

ARCHITECTURAL RECORD

URBAN POWER
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revival of cities

What's Shaping the
American City Today?

Special Section: Computer Technology



**Spot the two terms
that don't go together:**

1. Suspended Ceiling
2. Grid-hiding Visual

Until now.



Toward a new urban architecture

Editorial

By Robert A. Ivy, FAIA

Look at this month's cover, which proves that the city still has the power to fire the imagination. In documenting Fox and Fowle's new high-rise building, Four Times Square, Jeff Goldberg captured an urban dreamworld in a single image of New York City. It's all there, from the spruced-up globe of the Paramount building to the red blur of taxicabs trailing down the avenues—an urban vastness reflected in the evening light, a meta-rational universe that staggers the imagination. Although Goldberg's shot is poetic, even romantic, it captures the unexpected: despite our prognostications, the city lives.

Thirty years ago, however, American cities seemed to be the frayed repositories of old-fashioned ambition and optimism. Like the protagonist of Theodore Dreiser's novel, *An American Tragedy*, the metropolis, once a beacon of capitalistic hope, was sliding toward self-destruction. For a generation, we focused on the abandonment of places like downtown Detroit and Memphis, impotent to stop the suburbs from gobbling up people and energy. And despite good times, a multitude of unresolved issues confounded us.

Sprawl continues its insidious dance today, yet certain cities are awash in newfound prosperity and reveling in density. While all cities are fraught with problems, some are reclaiming their waterfronts like Pittsburgh or Boston or San Francisco; Chicago is transforming warehouses into housing and offices for new media providers. Has New York, international Gotham, ever been more vibrant? At the same time that every other computer wizard is buying a Range Rover and moving to Silicon Valley, the T-1 lines are converging into a thickly woven communication nexus of hip cafes and investment banking houses plugged into the city's latest high-rises.


What continues to draw a new generation back into the urban matrix? Cities still offer physical connections, sensory stimulation, and confrontation in ways that the virtual landscape only hints at: where better to hear an opera or make a date, encounter a demonstration or eat a hot dog? Where better to stroll? Where better to meet in person, after meeting online? The urban formula attracts demographic extremes, young and old.

At the same time new communications tools allow business dispersal into the countryside, we are finding new roles for cities. Political economist Saskia Sassen foresees a global consolidation of cities into key communications, cultural, and financial centers, citing a continual need for urban "agglomeration." The relationship between making connections (whether by subway or screen-to-screen) and actual buildings calls for broad new thinking—architectural thinking.

Some of us are already deeply involved. Although Europe has enjoyed a tradition of architects who both understand urban theory and build actual structures, the United States has fewer exemplars. In New York, architects like Marilyn Jordan Taylor and David Childs at Skidmore Owings and Merrill have grasped the new reality and are deploying their vision pragmatically in new architectural projects. They talk as easily about the interface between subway, rail, and airline terminals as they do the character of the street. Not obsessed with map-making, they are becoming proficient at envisioning how buildings fit into the larger urban web: simultaneously, they are asking how the new Penn Station will relate to both JFK airport, many miles away, and to Eighth Avenue, which flanks it.

While architects will continue to be concerned with construction and the limits of detail, the new century demands that we embrace the evolution of cities, offering them our analytical skills, our ability to conceptualize at the mega, as well as the minor scale, and our ability to think synthetically. As a profession, we continually make the mental connections that cities require, not only for urban planning as we have known it, but for a new urban architecture. Cities will benefit from our wide-ranging thought, as we stretch to meet the dynamic, challenge-ridden future.


Oh, the Design



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School reforms

Your November articles about architecture and schools [Building Types Study, page 111] showed that exciting innovations are coming to the classroom. We are discovering that design really does matter, not only for its aesthetic qualities but also to foster better learning.

A number of studies have correlated building design and construction with students' ability to learn. Published data gathered over a period of years from several school districts has demonstrated that students in better-designed classrooms actually progressed faster in math and reading. They often attend more successfully to their tasks, which is an especially compelling finding since asthma among children is increasing and learning disorders like hyperactivity currently prevent children from doing their best. (While the causality is not well understood, many researchers feel environmental considerations play a role.)

To create healthier high-performance classrooms, school districts in North Carolina, Washington, Colorado, and California are relying on full-spectrum artificial light, optimum siting, increased natural light, and HVAC systems with highly refined filters that greatly improve indoor air quality.

Schools designed for children and teachers to perform their best are becoming more and more affordable—saving money for local taxpayers over the life of the building, as energy efficiency is dramatically increased and operating costs greatly reduced. By 2020, technology should enable the capture of daylight for later transmission and distribution. Fuel cells and photovoltaic shingles (which make the roof a power system) will allow some buildings to be

virtually self-powered. And advanced triple-effect heat pumps, better air filters, and new refrigerants are also changing quality and cost considerations.

In addition to funding ongoing research into energy-efficient design, the State and Community Programs-Building Technology division of the U.S. Department of Energy helps architects and school districts learn about these better approaches. In a world that increasingly requires an educated, technologically savvy workforce, it's an investment well worth making. —*Mark E. Ginsberg, AIA Building Technology, State and Community Programs division U.S. Department of Energy*

Girls and boys

During my years in other firms and at professional meetings, I have consistently had my status as a licensed architect doubted, disregarded and challenged by male architects. Architecture is still very much a "boy's" game. Only a man could miss the ugly little boys' world we women are forced to live in to become licensed [January, Editorial, page 15].

Even the newest male architects will hand papers to a woman to photocopy. She will be consistently denied promotions and leadership roles (in favor of men who are younger and sometimes unlicensed). My clients and contractors are more prepared to accept my professional qualifications than the greenest of licensed males.

My credentials have been greeted with open disbelief. I have been repeatedly admonished, after an introduction to a male architect, that I must have a license before I can call myself an architect—as if women were not allowed to take the exam. Even after I've been introduced to male architects, I am often subsequently introduced by them as

a designer or even a decorator.

I have worked as the only licensed woman in a large office and as the only licensed professional kept in a cubicle while unlicensed men sat in offices. The reasons I have been given for holding women down include: "The management team may not communicate freely with a woman in the group"; "Once you take time off to raise a family, you have to expect to take time to catch up" (I had never taken time off); and the blatantly illegal, "He just got married and is going to have a family to support, so he needs this promotion." The AIA is still part of this boy's world. Groups such as Chicago's Women In Architecture have broken with the AIA in order to have a voice of their own. But the vast majority of women are under the glass ceiling or outside the profession entirely—that is the choice "our" profession gives us. —*Amy B. Reineri, AIA Casa PC, Newport News, Va.*

Thanks for your bright and thoughtful perspective on women in the profession. In the January editorial "Where do women stand?" you give us a touchstone. The short answer is: "Right outside the gate. But why would they want to come inside?" You say it's time to raise "substantive questions about the status of women" in architecture, but for those in this struggle, the time came long ago.

In fact, excellent studies and some worthy literature do raise those questions, and the architectural press has done its job. However, I have come to believe that the structure of the AIA (fundamentally male and pale) resists what seems an inevitable shift toward multiculturalism.

This is probably mostly unconscious, though occasionally it feels intentionally hostile.

Specifically, it plays out in the AIA's unaccountable tenacity against feminization—both in the overall lack of women in membership, leadership, and management roles and in the retention of hierarchical, patriarchal organizational attributes.

Regrettably, the results of this persistence appear too regularly and too visibly to "the rest of us"—as in the group photo of the newly ordained 2000 AIA Board of Directors shown in the January issue of *AIArchitect*. It was hardly a representative sample of the diverse energy that drives the profession.

The Board's antiquated reliance on geographic/regional representation helps perpetuate the excessively long and inaccessible ladder to influence and decision-making roles. But, on the hopeful side—at the smaller scale—AIA activity embraces women and "female" attributes. Despite the high cost of dues, which are another discouragement, local chapters enjoy the active participation and perspectives of female architects, many in leadership roles.

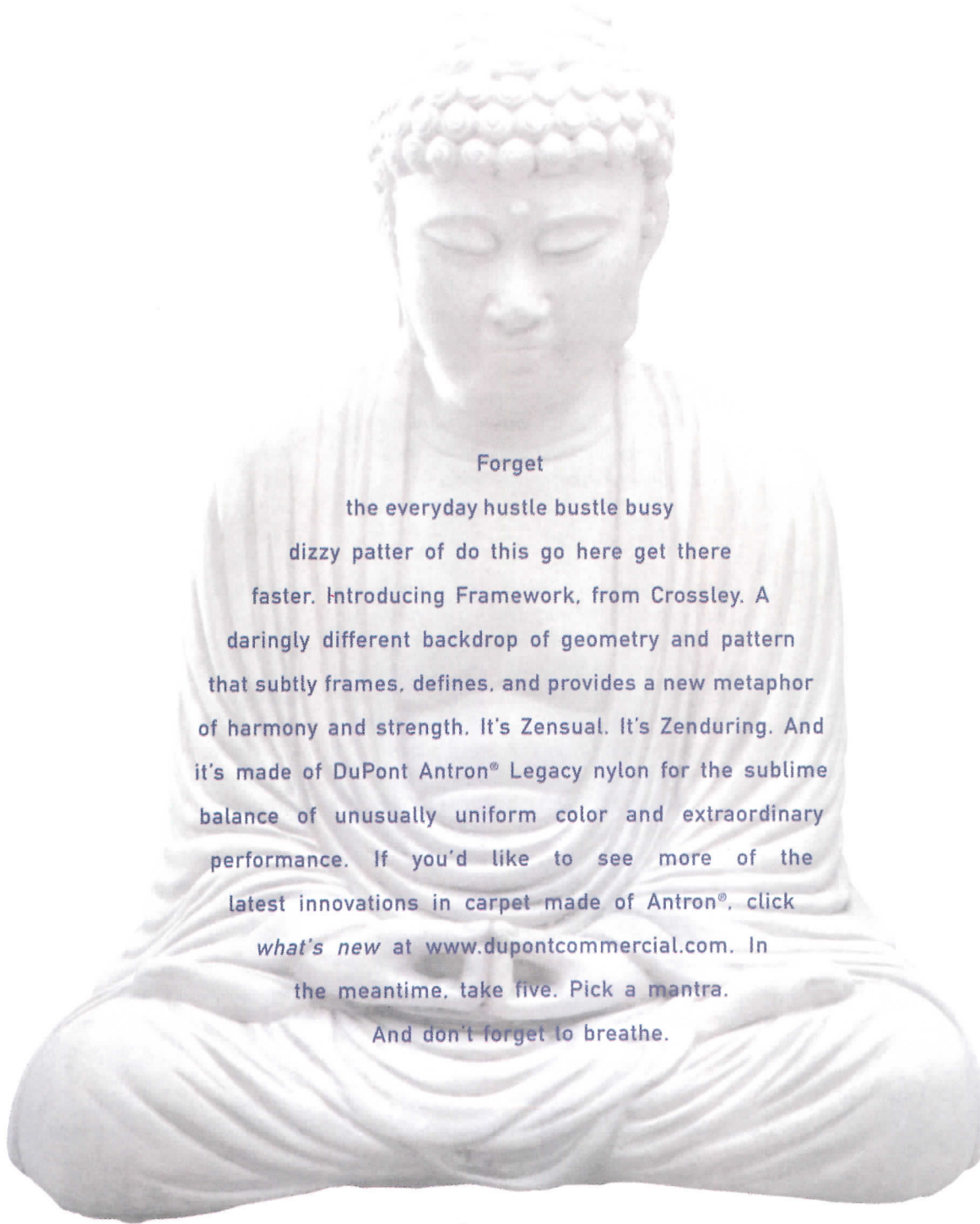
Still, the AIA would benefit from a deeper understanding of why women and minorities continue to choose paths outside of what we once thought of as the mainstream of the architectural profession—what was formerly a trickle is now a gathering deluge. I hope your observations help focus attention to bring the change necessary for professional survival. —*Marga Rose Hancock, HON. AIA Executive Vice President, AIA Seattle*

The patronizing tone of your editorial struck a chord with me and, I suspect, with many women, too. For our profession's leading magazine (and the voice of the AIA) to address women's career tracks or creative and intellectual powers

Letters



point of inspiration



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Letters

as if they are different from those of men further isolates and degrades women.

Family leave and paternity policy, equitable compensation, medical benefits, and breaking through upper management's fragile glass ceiling are not only women's issues. "Emancipation" from conventions of the profession must push past the equivalent of yet another Annie Leibovitz celebrity spotlight. The broadest reforms in education, alternative degrees, licensure, and practice should be an immediate concern for all. They will benefit all in the architectural profession. Otherwise, we will continue to see the brightest and most ambitious new talent—men and women alike—parlay their architectural training into one of the more progressive fields.

—John M. Rossi, Assoc. AIA
Seattle

Your editorial raised interesting questions about the state of women within the profession. I am registered in Louisiana but employed by the Sweet's Group as an architectural consultant. It's a wonderful job and I am very happy here. I have never wished to affiliate with the various "women in architecture" groups because I never wanted to be known as "a good female architect." I wish to be thought of as a *good architect*. However, I have yet to find a PIA within the AIA that addressed the needs of architects who take the nontraditional career path. That question knows no gender and I have not yet found my niche there. Our own professional organization has failed to recognize the needs of a large segment of its membership.

—Cynthia Belisle, AIA
via E-mail

Good enough government work

I was very impressed with your article on the "nation's biggest landlord." I am a project manager for the City of Savannah Design & Construction Group, and we are heavily involved in facilities management of approximately 140 municipal buildings. Until 1996, Savannah never had a buildings program per se. But today we follow a process of hiring consultants (using SF254 and SF255) that eliminates any bias and/or skewed opinion. A panel of five evaluators (including the purchasing administrator, PM, and user) evaluates RFQs independently and assigns "quality points," which are then submit-

ted to the purchasing administrator. Also submitted is the fee proposal, in a sealed envelope. The PA determines each firm's "quality point/dollar ratio," and the contract is awarded to the firm with the best ratio. We have seen a significant increase in interested firms and great improvements in the quality of work by consultants who are not competing simply on a fee-based proposal. I strongly encourage similar municipalities to adopt this system.

—Rumit Mehta
Savannah

Black-and-white landscape

Catching up on my reading, I was delighted with November's photo essay, "A Lens into the Gardens of Le Nôtre" [page 68]. It transported me back to the fall of 1955. I was 21 and part of the American sector occupation forces in Germany; she was a Danish student at school in Paris. Together, we saw Versailles—but the images were fading. The scenes so skillfully captured by Becky Cohen brought them to life again. Thanks for understanding how black-and-white photography helps to focus us on images that can be blurred by the confusion of color.

—Dick Thevenot, HON. AIA
Executive Director, AIA Louisiana

Corrections

Colab Architects' Mark Engberg and Lawrence Ko were not mentioned in our December story [page 138] on the Times Square television studios that host ABC's *Good Morning America*. The Michigan Architecture Papers [December, page 49]—a collaboration between faculty, students, distinguished architects, and scholars—were produced by a team including Brian Carter, Jason Young, Kent Kleinman, Annette LeCuyer, Caleb H. Clauset, Dennis B. Smith, Carla Swickerath, and Christian Unverzagt. Brian Carter was incorrectly identified in the story. He is chair of Architecture at the University of Michigan.

In November [page 177], Lucifer Lighting products were incorrectly identified. The fixture labeled "ScapeLight" is actually called "Scapebeam." The fixture we identified as a "Light Chime" is actually the "Scapebeam Pendant." What is more, Lucifer Lighting (www.luciferlighting.com) is in San Antonio, not Austin.

On page 138 of the February issue, images of the computer tests on the dogbone connections were courtesy of Ove Arup & Partners. ■

Letters may be E-mailed by clicking **Letters** on our Web site at www.architecturalrecord.com. RECORD may edit letters for grammar, style, and length.

THE SEAGRAM BUILDING'S LONG-LIVED BRASSERIE STARTS OVER WITH A DILLER + SCOFIDIO REDESIGN



New York City's Brasserie has entered a new stage in its storied architectural history. Located in Mies van der Rohe's Seagram Building, on the opposite side from the Four Seasons, the original Philip Johnson-designed restaurant opened in 1959 and served a hip midtown crowd for many years, before faltering in popularity and then succumbing to a fire in 1995. Now, local firm Diller + Scofidio—much talked about since last year as the only architects to snare a MacArthur Foundation “genius grant”—has revamped the eatery in an ultramodern style that plays with diners' perceptions.

“The space changed entirely,” says Elizabeth Diller, noting that Johnson's restaurant “was a sequence of spaces; now, it's one long stretch.” The architects updated the front-and-center staircase,

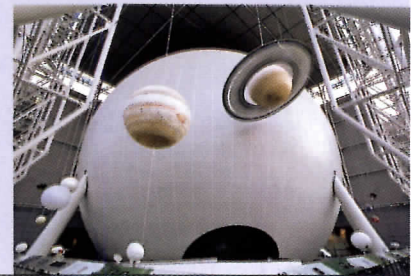
which “had always produced a sort of grand entry,” says Diller. “We wanted to ‘theatricize’ it a bit more.” The descent of the glass stairs was elongated, depositing diners' nearer the center of the room.

All told, the establishment's new owner, Restaurant Associates, invested \$5 million in the makeover, which produced a warm space clad in curving pearwood, dotted with translucent epoxy-resin green tables (covered with tablecloths for dinner) and lined with booths on one edge. On the other side of the room, opposite the booths, is the bar, over which hang 15 video monitors that display restaurant-goers as they approach the street entry. As new people enter, the images are bumped down the line of monitors in chronological order, eventually disappearing. Behind the bar, rows of wine and liquor bottles float behind a translucent white resin wall. The architects also played with ideas of voyeurism in the bathrooms, where a single sink runs through a slot in the wall dividing the men's and women's rooms.

Diller concludes: “We kind of thought of the space we inherited as an old coat that just needed a new lining.” *Soren Larson*



A STAR IS BORN Amid the kind of media hoopla reserved for buildings such as Gehry's Guggenheim Bilbao, one of New York City's most eagerly anticipated new public spaces opened last month: the \$210 million Rose Center for Earth and Space, an ambitious new project at the American Museum of Natural History designed by Polshek Partnership Architects [May 1998, page 105]. The complex facility looks deceptively simple: an 87-foot-diameter, aluminum-clad sphere apparently suspended inside a 95-foot-high cube of colorless glass. The upper hemisphere encases the high-tech Space Theater, and a curved ramp exhibiting the history of the universe winds around the sphere's exterior. The museum considers the Rose Center light years ahead of its predecessor, the 1935 Hayden Planetarium. *S. L.*



CLINTON'S PROPOSED BUDGET OPENS COFFERS FOR ARRAY OF EMBASSY AND COURTHOUSE PROJECTS

President Clinton's proposed Fiscal Year 2001 budget includes over \$1.3 billion earmarked for architectural projects. Most of the money falls in the domain of the General Services Administration (GSA), which handles domestic projects, or the State Department, which handles foreign properties, such as embassies and consulates.

The top priority for both agencies is the joint undertaking of a new U.S. Mission to the United Nations in New York City. That project alone carries a \$58 million price tag. The bulk of the GSA projects would be courthouses, with seven new federal court buildings on what GSA spokeswoman Vicki Reath referred to as “the wish list.” Sites include Los Angeles, Seattle, Richmond, Biloxi-Freeport, Miami, Little Rock, and Washington, D.C.

Equal in number, but smaller in scale and budget, are border stations, to be built in Texas, Michigan, Montana, and Maine. The total construction program for the GSA is

\$779.8 million.

The State Department's projects are the line item dubbed “Embassy Security, Construction and Maintenance.” In addition to the funds for the U.N. Mission, \$647 million was requested for security upgrades, including design and/or construction of facilities in Cape Town, South Africa; Damascus, Syria; Rio de Janeiro, Brazil; Sofia, Bulgaria; and Yerevan, Armenia. This money will also go toward new U.S. Agency for International Development facilities in Kampala, Uganda, and Nairobi, Kenya.

Lest any architect start looking for a commission, bear in mind that the Fiscal Year 2001 budget was submitted by President Clinton in early February. It will wind its way through Congress before gaining approval in some final form in the fall. The good news, though, is that the administration also recommended that \$14 billion over the next 10 years go toward new embassy construction. *Ellen Sands*



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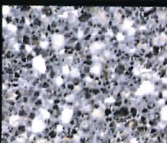
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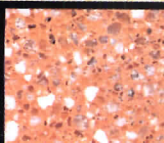
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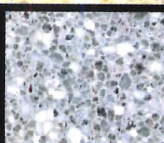
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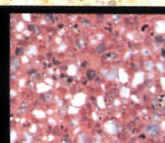
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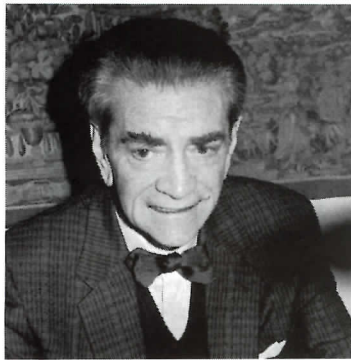
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Record News

INFLUENTIAL CRITIC BRUNO ZEVI DEAD AT 81



Bruno Zevi, an influential Italian architect, historian, critic, and politician, died in January at his home in Rome. He was 81.

Zevi's writings include *Towards an Organic Architecture* (1950), *Architecture as Space: How to Look at Architecture* (1957), *The Modern Language of Architecture* (1978), and a classic history of modern architecture, *La Storia dell'architettura moderna* (1950). He edited the magazine *L'Architettura: Cronache e Storia*, which he founded in 1955, and wrote criticism for the news magazine *L'Espresso*. Zevi also taught architectural history in Venice and later in Rome.

His political activism, which began in the anti-Fascist Justice and Liberty Movement, positioned him after World War II as a founder

of the anti-Communist liberal Action Party, and later as a member of parliament in the Radical Party.

The bases of Zevi's intellectual formation were disparate: Italian, American, and Jewish. Heir to a long tradition of Italian cultural historiography, he was influenced by Benedetto Croce's aesthetic philosophy, which proposes art as autonomous knowledge, that is not subordinate to science or technology. The American source was Frank Lloyd Wright's organic architecture, which Zevi saw as an expression of democracy (Zevi studied architecture at Harvard during a stint in political exile). In Jewish culture, Zevi saw an anti-classicist, antirepresentational bias toward expressionism.

The postwar Italian architectural profession owed much to Zevi, yet he was somewhat an outsider in a culture nurtured in Milan and Venice by Ernesto Rogers, Rogers' disciples Aldo Rossi and Vittorio Gregotti, and historian and theorist Manfredo Tafuri. They used the journal *Casabella* as well as architecture schools to configure what became the prevailing neo-Marxist and neo-Rationalist culture.

Zevi organized *L'Architettura: Cronache e Storia* in part as a reaction to Rogers' unwillingness to let him codirect *Casabella*. Yet even Tafuri, who died in 1994, in his *History of Italian Architecture, 1944-1985* attested to Zevi's "historical significance." *Frank Spadaro*



A MCKIM, MEAD & WHITE BANK IN PHILADELPHIA PROVIDES A CLASSIC HOME FOR THE RITZ-CARLTON

Last decade, looking for a new spot for a luxury hotel in Philadelphia, the overseers of the Ritz-Carlton found the perfect opening: a pair of neoclassical McKim, Mead & White structures, right across from City Hall, that a local developer had recently purchased from the long-time occupant, the Mellon Bank. The structures—a domed building from 1908 and an adjacent 30-story tower added a little later—came on the market in the mid-1990s when fire damaged the tower, and the bank decided to sell the lower building, as well.

The Ritz-Carlton worked a deal with developer Craig Spencer to turn the buildings into an elite 330-room hotel and conference center and hired The Hillier Group's Philadelphia office to rework the exterior and create new entry and office spaces. Hirsch Bedner &

Associates was brought in for the interior design of the hotel, which should be open in late spring.

Hillier set to work at cleaning the marble exterior—a job finished late last year—and remodeling the interior to accommodate extensive new infrastructure while taking pains to appease landmark preservation agencies. "It's amazing how well the hotel program actually fit in," says James Garrison, AIA, the project architect. "There were no significant interventions."

Teller desks were removed, while two skylights—in the ceiling and in the floor over the vault—were maintained, along with a row of columns surrounding the new lobby. A monumental new staircase will lead to a junior ballroom on the second floor, and the former vault, in the basement, will become a 6,000-square-foot ballroom. *Soren Larson*

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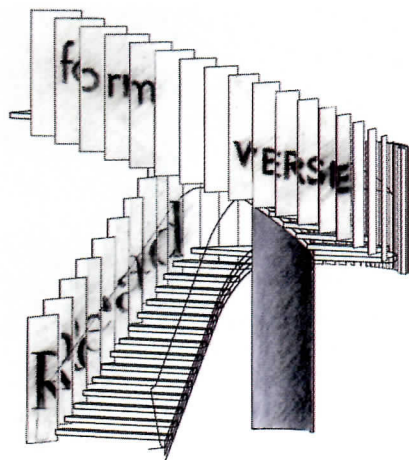
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Record News

READ ALL ABOUT IT: THE OPEN BOOK CENTER

Three turn-of-the-century brick buildings near the fast-changing Minneapolis riverfront will soon become a literary arts center called Open Book. By connecting the three-level buildings and inserting a mezzanine, architect Meyer Scherer & Rockcastle (MS&R) created contemporary space for three nonprofit tenants—The Loft Literary Center, the Minnesota Center for Book Arts,



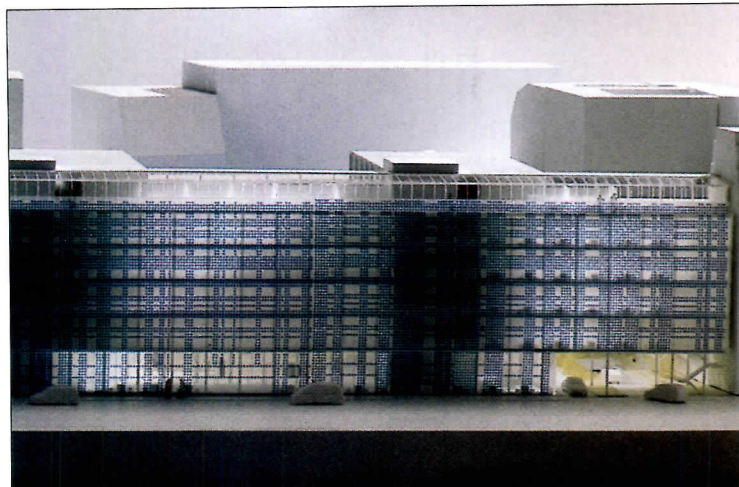
and publisher Milkweed Editions—plus a cafe, classrooms, performance space, writers' studios, informal gathering spaces, and a popular independent bookstore, Ruminator Books. While retaining most of the original exterior, MS&R brought more daylight inside with a glass facade at street level that wraps around and into the center lobby atrium.

In the atrium, principal architect Garth Rockcastle, collaborating with book artist Karen Wirth, sculpted a spiral staircase tying all the floors together. The steel staircase is structured like a book turned inside out, with its stitches pulled apart from the center binding. The 6-foot-high "pages," made of translucent Lumasite, radiate out from the stair railings. Rockcastle sees the Open Book's staircase as a metaphor for "joining the craft of bookmaking with literary content."

For MS&R's project architect, Kate Bergquist, the renovation has been similar to book editing, as the firm saved an old bank vault and reused huge industrial doors as room dividers. Where contractors cut passages through the three structures, the architects left steel reinforcements exposed. "It's like revealing the past and beginning to show what's coming," said Bergquist.

The three buildings originally housed a variety of manufacturing and wholesale businesses, but recently fell into disrepair. Today, the neighborhood, just a few short blocks from the river, is showing new signs of life as old flour mills are being converted into housing and the Guthrie Theater may relocate nearby. The University of Minnesota campus lies only six blocks away.

The Open Book project will cost \$6.75 million, and the three nonprofits are close to reaching their fund-raising goals. The trio is gearing up for a major public opening on May 21. *Bette Hammel*



IN HIS FIRST PROJECT IN PARIS, JAPAN'S TOYO ITO WILL DESIGN THE NEW COGNACQ-JAY HOSPITAL

Toyo Ito finally stepped onto the Parisian scene in October last year with his successful bid for the new Cognacq-Jay hospital. And he had to beat some stiff competition: John Nouvel, Dominique Perrault, Paul Chemetov, and Borja Huidobro, and Architecture Studio battled it out to design the \$18 million project.

With the closure of the Saint Jacques hospital in the 15th *arrondissement* and the demolition of the old Cognacq-Jay, local private facilities will be consolidated. Ito's building will more than double the size of the present one, increasing the current capacity from 72 to 152 beds. Although "destruction was not an obligation in the brief," notes Frédéric Nantois, architectural advisor on the jury, it was considered necessary because the existing facility is unusable. Only Chemetov suggested preserving an old pavilion, "but it was more decorative [than anything]," adds Nantois.

Central to the project will be a large garden, into which will extend three blocks containing private rooms, thus giving each a view onto the green space.

Glass elevations along rue Blomet and rue Eugène Millon will be both transparent and translucent—an Ito trademark—while the interior facades will consist of "a wooden grill, or [a type of] slat," Nantois says. Circulation between sections will be via the first sublevel, and the garden will be landscaped in such a way that ample daylight will stream into this lower level.

This is not Ito's first attempt to win a Parisian contract. Proposals for the *Maison de la Culture du Japon* (1989) and the library for the University of Paris, generally known as *Jussieu* (1992), both missed that mark. The 2003 completion date for the Cognacq-Jay will represent what is likely to be an exciting new stage for the Japanese architect.

Robert Such

KOOLHAAS, HERZOG & DE MEURON TEAM UP FOR A HOTEL DESIGN

The craze for boutique hotels in Manhattan shows no signs of abating, and the most recently announced addition boasts quite an architectural pedigree. Hotelier Ian Schrager (who's already opened the *Paramount*, *Royalton*, and *Morgans* hotels in New York City) has persuaded Dutch designer Rem Koolhaas and Swiss firm Herzog & de Meuron to team up for the design of a hotel that will rise on a parking lot next to the Cooper Union, near Astor Place. Koolhaas and Herzog & De Meuron will work in a partnership and expect to present an initial design proposal in April.

"I've been familiar with [the architects'] work for some time," says

Schrager, a native New Yorker, who has never developed a project from the ground up in his hometown. Neither architect has built from scratch in New York, either. "[Koolhaas] is a great thinker, and Herzog & de Meuron have that lyrical, poetic side," Schrager adds. "These aren't corporate architects. What I wanted to do was stand the New York architectural world on its head."

Cooper Union owns the parking lot where the hotel will be built, across the street from its own landmark *Foundation Building*. The hotel might be around 12 stories, while the ground floor and two floors below will house screening rooms and perhaps a bookstore and restaurant. Construction is expected to begin this year. *Soren Larson*



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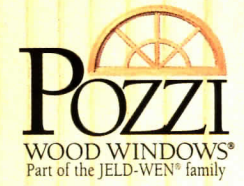


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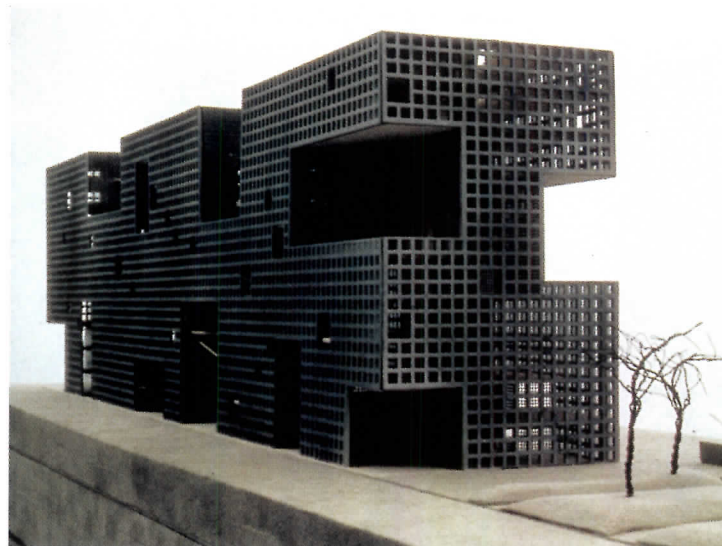
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REDOING THE DORM: A NEW ERA FOR HOUSING

According to Scott Smith, AIA, of Sasaki's San Francisco office, the days of cinderblock dormitories with students sharing crowded rooms are long gone. Today's college kids want more from their housing arrangement—much more. To compete with off-campus alternatives, "collegiate housing increasingly emulates private sector models," Smith says; these new priorities "reflect very different concerns from those embodied in traditional dormitories or residence halls."

Across the country, colleges and universities are looking to provide a range of amenities and comforts in new housing, as well as improvements in overall infrastructure (RECORD, February, page 77). In terms of dorms, Sasaki has been asked to design a variety of private, semi-private, and public spaces for socializing and learning. The firm adds computer network connections, cable television, pools, conference facilities, and washer/dryer hook-ups in individual units. Programs are becoming more complex to include cafes, group study rooms, seminar rooms, and visiting-faculty apartments.

Universities are also becoming more daring in choosing their dorm designers. At the University of Toronto, work is nearing completion on a 163,000-square-foot graduate-student residence designed by Morphosis. The building, scheduled to open this spring, has created controversy: not everyone on campus admires the nontraditional appearance, and some are concerned about the dangers of having a two-story steel letter O project over a busy intersection (it completes the university's spelled-out name; the preceding letters are made of glass and fixed to the facade). The residence is clad in layers of perforated, corrugated



The first Canadian project by Morphosis goes up in Toronto (top); a model of Steven Holl's residence at M.I.T. (middle); Sasaki's dorms for SF State.

aluminum siding over black pre-cast ribbed concrete panels and aluminum windows. The rooms are grouped around a central courtyard.

Stephen Teeple, whose Toronto firm won the design competition with Morphosis, says the courtyard "will define a great outdoor space for students." Thom Mayne, AIA, of

Morphosis says the building was produced within a constraining budget, which he said "was not an easy task—but the client thinks we got quite a bit of building out of it." Mayne dismissed concerns about something falling off the cornice over the intersection, adding that "if a building says something it's bound

to engender agreement and disagreement. It's not an architect's role to worry about whether people like or dislike a piece of work. The bigger problem is if nobody notices it as it goes up,"

M.I.T. and beyond

At M.I.T., Steven Holl, AIA, has designed a 350-bed residence that he calls a "vertical slice" of the city, 10 stories high and 330 feet long. Amenities include a 125-seat theater, a cafe, and additional dining on street level. Corridors are 11 feet wide and meant to act like small streets, leading students to happen upon "urban experiences." The unusual form is based on a "sponge" concept: the mass has five large-scale openings, corresponding to entrances and corridors, and an abundance of smaller perforations that allow in light and move air up through the sections. Each single room has nine operable windows.

At Rice, Boston's Machado and Silvetti Associates has designed a 163,000-square-foot complex that includes a residential college and a series of dining facilities. The dorm will surround a courtyard on three sides and is laid out primarily in suite-type arrangements. The program also includes a variety of common spaces, including a library, computer rooms, seminar rooms, and recreation facilities.

At Colorado College in Colorado Springs, Sasaki is producing apartments and theme houses with a commons, a coffee shop, laundries, and social and academic "living rooms." Meanwhile, at San Francisco State, Sasaki is working on urban housing that addresses urban design as well a campus planning issues. At the University of New Mexico, the firm is creating a 400-bed project in apartment-style housing including common spaces, laundries, and housing offices.

"Now you simply have to offer something more than just a bed," says Sasaki's Smith. "This, along with distance learning, is causing colleges and universities to completely rethink housing." *Soren Larson and Albert Warson*

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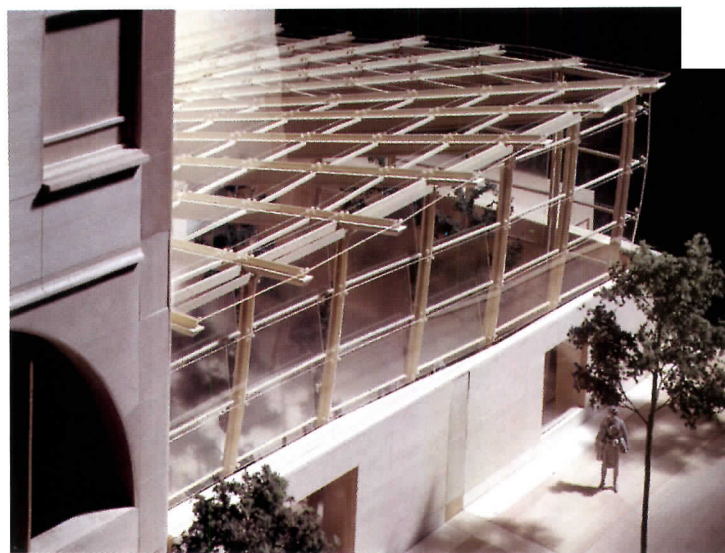
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Record News

ASIA SOCIETY ADD-ONS PASS LOCAL MUSTER

The Asia Society has commenced construction of a \$30 million renovation and expansion of its Manhattan headquarters, designed by Edward Larrabee Barnes and built in 1981, with completion expected in late spring. The current project, designed by Voorsanger & Associates Architects, will add 5,000 square feet to the existing red granite building in the form of an expanded rooftop enclosure, extended service alley, and new mechanical support area.

The original design was thought by some to be hostile to its surroundings, yet it has recently inspired strong loyalty from area



residents; the expansion was much delayed due to community opposition. The dispute was sparked by the first renovation scheme's intended relocation of the existing Park Avenue entrance. The community attempted to block the move and asked that only the interior of the

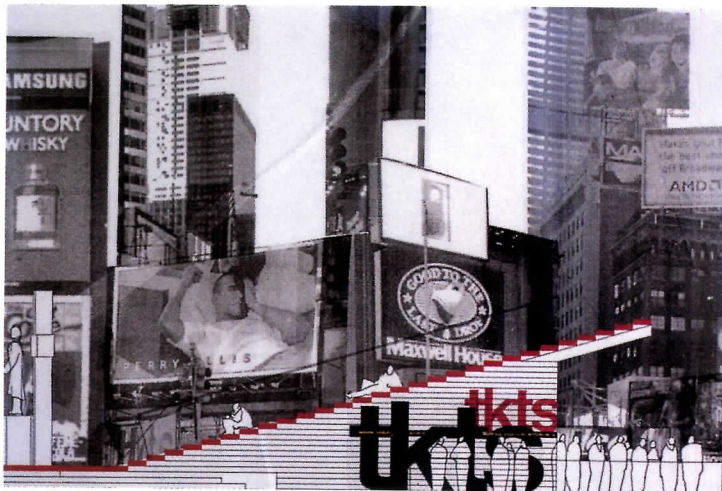
building be altered. Letters to the city's Landmarks Preservation Commission were written by architectural historians and Barnes himself, protesting the reconfiguration of his own design.

As a result, the new, approved scheme does not change the Park

Avenue facade, but instead reconfigures the interior, focusing on the new skylit garden court and its sculpture, plantings, and cafe. What were once administrative and support service areas have been converted to gallery space, and the lobby entrance has been expanded to accommodate a theatrical blue glass stairway. Other materials—such as bamboo floors, birch for the lobby ceilings, and rice paper laminated with glass—evoke Asian architecture.

The dynamic entrance stair was intended by the architect, Bartholomew Voorsanger, FAIA, "to add life to the building, as the space should be visually and aesthetically kinetic; it should keep moving." The scheme also allows for up-to-date communications technology infrastructure, an expanded store, and designated sites for several contemporary artworks commissioned by the Asia Society. *Susanna Sirefman*

AUSTRALIAN DUO WINS COMPETITION TO DESIGN NEW TICKET BOOTH AT CROSSROADS OF THE WORLD



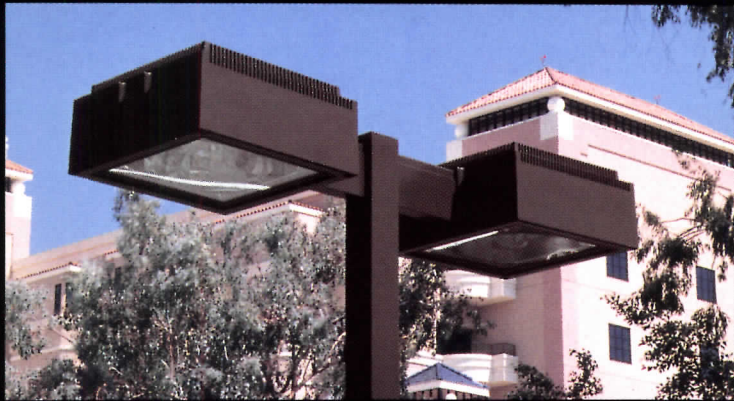
The TKTS booth in Times Square draws a daily crowd seeking off-price tickets to Broadway shows. While the spot now holds a rudimentary installation built in 1973, bargain seekers may soon be lining up at more sophisticated facilities. Australians John Choi and Tai Ropiha have won a competition, directed by the Van Alen Institute, to design a permanent TKTS facility as an official project of the New York City Millennium Committee.

The winning proposal is a wedge shape accommodating two uses within one footprint. The ticketing functions are housed within the wedge, while its roof—covered with stairs made of red resin planks—provides visitors with a place to rest. Now the proprietor, Theatre Development Fund, will decide whether to build the prize-winning design (it and other top entries are on display the Van Alen Institute through May 1). *Soren Larson*

GM REVS UP San Francisco's Kaplan McLaughlin Diaz (KMD), along with consulting engineers Ove Arup, has completed a campus renovation plan as well as the design of a new 960,000-square-foot facility for the vehicle engineering center (VEC) at General Motors' campus in Southeast Michigan. The historic campus, called the Warren Technical Center, was originally designed by Eero Saarinen nearly 50 years ago, and KMD's updated master plan preserves the legacy of Saarinen's work while creating a more flexible, interactive, high-tech environment. The most highly visible new feature will be a huge VEC addition, an eight-story structure (below) that will rise next to a manmade lake. GM is investing \$1 billion in the Warren campus to consolidate its engineering functions. Site preparation has begun for the project and the estimated completion date for the VEC tower is August 2001, with the renovation of existing VEC portions of the VEC scheduled for April 2002. *S.L.*



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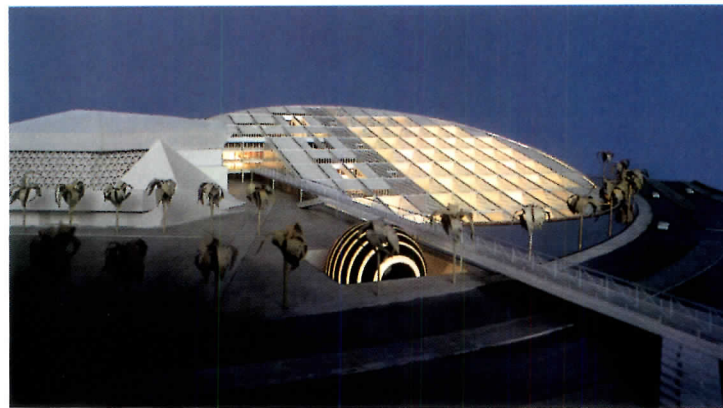
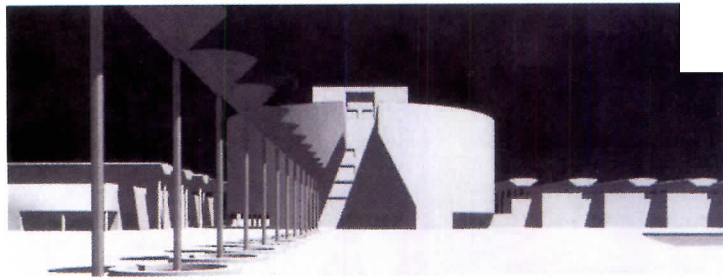
The Koran speaks of every nation being "called to its book." The new British and French national libraries embody this idea, expressing and preserving their nations' identity. By taking the first steps toward establishing the new King Fahad National Library, Saudi Arabia embraces these same goals. Meanwhile, Alexandria, Egypt, is returning to its literary roots.

In a limited competition last October, seven finalists presented schemes for a new national library in Riyadh, Saudi Arabia's capital. The winning design (top right), by Swiss architect Mario Botta, addresses the expansive site—18 football fields in size—with an iconic, circular library tower set within the desert landscape. Low-rise structures surround the tower, with the total library area reaching over 420,000 square feet.

The Kingdom of Saudi Arabia was founded in 1932, yet, there is great breadth to the culture in this cradle of Islam. The desire to reconcile the modern and ancient is reflected in the library's mission, with the Kingdom Information Center, 500-seat auditorium, and gallery spaces as key components. The desert environment, where the temperature rises above 90 degrees an average of 205 days a year, and the culture's strict segregation of the sexes were among the unusual factors the competitors faced. Strategies to provide shade and filtered light were mandated. The entry sequence and circulation had to ensure gender separation throughout the complex, culminating with a separate Women's Library. Construction should begin in 2001.

Rebuilding the past

Alexandria is also getting a new library building—though it's not exactly a new library. The fabled



Alexandria Library, thought by many scholars to have been destroyed in the third century, is being rebuilt with a design by a consortium of Norwegian firm Snøhetta and Hamza Associates of Egypt

(Snøhetta won a competition in 1989 and later joined with Hamza for planning and site supervision).

The building's circular form is designed to evoke objects in astronomy, a field in which the

ancient library excelled. The roof, reminiscent of a computer microchip, merges contemporary technological issues with the fundamental aspects of our place in the cosmos, according to Snøhetta's Craig Dykers. The surrounding stone wall, of Egyptian granite, is carved with inscriptions in various alphabets and helps protect the library from seasonal Saharan winds. The 800,000-square-foot structure will be located on the Mediterranean at almost the same site of the ancient library complex,

With space for five million volumes, a computerized catalog and 500 built-in Internet ports, the library could be the most advanced in the Arab world when it is completed later this year. More than half the \$175 million construction cost has been paid by the Egyptian Government, with the rest coming from international donors rallied by the United Nations Educational, Scientific, and Cultural Organization. *Todd Wilmert and Soren Larson*

KNIGHTS OF THE DRAFTING TABLE What do Lancelot and Jeremy Dixon, architect of the new Royal Opera House in London's Covent Garden, have in common? After the New Year's Eve announcement of the Queen's honors, both are knights of an order that dates back to King Arthur's roundtable. The most recent group of Queen's honors, given twice a year to citizens deemed to have contributed greatly to public service, included a larger-than-usual array of architects. Tokyo-based British architect Mark Dytham, who was made a Member of the British Empire (MBE) for services to British architecture and culture in Japan, describes it as a "huge shock; it is tremendously cool getting it at 35. I see it as a reflection of the New Britain, proud and trusting of its younger generation."

Julia Barfield and David Marks received their MBEs for conceiving of and designing the giant ferris wheel called the London Eye. Ironically, like many of the honored projects, the wheel, which holds a commanding site on the Thames, has suffered a series of setbacks; it failed a last-minute inspection and couldn't carry passengers on New Year's Eve, as had been much anticipated, though now it has been deemed fit. London's latest subway project, the Jubilee Line Extension (see page 129), was cited three times. Roland Paoletti, head of architecture and station design for the extension, was made a Commander of the British Empire (CBE), as was Ian Ritchie, designer of Bermondsey Station. Chris Wilkinson, designer of Stratford Station, was made an Officer of the British Empire (OBE). Jeremy Dixon's honor is called a Knight Bachelor and isn't appointed to a specific order, so he will not be able to use post-nominal letters after his name, but can use the title Sir. Dixon says he was "very surprised" to be honored, considering some setbacks the opera house has suffered. A dozen performances have been cancelled, due for the most part to teething problems with the complicated, state-of-the-art building management system.

Also on the list were Mike Davis of Richard Rogers Partnership, an architect of the Millennium Dome, CBE; Ian Liddell, design engineer of the Millennium Dome, CBE; Bernard Ainsworth, project director for the dome, OBE; John Gibbons, chief architect of the Scottish Executive building, CBE; Gordon Benson, designer of the Museum of Scotland, OBE; Duglad Cameron, former director of the Glasgow School of Art, OBE; Donald Leeper, director of the country's Building Services Research and Information Association, OBE; Helen Stone, chairman of the Construction Industry Equal Opportunities Task Force, OBE; Ralph Mayer, chief executive of the Housing Association, CBE; Joyce Deans, former president of RIAS, CBE; and Terence O' Rourke, for general town-planning services, MBE. *Katherine MacInnes*



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Record News

A CALIFORNIA FIRM REVELS IN DIGITAL AGE

Last fall, Shubin + Donaldson Architects received three design awards from the AIA's Los Angeles chapter, whose awards program tends to be among the more competitive in the country. The clients of Russell Shubin, AIA, and Robin Donaldson, AIA, however, are much more interested in the team's process.

Donaldson and Shubin are in the vanguard of the many young architects who have embraced computer modeling and imaging technology not only as highly effective communications tools but as design generators. While Donaldson and Shubin

insist that cardboard models still play an important role, they use several software programs from the start of each project, and their clients expect it.

"These companies—dot-coms, ad agencies, brand designers—embrace the technology that lets them participate in making places that reflect their organizations," says Donaldson. "Perhaps because they deal in entertainment and because their own businesses are immersed in technology, they understand how technology can

heighten the process and get them what they want—a place that's also an experience."

Zero hour

Ground Zero, a growing ad agency whose campaigns are known for their straightforward attitude, asked Shubin + Donaldson to renovate a warehouse in Marina del Rey. At the first design meeting, huge 3-D images of the existing space helped plunge the clients and designers into an exploration of the project's conceptual underpinnings.

According to Shubin, "They wanted to convey how the Ground Zero teams work to uncover the essence of a brand." The result (left) includes a 200-foot ramp that takes visitors through much of the space—where they can see teams

at work—before they arrive at reception. Huge scrimms, hung from the ceiling, feature projections of abstract or representational images, including some of the company's recent design schemes. The project was completed last year, and the firm is now renovating the building next door to provide the agency with more space for post-production facilities. An open air bridge will connect the two buildings, and the second structure will have a similar plan (very simple) and a similar feel (very layered).

These new economy clients typically demand tight timelines, but Donaldson and Shubin don't complain. "We occasionally wish we had more time, but time pressure just pushes us to distill the real essence of what they want to accomplish," Donaldson says. "They don't have time to hear about our personal design fantasies, so we just skip all that. We quickly get to the heart of what they want to do."

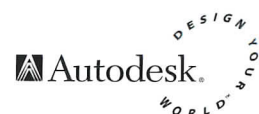
Kira L. Gould

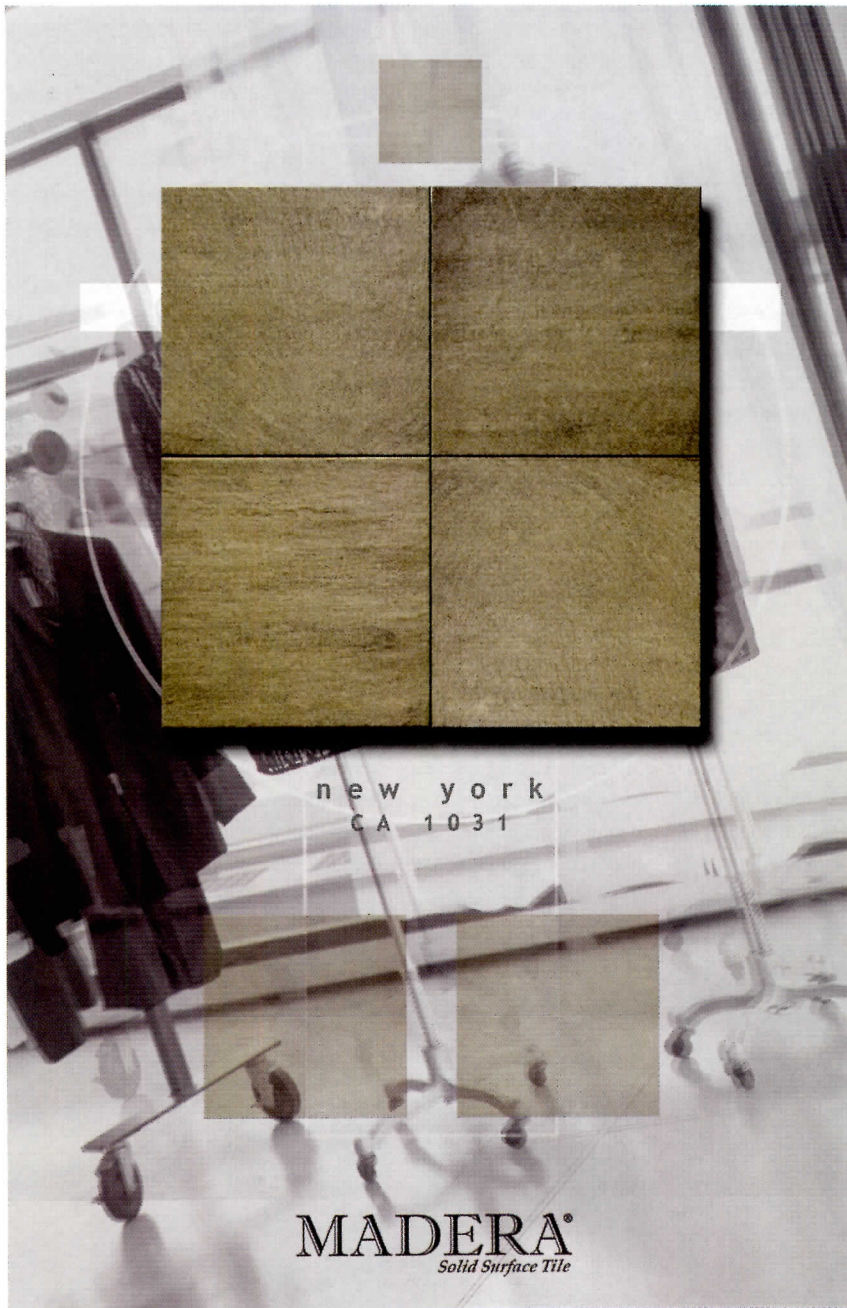


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News Briefs

Golden moment AIA President Ronald L. Skaggs, FAIA, placed the 2000 Gold Medal around the neck of Ricardo Legorreta, HON. FAIA, at February's Accent on Architecture gala in Washington, D.C. Legorreta told the crowd he has worked hard to improve the world's perception of the architecture of his native Mexico, which he feels is starting to gain the recognition it merits. "I have devoted all of my enthusiasm and passion to the profession of architecture," he added.

The short of it The New York Public Library's search for an architect to design a new midtown Manhattan branch has narrowed to a shortlist of Smith-Miller Hawkinson in association with Shepley Bulfinch Richardson and Abbott, Gwathmey Siegel, and Hardy Holzman Pfeiffer. The library is



Ricardo Legorreta, HON. FAIA, lives it up with Ronald Skaggs, FAIA.

expected to choose in March for the project, which is estimated to cost \$40 million to \$50 million. Meanwhile, the University of New Mexico has winnowed its search for a designer of its new School of Architecture and Planning to four finalists: Leers Weinzapfel Architects of Boston, in association with SMPC of Albuquerque; Barton Myers Associates of Beverly Hills, in association with Ellis/Browning of Santa Fe; Antoine Predock of Albuquerque;

and Rob Wellington Quigley Architecture of San Diego, in association with Garrett Smith Architects of Albuquerque. Final design proposals will be presented April 6.

Eli expansion Yale University plans to invest \$500 million in science and engineering facilities, including the construction of five new buildings and the renovation of several old ones—apparently one of the largest building plans ever undertaken by a university. The new buildings, to be completed in six to eight years, will include facilities for chemical, biological, and environmental research as well as for engineering and the School of Forestry and Environmental Studies.

Starck on Target French designer Philippe Starck has joined Michael Graves, FAIA, in creating household merchandise for Target Stores. While no product categories have been specified, Starck will develop the line through this year with an eye on launching a collec-

tion in 2001. Meanwhile, Graves will continue to expand his product offerings this year.

Scaffolding saga Speaking of Graves, the scaffolding he designed to surround the Washington Monument during its recent rehabilitation—and which garnered acclaim for its aesthetics as well as its function—is being dismantled, though perhaps not for good. Target (which was a major funder of the scaffolding project) and the Minneapolis Institute of the Arts are considering rebuilding about half of it, creating a sculptural obelisk in the Twin Cities.

Maltzen for the MOMA The Museum of Modern Art in New York City has chosen Michael Maltzen Architects of Los Angeles to design its temporary arts center in Queens. Maltzen, who formerly worked with Frank Gehry, FAIA, will transform part of an old industrial warehouse—the former Swingline stapler building—into gallery space to display temporary exhibitions and portions

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News Briefs

of the museum's permanent collection while work proceeds on a \$650 million expansion in Manhattan. Cooper Robertson and Partners of New York is developing a plan for the entire building, which would eventually include storage and offices as well as exhibitions.

The look of Louisiana The New Orleans firm Eskew+ has been chosen to design the new Louisiana State Museum in Baton Rouge, to be constructed on the Capitol Park Campus, adjacent to the state capitol and the Huey P. Long Public Gardens. The 100,000-square-foot structure will showcase a comprehensive history of Louisiana. It is scheduled for completion in fall 2003, to coincide with the bicentennial of the Louisiana Purchase.

Casino craze Mohegan Sun is

rolling the dice on a second casino. The \$800 million Project Sunburst, said to be the largest private development on the East Coast, is being built next to the company's first casino, in Uncasville, Conn. The exteriors, including a 34-story hotel, were designed by Kohn Pedersen Fox, while the interiors are by New York City's Rockwell Group. The 4 million-square-foot addition also includes restaurants, spas, and a 10,000-seat arena, and is slated to open in 2002.

New life for a library The city of Oakland, Calif., is renovating its former main library, a National Historic Landmark, and transforming it into the African American Museum and Library at Oakland. The Bay Area-based Michael Willis Architects is leading a team that will reinforce the turn-of-the-century building, upgrade infrastructure, and create exhibit spaces.

Caring for Kosovo The Council of Europe and the European



SmithGroup's design for the BART station in East Dublin/Pleasanton, Calif.

Commission are preparing a survey of damage to and destruction of the architectural and archaeological heritage of Kosovo. Once the survey is complete, experts will set up local teams, representing all demographics in Kosovo, to draw up proposals for preservation and rehabilitation. Since the arrival last June of the NATO-led peacekeeping force, protection of cultural monuments has been limited to Serbian Orthodox churches; nevertheless, more than 50 churches in Kosovo have been damaged by vandalism since then.

Beautifying BART The San Francisco region's Bay Area Rapid Transit system has begun a series of expansions to move closer to fulfill-

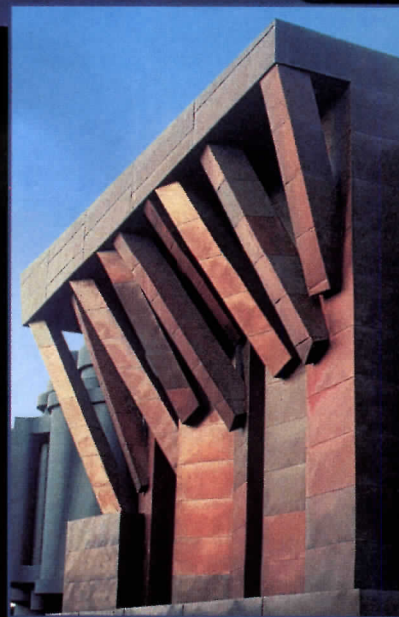
ing an original vision of encircling the bay while expanding to new and distant communities beyond. Alongside expanded reach, design quality is taking priority; for example, San Francisco's SmithGroup has designed an unusual new BART station in East Dublin/Pleasanton with a long, snakelike appearance. The station is meant to act as a billboard for the new look of BART.

He's with Steuben Ralph Appelbaum does more than museums. Known for museum interiors such as the new Rose Center in New York, Appelbaum has designed his first retail space, a store for Steuben crystal that will open in Manhattan in May 2000.

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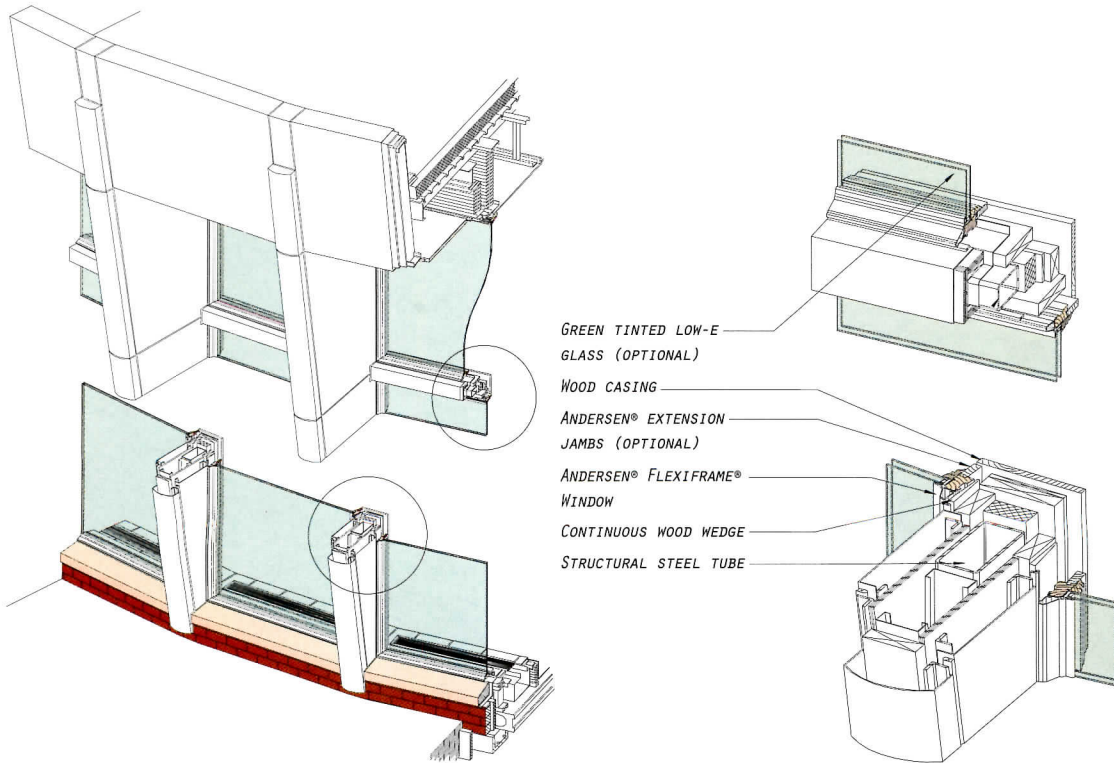


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To the **Jubilee Line Stations (March BTS):** Bermondsey - Ian Ritchie; Canary Wharf - Foster & Partners; Canada Water - Jubilee Architects and N. Greenwich - Alsop & Stormer.

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The Green Products Guide is organized by division, with product descriptions and links to manufacturer web sites. New "green" products are added each month. Products are evaluated for **durability, recycled content**, and other attributes - making it easier to choose products that are **resource efficient**. Find vital coverage of "green" issues, sustainable design, and newly built structures that respect the environment here.

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GO HERE to find Vendor Guides and software reviews with links to manufacturer web sites. **NEW this month: project collaboration tools**, with vendor list. Plus a feature on computer aided facility management. You can also refer to past Digital Architect columns, digital product reviews and related Vendor Guides.



Brazil may be poised for an architectural comeback

Correspondent's File

By Clifford A. Pearson

The time is right for the architectural world to take another look at Brazil. For the past few decades, the largest country in Latin America barely registered a blip on the radar screens of architects and design professionals interested in the international scene. Economic, political, and social troubles in the 1970s and '80s created the impression that Brazil was a country without much to offer the rest of the world.

Recent changes in Brazil and abroad, though, should help put the country back on the design map. In the U.S. and Europe, midcentury modernism is all the rage with collectors snatching up Eames chairs and culture mavens expressing renewed appreciation for the works of the 1950s. This was also the era when Brazil made its biggest splash in the international design press with celebrities such as architect Oscar Niemeyer, planner Lúcio Costa, and landscape architect Roberto Burle Marx, and the building of a radically modern new capital, Brasília.

As Brasília celebrates its 40th anniversary this year, many eyes are once again turning to the country that took a Corbusian vision of the future and made it a reality. The festivities began with the Fourth International Bienal of Architecture in São Paulo, which ran from November 20, 1999, through January 25, 2000, and showed why Brazil still matters. By looking both backward and forward, it bridged the gap between Brazil's architectural coming of age and today.

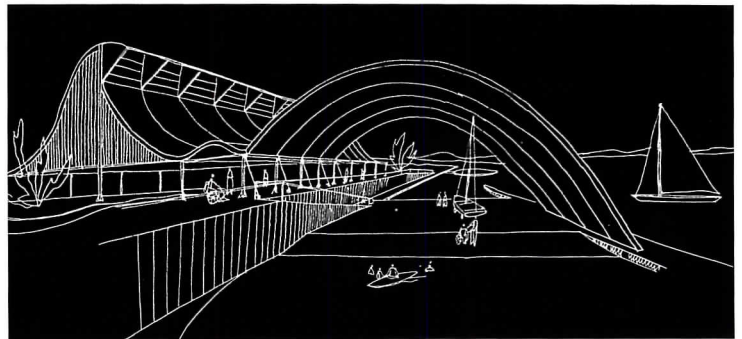
A highlight of the Bienal was

the display of wonderful black-and-white photographs from the famous "Brazil Builds" exhibition presented at New York's Museum of Modern Art in 1943. The prints capture the bold optimism that swept through Brazil four and five decades ago. While that era's faith in modern design's ability to shape a better future seems naive to us today, it is a bracing reminder of how much power a sharply drawn architectural vision can have—even in a country as large and diverse as Brazil.

Displays of the work of Paulo Mendes da Rocha, João Filgueiras Lima (usually known by his nickname, Lelé), and other leading architects of the past few decades show how Brazil's legacy of Modernism has been updated and reinterpreted since the 1950s.

Mendes da Rocha and Lelé in particular are living links to the architectural flowering of the 1950s. In recent years, the work of both these architects has become more sensuous—even lyrical—while losing none of its muscular expression. Good examples from the 1990s of this more plastic, less uptight modernism are Lelé's wavy-roofed health centers in Bahia and Mendes da Rocha's sculpture gallery in São Paulo, which draws visitors under and around a concrete pavilion. At his Forma store also in São Paulo, Mendes da Rocha again creates a walk-through experience, this time by raising an elegantly detailed glass-and-steel box one story above the ground.

The Bienal also offered a look at the future with an extensive exhibit of works by emerging Latin



A lakeside clinic in Brasília (top) is one of many facilities Lelé has designed for the SARAH health network throughout the country. A store in São Paulo by Mendes da Rocha combines a simple plan with elegant detailing (above).

American designers. On display was a generation of architects exploring new paths and absorbing a new set of influences. Underlying nearly all of these approaches is a solid foundation in modernism. The historicizing tendencies of Postmodern design, which were so popular in the U.S. in the 1980s, are nowhere to be found. Work by architects such as Marcelo Aflalo, Valentim César Bigeschi, Brunete Fraccaroli, Marcio Gifford, Marcelo Barbosa, Jupira

Corbucci, Angelo Bucci, and José Oswaldo Vilela demonstrate Brazilian architects' skill at manipulating the vocabulary of Modernism to create elegant places for habitation, work, display, and study.

Reinventing São Paulo

With 17 million residents, São Paulo is the world's third largest city (behind Tokyo and Mexico City) and sprawls over 3,100 square miles. Although it has boutique-lined shop-

Correspondent's File

ping areas and carefully planned garden communities such as the Jardim Paulista near its historic center, the city is experiencing a kind of cancerous growth around its periphery. The business capital of Brazil, São Paulo continues to draw large numbers of people from less vibrant parts of the country, many of whom end up in the makeshift megaslums that ring the city.

São Paulo, though, has a knack for reinvention that can be seen in some of its grittier districts. With varying degrees of success, industrial neighborhoods have used architecture to treat urban ills. A few years ago, for example, the Barra Funda area received a large injection of monumental Modernism in the form of government and cultural buildings designed by the old master Niemeyer. Cartoon descendants of his more sophisticated earlier work, these badly constructed concrete-and-dark-glass structures were originally intended to house a Latin American parliament. But when the international organization failed to become a reality, the complex was put to use as an odd mix of offices and museums and called the Latin American

made tourists think twice about visiting, Mayor Conde—who is an architect and ran a large design firm before getting into politics—has initiated a series of projects aimed at the public realm. Ranging from large-scale redevelopments of industrial sites on the waterfront and renovations of historic buildings in the Centro district to a program of



imaginative street furniture for various neighborhoods, the projects are beginning to make a difference. Streets are cleaner and business is picking up after the devaluation of the Brazilian currency a year ago. In time for the real turn of the millen-



At Lina Bo Bardi's SESC Pompéia (above), a new concrete tower contains sports facilities, while old factory buildings house cultural spaces. In Brasilia the Congress buildings (left) are still powerful icons. Rio's slums (below) cling to steep slopes.



Streeets still have numbers instead of names, residential areas are still called "superquadra" rather than neighborhoods, and the lawns between Niemeyer's futuristic government buildings still impress the eye while exhausting the feet. But the place is mellowing with age. Vines now soften the hard edges of concrete walls, flowering trees add scale and color to monumental vistas, and a veil of time imparts a welcome sense of history.

Blessed with a more temperate climate than its big sisters on the coast and a more manageable population of just 1.5 million, Brasilia is increasingly popular among young professionals as a place to live and raise a family. When the federal government moved the capital in 1960, it had to double the salaries of civil servants to entice them to relocate. Now Brasilia's low crime rate (compared to Rio's or São Paulo's), its easy commutes, and laid-back pace are enough to attract people. Indeed, the combination of a car-

focused culture and outdoor living gives this piece of South America the feel of southern California.

Much of the new architecture in Brasilia, including recent projects by Niemeyer himself, doesn't match the quality of the original buildings. But the addition of less distinctive buildings is making Brasilia feel like a real place, not just a showplace. Enough of the founding vision and heroic design remain intact for this city to remain a powerful magnet for lovers of modern architecture. Even some of the city's design failures have acquired an odd charm, such as Niemeyer's bombastic national cathedral with its leaky stained-glass roof and the rectangular toilet seat in the Americas Hotel, which works beautifully with the rest of the bathroom but considerably less well with the human body. But Brazil and its capital are such captivating places you're willing to forgive a great deal just to soak in their spirit. ■

BRASILIA IS BECOMING MORE OF A REAL PLACE AND LESS OF A SHOWPLACE.

Memorial, which aptly captures the lifeless character of the place.

A more successful model of urban renewal is the SESC Pompéia, a recreation and cultural complex inhabiting an old factory in the Lapa neighborhood. Designed by the Italian-born architect Lina Bo Bardi who died in 1992, the labor-union-run project is a vibrant mix of converted old spaces and gutsy new concrete structures.

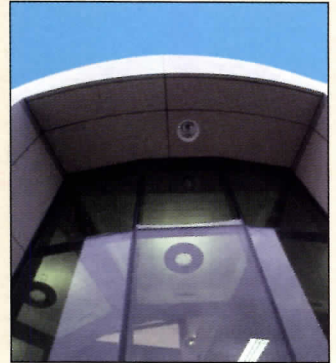
In Rio de Janeiro, Mayor Luiz Paulo Fernandez Conde (see sidebar) has been using design as an important tool in rehabilitating the city's image. Hoping to turn back a wave of crime and urban decay that

nium at the end of 2000, the city will unveil new restroom pavilions and sexy teardrop-shaped lighting fixtures designed by Indio da Costa Arquitetura e Design for Copacabana Beach. Mayor Conde is also trying to weave Rio's infamous *favelas* into the fabric of the city by extending essential services such as street paving and utility hook-ups to these sprawling slums.

Brasilia matures

Just as children often surprise us as they grow up, Brasilia at 40 has started to become something different from the utopian city on architectural steroids it once was.

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CIRCLE 27 ON INQUIRY CARD

Correspondent's File



INTERVIEW

"I'm still an architect. I just don't draw anymore," says Luiz Paulo Conde, 65, who was elected mayor of Rio de Janeiro three years ago after practicing architecture for four decades. "As mayor, I make architectural decisions all the time."

Indeed, Conde has inaugurated

two major programs aimed at upgrading the city's physical environment: Rio Cidade (which focuses on modernization projects such as redeveloping old piers and adding new underground parking structures) and Favela Bairro (which turns slums into neighborhoods).

Conde says the city itself, rather than individual building projects, should be the true focus of architects' energies. He mentions Oriol Bohigas, the architect who orchestrated the transformation of Barcelona leading up to and after the 1992 Summer Olympics, as a role model.

Born and raised in Rio, Conde understands that the city's diverse neighborhoods are its essential building blocks. "One of the failures of Modernism was treating the city all as one place. Each neighborhood has its own personality. People iden-

tify with their neighborhood." This is especially true in Rio, a city of 5.5 million people where rooting for the local soccer club is an activity that cements social relationships. Even the mayor, in his official two-page biography, notes which soccer team he pulls for (he's a Fluminense fan).

While practicing architecture, Conde served two terms as the president of the Rio chapter of the Brazilian Institute of Architects and was also the director of the department of architecture and urbanism at the Federal University of Brazil in Rio. In 1993 he was appointed secretary of urbanism for the city of Rio, the job that brought him into municipal politics.

Conde is particularly proud of his Favela Bairro program, which addresses the needs of the 1.2 million people living in Rio's extensive slums. In São Paulo, *favelas* form a great ring around the city, but in Rio they cling to steep mountainsides that rise from some of the best locations in town. So in Rio it is harder to ignore the poor, whose

makeshift homes look down on the city's wealthy neighborhoods and famous beaches.

The Favela Bairro program engages residents in discussions to identify their most important needs. Typical projects include paving streets and building concrete stairs to make these hillside neighborhoods accessible during all kinds of weather, providing sewage and water lines, and building community centers and schools. The city does not build much housing in these neighborhoods, but provides low-interest loans and advice so residents can build or improve their own homes.

"Everyone told me, 'it's impossible to work in the *favelas*,'" recalls Conde. "So we started with small *favelas* and won some small victories." After three years, "the program has touched 400,000 people," reports Conde. "Over the next four years, we hope to touch another 500,000 people." The goal is to eventually help all of the 1.2 million people living in the city's *favelas*. ■

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Recession proofing: When the boom busts, how will your firm fare?

Practice Matters

By Elizabeth Harrison Kubany

DEPARTMENTS

A sign recently spotted in a New York shop window reads, "Recession Special: For the one that was . . . and the one to come." After nine years of economic growth—the longest peacetime expansion in U.S. history—some Americans are beginning to wonder how much longer the economy can sustain the boom.

"Everyone I speak to is waiting for the shoe to drop," says Kermit Baker, chief economist for the AIA. "While there really aren't any signs that anything is wrong—billings are heavy, and inquiries for new work have continued to grow—below the surface, there is nagging concern." As Bob Hillier, FAIA, of the Princeton, N.J.-based Hillier Group says, "I can't see the end of the boom, but I know it is there."

"I've heard a number, which has never been refuted or substantiated, that 25 percent of all architecture firms went out of business during the last downturn," Baker continues. "I think firms today are well aware of the implications of an economic downturn and are looking over their shoulders for signs of weakness."

But there is no reason to sit around and wait for the worst. There are ways to minimize the impact of a downturn, whenever it might appear. We spoke to practitioners (many of whom have been through several economic cycles) to find out how they are preparing for a potential dip in the economy. Whether or not you are skeptical about the future of the economy, the following is sound advice that all firms should

follow, no matter how good or bad times are.

Diversify

There are two models of business diversity for architecture firms. First, those firms that do not consider themselves strictly design firms—those willing to try nontraditional business models—can expand the base of services they offer.

According to Baker, "standard design services are as volatile as anything you can do," because they are tied to construction cycles. By adding services like facilities management, firms can take advantage of a building's whole life cycle and expand their fee base.

More design-oriented firms can achieve a different kind of diversity. Herb McLaughlin, AIA, of KMD in San Francisco says, "Our firm has always been very diverse in terms of both the building types we do and the geographical locations of those buildings. This approach has helped us maintain our size over the years. Besides being economically sound, this model of diversity is also an interesting way to practice."

Hire creatively

Sam Spata, AIA, chief administrative officer of HOK New York, has noticed a greater reliance on part-time and freelance staff since the last recession. Ten percent of his staff consists of temporary workers who may eventually become full-time team members. "When these people come and go, the morale of the rest of the staff is not impacted as it is when full-time

workers have to be let go," he says. As a general rule of thumb, HOK never allows labor costs to exceed 50 percent of fees.

Labor is every firm's single largest expense, so it is often where people make cuts first. For example, Timothy S. Reedy, Hardy Holzman Pfeiffer Associates' administrative director, says, "At this point, we are not replacing those people we lose because of attrition. The only way that we can really plan for the end of this boom is by keeping tight control on the number of employees we have, particularly those who contribute to overhead," such as marketing, public relations, administrative, and other employees with nonbillable hours.

Don't stop selling

As Kenneth Drucker, AIA, of HOK New York observes, "Even in this market—particularly in this market—firms can never stop marketing themselves." In these flush times, when architects are having to turn away work because they are too busy, it might be hard to understand the need to step up business-development activities. But laying the groundwork for new projects, particularly in those sectors that may not be indelibly affected by the economy, such as education or health care, can help sustain a firm through bad times.

Run a tight ship

Architecture is simply not a profession that allows for a lot of fat. Fee structures are far too tight, and technology, personnel, marketing,

and research costs are too high. No matter how flush the times, it always pays to run your business frugally. Since the last recession, Spata has noticed a trend toward fiscal conservatism. "I don't know of a firm that hasn't operated differently for the past 10 years. Overall, architects are much more cautious. If there is a slowdown, I don't think we will see as huge a correction as we saw eight years ago. People were traumatized by the early 1990s. In discussions with my peers, I have found that people are running a tighter ship—not allowing overhead to grow disproportionately in relation to fees—than they were in the late 1980s."

The good news

Despite some general wariness on the part of architects, Hillier thinks the profession might be in for a surprise. "This economy might have long legs because the largest sector of the population—the baby boomers—has more disposable income than ever before. They want to travel, be entertained, relax, learn. This leads to hotel, airport, golf-course, restaurant, casino, and theater construction."

He also notes that, even if there is a downturn, there will be at least one happy result: "The downside of this go-go economy is we have no time to ponder design problems. Everything is going so fast that sometimes we have to resort to a rote answer from the design standpoint. I don't feel we are advancing the art one iota. The best architecture is created during recessions." ■

Critique

provokes people to go and look at the work. The most important role of architectural criticism is to create a receptive audience for good architecture, which is why the quality of criticism should be important to all of us who practice

CRITICISM SHOULD CREATE A RECEPTIVE AUDIENCE FOR GOOD ARCHITECTURE.

architecture, as well as to those concerned with the quality of our built environment.

In the past there were more clearly defined differences among publications featuring architectural criticism. Professional journals, such as this one, tended to merely present current work by leading practitioners and were prey to the vagaries of the marketplace and advertisers. While still accountable to the bottom line, professional

journals in recent years have moved away from a vanity press role to a more analytical and critical presentation of works. It is a move in the right direction but one that could go even farther. Critical journals such as the now-defunct *Oppositions* presented theoretical and historical views and contributed to the discourse about contemporary architecture, often in compelling and challenging

ways. Serious debate continues sporadically in various university publications from Columbia, Harvard, Yale, and other universities, and though the discussion can tend to be too esoteric or academic, its role for practitioners should not be minimized: It is in the architecture schools and the academies that many of the current directions in architecture are formulated and argued and it behooves us all to remain

involved with the academic aspect of the profession.

It is surprising and disturbing that in the U.S. there are only two major architectural journals, ARCHITECTURAL RECORD and *Architecture*, while in Europe there are dozens. It would seem that there is more than enough good work being produced today to fill the pages of at least one more architecture publication in this country. Or is the professional audience lacking? Assuming the audience exists, I think there is also a demand for presenting more buildings in the project stage. At most, there is meaningful coverage of only one project per issue. More often, unbuilt work is represented by a model photograph or two in the news. As this is the stage of a project's development where there is room for constructive criticism, it would make sense to expand this type of coverage.

Newspapers are another outlet for architectural criticism, and newspaper criticism needs the

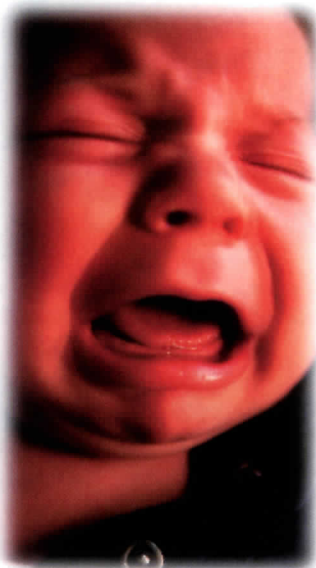
strongest shot of adrenaline. Most American newspapers (with the exception of the *New York Times*, which is read as much outside New York as inside) tend to do little more than report on the latest new local building, and they address themselves to the lowest common denominator. Many newspapers in major cities do not even have a full-time architecture critic and don't give regular space for architecture articles. Even the venerable Sunday edition of the *Times* does not have a predictable, weekly architecture review.

If we as architects wish to have our work better respected and understood by the public, we should work toward seeing it more regularly represented in the popular press and given the same weight as other cultural endeavors. It is only by making architecture a topic of popular discussion and debate that we as a profession will be able to fully engage the much-needed support of policy makers and the business community in urban design and development issues. ■

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Snapshot



By Ingrid Whitehead

When architects Carlo Baumschlager and Dietmar Eberle set out to design a building for the BTV Bank in the small Austrian village of Wolfurt, they had to grapple with a unique problem. The client wanted a modern building that would accommodate the bank on the ground level and have three other floors for undetermined purposes.

Could be offices, could be residential, could be retail, said the client. With no program and no user to answer questions, Baumschlager & Eberle elected to design the building in what has become their trademark style—a simple cube with a facade structured to look more complex and less practical than it actually is.

The building is four floors contained in a glass box, with the facade attached to concrete balconies two feet from the glass and a square concrete appendage that houses the elevator. Movable wooden panels make up the popsicle-stick

Popsicle-stick facade sweetens a simple cube



Snapshot



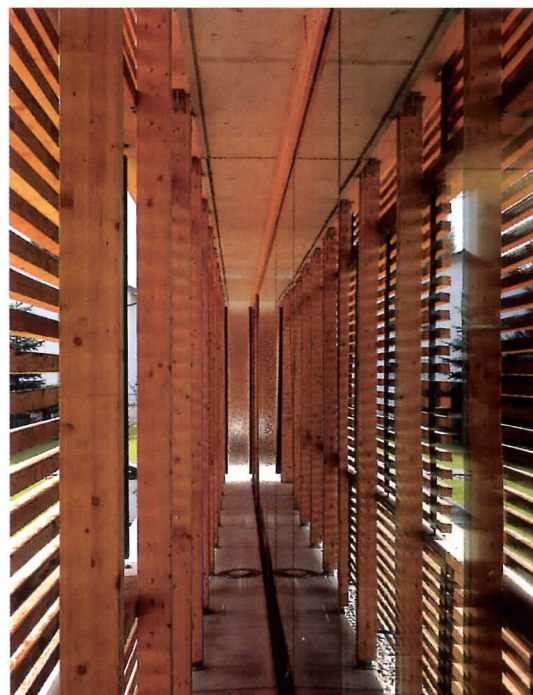
Horizontally movable wooden slats provide a flexible facade (above). The wooden lattice is about two feet away from the building's glass exterior (below), giving the building a multilayered face.

face. The panels, made of Austrian larch—a wood indigenous to the area and similar to pine—are attached in sections that move horizontally and wrap the entire building.

“By day it looks like a wooden box with a face that is always moving,” says Baumschlager, “but at night, when lit from the inside, the slats disappear, and the box appears only as glass.” Light enlivens the interior spaces as well, as shadows made by sun and lattice create intricate patterns on the walls and floors of the building’s ground-floor bank, two residential floors, and fourth-floor conference center. The latticed wood serves more than an artistic purpose. It was designed so users can see out, but passersby can’t see in—keeping the privacy of the residents sacred.

What wasn’t sacred to this project was the usual notion of a European bank. “Lucky for us,” says Baumschlager, “our client wanted something modern and flexible, not the usual expensive-looking stone bank.” Nontraditional aspects continue into the building’s interior spaces, especially on the bank floor, which has an open, living-room atmosphere without the usual teller booths.

With the bank’s storefront facing a busy thoroughfare, and apartments of different configurations facing gardens in the rear, bankers and residents coexist in harmony. ■



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CIRCLE 37 ON INQUIRY CARD

SOM takes Manhattan

NEW YORK CITY IS TRIUMPHING, WITH SOM LEADING THE ARCHITECTURAL CHARGE. HOW DID ONE FIRM GET SO FAR OUT IN FRONT?

By Elizabeth Harrison Kubany

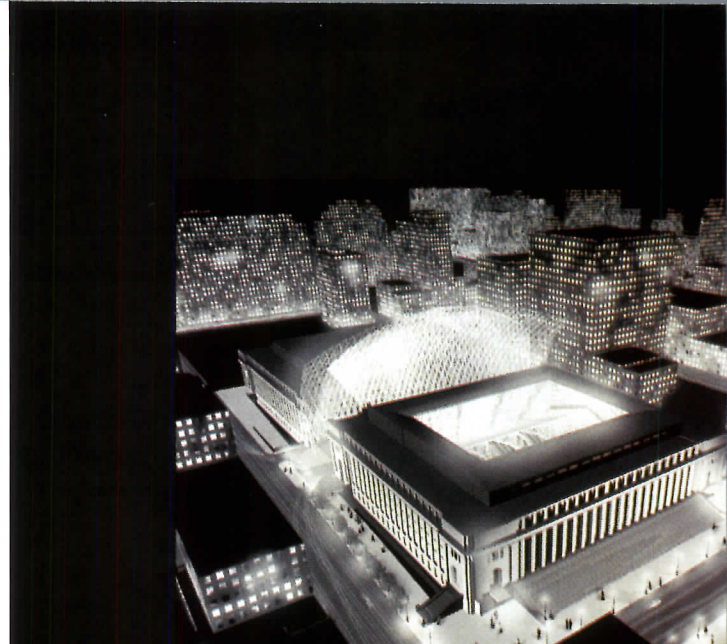
Not since McKim, Mead & White has one firm had such a profound effect on the built environment of New York City as Skidmore, Owings & Merrill's New York office. Between 1880 and 1920, McKim, Mead & White completed more than 70 projects in the city, including the Brooklyn Museum of Art, the Bowery Savings Bank in Little Italy, the Metropolitan Club on the Upper East Side, Columbia University in Morningside Heights, and Pennsylvania Station (whose demolition in 1964 sparked the preservation movement in this country). This was the Gilded Age—a period of dramatic change when technological advances led to vast infrastructure projects and widespread prosperity gave rise to many of the city's grandest monuments.

Today, a century later, New York City is undergoing a similar transformation with SOM leading the architectural charge. Affluence and optimism have resulted in massive investment in the fabric of the city; several major projects that have been under discussion for decades are now coming to fruition. "There's a golden moment happening in New York City and we're paying attention to it," says partner David Childs, FAIA.

Granted, New York may not be the first place we associate with SOM. The firm was founded in Chicago, has offices in seven cities—including San Francisco, London, Washington, Los Angeles, Hong Kong, and São Paulo—and has completed more than 10,000 projects in more than 50 countries. Some of the firm's most famous buildings, such as the John Hancock Building and Sears Tower (in Chicago), are not in New York. Today, designers like Adrian Smith, FAIA, Larry Oltmanns, AIA, Leigh Breslau, AIA, and Philip Enquist, AIA, in Chicago and Craig Hartman, AIA, Peter Ellis, AIA, and Brian Lee, AIA, in San Francisco are making news with such projects as Jin Mao Tower [January, page 82] in Shanghai, Lisbon's Atlantico Pavilion [August 1999, page 114], 7 South Dearborn [September 1999, page 49] in Chicago, and the Hong Kong Convention Center [June 1998, cover and page 90].

The Bronx is up and the Battery's down

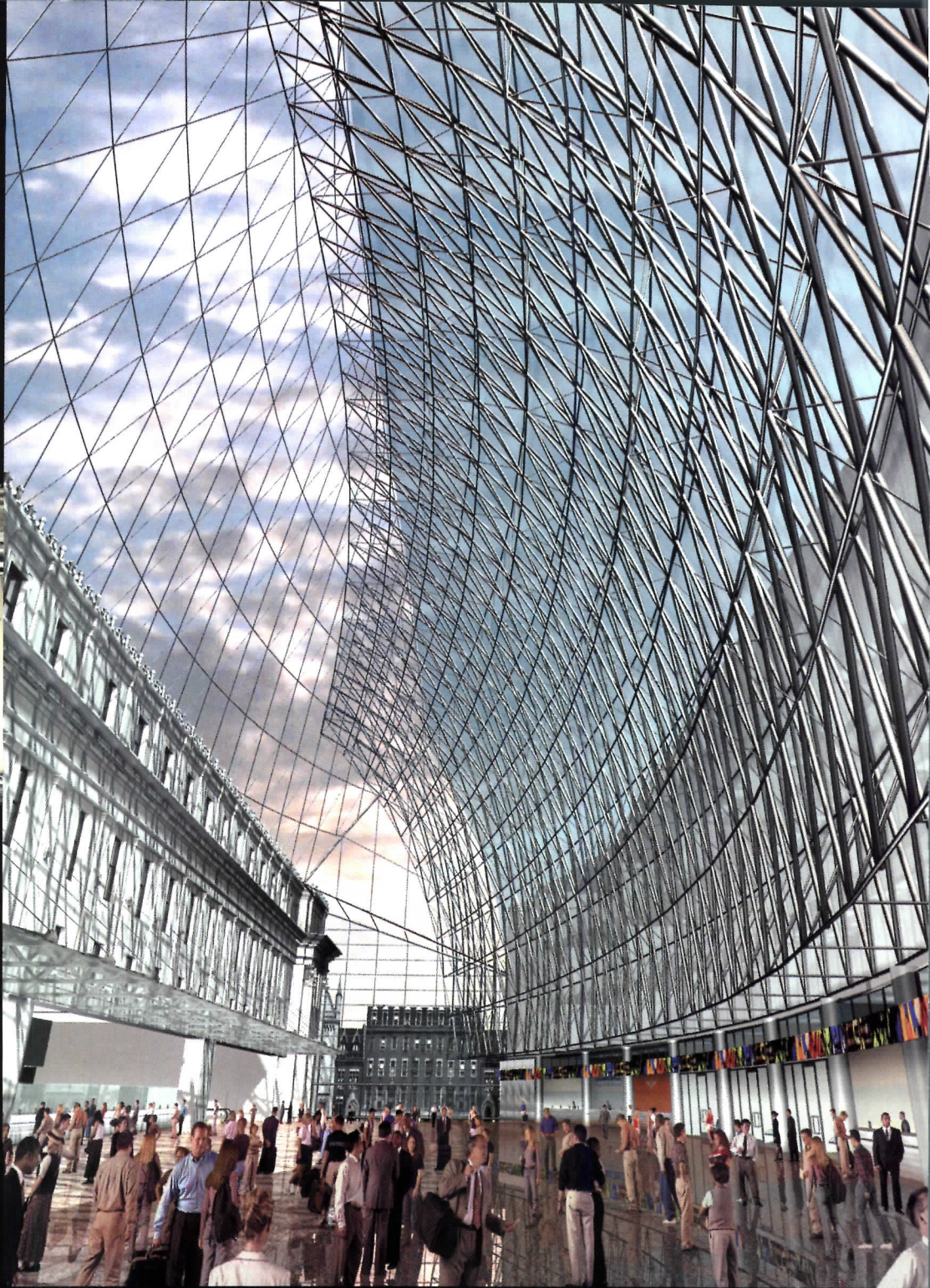
Still, as partner Roger Duffy, AIA, says, "this is a remarkable moment in New York City and for SOM's New York office." The office is transforming New York's skyline with some of the most important buildings of this





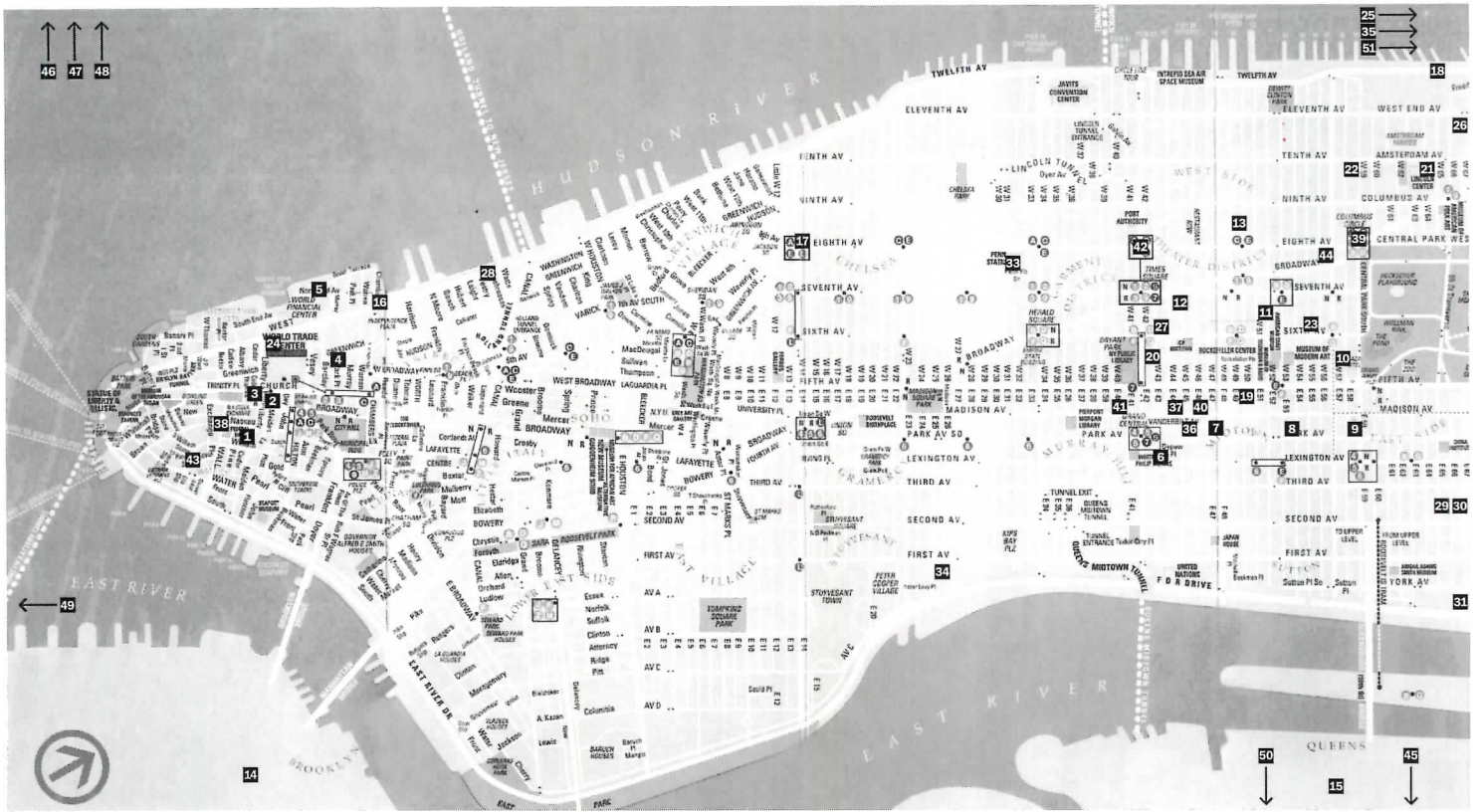
PENNSYLVANIA STATION

The outcry over the demolition of McKim, Mead & White's wrought iron and glass Pennsylvania Station gave birth to the preservation movement in the United States. Today, though it bears the same name, the station is little more than a rabbit warren under a two-square-block office complex and sports arena. Called "the most important public work undertaken in New York in more than a generation," the plan is to convert the landmark McKim, Mead and White Farley Post Office building (one block west of the original station) into the new Pennsylvania Station. The new Pennsylvania Station will expand the facilities of the existing station while creating a far grander arrival and departure gate for the city of New York. When completed in 2003, Penn Station will serve more passengers a year than the three regional airports combined. It will provide a hub for major transportation systems, the city's subway system, and new rail links to Kennedy and Newark airports.



- | | |
|--------------------|------------------------|
| 1. Ticketing hall | 5. Platform level |
| 2. Train hall | 6. Media wall |
| 3. Concourse | 7. Post office lobby |
| 4. Lower concourse | 8. U.S. Postal Service |





- | | | | | | |
|--|---|--|--|--|--|
| 1. One Chase Manhattan Plaza (1961) | 9. Pepsico Headquarters (1959) | 19. Olympic Tower (1976) | 27. Manufacturer's Hanover Trust (now Chase Bank) (1954) | 35. Mount Sinai Medical Center/Annenberg Pavilion (1974) | 44. Rand House Headquarters (future) |
| 2. One Liberty Plaza/U.S. Steel (1989) | 10. 9 West 57th Street (1973) | 20. 1114 Avenue of the Americas/W. R. Grace Building (1972) | 28. Shearson Lehman American Express (1986) | 36. 230 Park Avenue (future) | 45. Terminal 4 at Kennedy Airport (future) |
| 3. Marine Midland Grace Trust Company (now HSBC) (1967) | 11. Palio Restaurant (1986) | 21. Library and Museum of the Performing Arts at Lincoln Center (1965) | 29. 875 Third Avenue (1982) | 37. 350 Madison Avenue (future) | 46. Continental Airlines Terminal at Newark International Airport (future) |
| 4. Irving Trust Company (now Bank of New York) (1983) | 12. Bertelsmann Inc. (1997) | 22. St. Luke's/Roosevelt Hospital (1992) | 30. 919 Third Avenue (1989) | 38. New York Stock Exchange (future) | 47. Downtown Newark Master Plan (1991) |
| 5. New York Mercantile Exchange (future) | 13. Worldwide Plaza (1989) | 23. 1301 Avenue of the Americas/Credit Lyonnais (1989) | 31. Islamic Cultural Center (1991) | 39. Columbus Centre (future) | 48. New Jersey Performing Arts Center Master Plan (1991) |
| 6. 450 Lexington Avenue (1991) | 14. Chase Financial Services Center at Metrotech (1993) | 24. Vista International Hotel (1981) | 32. Manhattan House (1952) | 40. Bear Stearns Headquarters (future) | 49. Governor's Island (future) |
| 7. Union Carbide Corporation (now Chase Manhattan Bank) (1961) | 15. Citicorp at Court Square (1989) | 25. Columbia University East Campus Master Plan (1990) | 33. Pennsylvania Station Redevelopment Project (future) | 41. 300 Madison Avenue (future) | 50. World's Fair (1939) |
| 8. Lever House (1950) | 16. Tribeca Bridge (1992) | 26. Columbia-Presbyterian Medical Center (1988) | 34. New York University Medical Center (1945 to present) | 42. Port Authority Office Building (future) | 51. Harlem USA (future) |
| | 17. 14th Street & 8th Avenue Subway Station (future) | | | 43. Goldman Sachs & Co. (ongoing) | |
| | 18. Riverside South Master Plan (1991) 59th to 72nd Streets | | | | |

Just the tip of the iceberg: SOM has completed almost 400 projects in New York City—including new buildings, renovations, interiors, master plans, and competitions and studies—for hospitals, corporations, cultural institutions, developers, and various government agencies. The map above shows part of this proliferation.



generation, the kind of era-defining projects watched by the world. SOM's list of current New York work includes three of the largest projects on the boards in the city: Columbus Centre, 2 million-square-foot towers that will house the headquarters for Time Warner, a Jazz at Lincoln Center performance hall, retail shops, and condominiums on the prominent and hotly contested site of the existing New York Coliseum; the new Pennsylvania Station—which the *New York Times* called the “most important public work undertaken in New York in more than a generation”—the conversion of McKim, Mead & White's landmark Farley Post Office Building to expand the facilities of the most heavily trafficked transportation hub in the world; and a new 2 million-square-foot trading floor and headquarters building for the New York Stock Exchange, the most powerful symbol of capitalism in America. Together, these three projects will total close to \$2 billion in construction.

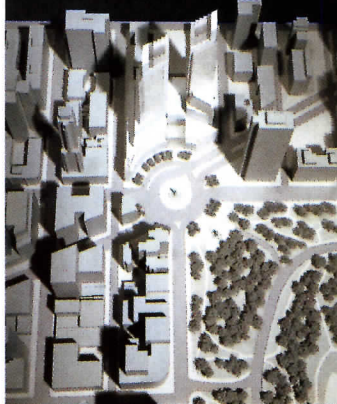
And there are numerous others: the new International Arrivals Building at John F. Kennedy Airport; the Continental Airlines Terminal at Newark Airport; the renovation of the landmark lobby at 230 Park Avenue (formerly known as the Pan Am building), including the intro-

NOT SINCE MCKIM, MEAD & WHITE HAS ONE FIRM HAD SUCH A PROFOUND EFFECT ON THE CITY OF NEW YORK.

duction of pedestrian walkways with simultaneous views of subway tracks below, cars outside, and computerized signage within; 350 Madison Avenue, whose “bold design treats the addition to the tall building as a virtually new building type,” according to the *New York Times*'s architecture critic Herbert Muschamp; Harlem USA, a new 260,000-square-foot retail/entertainment project at 125th Street and Frederick Douglas Boulevard; a 50-story mixed-used building with a 660,000-square-foot headquarters for Random House and 200,000 square feet of luxury residential space at Broadway and 56th Street; and 383 Madison, a 1 million-square-foot headquarters building for Bear Stearns. In addition, the firm is part of the master plan team for Governor's Island, which partner Marilyn J. Taylor, FAIA, calls “a wonderful plan for 172 irreplaceable acres of historic and open space resources for the city and the region.”

New York, New York, it's a helluva town

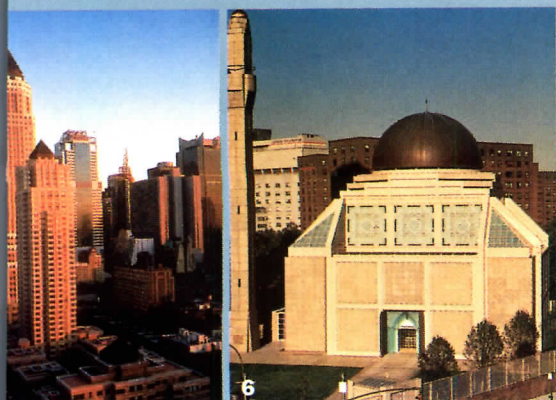
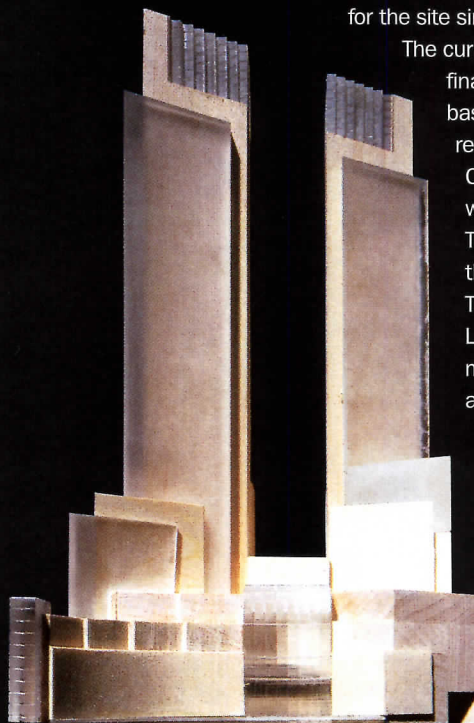
Creating architecture in New York City is notoriously difficult, so SOM's involvement in such a great scope of work is no small feat. Muschamp recently wrote, “The millennial threshold could be a pivotal moment for architecture in New York . . . there's been a break in the climate of hostility toward architecture that has prevailed here for two decades . . . For a



COLUMBUS CENTRE

What should be one of Manhattan's most impressive public spaces, where Broadway meets the southwest corner of Central Park, is in reality only a tangle of traffic punctuated by a few sculptures and some controversial—even ugly—buildings. The largest piece of this puzzle is the site of the hugely unattractive New York Coliseum, which has been discussed for years. SOM has proposed five separate designs for the site since the late 1980s.

The current iteration, awaiting final approval, includes a base, whose sweep responds to the curve of Columbus Circle, above which rise twin towers. The project will house the headquarters for Time Warner, a Jazz at Lincoln Center performance hall, retail shops, and condominiums.



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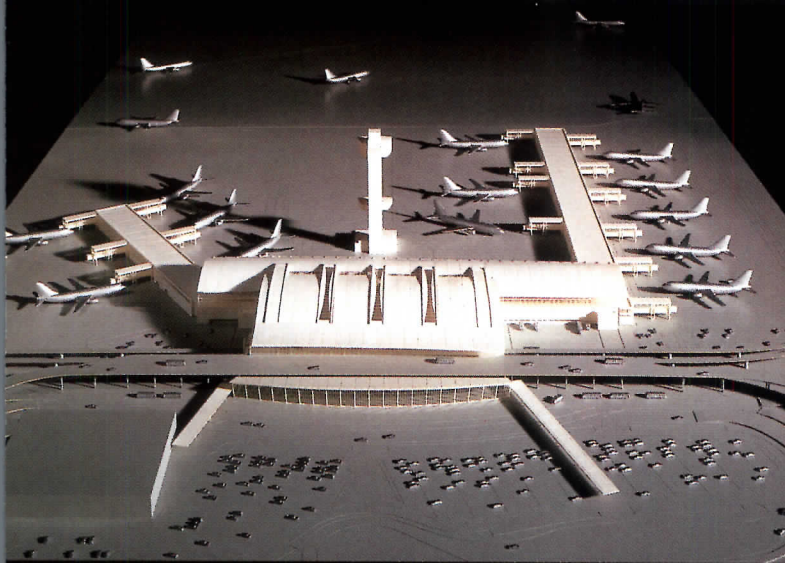
Some of SOM's greatest New York hits:

1. Lever House, 1950
2. PepsiCo Headquarters, 1959
3. One Chase Manhattan Plaza, 1961
4. Marine Midland Grace Trust Company, 1967
5. Worldwide Plaza, 1989
6. Islamic Cultural Center, 1991
7. Tribeca Bridge, 1992

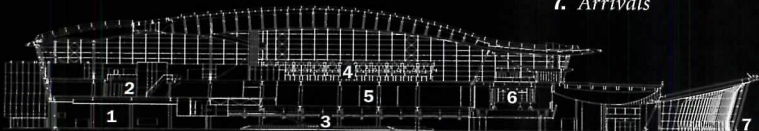
JOHN F. KENNEDY INTERNATIONAL AIRPORT

Since opening in 1957, the International Arrivals Building, designed by SOM for JFK, has been a modern landmark. Rapid changes in technology and growth in air travel, however, have rendered the building obsolete. The new 1.5 million-square-foot terminal both accommodates the contemporary realities of air travel and allows enough flexibility to facilitate future changes. An open ticketing area allows views out to the airfield for orientation. The privately managed

terminal features a 90,000-square-foot retail center located between the concourses and the terminal core. Integral to the design is the incorporation of an intermodal transit link. Marilyn J. Taylor calls this project, "the reason you want to do work at home . . . to create the most pleasant possible arrival into and departure from this city. This is Ellis Island for the 21st Century. We are trying to bring back the thrill of coming to America and arriving at Kennedy Airport."



- | | |
|------------------|---------------|
| 1. Immigration | 4. Departures |
| 2. Retail street | 5. Mechanical |
| 3. Baggage claim | 6. Light rail |
| | 7. Arrivals |



SECTION

continued from previous page long time, architecture in this town has been boxed up behind closed doors . . . but out on the street—democracy's great forum for celebration and debate—this ancient art form has long lain dormant."

So, what is the firm's secret? It begins with an understanding and love of cities. In the early 1990s, with the dearth of corporate and commercial work, SOM's partners made a conscious decision to pursue more politically and programmatically complex urban projects because they felt they could have a greater impact that way; that decision also happened to be good for business. Senior partners Taylor and Childs, with their powerful combination of talents—Taylor's with large-scale, complex urban-design issues and Childs' as a designer—head a multidisciplinary team, one of the few in New York qualified to address the variety of issues that arise in these large projects.

There's just one thing that's important in Manhattan

Taylor says simply, "I really love the phenomenon of cities." She calls the project at Kennedy Airport "a very personal project, the reason you want to do work at home . . . to create a more pleasant arrival into and departure from this city." Childs reiterates, "while I am primarily focused on the individual buildings, I am overwhelmed by how they fit into the city. And this city is the greatest piece of architecture ever built by mankind anywhere." The firm's younger partners are equally invested in the future of New York. In speaking of his work at 350 Madison, Duffy says he feels a "responsibility to give the city timeless designs like Lever House."

This passion leads to advocacy. Taylor believes that "to affect the city you have to be involved in issues that are broader than your own self-interest. If you're out there, then the opportunities come." Childs feels that architects could have an "enormous influence on the

"TO AFFECT THE CITY, YOU HAVE TO BE INVOLVED IN ISSUES THAT ARE BROADER THAN YOUR SELF-INTEREST," SAYS TAYLOR.

world" by coming together with a collective vision, which is part of their responsibility as a profession. To this end, both partners serve in numerous civic organizations—the New York Building Congress, the Institute for Urban Design, and the New York Municipal Art Society, among others—where ideas are discussed with influential decision makers and where deals are brokered. Founding partner Nathaniel Owings called politics "the fifth dimension of planning, the art of getting things done." This is an aggressive approach, where, rather than waiting for the RFP, Taylor, Childs, and their team try to find a way to get into a project early, "when it is still in the pipeline," says Taylor, before the criteria are set for the role of the architect.

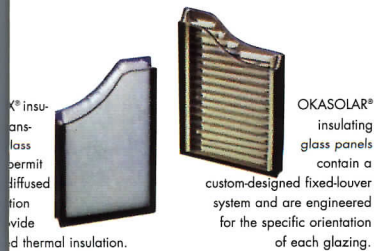
Taylor and Childs use these organizations to advocate large-scale public goals, which is the same approach SOM brings to urban planning. Before planning was really in vogue, Owings predicted, "We are going to reach the point where environment planning will be the supreme thing in this country. Then perhaps we can . . . begin to build a real environment that is a lasting investment rather than something to be destroyed." As a profession, planning has lost some of its clout in recent decades, but SOM and, specifically, Taylor and her team, have used it as an ace. They think about their projects in the broadest terms possible. "Planning at SOM means thinking beyond the boundaries of the project," Taylor explains. "We try to make the object meet the ground, the city, and the neighborhood in the best way. My job is to understand the larger implications of the architecture." For example, in addition to considering how the new Penn Station will fit into the infra-

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HARLEM USA

For years, development in Harlem was almost unheard of. Recently, retail and entertainment companies have started to realize the potential of the market in this part of the city. Harlem USA, a 260,000-square-foot building housing shops and a multiplex cinema, reflects this change in attitude. Located on a prominent

site at the corner of 125th Street and Frederick Douglas Boulevard, the new building is almost entirely glazed to reinforce the activity of the street. This outward-looking approach is more appropriate to New York City than the shopping-mall model, proved unsuccessful in other parts of the city.



350 MADISON

The expansion of 350 Madison includes the addition of a new lobby and 110,000 square feet of office space to this 24-story building. The design treats the existing building as an artifact and intervenes with new piece of architecture, an approach that “transcends the typology of renovation,” according to designer Roger Duffy. The lobby, a two-story cube of steel and glass, is inserted into a 25-foot gap between the building and the flagship Brooks Brothers store next door. Lit from below, this lobby radiates to identify the building as a destination at street level. Additional floors of office space are stacked above the existing building and partly cantilevered over the new lobby. A laminated skin of metal and glass wraps around all the new elements, tying them together while distinguishing them from the existing building. The *New York Times* called the design “an innovative approach to building vertically in an already built-up city.”



continued from previous page structure of the city, Taylor is hoping for an extension of the Number Seven subway line from Times Square down Eighth Avenue, west to the new station, and then over to the Jacob Javits Convention Center. Eventually, she envisions Penn Station and Grand Central Station as the hubs of a regional railroad which would allow commuters to take a single train directly from, say, Trenton, New Jersey out to Long Island. “This rail corridor has the potential to increase mobility and match people and jobs,” she says. At Kennedy Airport, Taylor has designed the new terminal to accommodate a light-rail system that will connect the various terminals and eventually drop passengers at the A subway line. “Our European client couldn’t believe there was no train to the plane. We knew with a little bit of earnest advocacy, we had a chance to embrace the air train and put it in the building. We are trying to design conditions that will make it easier, rather than harder, for these connections to be made in the future,” she explains. Ultimately, she hopes a direct, one-seat ride from Kennedy to Penn Station will be in place, an improvement she calls “compellingly important to our region if we want to compete in the future.”

This approach makes the projects more difficult for the architects; the complexity of the firm’s work correlates directly to the time it takes to reap the fruits of the labor. “The projects we have now come from a history of 10 to 20 years,” says partner T. J. Gottesdiener, AIA. “We worked hard to develop relationships and a reputation. These projects have the work, background, and sweat equity in them that are paying off now.” Childs has completed five separate designs for Columbus Centre since the 1980s and has been talking about Penn Station since the 1970s. Taylor calls the tenacity required to complete these projects “a tolerance for the indeterminate.”

The famous places to visit are so many

SOM’s New York office is enjoying its second heyday. The first was during the 1950s and 60s, when Gordon Bunshaft defined SOM with his unwavering, uncompromising devotion to the principles of Modernism. Bunshaft’s clear, well-conceived buildings simultaneously cemented his reputation as one of the foremost Modernists of his day and changed the fabric of New York City. Lever House on Park Avenue, completed in 1951, won the First Honor Award from the AIA in 1952 (the first of 12 such awards that Bunshaft-designed buildings were to receive) and was called, by ARCHITECTURAL RECORD in 1956, one of the three most influential buildings erected during the previous 100 years. The Manufacturer’s Trust Company (1954) on Fifth Avenue, Pepsico Headquarters (1960), Union Carbide Corporation Headquarters (1960), and Chase Manhattan Bank Headquarters (1961) compose a remarkable list of buildings—all impressive for their size, technological development, and sensitive detailing—that Bunshaft completed in Manhattan during these (continued on page 204)



The partners of SOM’s New York office (left to right): David M. Childs, FAIA, Carl L. Galioto, AIA, Marilyn J. Taylor, FAIA, Stephen A. Apking, AIA, Peter J. Magill, AIA, Anthony I. Vacchione, AIA, Mustafa K. Abadan, AIA, T. J. Gottesdiener, AIA, Gary P. Haney, AIA, and Roger F. Duffy, AIA



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By James S. Russell, AIA

Schaumburg, Ill., a freeway-entwined landscape at the far northwestern edge of the Chicago metropolitan area, is a modern-day seat of suburban plenty, where people speak of enormous choice, where home businesses proliferate in McMansions that spread like crabgrass across the prairie. Among the upscale malls pop low-rise towers sporting the names of the region's high-tech employers: Motorola, Lucent Technologies, 3Com. Here marks ground zero of the sprawl debate as it is usually portrayed. The freeways have clotted, the meadows and forests have vanished, and lines of sport utility vehicles pouring into the Costco lot have replaced the storefront-lined Main Street.

The Village of Park Forest, 30 miles South of Chicago's loop, tells a different kind of suburban story. The tidy bungalows and split-levels have changed surprisingly little in the 45 years since William H. Whyte dissected the town's culture of aggressive conformism in the seminal 1956 sociological study, *The Organization Man*. Behind the neatly trimmed lawns today, however, trouble brews. Population and household income have slid; single-income, single parents head more families. The once nearly all-white suburb now trumpets its ethnic diversity, but racial tension, gang activity, and other social ills have appeared.

Park Forest's most obvious sign of decline is its nearly empty shopping center. Once a style-setting composition of low-slung wedges and covered walkways snuggled around an intimate, grassy court [May 1951, page 93], it was all but abandoned in the mid-1980s. Three remodelings have failed. Recently, village manager Janet Muchnik has tried to jump-start the nearly empty center along neotraditional lines by pushing streets through its once pedestrians-only precinct and adding new brick sidewalks and old-fashioned lamps. A year ago, she gamely pointed out a new pizza restaurant, hair salon, and movie theater—the blips of life interrupting the flatline of vacant storefronts.

Park Forest is “flat on its back and won't come back under today's circumstances,” says Myron Orfield, a Minnesota state representative and executive director of the Metropolitan Area Research Corporation, Minneapolis. Although it is far from the worst case in the Chicago area, Park Forest is a loser in a Darwinian struggle that is fast

developing in suburban America, says Orfield. He is just one of many observers who think the kind of decline and disinvestment that has long plagued older cities is moving into the inner-ring suburbs built in the two decades after World War II.

In policy-making circles there is less debate about whether people are abandoning the homes and businesses in older suburbs than there is about how serious the trend is. Though this is a potentially explosive urban issue, it is just one of several trends affecting American cities, any of which could have profound social and land-use consequences. William Fulton, editor of the *California Planning & Development Report*, sees a fundamental unraveling of the whole system that made the rapid, relatively inexpensive growth of the postwar era possible. And he finds nothing replacing that system. Sprawl has gotten the headlines, but “it is only one of the issues we're dealing with,” says Michael Gallis, a Charlotte, N.C.-based architect whose firm uses strategic planning and design to help urban areas position themselves in the emerging global economic framework. He fears that the nation's failure to halt central-city decline and its ignorance of fast-changing globalization will have serious competitive consequences.

Whether or not these prognosticators have properly diagnosed America's urban ills, American cities do seem to be sailing into uncharted waters. Do architects have a place in defining, if not designing, whatever cities become? “No one thinks architects have anything to say about shaping regions and metro areas because we have defined what we do in such a narrow range,” asserts Gallis. “At best, we decorate the city with fascinating and interesting objects. At bottom, we are service providers, warehousing people.”

Gallis is one of a small but growing number of architects unafraid to get their hands dirty tinkering with the mechanisms that drive what sociologist Harvey Molotch has dubbed the urban “growth machine.” And Gallis thinks the profession's future depends on architects' understanding emerging urban issues and engaging themselves more deeply in making the urban environment.

Parasitic suburbs?

If Orfield's research is correct, the most immediate crisis affecting urban America is the abandonment of the older suburbs. This trend could lead to an enormous growth of poor, blighted communities. While largely poor census tracts within Chicago number in the dozens, Orfield counts

On May 6, at the 2000 AIA convention in Philadelphia, “Architects and the Sprawl Debate,” a keynote panel featuring Myron Orfield, Elizabeth Plater-Zyberk, Robert Brueggemann, and the author will further explore issues raised in this story.

CHICAGOLAND ACCORDING TO MYRON ORFIELD

To the casual observer, one part of the Chicago metro area looks much like another, but urban analyst Myron Orfield maps a landscape of profound sociological difference, with affluence and torrid job growth in the "privileged" northwestern suburbs, stagnation and decline in the older southern suburbs, and a questionable future for emerging middle-class suburbs lacking a substantial commercial tax base.

PRIVILEGED-SECTION SUBURBS



Malls thrive near executive homes in affluent Schaumburg.



Commercial development underwrites ample public services.

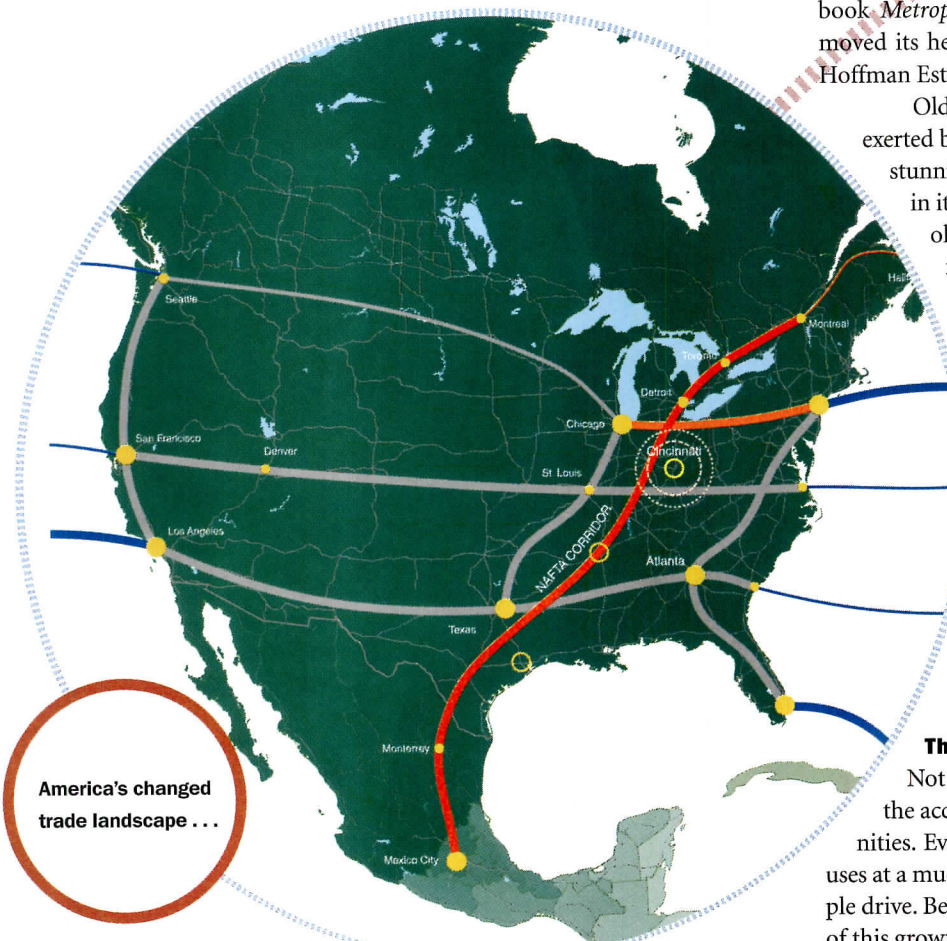
CHICAGO

EMERGING MIDDLE-INCOME SUBURBS

STRUGGLING INNER-RING OUTER SUBURBS



In struggling Park Forest, "For Rent" signs proliferate.



87 troubled suburbs surrounding the city's western and southern edges, stretching in a mind-boggling 65-mile crescent from just south of O'Hare airport through Park Forest into the northeast corner of Indiana (map, page 77). Few have the boarded-up buildings and weed-infested lots long associated with big-city ghettos, but in terms of household poverty, percentage of children that eat government-provided free school lunches (a harbinger of poverty), the trends in these communities are alarming.

Schaumburg, however, sits in what has been dubbed Chicago's "favored quarter" of newer, outer-ring suburbs. It is an emblematic "edge city," of the kind made famous by the 1991 book of the same name by Joel Garreau (Doubleday). Even Garreau, who considered edge cities a pioneering urban form, recognized their opportunistic quality. They sprouted near already wealthy areas with few tax burdens and took advantage of highway and airport infrastructure paid for by older communities. Edge cities perniciously wield their wealth to secure the lion's share of business-attracting infrastructure, says Orfield, thereby generating enormous job growth at the expense of older downtowns and, nowadays, older suburbs. He frames his arguments in the influential

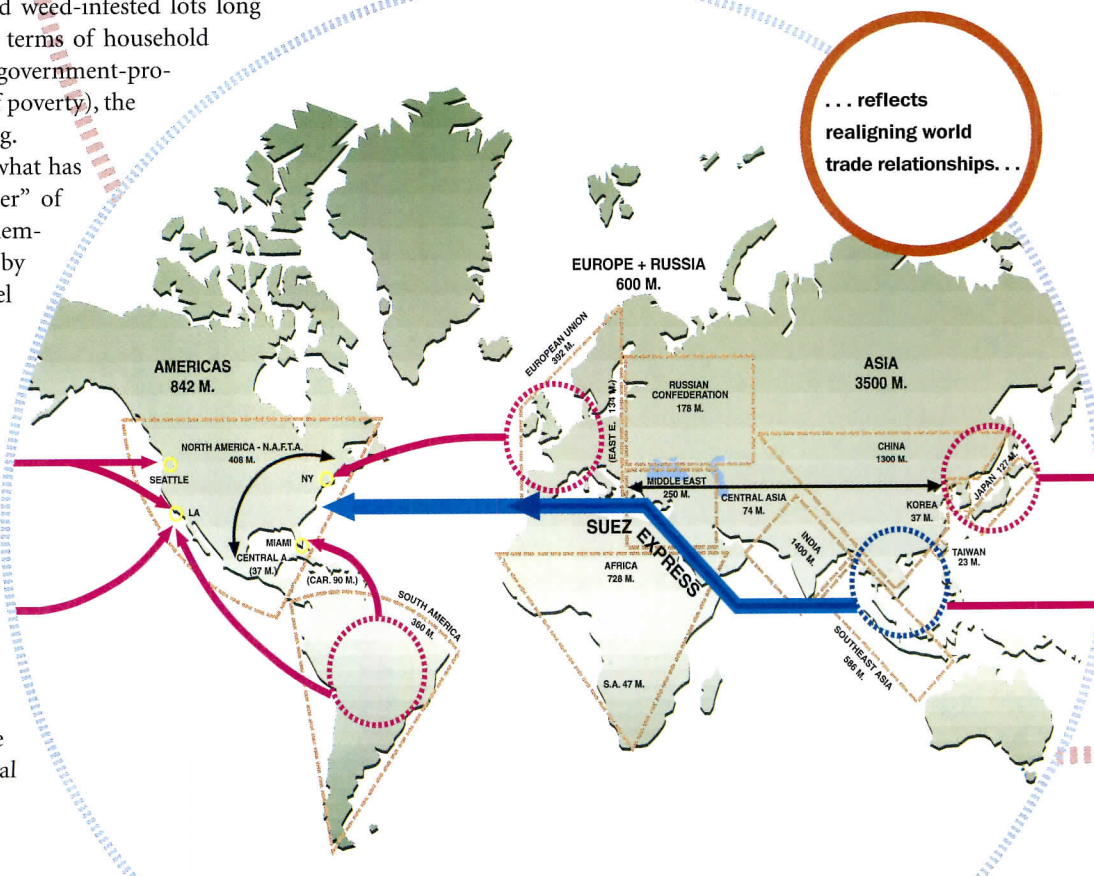
book *Metropolitica* (Brookings Institution, 1996). Sears, for example, moved its headquarters from its famous Loop tower to favored-sector Hoffman Estates about 10 years ago.

Older communities have few tools with which to resist the "pull" exerted by edge cities, says Orfield. As a result, a vast, land-eating and stunningly inefficient shift of urban settlement outward, is leaving in its wake a trail of urban devastation. (Schools are shuttered in older communities while growing areas struggle to raise money to build new ones, for example.) Worse, he says, such concentrations of wealth and poverty impede overall metro-area growth. To the extent Orfield is correct, political polarization will follow spatial polarization as wealthy "have" communities battle poorer "have nots." Orfield sees significant political realignment as struggling suburbs make common cause with older cities.

THE WORLD ACCORDING TO MICHAEL GALLIS: For clients that usually include the business, institutional, and governmental movers and shakers of a region, Gallis maps the relationships, from global to local, that affect urban form.

The fragile underpinnings of growth

Not surprisingly, the leaders of the stable, affluent suburbs reject the accusation that they are parasites on the body of older communities. Even here, challenges abound. Land is being turned to urban uses at a much higher rate than population growth, as is the mileage people drive. Because the "privileged sector" is seeing a very high percentage of this growth, the green spaces that define their laid-back, bridle-trailed ambiance are disappearing, replaced by road-rage inducing traffic congestion. While the Los Angeles area's population grew 45 percent from 1970 to 1990, for example, its land area ballooned 300 percent. The



population of Cleveland declined 11 percent, while land consumed grew 33 percent. Similarly, the annual miles people drive have increased three times as fast as population growth in the largest metro areas. So it is little wonder that the wealthiest communities—those that have derived the greatest economic benefits from urban growth—have joined the anti-sprawl movement to slow traffic growth and land consumption.

But the benefits wealthy suburbs enjoy may be threatened. Antisprawl activism is one aspect of the collapse of a consensus that has long fueled growth, says William Fulton, in his book, *The Reluctant Metropolis* (Solano Books, 1997). American urban growth has relied on the idea that “current property owners and residents paid higher taxes to support the debt-financed construction of new facilities (roads, water pipes, parks, etc.) to be used by newcomers who would then help finance the next phase, and so on.” (He calls this an urban-growth “Ponzi scheme.”) Californians passed a tax measure that shields existing residents from dramatic tax rises, so housing developers “now must pay for all the community infrastructure, which can be \$30,000 to \$40,000 a unit,” Fulton explains. Because residents fear that new development will damage their quality of life, developments must also run a costly and complex environmental and community-approvals gamut.

The result, far from reducing sprawl, can exacerbate it. Such burdens “drive growth down the path of least resistance, which is further and further away. By the time you find a town that will accept the growth, you are halfway to Las Vegas,” Fulton adds. Another unanticipated consequence, is the exacerbation of sociological spatial separation. “You have to supplement property taxes, especially with retail,” Fulton explains. “For retail to succeed, you have to have an affluent community nearby. This has created a scale of class and income segregation in California today that is unprecedented.”

Consider Silicon Valley, the 40-mile corridor of office parks and executive housing south of San Francisco [see “Correspondent’s File,” February 2000, page 45]. Computer and software businesses have created an economic juggernaut of unprecedented size in this emblematic low-density landscape. There is widespread fear that congestion, astronomical house prices, and environmental decline are killing the goose that laid the golden egg. “Much of the manufacturing and the low-paying jobs are moving out of the valley,” observes Erik Sueberkrop, a partner at Studios Architecture, a firm with many computer-industry clients. “It is still ground zero for high-tech companies here, but in a lot of ways it no longer makes sense.” An ethos of cheap, garage-based creativity is reeling in the face of median house prices pushing half a million dollars. The 140-member Silicon Valley Manufacturers’ Group, which is said to account for one-third of private-sector jobs in the Valley, shares Sueberkrop’s assessment. The group promotes initiatives for more transit and affordable housing and advocates policies to drive growth into needy, older communities.

Emerging building types for the changing city

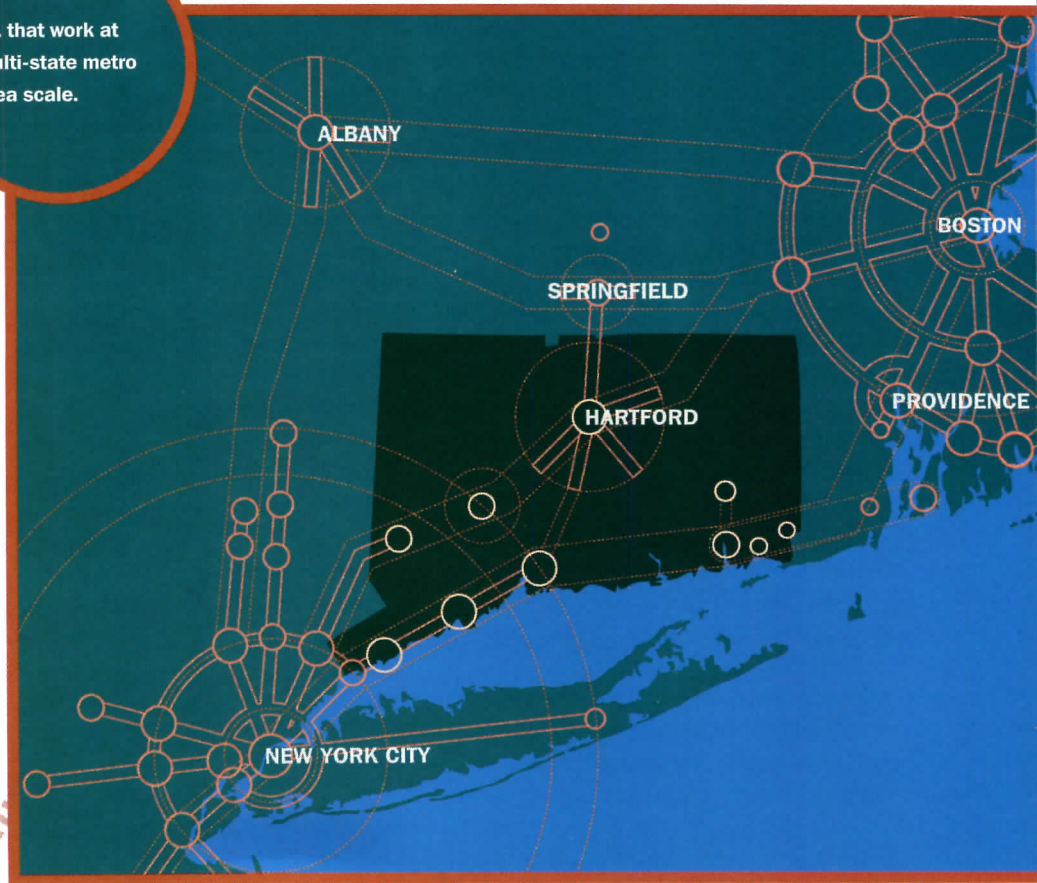
For those who don’t want to engage the fractious political issues urban change portends, there is likely to be more work for architects as cities

compete more aggressively to succeed in the rapidly changing economic landscape. Urban change is already altering traditional building types. Where once Portland, Ore., was almost entirely a city of one-family houses, designers now have to come up with new higher-density strategies to conform to the city’s strict growth boundaries. Sierra Designs, for example, builds new, higher density, mixed-use projects in the growth-boundary-encircled city.

Cities also find themselves competing by using “trophy” urban projects, many of them with a high design profile. Appealing to relocators in a skills-short economy is a key reason cities all over the country are building museums, sports stadiums, aquariums, zoos, and performing-arts complexes [“Building Types Study 773,” May 1999, page 223]. “Most suburbs will be worse off than central cities because they don’t have the universities, the downtown commercial core, the museums, and the cultural and recreational facilities to build on,” says Orfield.

Infrastructure is also becoming a higher priority. Gallis charts a vast global realignment of trade routes that is occurring as huge new pop-

... that work at multi-state metro area scale.



ulations are brought into the world marketplace in the wake of collapsing Communism [map opposite]. According to Gallis, trade is moving at new speed to a new scale, one that is gigantic without precedent. “To sustain the global economy, you have to continuously move people and goods as well as information around the world,” he says. “Metropolitan areas [cities and suburbs together] are where the population concentrates and where production and consumption take place. They are the hubs in the network, which is why metro regions are more important than ever before.” This new world order may call for new kinds of multimodal facilities, such as the air, sea, rail, road, utilities, and communications “Multi-Port” he has proposed for Charlotte.

European cities have gone on an infrastructure spending spree, upgrading airports, rail, road, and transit systems. The costs of new and

upgraded facilities are now too large and costly for a single city to finance, Gallis says. His research concludes that large, established ports have the advantage, but it is one they could lose to smaller, smarter, and more agile players. If the three states and dozens of cities within the New York metro area can't find a way to cooperate to reduce congestion in the harbor, airport, rail, and highway infrastructures, Gallis found in a recent study, the region could lose out to other Eastern Seaboard cities.

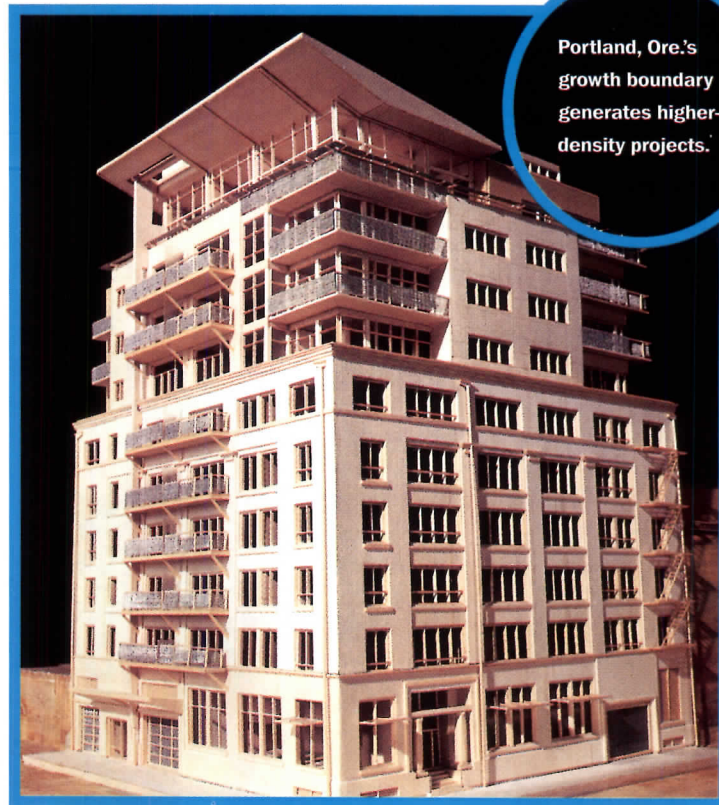
Confronting the barriers to innovation

A larger role for architects in building skyline-defining projects is by no means guaranteed. Architecture is still too often an afterthought when businesses, institutions, and governments make decisions that profoundly affect the future. Those architects who have carved out a larger role in defining what cities can be have done it by directly confronting the barriers to architects' participation.

"There was an early moment in our South Florida work when we began to see how many other influences outside the client and the designer were constraining what we could do," explains Elizabeth Plater-Zyberk, FAIA, dean of the architecture school at the University of Miami, Coral Gables, and partner in Duany Plater-Zyberk. "The first rude awakening was zoning codes. We had not previously understood the degree to which they were preventing what we thought was appropriate." The firm, and other New Urbanists, have developed new codes of their own, which have influenced development nationwide.

New Urbanists have also attacked road-design standards, such as mandated widths and turning radii that they contend encourage excessive speed and impede the making of more walkable, socially cohesive communities. "We thought we had seen everything," says Plater-Zyberk. "But in one community the turning radius had been determined by the size of the fire trucks, which were very large. We found that these trucks were used because they carried the number of firefighters negotiated by the union."

Architects must confront rigid real estate industry lending standards if they want to build innovative, less sprawl-inducing projects, says Christopher B. Leinberger, managing director of Robert Charles Lesser &



Portland, Ore.'s growth boundary generates higher-density projects.

and other real-estate development underwriters. He hopes to persuade them that their long-term income goals can be aligned to high-initial-quality projects that pay back over a longer time horizon than the five-year span now commonly recognized in the financial community.

Get involved in the political process, say architect-politicians Harvey Gantt, FAIA, former mayor of Charlotte, and Richard Swett, FAIA, once a U.S. Representative, now ambassador to Denmark. Indeed, those who have tackled the mechanisms that drive patterns of urban growth

ZONING, INFRASTRUCTURE-DESIGN STANDARDS, AND BANK-LENDING PRACTICES ARE AMONG THE FORCES IMPEDING LIVABLE-COMMUNITY INNOVATION. ARCHITECTS CAN KNOCK DOWN THESE BARRIERS.

Co., Albuquerque. A longtime real-estate analyst and relocation advisor, Leinberger describes a taxonomy of 19 readily financed "products." Many of which are simplistic, congestion-inducing types like strip malls and the big-box retail outlets that are increasingly rejected by communities. But real-estate lenders regard these types as low-risk. Newer typologies such as apartments over stores are not understood by the industry and are virtually shut out of the conventional lending market, which greatly raises project costs. "To do New Urbanist projects, urban infill, or ecologically innovative projects demands a high level of architecture and quality," explains Leinberger. But because banks see only higher risk, "you can only afford the financing if you decrease quality. It's a Catch-22 situation." Robert Shaw, a developer of infill housing in Dallas, ticked off lender objections to what he does: "They say the land costs are too high. They don't like city lots because they don't meet HUD standards. They want you to gate your development, which is bad planning. If you gate, the public sector—which these projects need—won't participate."

How can such daunting barriers to change be overcome? "You have to identify them, find out their ultimate source," says Plater-Zyberk. "There might be a local or a national standard. Then address whatever put it in place." Leinberger travels the country, speaking to pension funds

note the near total absence of architects at political, civic, and institutional forums for change.

Who designs the future?

Planners, developers, and politicians argue that there is no place for architects in the broader urban growth and development debates. With sociology, technology, economics, and demographics so strongly driving urban change these days, is there a place for architects beyond the hope of appropriately packaging emerging or altered building types? "The purpose of architecture is the housing of humans and the activities they perform," says Gallis. "Large-scale urbanization has had a hard time delivering environmental sustainability and quality of life, so we fear it. Cities are physical artifacts and they can be managed and designed."

For 15 years, Gallis' firm has been helping clients see the physical connections and implications of changes in cities. One of his strengths as an architect, he says, is to use visualization tools to help clients understand how their cities are growing and what the key issues are. Trained neither as a planner nor strategist, Gallis simply stoked his passion by educating himself, and turning his design skills to rendering urban futures as they are and could be.

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ing urban growth, the challenges are likely to be profound—but the result could be a much more important role for architects in the making of cities.

Consider the effects, for example, of wide-bandwidth electronic communications technology. It appears to be exerting a strong decentralizing force. The city is “flatlining,” MIT architecture school dean William Mitchell writes in his new book, *e-topia: Urban Life Jim, But Not As We Know It* (MIT Press, 1999). “Traditional urban patterns cannot coexist with cyberspace.” Indeed, cybercommuters work from Vermont villages and Colorado mountain resorts. Satellites have turned the software parks of Bangalore, India, into a low-cost electronic suburb of Santa Clara. Some electronic forums—cybershopping, for example—may displace bricks-and-mortar retail stores. Mitchell, however, argues that architects can help define appealing new, nonvirtual places.

But there is another, apparently contradictory trend emerging. As metropolitan areas fling their borders ever farther outward, they are simultaneously becoming more dense. Traffic congestion is everywhere cited as spurring a new interest in living downtown. “Historically, consumers have been willing to drive for value,” Greg T. Logan, of the real estate analysis firm Robert Charles Lessor & Co., told an Urban Land

CITIES ARE SPREADING OUTWARD WHILE BECOMING DENSER DOWNTOWN; PEOPLE NEED NEW MEETING PLACES—“ON LINE” AND “OFF LINE.” ARCHITECTS’ VISIONS CAN SORT OUT THE BEWILDERING POSSIBILITIES.

Institute conference in Chicago last spring. “They have been willing to trade lower housing costs for higher transportation costs.” But with Americans working longer hours and with gut-wrenching traffic jams becoming a fact of life from Atlanta to Seattle, a significant percentage of the market will pay more for housing, says Logan. In-town residences must offer convenient access to “a major employment node,” good quality schools, and proximity to desirable retail and services.

Thousands have moved into the once resident-free downtowns of Denver and Dallas. Loft conversions are proceeding at a torrid pace near Chicago’s Loop, and housing prices have skyrocketed in Manhattan, Los Angeles’ West Side, and both Boston and Cambridge, in Massachusetts—areas rich in jobs and amenities. Because housing is so tight in Silicon Valley, younger high-tech staffers are moving into San Francisco, 40 miles north, where housing seems inexpensive only compared to the Valley. The city also appeals, however, for its diverse social and recreational opportunities. Sueberkrop, of Studios, says his firm is designing a new downtown complex for companies that want to attract these young workers.

Geometric growth in computing power allows organizations to

assemble teams of specialized expertise of unprecedented complexity to attempt projects of heretofore unthinkable size. And sometimes new kinds of places must be created for these kinds of interaction. Skidmore, Owings & Merrill, for example, is helping the New York Stock Exchange figure out what form the trading floor of the future should take [“SOM Takes Manhattan,” page 68].

It is the depth of the highly trained workforce that keeps Silicon Valley a magnet in spite of its high costs and congestion, says Sueberkrop. The presence of a wide variety of specialized businesses and a large, highly trained workforce are also the engines powering commercial revival in many of America’s downtowns. Manhattan’s burgeoning Silicon Alley draws on New York’s concentration of media, advertising, art, and entertainment leaders for both expertise and clients.

Envisioning the emerging city

An architect can help people understand that abstract concepts have real implications on the ground. Gallis, for example, maps urban areas not in terms of how people traditionally think about them, but in terms of the forces that have created them and will affect them in the future. While people tend to associate themselves with the town in which they live, for example, Gallis’ maps play down political jurisdictions. That’s because people increasingly move across municipal and county lines for work or leisure. Gallis maps metro areas—the conurbation of cities and suburbs together that are today’s real “cities” [page 78]. People may say they dislike large, crowded metro areas, but these are exactly the places people more often choose to live. Though the largest cities are not growing quickly, more people live in the most populous *metro areas* than ever before. Nor is the trend abating, primarily because large metro areas offer the greatest choice for careers, places to live, and recreation.

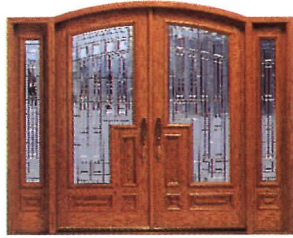
In this state of urban flux, Gallis says, a key role for architects is to help people recognize that cities are not planners’ abstractions or formless blobs, but follow relationship patterns that can be traced, understood, and analyzed for their implications. So Gallis maps cities as webs of relationships that rely on infrastructure. He even maps the satellite nets that power urban communications networks.

Metropolitics for metrocities

One of the reasons so many analysts look at metro areas rather than individual cities is that a consensus is growing that traditional political boundaries are impediments to growth and stability. Suburbs and cities too often compete wastefully with each other, critics say, inducing sprawl by subsidizing the location of new business on greenfield sites through tax abatements and below-cost infrastructure extensions. One of the reasons suburban congestion is so bad, says Orfield, is that favored-sector communities, which usually have many more jobs than residents, use restrictive zoning (mandating large lots, prohibiting apartments) to keep out lower-income workers (whose taxes may not cover the cost of services). These workers then clog highways because they must drive as much as 30 to 60 miles to reach their jobs.

Policymakers today debate ways to induce jurisdictions within metro areas to work together cooperatively. In his 1993 book, *Cities Without Suburbs* (Woodrow Wilson Center Press), David Rusk argued that “elastic” cities—cities that could annex their suburbs or were otherwise able to act in concert with them—were more (continued on page 206)

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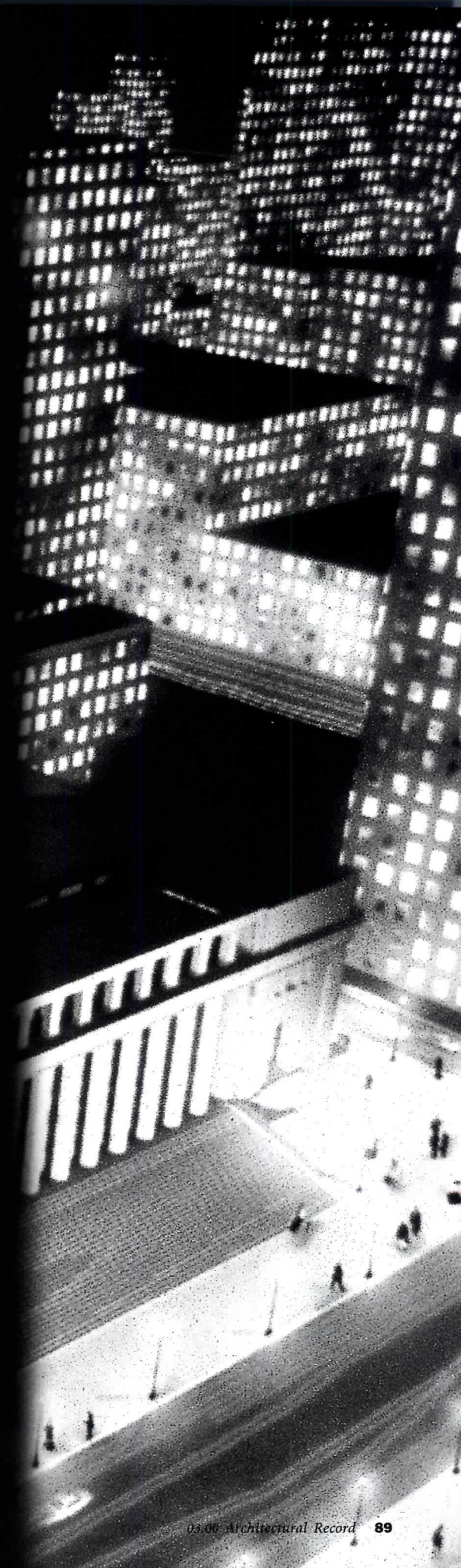
Urban Magnets

Media-charged towers, waterfront parks, and new infrastructure are pulling dollars and people back to the city.

Sometime in the next few years, more than half the people in the world will live in cities. This will mark a critical turning point in history—less heralded than the recent turn of the millennium, but probably more significant. And once this demographic shift takes place, it will gain enormous momentum. Why? Because 7 of the 10 largest cities on the planet will soon be in Brazil, India, Pakistan, Bangladesh, Nigeria, and Indonesia, countries witnessing lightning-fast transformations from agrarian to urban economies. The challenges facing these rapidly emerging megacities—expanding infrastructure, housing new arrivals, employing unskilled millions, and preserving important parts of the existing environment—will be huge. But so will the opportunities—designing new landmarks, building communities, and creating memorable public spaces.

Cities have always been where the action is with regard to politics, business, and culture. This won't change, even with the Internet connecting every modem-enabled person in virtual chat rooms or cyber-shopping malls. Indeed, the resurgence of cities such as New York, London, Pittsburgh, and Mannheim, Germany, has coincided with the explosive growth of electronic communication and commerce. The projects in this month's issue show how cities are adapting to stay vital—from skyscrapers that express the multiple personalities of a media-charged society to parks that reclaim parts of the urban waterfront, from an infill building that combines popular and fine arts to an exhibition pavilion that engages mind and body.

In the features, you can read about the way sprawl has created a Darwinian struggle for survival among suburban communities [page 76] and how SOM got its groove back and is shaping some of New York City's biggest projects [page 68]. Finally, the Building Types Study takes a look at a remarkable piece of urban infrastructure, London Underground's Jubilee Line Extension [page 129]. The forces shaping cities are often beyond the control of architects, but the projects shown here demonstrate that good design can still make a difference. *Clifford A. Pearson*



Although much shorter than the Empire State Building, the 796-foot-tall Four Times Square still stands out against the skyline. From the east along 42nd Street (opposite), the tower looks like a collage of several structures.



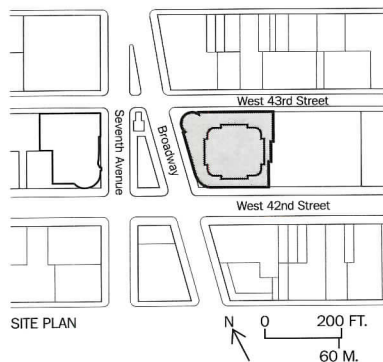
Fox & Fowle creates a collage in **FOUR TIMES SQUARE**, using skyscrapers past and present and a touch of “green.”

By Suzanne Stephens

Fox & Fowle's Four Times Square is not avant-garde. The 49-story tower at 42nd Street and Broadway does not radically redefine the skyscraper as an urban building type, and its much praised energy-saving features are more symbolic than actual. Nevertheless, it is an accomplished amalgam of stylistic motifs and technical themes that embody concerns and obsessions of late-20th-century architecture. In so doing, it falls neatly within the history of New York City's commercial high-rises.

New York has never been a town where great design risks are taken, especially with the skyscraper. Even the city's most iconic towers—the Woolworth, Chrysler, Empire State, 30 Rockefeller Center, and, more recently, Citicorp and AT&T (now Sony)—have been derided for not advancing the skyscraper as architectural critics desired. Conceived to draw attention with their height and distinctive tops, these icons responded to previous development and zoning regulations with forms that featured setbacks, a vertical (or sometimes a horizontal) emphasis, and crowning spires. Admired as huge construction feats, they did not postulate new tall-building forms, functions, and techniques as Lever House, the United Nations Secretariat, and the Seagram Building did. Yet in time they still earned cachet as powerful emblems of this glittering city. They created the skyline.

As a commercial New York skyscraper, Four Times Square revels in its nature as a hybrid design, combining the crown and shaft of old skyscrapers with a base that dissolves into the surrounding signage of Times Square. Its melds neo-Modernist elements—techno-constructivist imagery at the top, curved walls, and the shaft's watery reflective glass—with traditional elements, including slightly recessed windows and granite cladding, which wraps much of the tower's south, east, and north sides. The form features layered planes, peeled surfaces, and collaged elements—right out of the 1980s and '90s skyscrapers of Cesar Pelli & Associates, Kohn Pedersen Fox, and SOM—fused with the heavy massing, setbacks, and surface detail of early-20th-century sky-



scrapers by Ely Jacques Kahn, Raymond Hood, and Ralph Walker. Even its structure is a hybrid: part concrete, part steel.

In other words, a lot is going on. Is it too much? Yes, if you're looking for purity. The decorative stuff added to the sleek elevations—the cavetto-shaped cornice on the glass setback on 43rd Street or the vertical fins here and there—seems unnecessary. (But let it be remembered that the Empire State was criticized for its masts as was the Chrysler for its car

Project: *Four Times Square, New York City*

Owner: *The Durst Organization*

Architect: *Fox & Fowle Architects—Robert Fox Jr., AIA, principal (administration); Bruce Fowle FAIA, principal (design); Daniel Kaplan, AIA, project director; Elizabeth Finkelshteyn, project architect; Daniel*

Schmitt, Hitoshi Amano, job captains

Consultants: *Cosentini Associates (mechanical); The Canto Seinuk Group (structural); Kiss + Cathcart Architects (photovoltaic); Fisher Marantz Renfro Stone (lighting); Heitmann & Associates (exterior cladding)*

Contractor: *Tishman Construction*

motifs, both of which became appealing in due time.) Eclectic as the tower is, it maintains a sense of balance.

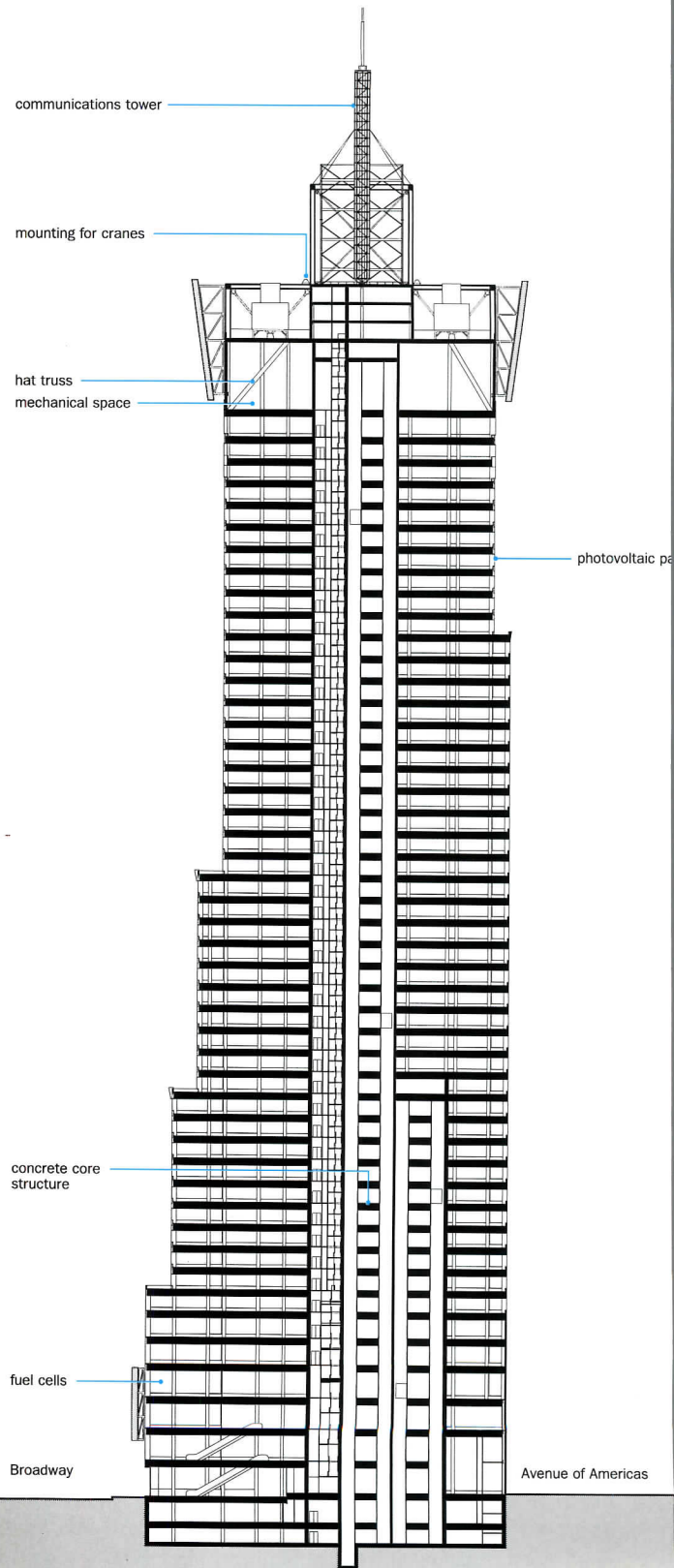
Tower in a neon park

The shape of Four Times Square resulted from determinants slightly different from those of most contemporary skyscrapers in the city. For one thing, the idea of an office tower grew out of a plan by the Empire State Development Corporation (ESDC), which in 1983 had assembled properties, including the tower's site, to beef up office space in the former porn belt. As a result, city zoning rules tying bulk and height to floor area ratio (FAR) and mandated sky-exposure planes did not apply.

Architects Philip Johnson and John Burgee, working with developer George Klein, had first crack at the project and in 1984 proposed a cluster of four office buildings, totaling 4.1 million square feet and ranging from 29 stories (388 feet) to 56 stories (705 feet). The four big bulkies at the crossroads of Times Square proved a trifle unsettling.

Meanwhile, in 1982 the city upzoned the rest of this area, from 12 to 15 FAR, and 15 to 18 FAR, giving rise to fears that Times Square would soon be dark by day, in the shadows of high-rises, and pitch black by night, with all the honky-tonk buildings carrying illuminated signs gone. In part to quell these fears, new zoning for signage was passed, at this time, to encourage developers to append to their corporate office buildings the bright lights and dazzling signs that had once made Times Square fabulous.

After delays caused by lawsuits and a recession, the Johnson Burgee scheme was scrapped. But not the ESDC guidelines. The Durst Organization, a big-time New York developer, bought the 33,000-square-foot parcel at the northeast corner of 42nd Street and Broadway and then

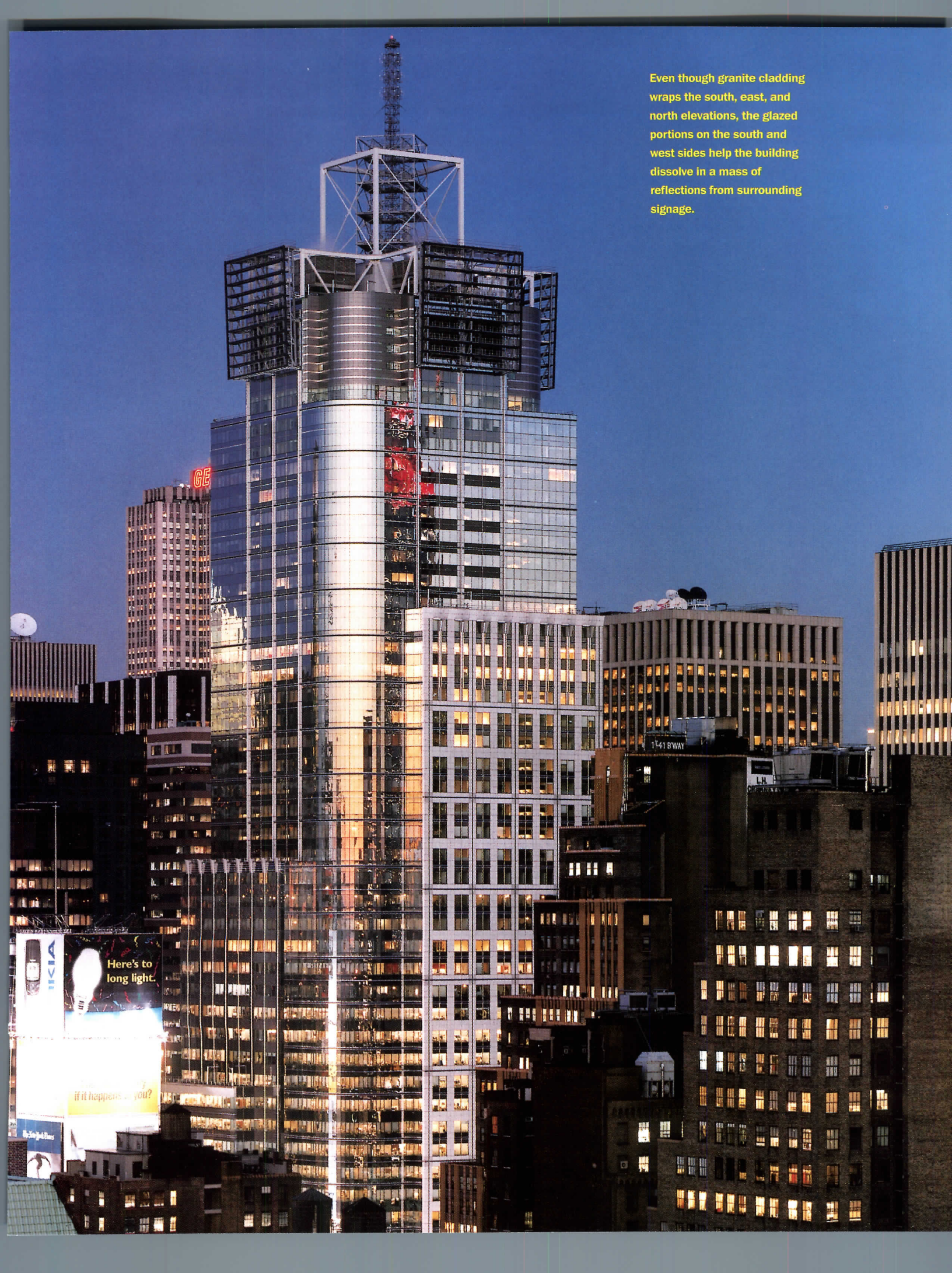


EAST-WEST SECTION

0 59 FT.
15 M.



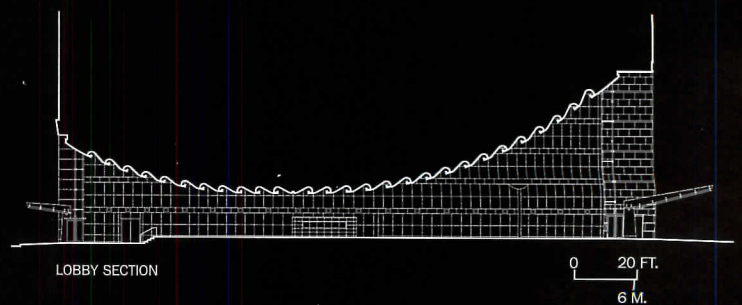
Even though granite cladding wraps the south, east, and north elevations, the glazed portions on the south and west sides help the building dissolve in a mass of reflections from surrounding signage.

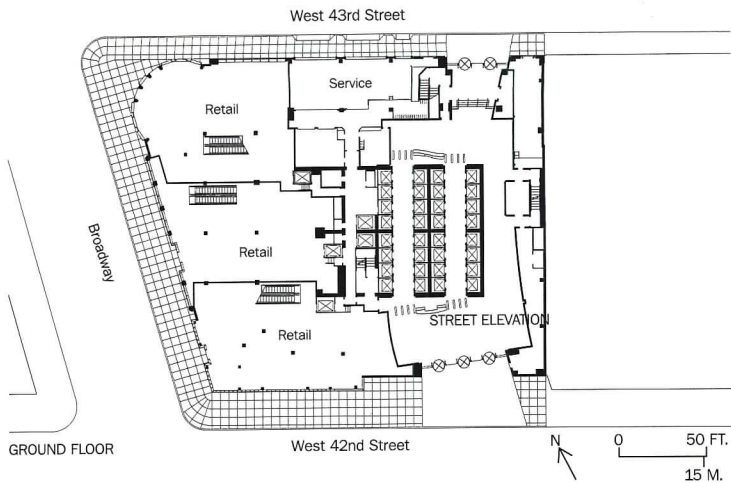




The 42nd Street lobby, marked by an angled glass canopy, compresses the entrance space. Then, the lobby expands dramatically upward to a four-story height (opposite top and

section, below). The pass-through along the lobby's eastern edge (opposite bottom) is marked by a similar canopy ceiling of aluminum leaf on fiberglass panels.





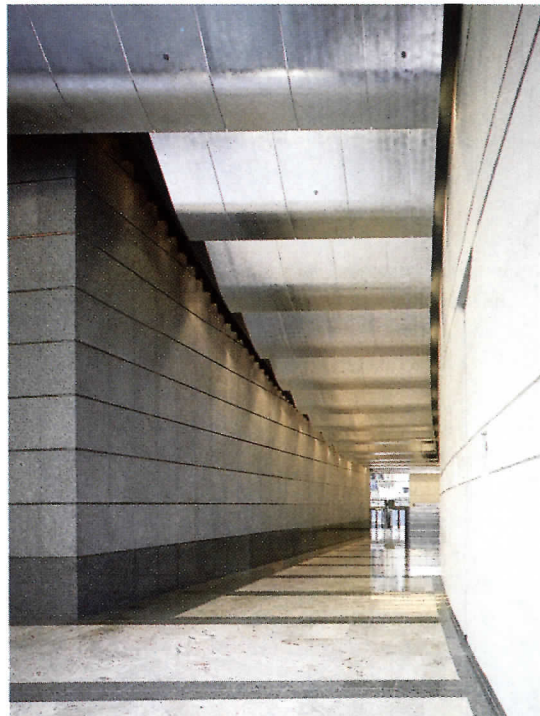
added an extra 11,000 square feet of land next door. Next, Durst brought in Fox & Fowle, New York architects known for a discreet stylishness in their Manhattan skyscrapers, to make the 1.6 million-square-foot behemoth the developers envisioned palatable. Although the building rises only 49 stories, its bulk, calculated according to the city's zoning laws, approaches about 35 FAR. Fortunately, and to the architect's credit, the tower doesn't show its amplitude. The irony is that Fox & Fowle introduced setbacks that had not so much to do with zoning, as with sculpting the mass based on aesthetics (and developers' economics). "People keep complimenting us on the proportions," says principal Bruce Fowle, FAIA. "The setbacks are where they make sense in terms of the building's form, not where the city requires them." The layers of granite and glass, along with billboard signs—of which about 20,000 square feet were mandated by zoning—also break up the mass and help it blend with the setting. Four more 4,300-square-foot signs, not part of the zoning, were attached to the building's crown to help demarcate its Times Square address on the skyline. While not yet in full working condition, two of these signs are being readied now.

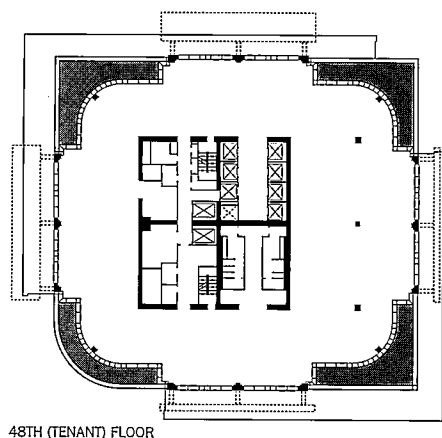
At street level, the compilation of design elements imprints the building with different personae. Approaching the tower from the east along 42nd Street, you first come to the entrance. For the corporate tenants, Condé Nast Publications and law firm Skadden Arps Slate Meaghers Flom, Fox & Fowle pulled the lobby on 42nd Street east toward Bryant Park, away from Broadway, and designed a large granite and structural glass entrance portal with a subdued mien. But then, turning up Broadway to Times Square, you are assaulted by the boardwalk garishness of ESPN-Zone's plastic, razzle-dazzle storefront. It hardly seems to be the same building (the tenant, Disney, designed its own facade). As you continue on Broadway to 43rd Street, Nasdaq's eight-story LED sign, mounted on the cylindrical portion of the tower's facade, shifts the Gestalt again, to a more up-to-date cybertech world.

How green is green?

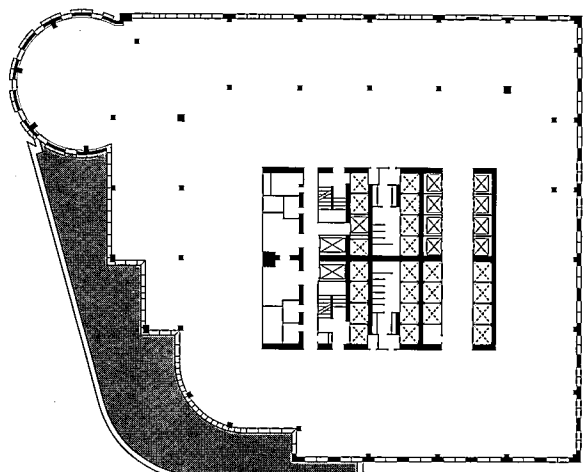
With all these flashing signs gobbling up so much power, it's ironic that Four Times Square has been heralded as environmentally sensitive [June 1997, page 73]. The developers, Jonathan and Douglas Durst, both avowedly interested in environmental issues; the architects, Fowle and his partner Robert Fox, AIA, their project director Dan Kaplan, AIA; and a team of environmental consultants including Steven Winter Associates and Kiss + Cathcart Architects, tried to reduce energy use. And while investigating ways to save electricity at Times Square may be a little like opening up a smoke-enders clinic on a tobacco farm, their strategies are interesting.

At Four Times Square, alternative-energy fuel cells, which convert natural gas into electricity without combustion, were installed to





48TH (TENANT) FLOOR



8TH FLOOR

generate electricity on-site. But because of their size, their expense, and the fact that they run continuously, only two 200-kilowatt fuel cells, instead of the desired eight, were purchased, covering just 8 percent of the building's electricity.

Photovoltaic (PV) cells constituted another method of generating power on-site. Two hundred eighty eight PV panels replaced spandrels on 2,955 square feet, or half of a percent, of the building's walls. The electricity created would supply five or six houses but meets only about a half of a percent of the building's energy needs.

The curtain-wall system at Four Times Square incorporates conventional energy-saving features, as well. The double-glazed clear panels come in two types: a low-reflectance glass on the lower floors and a higher reflectance glass that cuts solar heat gain on the upper floors. Other environmentally conscious devices include light sensors in the offices and CFC- and HCFC-free absorption chillers run on natural gas for air-conditioning. The HVAC equipment is digitally monitored with variable drives, and fresh air is provided by a state-of-the-art air-pollutant filtration system. To reduce the amount of costly steel while obtaining the proper stiffness in the frame, the design team placed steel columns within reinforced-concrete shear walls. In addition, a steel hat truss at the top of the building reduces lateral deflection, because the perimeter columns act as tension ties.

In spite of the impressive laundry list of environmental strategies, the actual energy savings is probably not earth-shattering. Nevertheless, that the developers and architects took the symbolic lead is significant. Hillary Brown, an architect and managing editor of New York City's *Department of Design and Construction High Performance Building*

Guidelines, comments, "Sure, the project could be criticized for where it fell short. But nobody else in spec buildings is saying, 'We have to be socially responsible, take risks, and educate ourselves.' The developers, the architects, and all their consultants should take pride in this achievement. They are setting new standards."

Between the skin and the deep floor plate

Four Times Square illustrates the inherent conflict in trying to have a green, urbanistic, architecturally striking, and comfortably functioning building in New York City. The city wants dazzling signage on the office building. The architects and developers want to save energy through use of ample natural light while still holding onto the large floor plates. And the building tenants want views, natural light, and privacy. Because of the large floor size (typically 35,000 square feet) and the fact that the elevator cores were pulled east to accommodate setbacks, natural light reaches about 25 percent of each floor. As a result, the architects and developers gave the tenants energy-saving guidelines that advocated open plans. Open offices have been nicely tucked into some of the building's curves. Still, in most cases, it was not always easy to convince lawyers and journalists, who have to read, write, or talk in privacy, to get over the deficiencies, especially acoustical ones, found in open offices. (As it is, acoustical insulation in Four Times Square is not one of the building's strong points.) Furthermore, the open offices in the cylinder have smallish square windows punched through the Nasdaq sign. A five-foot space between the wall and the sign's exterior face, needed for the sign's air-conditioning, blocks part of the view and some light.

Big and bigger

The rest of the block to the east, toward Bryant Park, is also being developed by the Durst Organization. Fox & Fowle is the architect for this 2 million-square-foot parcel, as well. The firm has the interesting challenge of designing a new building that will partially obscure the east elevation of Four Times Square. According to Fowle, the scheme explores elevations and setbacks to mitigate the sense of more new bulk. Meanwhile, other buildings quickly rise. Fox & Fowle's Reuters Building, at 42nd Street and Seventh Avenue, will soon be completed, and buildings by SOM and KPF on the southern corners of 42nd Street are about to start construction.

Considering all this development and all the signs to come, one nagging thought remains: The icons of New York City's past are highly visible, standing tall and proud, their tops distinct against the backdrop of the sky and city. They are eye-catching artifacts in a scenic skyscape. So is Four Times Square, now. Over time, as the development in Times Square is filled out and the buildings are smothered in signs, can Fox & Fowle's new tower remain visible? To be iconic, a skyscraper must stand out against the sky, embraced by the air around it, demanding recognition. When it all blurs together, it may be hard to spot these New York beacons after all, at least in this part of town. ■

Sources

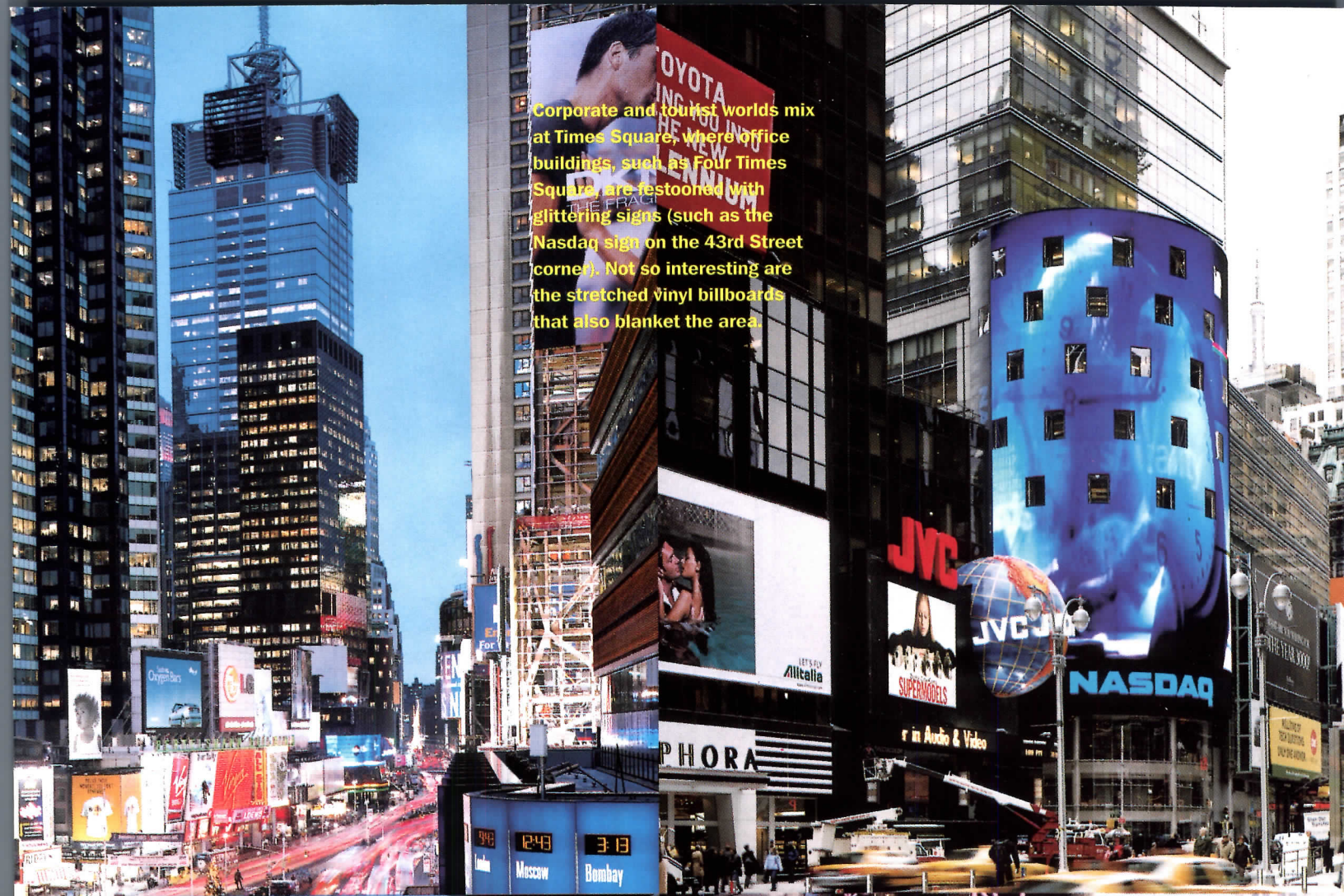
Curtain wall: *Glassalum*
Granite: *Domestic Marble and Stone; Castellucci Stone Quarry*
Marble: *Liberty Marble*
Glazing (interior): *W&W Glass Products*
Hardware: *Architectural Hardware*
Photovoltaic panels: *Energy Photovoltaics*
Ornamental metals: *Coordinated Metals*

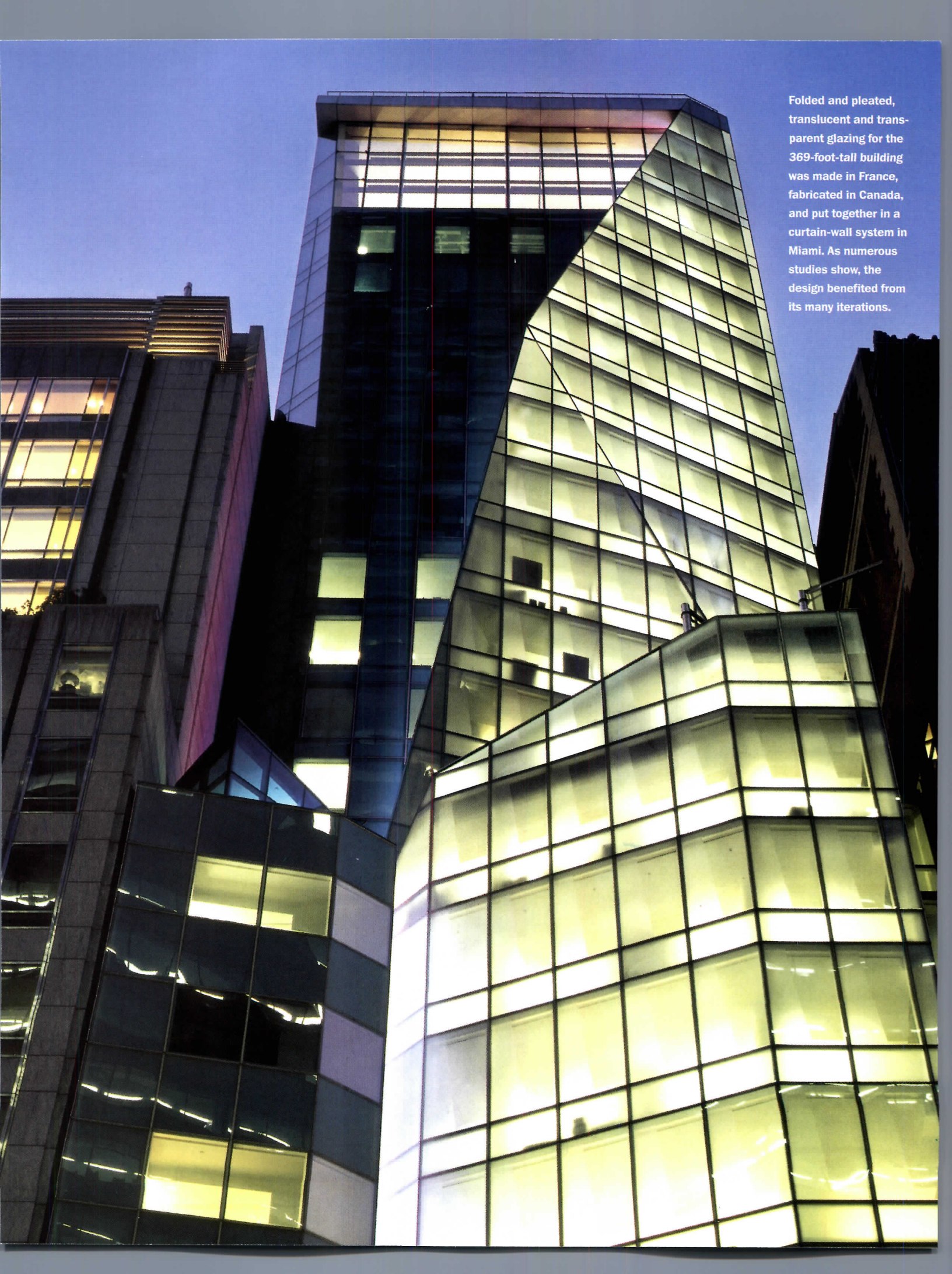
Signage (construction): *Maier National Signs*

Elevators/Escalators: *Otis*
Canopies: *Post Road Iron Works*
Carpentry/Drywall: *Component Assembly Systems*

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Corporate and tourist worlds mix at Times Square, where office buildings, such as Four Times Square, are festooned with glittering signs (such as the Nasdaq sign on the 43rd Street corner). Not so interesting are the stretched vinyl billboards that also blanket the area.





Folded and pleated, translucent and transparent glazing for the 369-foot-tall building was made in France, fabricated in Canada, and put together in a curtain-wall system in Miami. As numerous studies show, the design benefited from its many iterations.

CRITICISM: The seductive LVMH TOWER by Christian de Portzamparc revisits a century-old question about the nature of architecture.

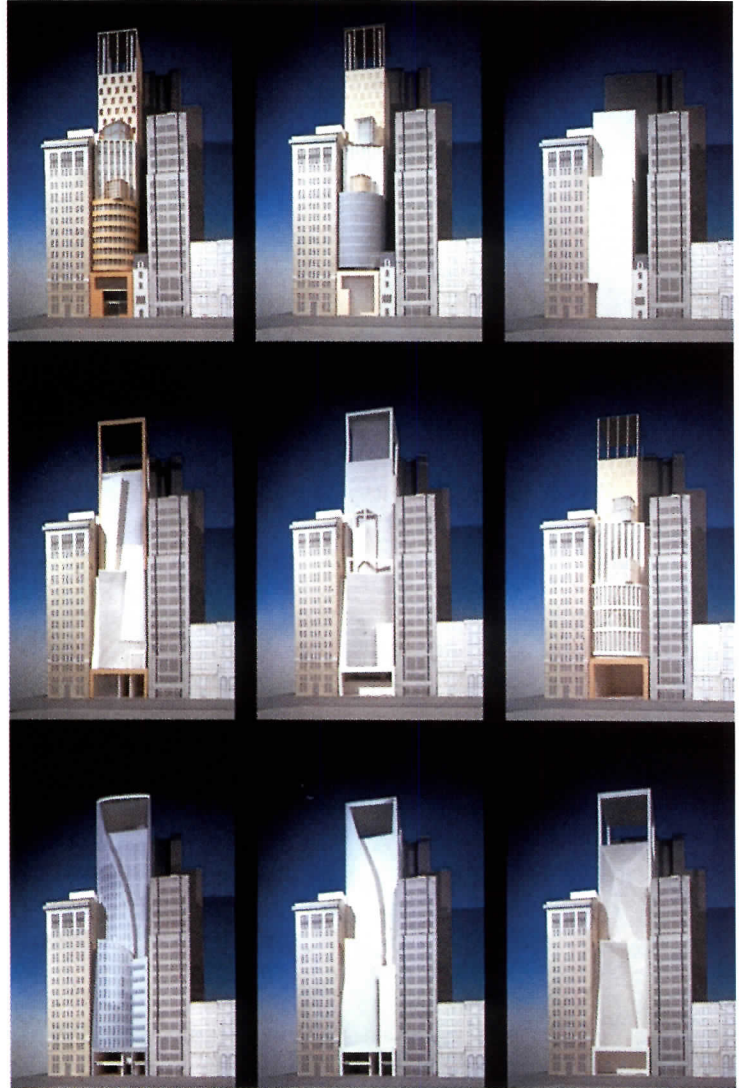
By Suzanne Stephens

If truth be told, the “architecture” of the LVMH Tower in Manhattan is only skin deep. Behind the angled, shimmering glass facade is a narrow, dark, steel-framed building on the 100-foot-deep site. Fortunately, the skin is thick; the three-dimensional folds of the glazing generate angled walls and soffits inside, creating a layer of sculptured space along its 60-foot-wide front. At a certain depth, however, “architecture” turns into just “building,” and most floors of the 24-story structure (from 3,000 to 5,000 square feet and 12 feet floor-to-floor) host cramped, windowless offices and showrooms for LVMH Moët Hennessy Louis Vuitton luxury goods. The major exception to the perfunctory stacks of office space is the top-floor Magic Room, a glass box, 30 feet high and almost 60 feet square. This well-proportioned penthouse, with its panoramic views of Midtown, makes a smashing venue for LVMH’s parties and events.

Still, the tower is basically a room and a facade. So what is all the fuss about? Ada Louise Huxtable in the *Wall Street Journal*, Herbert Muschamp in the *New York Times*, and Paul Goldberger in *The New Yorker* have commended the inventiveness and quality of 57th Street’s new arrival, especially its facade. Their arguments are well taken. They point out the rarity of having such a faceted form in a town where setbacks and sky-exposure planes, mandated by 1982 zoning regulations, have spawned buildings with a step-ladder configuration. Instead, Christian de Portzamparc, a Parisian architect, in association with the Hillier Group, created wedgelike planes, folded and chiseled, to show you can follow the rules and literally give them a new slant. No spec building, the tower, which will be the North American headquarters for LVMH, benefited from a top-of-the-line budget, said to be about \$40 million or, at 112,167 square feet, \$357 a square foot. (Frankly, this figure sounds low.) The craft of the curtain wall dazzles in a town where “crafted” usually means everything lines up, and its shimmering glass is luminously elegant in a city where Trump’s glitz sets the gold standard for development. With such comparisons, what’s not to like?

A French building with a New York provenance

Do all LVMH’s exotic design ingredients make it “architecture,” or is it just an office building with a chic facade? Interestingly, the design rekindles an issue addressed a little more than a century ago in New York by Louis Sullivan (another out-of-towner) with his Bayard Building (1897-99) on Bleecker Street. When the 12-story structure went up, its frank expression of structure, its flat top, and its verticality riveted the architectural com-



PROJECTS

munity. It was a modern response to tall office buildings (the highest at the time was 32 stories) that tended to look like overgrown masonry bearing-wall chateaux and palazzi.

The major difference between the LVMH Tower and the Bayard Building is in the approach to the design of the facade. As Russell Sturgis

Credits

Project: LVMH Tower, New York City

Owner: LVMH Moët Hennessy Louis

Vuitton—Bernard Arnault, chairman

Architect: Atelier Christian de

Portzamparc—Christian de

Portzamparc, principal; Bruno

Durbecq, Wilfrid Bellecourt, team

Architect of record: The Hillier

Group—Gerard F. X. Guy Geier, Jim Greenberg, principals; John Mulliken, project architect

Engineers: Weiskopf & Pickworth (structural); Lilker Associates (mechanical)

Consultants: Robert Heintges (curtain wall)

Construction manager: Tishman

and Montgomery Schuyler both noted in *RECORD* at the time, the Bayard's metal frame was revealed through a terra-cotta cloak, or "drapery of baked clay," as Schuyler described it. The facade allowed the "facts of the case to be revealed," and thus the building constituted architecture in its fully integrated sense, because the terra-cotta and ornament clearly articulated the building's metal frame. Even so, architects and critics still paid the most attention to Sullivan's facade. As noticed later, the floor plan was basically that of a typical loft building.

Drapery or mask?

Clearly, the LVMH facade does not cling to the underlying frame as the Bayard Building's terra-cotta skin does. De Portzamparc did not want even LVMH's floors to be "conspicuous" and, therefore, "fragment the verticality." Although de Portzamparc, like Sullivan, values vertical expression, his facade acts more like a mask, concealing rather than revealing the structure behind it. Indeed, the structure at the perimeter ingeniously follows the form, not vice versa: a column, set back from the facade and sloping in two directions was devised by engineers Weiskopf and Pickworth to counteract wind loads and avoid transfer columns at every floor.

If a building is a mask, can it be architecture? American 19th-century critics voted no, unless the mask represented the structure and function. Yet, recently, scholars have revisited an argument proposed by Gottfried Semper, the 19th-century German architect. Semper maintained that the "veiling" of a structure was quite natural, having derived from the practice of dressing scaffolding for a festival. He said the mask involved the "denial of reality, of the material, [which] is necessary, if form is to emerge as a meaningful symbol." While Semper was referring to the painting of marble temples in classical Greece, his dictum seems to condone in advance the current fondness for upholstering steel-frame-skyscrapers with glass or granite and calling it "architecture."

So where does that leave LVMH? Because it is not architecture, according to Sullivan's definition, could it qualify in an ahistorical reading of Semper? Ironically, no. LVMH's mask does not deny its materiality as glass, but exults in it. The form that Semper wanted to see emerge as a meaningful symbol remains a surface. Owing to LVMH's three-dimensionality, including cantilevered floor plates and that facade column, we can say, however, the glass mask is at least architectonic.

Can a building with an architectonic facade pose a direction for future architecture? Like the Bayard Building, LVMH is intimate in scale. Framed by the Chanel Building on one side, a limestone, genteel affair by Platt, Byard Dovell, and an older brick building on the other, LVMH's prismatic, abstract forms do not alienate or overwhelm the passerby. If the tower were larger and taller, that would be another story.

The LVMH Tower owes its success to its location, size, scale, and price tag. Its custom design, a welcome addition to New York's streetscape, is one-of-a-kind. As a new response to current zoning, it makes a strong contribution. As a prototype for the skyscraper form, it doesn't. It is runway couture that would lose its essence in translation to ready-to-wear. ■

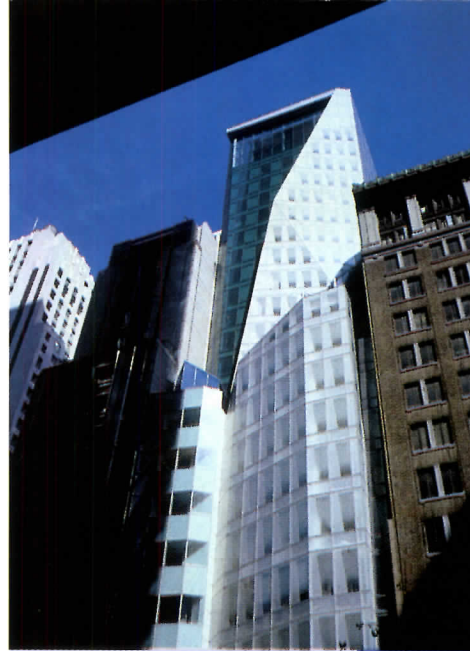
Sources

Glass manufacturer: *St. Gobain*
Glass fabricator, sandblasting, and tempering: *Guardian*
Curtain-wall contractor: *Glassalum*
Steel contractor: *U.S. Bridge*
Flooring (main lobby): *Jah-sal-mer stone, India*
Figural wood (pressed medium-density fiberboard) in lobby: *Marotte*

Cast synthetic glasslike material:

Neopareis (Japanese supplier)
Slate: *Burlington Slate Co.*
Venetian plaster: *Art in Construction*

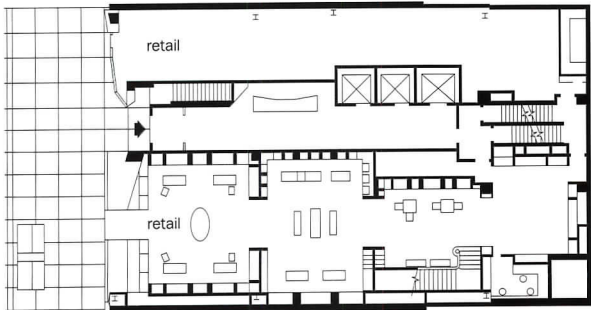
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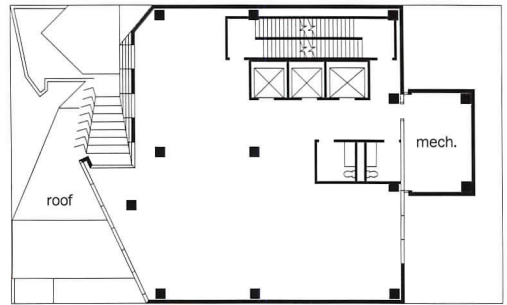
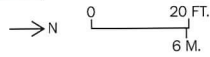
The double insulating glazing of the curtain wall (left) has three types of outer lights: one outer light is white, low-iron glass, which has been sandblasted on its inner surface in a geometric pattern; the second is a green-tinted glass with a ceramic frit on its inner surface, and the third type of exterior light is regular clear glass. All the inner lights of the wall are also regular glass, many with a low-E coating.

In working with the double-glazed panels, Robert Heintges, an architect who consulted on the curtain wall, designed a custom edge seal for the white glass, since the normal edge of black butyl and silicon would be visible (it works fine for the greenish glass).

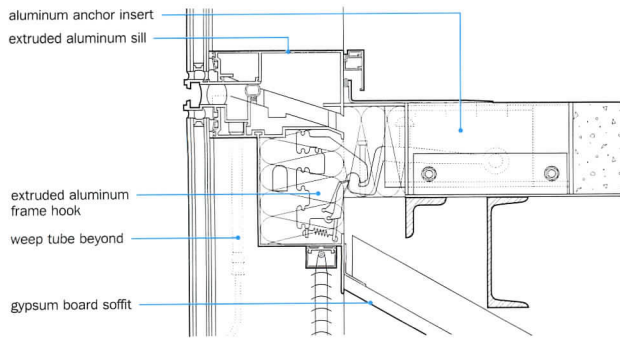
The Magic Room (opposite) has clear glass on two walls and is sandblasted on a third; fin-tube radiation heats the 30-foot-high space.



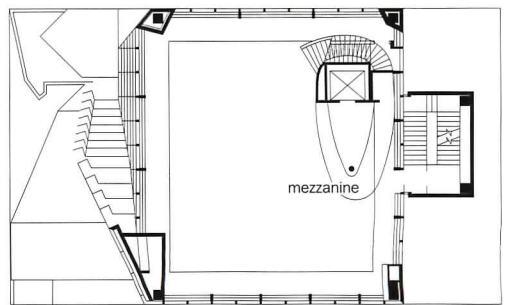
STREET LEVEL



19TH FLOOR

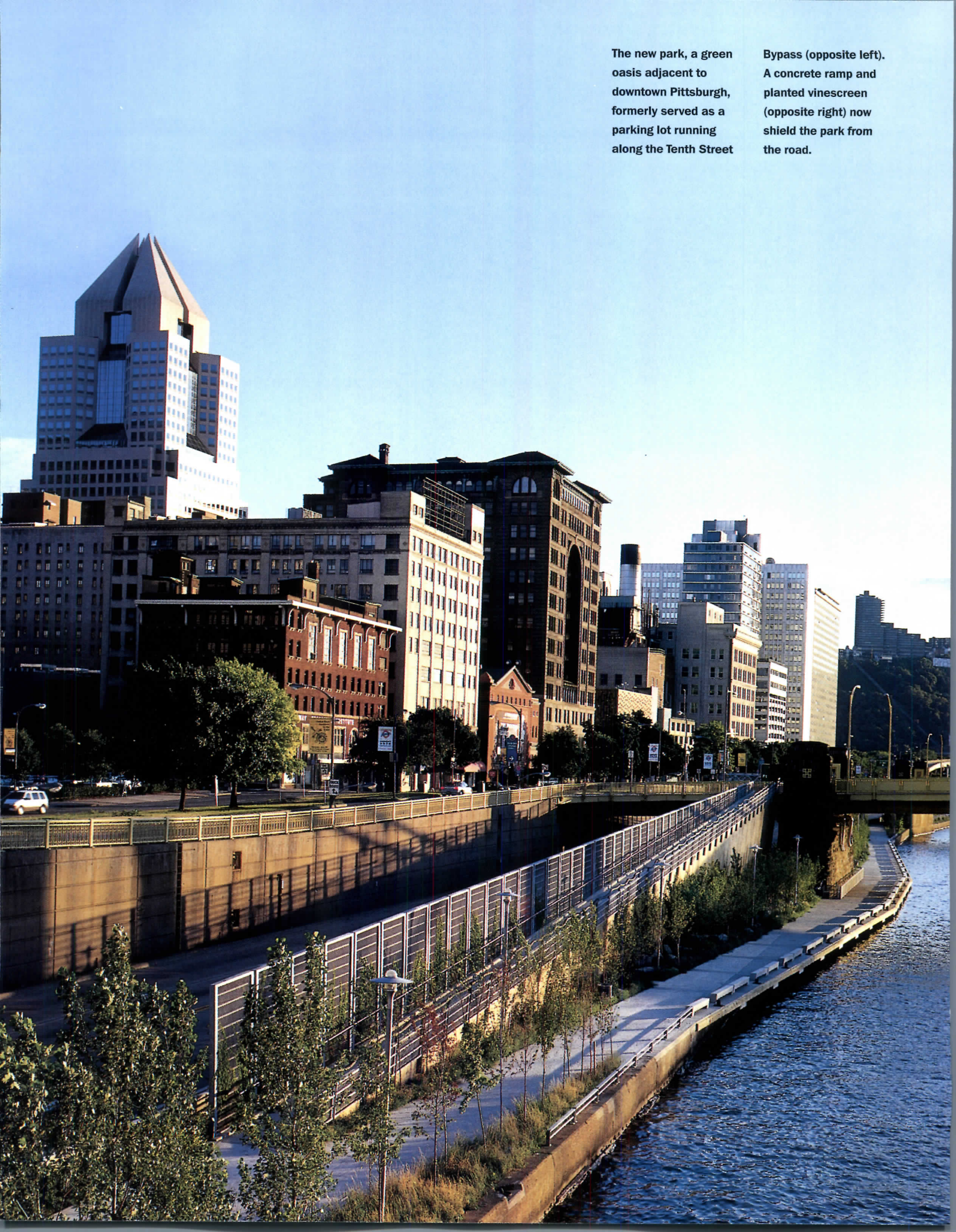


SECTION AT STACK JOINT



23RD FLOOR (MAGIC ROOM)





The new park, a green oasis adjacent to downtown Pittsburgh, formerly served as a parking lot running along the Tenth Street

Bypass (opposite left). A concrete ramp and planted vinescreen (opposite right) now shield the park from the road.

Michael Van Valkenburgh takes people for a walk over the water's edge in his design for Pittsburgh's ALLEGHENY RIVERFRONT PARK.

By Clifford A. Pearson

American cities have trouble with edges—either turning their backs on the natural features that define the local landscape or letting the boundaries between urban and suburban fray into wastelands of warehouses and big-box stores. Pittsburgh long suffered from such tendencies, having surrendered much of its south bank of the Allegheny River to car traffic that cut off the downtown from the three waterways integral to the city's identity. A sliver of land on the Allegheny that the Pittsburgh Cultural Trust wanted to convert from parking lot to park posed a particularly tough challenge because it was essentially all edge: 4,000 feet long and just 35 feet wide.

Since 1984, the Cultural Trust has revitalized a 14-square-block section of downtown Pittsburgh, an architecturally rich zone that had become a virtual ghostland after the local steel industry collapsed in the 1970s and the city lost nearly half its population. Over the last two decades, the Cultural Trust has made important inroads with a series of successful interventions. It has brought old theaters back to life, restored

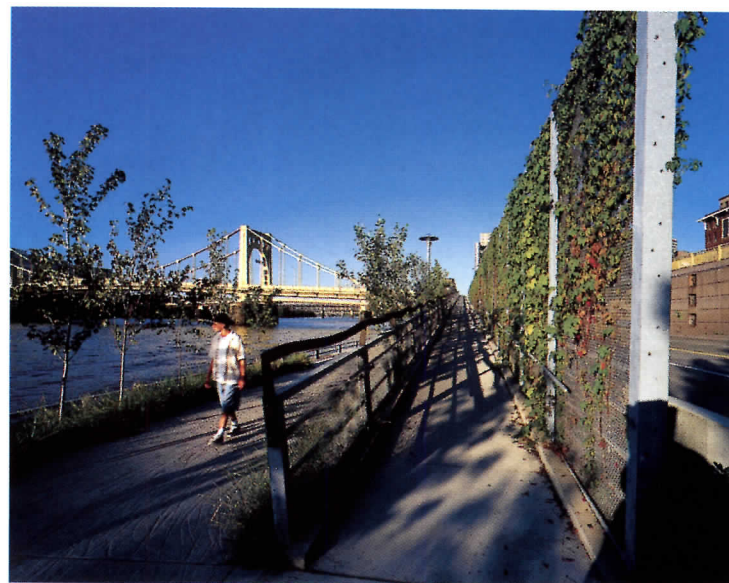


historic building facades, and commissioned public artworks that include a lighting scheme designed by architect Richard Gluckman, FAIA, and theater director Robert Wilson; a town square landscaped by Dan Kiley and animated by a multi-tiered fountain and benches by

artist Louise Bourgeois; and a sculptural installation by Alexander Brodsky. Although the cultural district extended to the Allegheny River, the area was separated from the water by Fort Duquesne Boulevard and the Tenth Street Bypass, which together presented a formidable, 10-lane traffic barrier. In 1910, Frederick Law Olmsted Jr. had envisioned a riverfront park in his plan for Pittsburgh, and the Cultural Trust's 1990 plan later incorporated this concept. As it had done with many of its downtown projects, the Cultural Trust encouraged designers competing for the park job to collaborate with artists.

"When I first saw the site, I thought, 'This is impossible,'" says landscape architect Michael Van Valkenburgh. "It was more than half a mile long and just 35 feet wide." To make matters worse, the site lies in a

flood plain that is periodically immersed under 20 feet of water and battered by ice floes in the winter. But nature wasn't the only force to reckon with; multiple layers of city, state, and federal jurisdiction, involving environmental, transportation, and sewage issues, meant that 20 different departments in 9 public agencies had oversight on the project.



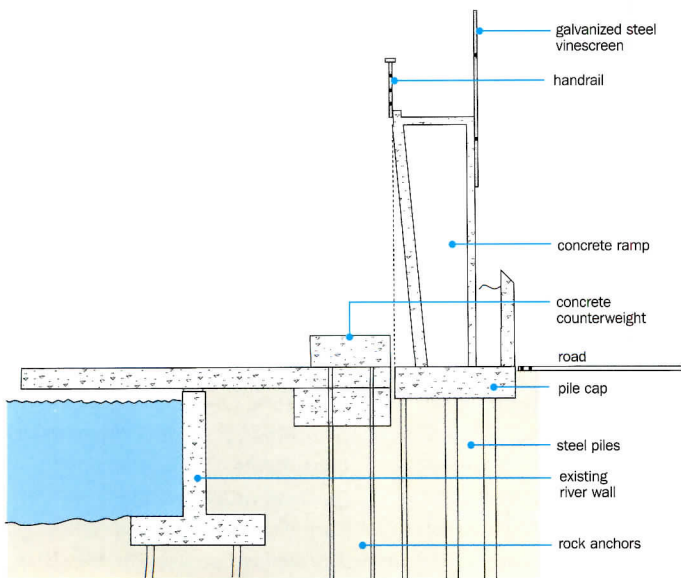
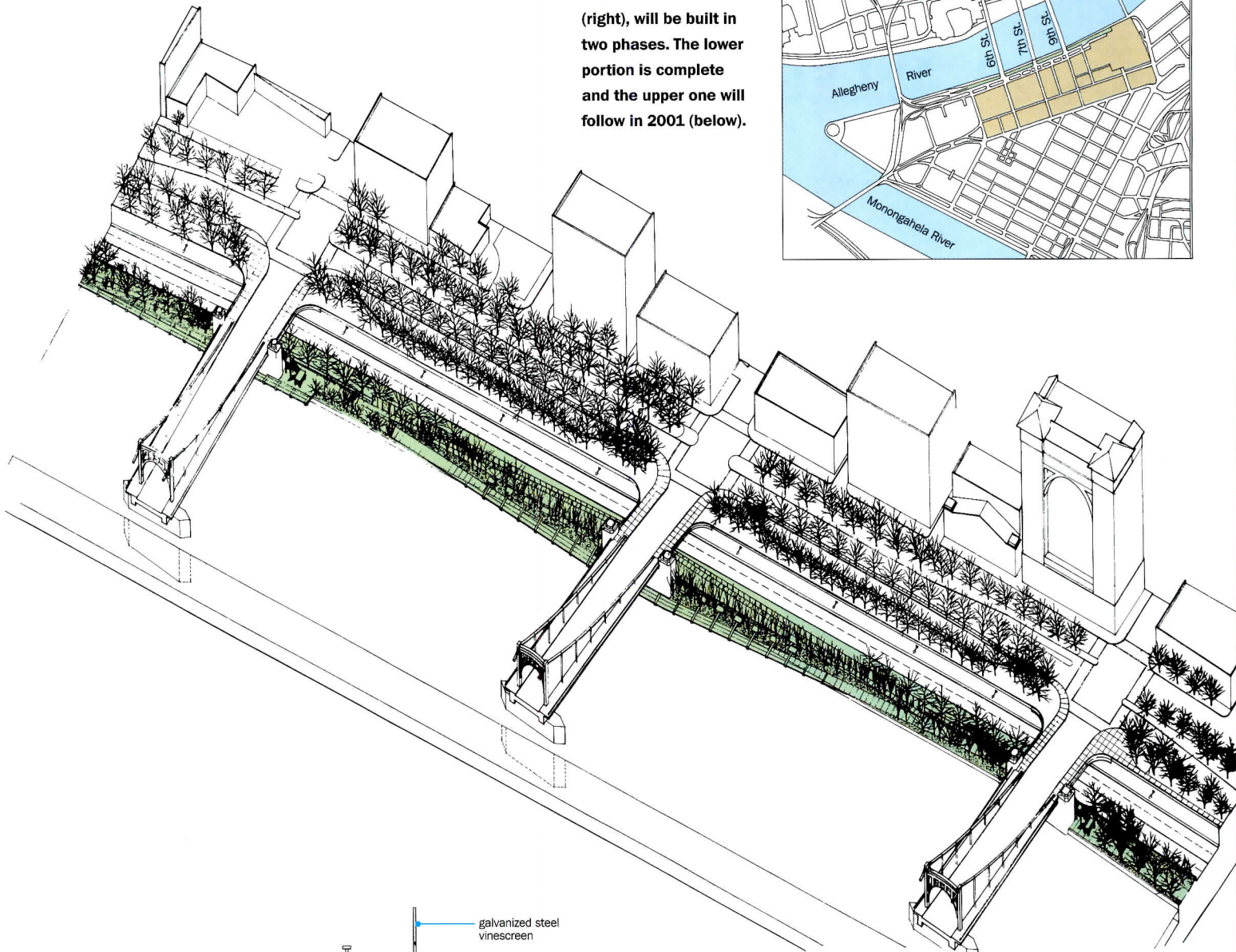
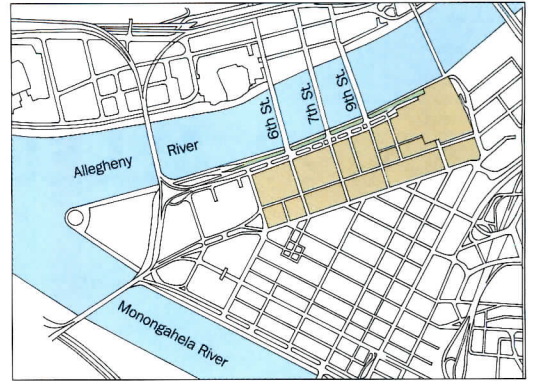
Before competing for the commission, Van Valkenburgh asked installation artist Ann Hamilton and her husband, sculptor Michael Mercil, to join his team. "Ann's work is very spatial and deals with how the body experiences space," says Van Valkenburgh of his collaborator. "We made it clear to the client," he adds, "that Ann and Michael would be involved in the design of the park, not just adding a piece of art to it."

The project would proceed in two phases, starting with a 35-foot-wide landscape at the river's edge, followed by a park at the higher

Project: Allegheny Riverfront Park
Landscape architect: Michael Van Valkenburgh Associates—Michael Van Valkenburgh, principal-in-charge; Matt Urbanski, Laura Solano, senior associates; Tim Barner, Martin Roura, team
Artist collaborators: Ann Hamilton, Michael Mercil

Engineers: Ove Arup & Partners (structural); Frederic R. Harris (civil)
Consultants: GAI Consultants (geotechnical); InterFluve (hydrology); Phillip Craul (soils); Accessibility Development Associates (ADA); UDA Architects (planning)
General contractor: C&M (contracting)

The park, just north of the cultural district (right), will be built in two phases. The lower portion is complete and the upper one will follow in 2001 (below).



EAST-WEST SECTION

street level and incorporating a redesigned Fort Duquesne Boulevard. The lower park cost \$8.5 million and opened at the end of 1998, while the second phase will start construction this summer and debut in spring 2001.

“We saw the upper park as being urbane, formal, and of the city, while the lower park is more willfully wild,” states Van Valkenburgh. The design of the upper park calls for reducing the number of lanes on Fort Duquesne Boulevard from six to four and expanding the median into a more usable space with alternating clusters and rows of trees.

The lower park presented two big challenges: how to get people down to the water’s edge, 24 feet below the city’s streets, and how to turn a strip of riverside land into more than a glorified footpath. The solution to the first problem was a pair of monumental ramps stretching out from the Seventh Street Bridge, one of three landmark steel bridges spanning the Allegheny along the length of the park. Made of poured-in-place concrete, the 350-foot-long, 6-foot-wide ramps block the noise of cars speeding along the Tenth Street Bypass, but also serve as the park’s dom-



Concrete benches provide a subtle barrier and seating (left). Each of the two 350-foot-long ramps turns an ADA requirement into an architectural feature (left bottom).

Artists Ann Hamilton and Michael Mercil collaborated on the design of the entire park, but were particularly responsible for the flowing bronze handrail (right top) and bulrush markings in the concrete paving (right bottom).



inant architectural feature. On the city side, a 13-foot-high “vinescreen,” made of galvanized steel and planted with Virginia creepers, rises above the ramps, while the ramp cants toward the water at 14 degrees. Snaking along the outer edge of the ramps is a cast-bronze handrail designed by Hamilton that recalls the fluid motion of water.

To overcome the narrowness of the riverbank, the designers cantilevered a concrete walkway, extending 15 feet over the surface of the river. Precast-concrete girders, 3 feet, 6 inches deep and set at 25-foot intervals, support precast beams and planks, eliminating the need for all but a few piles in the riverbed. Hamilton imprinted the poured-concrete paving with bulrush reeds, leaving the ghost of nature in the hard material. By pushing much of the walkway over the river, the designers made room for wedges of earth dotted with boulders, grasses, wildflowers, and native species of trees, such as river birch, red maple, silver maple, and cottonwood. Like the concrete benches lining the park’s north edge, these trees can take a lot of punishment; when snapped by ice floes or floodwaters, these fast-growing species sprout again with multiple trunks.

Walking through Allegheny Riverfront Park, visitors enjoy one of those urban experiences that balances accessibility with a sense of separation. The skyline, the muscular bridges with their rusticated bases, and the muffled sounds of cars zipping by are reminders that the big city is nearby. But kneel down, and you can touch the river. ■

Sources

Precast concrete: A. C. Miller

Galvanized steel vinescreen:

Custom by Wilhelm + Kruse

Handrail: *Custom by Laran Bronze*

Ramp lights: C. W. Cole

Pole lights: Sterner

Funding: *Vira I. Heinz Endowment, the Commonwealth of Pennsylvania,*

the Pittsburgh Cultural Trust’s Campaign for a Dynamic Downtown, the Pittsburgh Water and Sewage Authority

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Though the designers encountered a strong aesthetic in the gantries' 19th-century industrial forms, they avoided the temptation to overuse them as a source. "If the details become too derivative, designs tend to become theme park-ish," says landscape architect Thomas Balsley. "We try to create a dialogue between the new materials and the old."

Thomas Balsley and collaborators reclaim priceless waterfront formerly lost to industrial use for **GANTRY PLAZA STATE PARK.**

By Charles Linn, AIA

Few who spy the huge steel frames marked “Long Island” across the East River from the United Nations know what they are or why they are there.

These structures mark both the last vestiges of a booming industrial district that dominated the west edge of Queens and the beginning of a new park system that will eventually contain 19 acres, with more than a mile of continuous waterfront esplanade. The site is Hunters Point, and a new park there bears the name of the mysterious steel structures: Gantry Plaza State Park.

In the early 1850s homes were built there, and businesses grew up around a ferry terminal and a railway station at the terminus of one of the commuter lines leading east to Long Island. But Hunters Point’s access to the water made it quite valuable for industrial use, and by the end of the Civil War, the area was filled with oil refineries and manufacturing plants. The gantries were built in 1876 so that freight cars being shipped on barges could be pulled onto landside tracks. These gantries were among the first water-land rail-transfer facilities in the New York City region. By the end of World War II, industrial activity at Hunters Point had begun a slow decline that has lasted almost 50 years, leaving scores of empty factory buildings and acres of unused railyard behind.

Fortunately, the loss of industry left prime waterfront real estate open for reclamation. Gantry Plaza State Park and the rest of the park system that will follow compose only part of the Queens West Waterfront Development. The developers project that eventually there will be 6,385 residential units on the 74-acre site, as well as 117,000 square feet of commercial and retail space, 132,000 square feet of community and school facilities, and a 350,000-square-foot hotel. Gantry Park, along with a smaller greenspace called the Hunters Point Community Park, and City Lights, a residential tower by Cesar Pelli, have already been completed.

All things for all people

One of the most enlightened aspects of Gantry Park’s design, by landscape architect Thomas Balsley and his collaborators, Richard Sullivan, AIA, and landscape architect Lee Weintraub, is that it is very democratic. In a relatively small space they have produced enough variations that almost anyone can find an appealing place. The all-things-for-all-people nature of the public spaces is especially important in this diverse community.



Residents of the existing low-rise housing around the Queens West development initially feared that the new construction—much of which will be mid- to high-rise—would gentrify the neighborhood and block access to the waterfront. The designers took great pains to address these concerns during the design of the park and have provided a mix of uses so that these communities could come together.

“The mix is what makes the difference between parks that alienate people and become settings for mayhem, and parks that give people of different cultural and economic backgrounds, a place that they all can enjoy,” says Balsley.

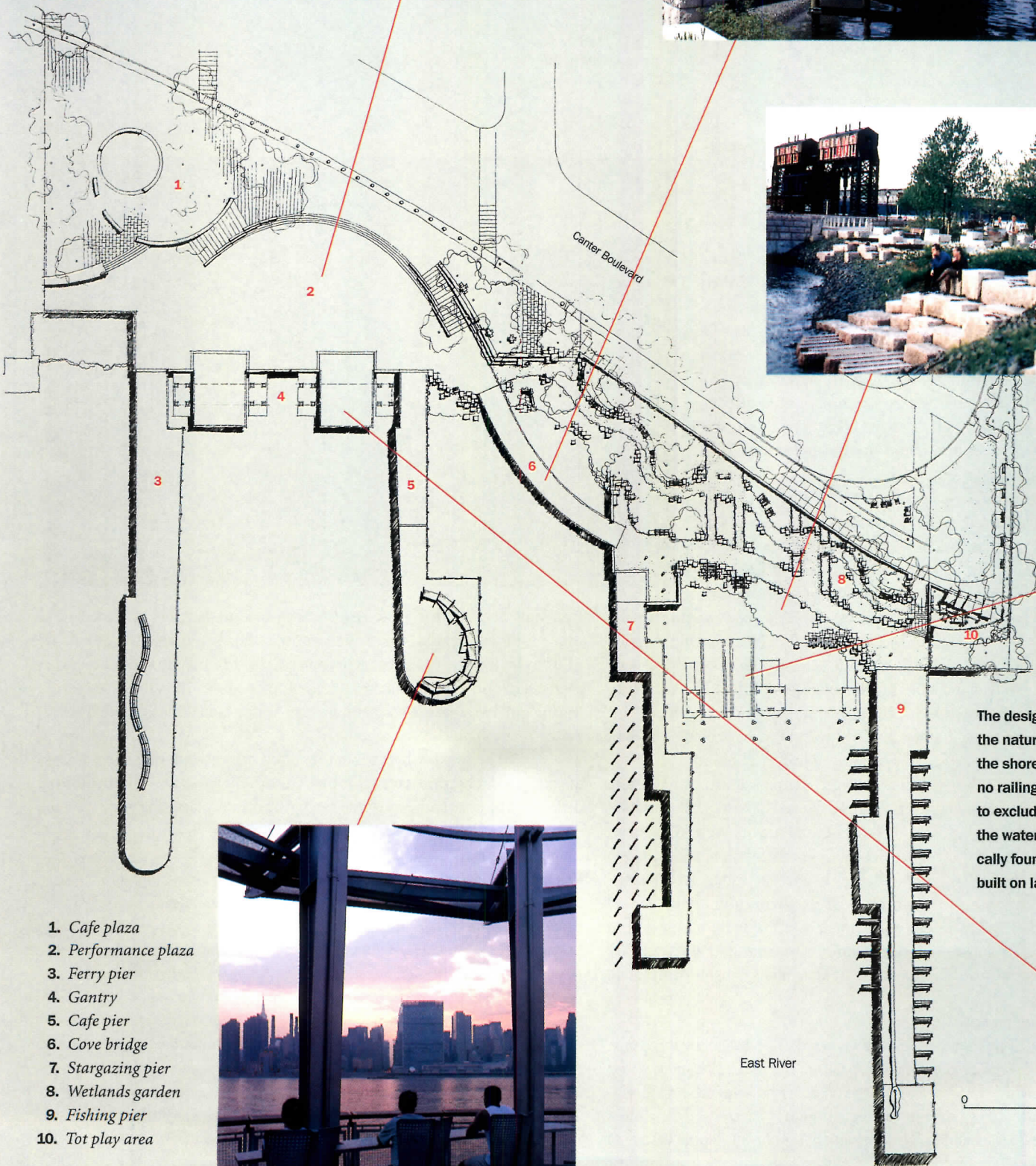
Project: Gantry Plaza State Park, Long Island City, Queens, New York

Owner and client: Empire State Development Corporation, Frances Huppert, FAIA, senior vice president, design and construction; Queens West Development Corporation; Port Authority of New York-New Jersey; NYC Economic Development Corp.

Landscape architect and architect: Thomas Balsley Associates and Sowinski Sullivan Architects, with Lee Weintraub—Thomas Balsley; Richard

Sullivan, AIA; Lee Weintraub; Samuel Lawrence, Laura Auerbach, AIA; William Harris

Consultants: Mueser Rutledge Consulting (marine engineering); Domingo Gonzalez Design (lighting); Alfridi Associates (waterfront inspection and cost consultants); 212 Harakawa (graphic design); Ralph Applebaum Associates (exhibit design); A. Billie Cohen (horticulture)



- 1. Cafe plaza
- 2. Performance plaza
- 3. Ferry pier
- 4. Gantry
- 5. Cafe pier
- 6. Cove bridge
- 7. Stargazing pier
- 8. Wetlands garden
- 9. Fishing pier
- 10. Tot play area

The design fully exploits the natural contours of the shoreline. There are no railings or seawalls to exclude people from the water, as are typically found at parks built on landfill.

East River

N ←

0 50 FT.
15 M.

The south gantry (below) is located in the midst of the interpretive garden. Its rails, set in native grasses, recall the site's appearance after being

abandoned. The north gantry (bottom) can be used as a performance space; the steel structure is a proscenium arch with a skyline backdrop.



A coexistence of opposites

The park is divided into two parts: North Gantry Plaza, made of open space, and the softer, more organic South Gantry Interpretive Park, whose scale is broken down by a patchwork of walks and plantings. North Gantry Plaza is paved in granite, with steps and retaining walls that are formed in arcs among mature shade trees. A circular fog fountain just inside the park would make a perfect venue for telling spooky tales on chilly fall nights. A few steps away at a semicircular performance

plaza, it is easy to imagine a Greek chorus performing Sophocles, or kids playing kick the can. The looming north gantry forms a proscenium arch, with the skyline of the city acting as its backdrop, and can be used as a stage. The northernmost pier has a long, sinuously curved bench with back-to-back seats where commuters will one day wait for the ferry, once service is reestablished. Just south of the gantry is the cafe pier, where in the future food service will join permanent tall metal stools and an arc-shaped counter, all covered by a metal canopy.

Today, visitors can enter the South Gantry Interpretive Park by crossing a curved, open-grate metal bridge that spans a cove where marsh plants grow in shallow water, or by walking over a gravel path that leads through an interpretive garden. Here, native grasses and shoreline plants have been reintroduced to give a sense of what the river's edge might have been like before it was industrialized and after it was abandoned—some of the plants grow up between lengths of rusty railroad rails and large stone blocks, reminders of abutments that for decades were the traditional foundations for railroad structures in the region.

A third pier, off the south plaza, has the most romantic quality of any space in the park. Named “the stargazing pier” by the designers, it is dimly lit at night, allowing visitors to recline on overscaled chaise longues and observe the Manhattan skyline undeterred by nighttime glare. A fishing pier to the south is equipped with a long wooden bench that undulates like a wave and terminates at the “fish or cut bait table,” a flat, puddle-shaped slab, complete with a faucet that supplies water to a gutter that runs its length for fish cleaning. It also makes a great place to strike up a conversation.

Getting respect

A public project's success can't always be measured by just the presence of people. “Folks generally tell you more by whether they show up to enjoy it or abuse it,” says Balsley. After two years, Gantry Plaza State Park shows nothing but kindness from its users. There is no graffiti, no broken equipment, no glass shattered in anger. It must be working. ■

Sources

Stone: Castalucci Stone International
Metalwork: West Field Sheet Metal
Exterior lighting: Bega Lighting;
Kilark Lighting

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By breaking the building into a series of distinct forms, the architects reduced its apparent bulk. The curving yellow drum helps draw visitors to the center of the mid-block site.



Michael Wilford inserts a spatially complex MUSIC SCHOOL AND CINEMA into the historic heart of Mannheim, Germany.

By Hugh Pearman

Tn the city of Mannheim street names mean little, where they exist at all. Built on a supremely rationalist 18th-century rectilinear grid, central Mannheim is contained within the circle of the city's original fortifications. Instead of using street names, this part of Mannheim is organized by blocks, each one given a grid reference, neatly mounted on a blue-and-white-enameled plate. Set in the thick of the city—at block N7—Michael Wilford and Partners' colorful new music school and cinema fills a gaping hole in the urban fabric.

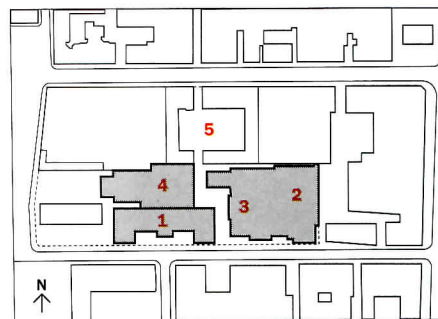
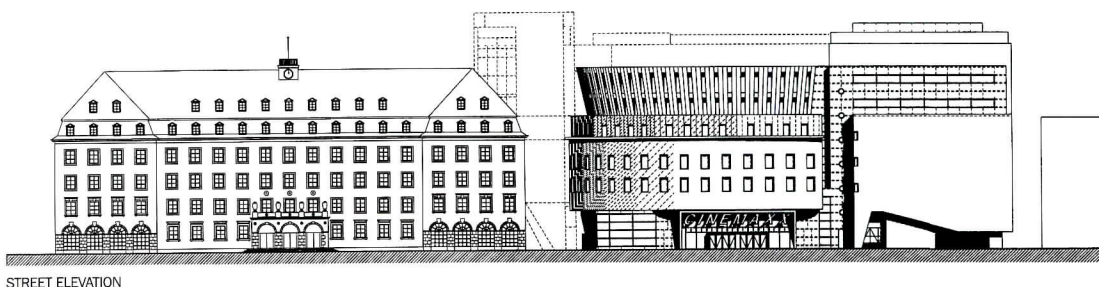
Mannheim is an important industrial town, in the very center of Germany and by extension Europe, at the confluence of two mighty rivers, the Rhine and the Neckar. It was a vital center of Albert Speer's armaments production program for Hitler. Consequently, it was a prime target for Allied bombing and was mostly destroyed by the end of World War II. Postwar reconstruction adhered faithfully to the original block plan, but, although worthy, the new architecture has been mostly dull until recently. Nevertheless, as with Frankfurt to the north and Stuttgart to the south, things are changing rapidly.

An Anglo-German architecture firm

Michael Wilford has been active in Germany since he and his late partner, Sir James Stirling, won a 1977 competition for the celebrated Stuttgart Staatsgalerie. Opened in 1984, the Staatsgalerie received rave reviews and led to a steady flow of German commissions, including a music school and other arts buildings nearby. His is now a true Anglo-German practice, with an equal number of staff in each country.

In Stuttgart, Wilford has designed nearly an entire cultural quarter in phases over many years, but in Mannheim his task was very different, requiring high-density, small-footprint urban infill. The available site occupied only a fragment of block N7: On one side was the existing music school, housed in the grand but conservative former 1920s headquarters of electrical engineering and electronics firm Siemens.

Hugh Pearman is the architecture and design critic of London's Sunday Times and the author of Contemporary World Architecture, published by Phaidon Press in 1998.



1. Old music school
2. Cinamaxx
3. New music school
4. Future concert hall and terrace
5. Future passageway

Behind the site was a large, blank-walled supermarket. And on another side was a water-filled hole in the ground where a private developer had gone bust.

For the Music School and Cinamaxx, Mannheim's city development director, Siegfried Kendel, organized an unusual partnership of both the public and private sectors. First, Kendel brought in a commercial developer to build the whole complex as one package following Wilford's design, including the music school (and its affiliated dance academy) and

Project: Music School and Cinamaxx, Mannheim, Germany

Architect: Michael Wilford and Partners—Michael Wilford, principal-in-charge; Gudren Ahrens, Darren Capel, Stephan Gerstner, Klaus Grübnau, Mark Jeffs, Alison McLellan, Stuart McKnight, Ian McMillan, David Reat, Sven Schmedes, Manuel Schupp, Charlie Sutherland, Karen Waloschek, project team

Engineers: Wayss & Freytag (structural); KHS-Plan (mechanical and electrical)

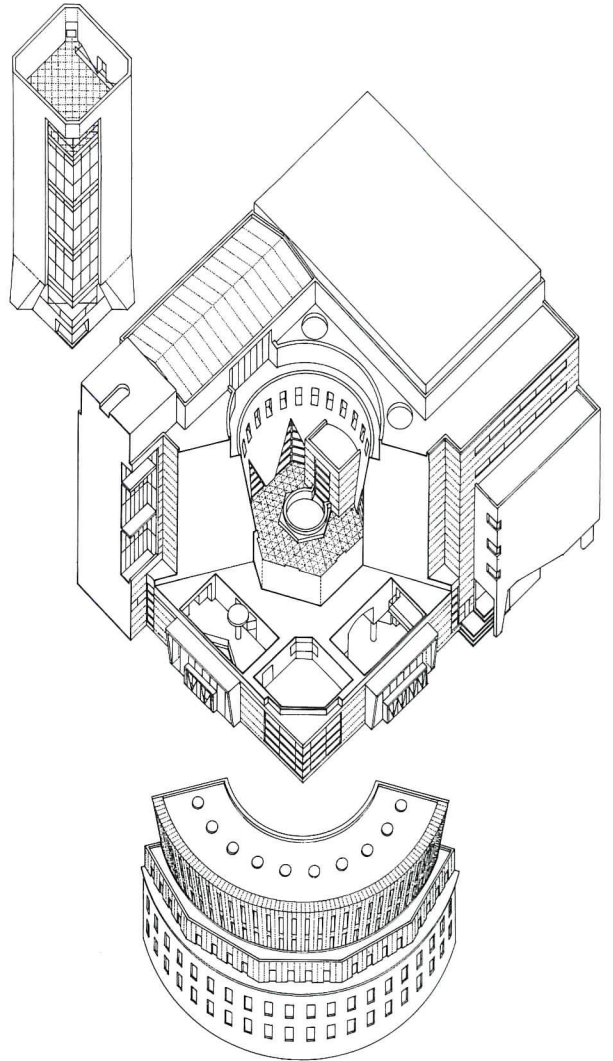
Consultants: Dr. Westphal (acoustics); Manfred Haas (fire); ITA Wiesbaen GmbH (building physics); Angela Bezenberger (landscape); Trischler & Partner (soils)

Project manager: BOP Gesellschaft für Bauoptimierung

General contractor: Wayss + Freytag AG

Different geometric forms give individual identities to various components: a yellow drum houses lobbies, a copper-clad rotunda embraces the music

school, and a white tower accommodates the dance academy (this page). The dance tower (opposite) recalls Stirling's Leicester Engineering Building.



AXONOMETRIC





a 10-screen, 35,000-square-foot multiplex for the Cinemaxx chain. Then, after construction was completed, the city bought back the music school, leaving the multiplex cinema privately owned and operated. Architecturally, the cinema and music academy interlock: seldom are popular and high culture so intertwined.

Approaching the project on its streetside, you observe Wilford's compositional game slowly emerge from the adjacent buildings. The pale blue stuccoed elevation of the cinema block fits into the streetscape, with its entrance set back a few feet from the street. A 1,080-square-foot cinema cafeteria occupies the corner, but above it, sits a great yellow drum, sweeping the bulk of the complex into the heart of the site, where the music school entrance shares a courtyard with the existing 1920s building.

Layering the building vertically

The deeper into the site the building extends, the higher it goes. The rotunda of the music school, which in plan is firmly engaged with the L-shaped cinema component, is layered vertically: the yellow drum forms a base, a faceted floor emerges from the drum, and an outward-leaning metal-clad cone crowns the composition. By stacking a series of discrete

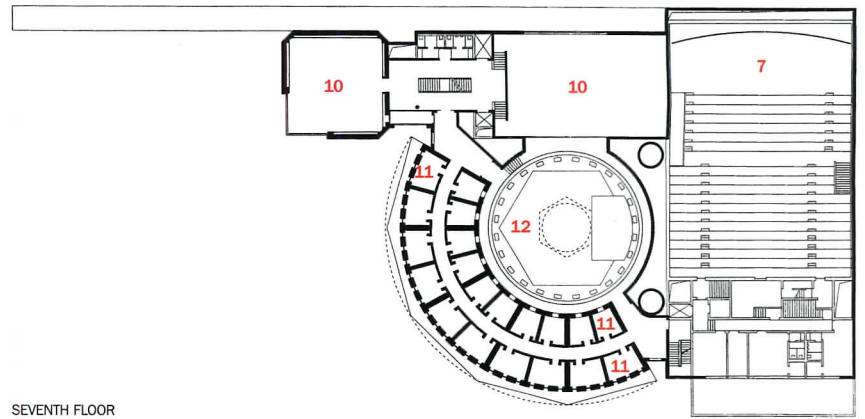
forms, Wilford picks up the cornice line of the old Siemens building and reduces the apparent bulk of his new 149,000-square-foot structure. Set back farthest from the street and rising above the rest of the arts complex is a final component, a dance academy expressed as a white rectilinear tower.

Deceptively simple in plan, Wilford's scheme took some spatial maneuvering to achieve. No simple party wall separates the cinema from the academy. Instead, there is an interweaving of volumes, with the largest ballet studio above one of the cinemas and emergency escape stairs for the cinemas sliding behind the studios and leading into a central academic courtyard at ground level. The new music school also enjoys a circular court on the fourth floor of the rotunda. A large glazed oculus in the floor of this private, elevated courtyard brings daylight to the cinema lobbies below. Tantalizing visual connections between the lobbies of the school and the cinema are established, enabling the two communities to glimpse each other through clear glass, but not to touch or speak.

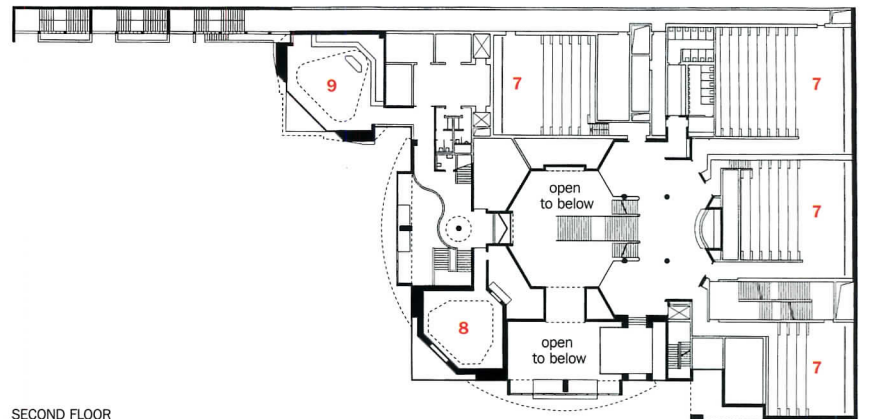
Space is tight, so the school's lobbies are smaller than the cinema's, which must accommodate up to 2,600 people in its 10 auditoria. Even so, two outdoor rooms for the school add a sense of luxury: a fourth-floor circular court with sloping walls clad in patinated copper

The music school overlooks an inner circular court enclosed by a copper-clad rotunda (below). An oculus in the court brings daylight down to the

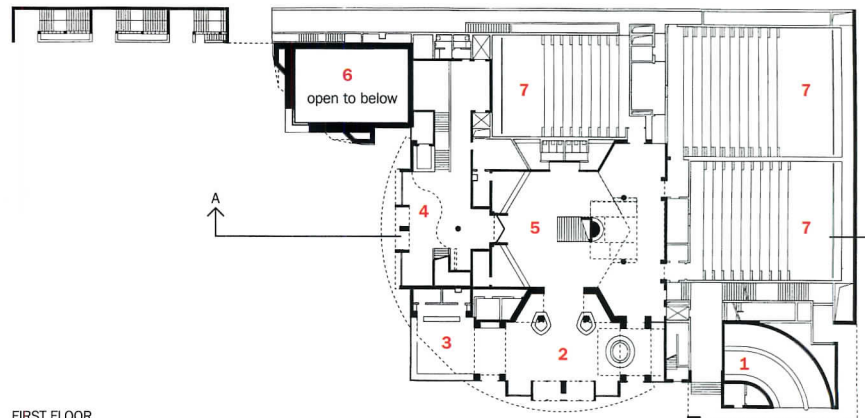
cinema lobbies below (bottom). A dance studio on the top floor of the rectangular tower offers good views of the surrounding city (opposite).



SEVENTH FLOOR



SECOND FLOOR



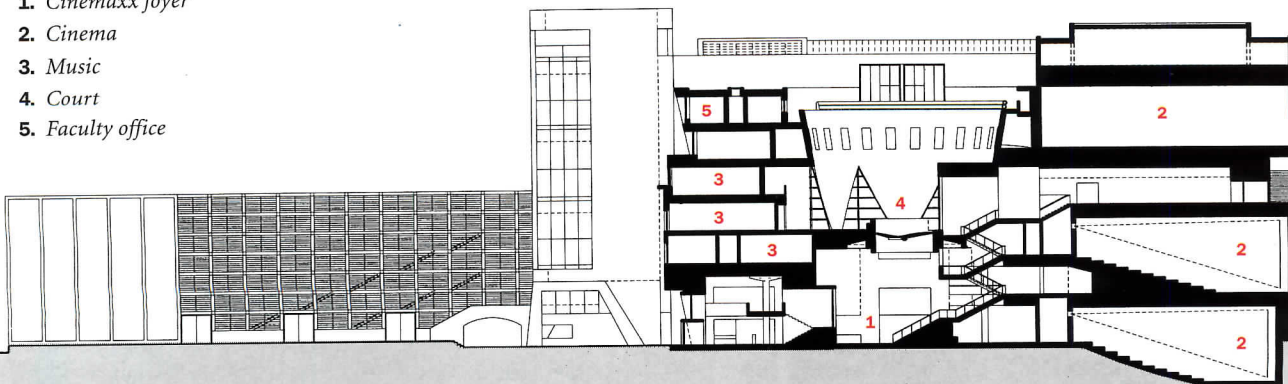
FIRST FLOOR

0 30 FT.
9 M.

- | | |
|-----------------------|--------------------|
| 1. Parking entrance | 7. Cinema |
| 2. Cinemaxx lobby | 8. Music |
| 3. Cafeteria | 9. Student canteen |
| 4. Music school entry | 10. Ballet studio |
| 5. Cinemaxx foyer | 11. Faculty office |
| 6. Chamber concert | 12. Court |



1. Cinemaxx foyer
2. Cinema
3. Music
4. Court
5. Faculty office



SECTION A-A

Though housed in the same block as the Cinemaxx, the music school has its own entrance and lobby (below). The cinema's

main lobby (opposite) is a grand three-story-high space. The cinema's upper foyer looks onto the school's court (bottom).



and a rectangular rooftop terrace on the dance academy's tower. With its chamfered corners and splayed concrete legs, the dance tower carries faint echoes of Stirling and Gowan's famous Leicester Engineering Building of 1963 (a project that Wilford worked on as a young designer in Stirling and Gowan's office).

Wilford's usual palette of rich colors is evident in the bright-orange mezzanine in the school's entrance lobby, the yellow and blue stuccoed external volumes, and the multicolored window reveals on the top two floors of the rotunda. The curving plans of the music-school floors allow them to be divided into wedge-shaped practice rooms, which enhances acoustics by eliminating reflections. Meanwhile, the dance academy's white tower provides a separate architectural identity and precisely the kind of large rectangular spaces that dancers need for rehearsing and performing.

A small chamber music hall occupies the basement of the tower, but the school lacks the kind of public concert hall that is a feature attraction of Wilford's larger music academy in Stuttgart. However, just such a hall is planned for a future phase of development behind the old school building.

Keeping the highbrow from movie-goers

Popular and high culture demand different interior treatments. While Wilford designed the interiors of the music and dance academy, he controlled only the basic forms of the cinemas spaces. Consequently, the cinemas' commercial decorative treatment is not his responsibility. It seems the cinema operators were afraid this multiplex would be, in the words of the manager, "too elegant." In other words, they did not want customers put off by a highbrow appearance.

With an eye to the future, Wilford designed this project so it could adapt to changing needs. Some fairly radical acoustic tweaking, for example, could turn one or more of the cinema spaces into a recital hall, and an expanded music-and-dance academy could take over the rest of the cinema building. You get the impression that Wilford and Kelner, his city client, are playing a long game. Cinema chains come and go: arts academies have a habit of sticking around.

Already Wilford and his associates have drawn up plans to extend the public areas of the music school deeper into block N7, adding a concert hall and an adjacent terrace behind the old Siemens building and cutting a new public passageway to the street behind the arts complex. One remembers the events that unfolded in Stuttgart—the art gallery competition that led to a music school, then a library, and now possibly even a grand new landscaped public space. Wilford's open architecture, with its clearly expressed separate elements and its commitment to the public realm, seems capable of unlocking the minds of urban planners and municipal authorities in a way that insular, hermetic buildings do not. ■

Sources

Powder-coated metal panels: Bugert, B+P

Prepatinated copper: KM Europa Metal AG

Steel windows: Janssen

Aluminum windows: Wicona

Sound-control doors: Neuform-Türenwerk

Perforated plasterboard: Jaeger Akustik

Dance-studio flooring: Braig

Interior ambient lighting: Zumtobel Staff, Lemgo

Interior downlights: Louis Poulsen + Co.

Cupboard walls: Simon Schreinerwerkstätten

Elevators: Electronic Lift Thoma

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JULIA ROBERTS HUGH GRANT
Notting Hill

Ebene 4
WC

Underneath the Teflon-coated glass-fiber roof of Richard Rogers' Millennium Dome is Zaha Hadid's steel structure clad in glass-fiber-reinforced polymer panels.



ANALYSIS: Getting inside Zaha Hadid's MIND ZONE proves it's the spectacle of choice at the Millennium Dome.

By Deyan Sudjic

Britain's prime minister Tony Blair is still reeling from the savaging that his lottery-funded \$1.5 billion Millennium Dome has had since its troubled opening on New Year's Eve. Even though Richard Rogers' dome—actually a cable-supported tensile structure—was originally hatched by Blair's Conservative predecessors, it has come to be seen as a politically charged starting point for Blair's re-election campaign [December 1999, page 78].

Intended to reflect glory on Blair's administration, the Dome simply couldn't get it right. Either it was so full that paying visitors had to wait in line two hours to see any exhibitions they judged worthy, or the dome was so empty that the predictions of 12 million visitors a year seemed unlikely to be met. The content earned special abuse. It was simultaneously far too lowbrow—and far too high falutin'.

To find Zaha Hadid's first major architectural work in Britain in the middle of all this comes as something of a shock. There it is, right next to the McDonald's-sponsored performance stage, a regrettable structure that bears an uncomfortable—and entirely deliberate—resemblance to a jester's hat.

Hadid has built a three-level structure that looks big enough and striking enough to hold its own as a building. It could be a midsize art gallery, and with its battery of internal lifts, heavyweight structural steel, and translucent cladding, it certainly looks built to last. But despite its 16,140 square feet, it isn't a building. It's an exhibit, and when the dome eventually closes its doors, it is likely to be torn down. Hadid's zone,

one of 14 zones commissioned for the dome, is dedicated to an exploration of the mind. And in among the failing interactive displays and the schlock of a state-sponsored attempt at fun—always likely to be a queasy compromise between education and half-baked spectacle—Hadid has come closer than most to keeping control, not just of the architectural composition but of the content, too. More to the point, she has maintained a sense of aesthetic integrity. She has not suffered in the way that Eva Jiricna has. Jiricna's elegant white structure on the other side of the Mind Zone from McDonald's has been fatally compromised by a crude and condescending installation on comparative religion, designed by others. Hadid, on the other hand, kept a tight hold on the Mind Zone content almost to the last moment.

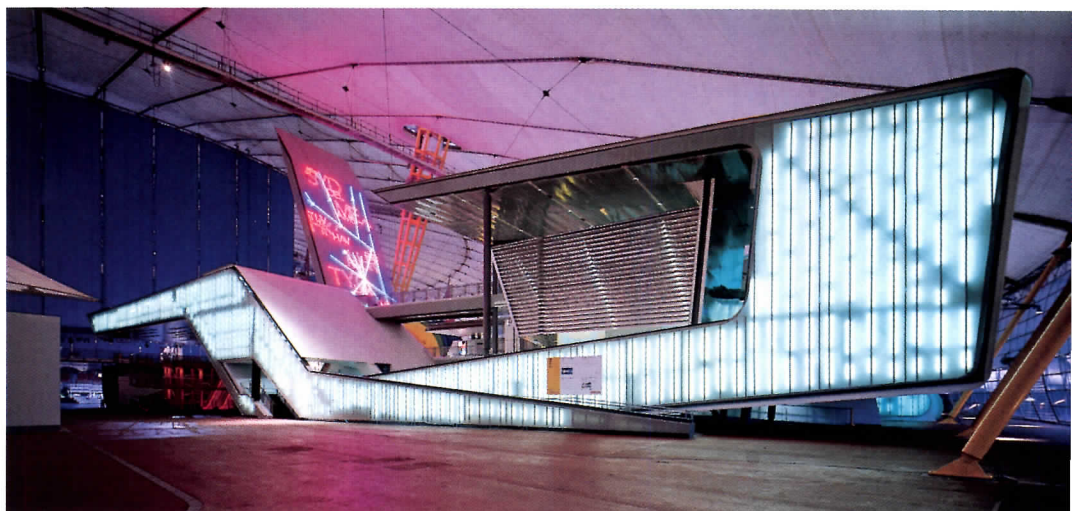
For Hadid, the initial problem was how to represent the mind when its physical manifestation—the brain—is an inadequate signifier of its complexities. Working with art collector Doris Lockhart-Saatchi, Hadid commissioned a number of artists to create site-specific installations exploring various aspects of the mind. Richard Deacon marked the entrance with "How much does your mind weigh?"; a piece made up of 24 interlocking wood cells. Langlands & Bell have made a giant neon wall of airport codes. The pavilion was conceived as a journey through and around these installations that explore both art and science. "Nothing is hermetically sealed, so neither art nor science is seen in isolation, without other

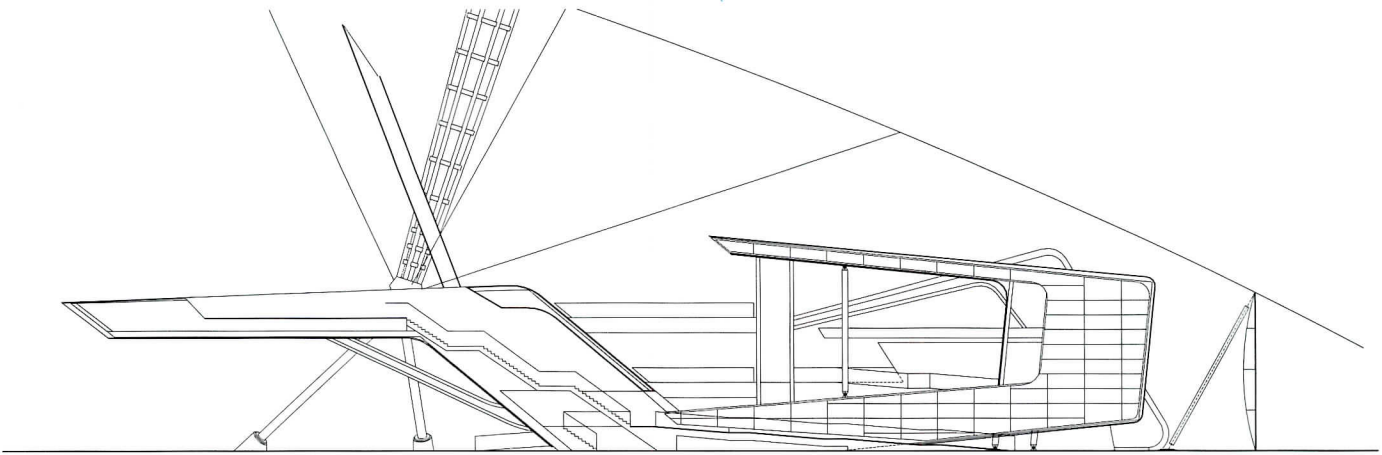
Deyan Sudjic, founding editor of Blueprint, was director of "Glasgow 99, UK City of Architecture" and is architecture critic for the London Observer.

Project: Mind Zone, Millennium Dome, Greenwich Peninsula, near London

Client: New Millennium Experience Company

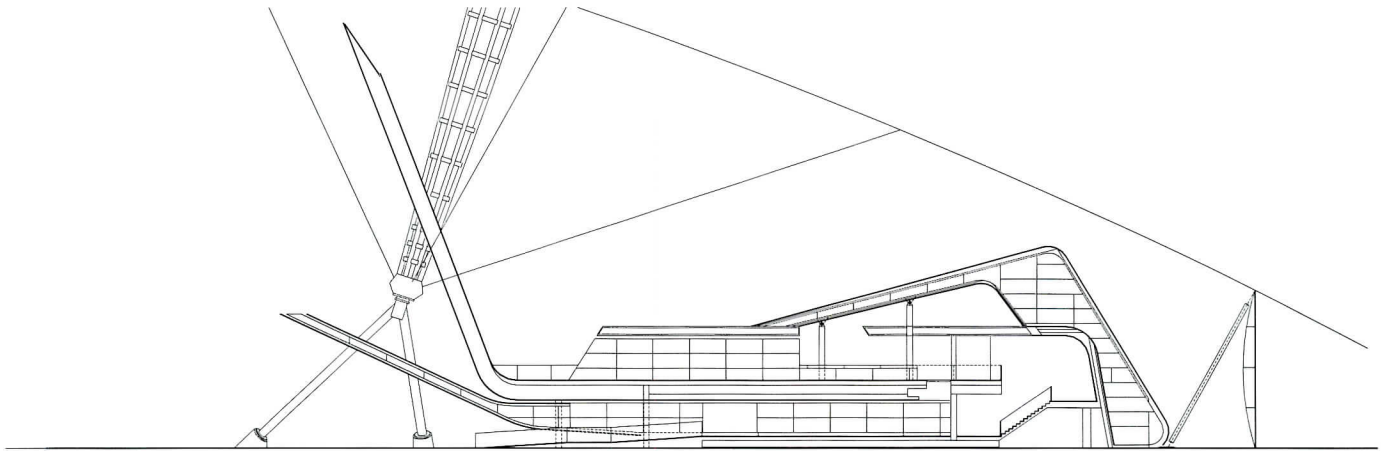
Architect: Zaha Hadid Ltd.—Zaha Hadid, design architect; Jim Heverin, project architect; Ana Sotrel, Graham Modlen, Christos Passas, Jon Richards, Paul Butler, project team; Patrik Schumacher, Barbara Kuit, Graham Modlen, Oliver Domeisen, curatorial team





SECTION A-A

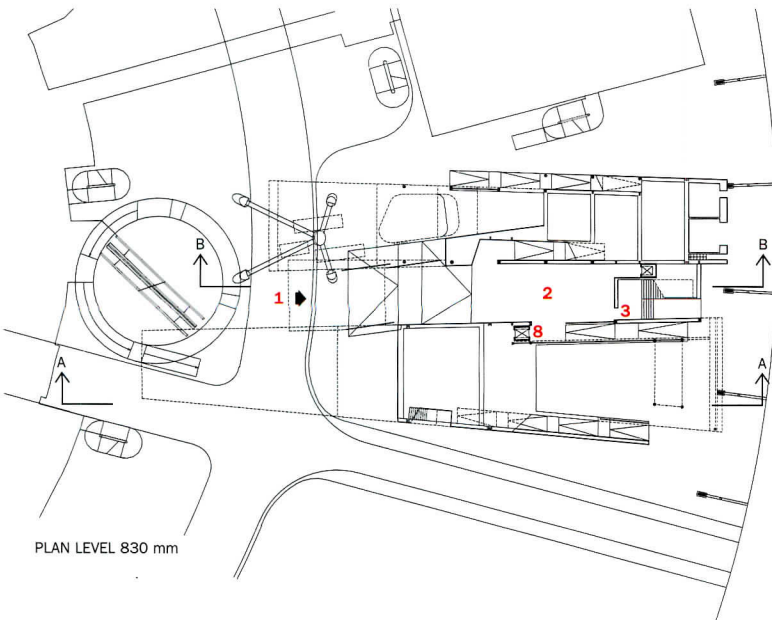
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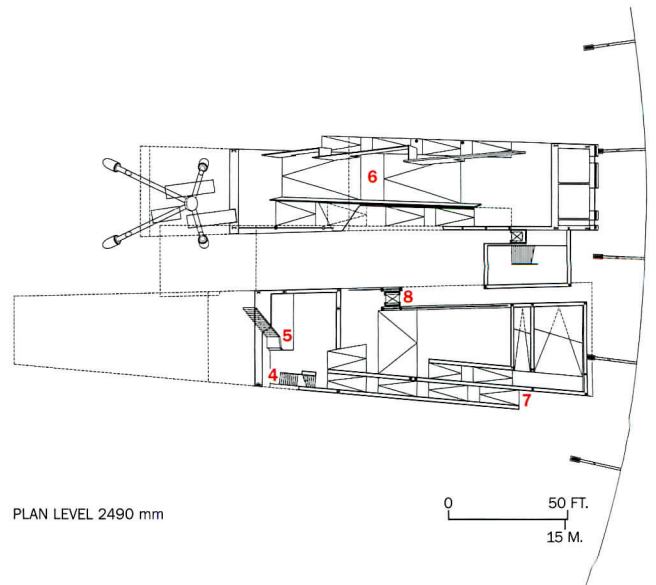
SECTION B-B

- | | |
|---------------------------------|---|
| 1. Entrance | 5. Stair up |
| 2. "What is a Mind?" exhibition | 6. "Perception and Illusion" exhibition |
| 3. Emergency exit | 7. Exit ramp |
| 4. Exit stair | 8. Elevator |

The 16,140-square-foot steel-framed pavilion uses timber-composite secondary trusses. The art installations, such as Ron Mueck's sculpture of a crouching boy (opposite), are placed within the ramped structure according to themes relating to cognition and perception.

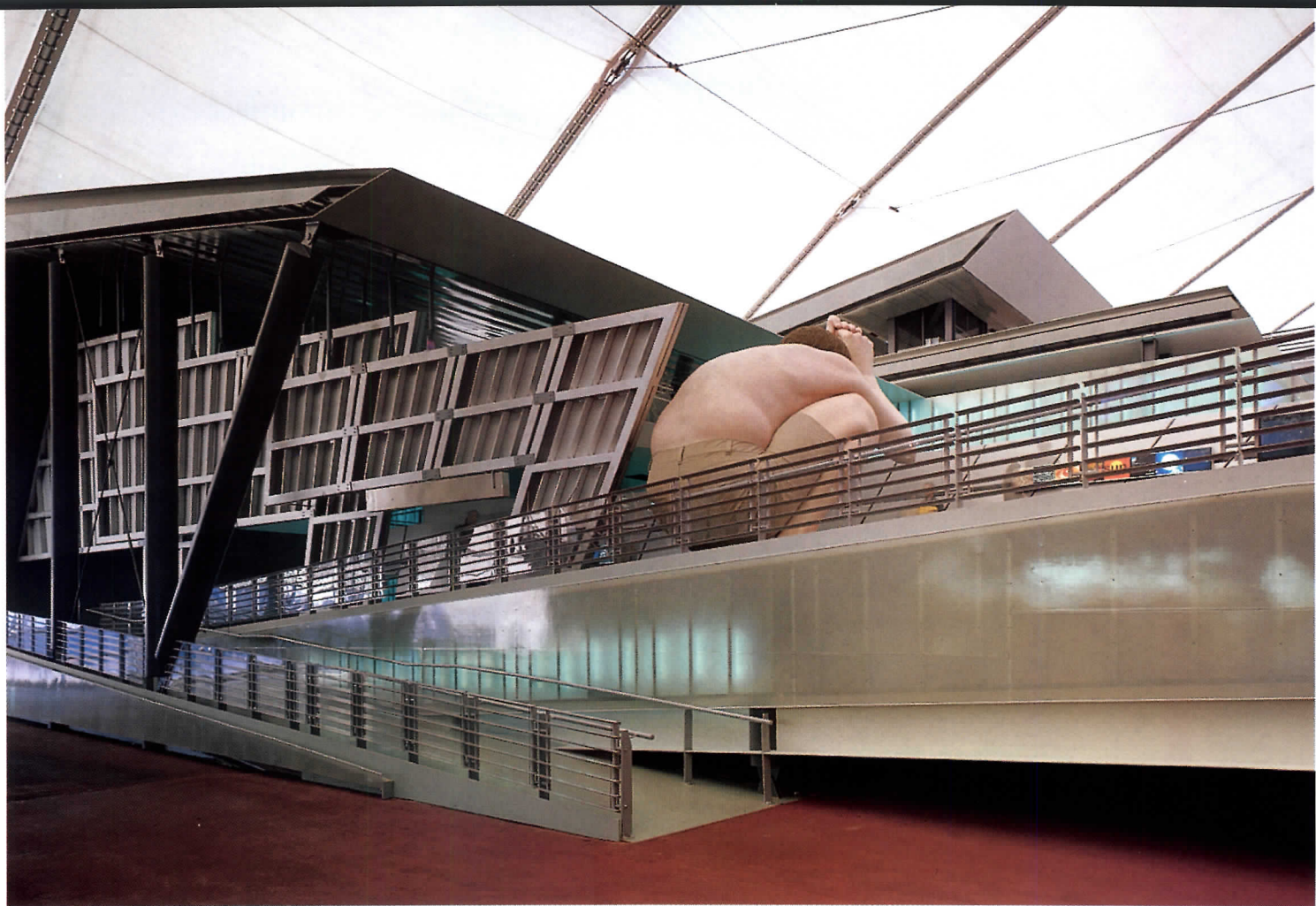


PLAN LEVEL 830 mm



PLAN LEVEL 2490 mm

0 50 FT.
15 M.



frames of reference,” says Hadid. “Their very juxtaposition in the exhibit allows neither discipline the entitlement to a position. This takes away boundaries associated with both. The audience is free to explore the propositions and come to its own conclusions.” That, at least, was the intention.

And the project very nearly comes off. As you follow the journey that Hadid has devised, you can for a moment forget where you are and experience a series of thrilling spaces and views. The structure is big enough and bold enough to stand up to the potentially overwhelming scale of the dome itself, which reads not so much as an overarching sky, but as a giant, attention-grabbing presence. The Mind Zone also holds up against the cluttered, haphazard, chaotic jumble of competing zones.

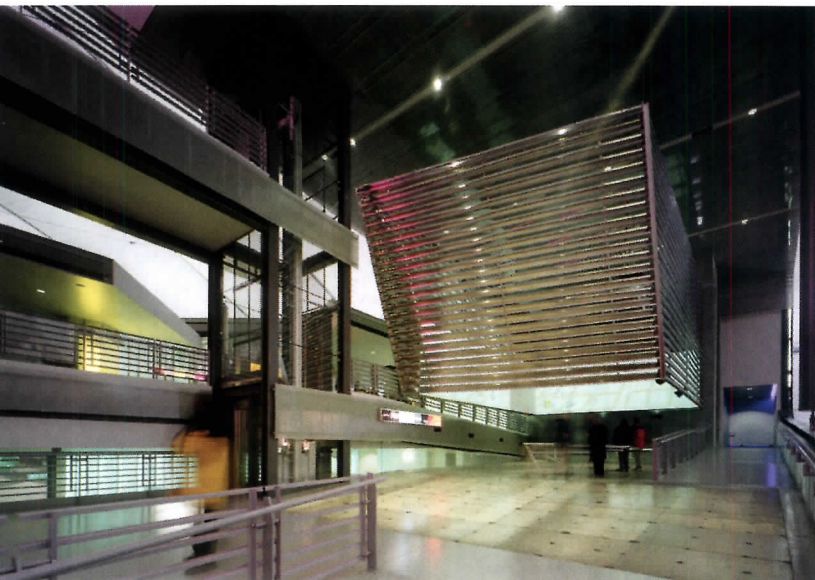
Through a shimmering curtain of back-lit, glass-fiber-reinforced polymer panels and translucent epoxy resin sheets, the dynamic structure zigzags back and forth in a series of dramatic leaps. You are sucked in through an entrance ramp, under the spreading shelter of

YOU CAN EXPERIENCE A SERIES OF THRILLING SPACES AND VIEWS AS YOU FOLLOW HADID’S JOURNEY.

Deacon’s wood-cell sculpture. In the distance, you see a robot zoo. Then, the sloping ramps that drive you through the building take a sharp twist to the right, and you find yourself underneath a dizzying projection screen, showing a video by young Royal College of Art graduates who call themselves New Renaissance, offering yet another tribute to powers of 10. The ramp then shoots forward toward the center of the dome and offers a grandstand view of the huge void at its heart.

The procession of spaces moves on, past a giant sculpture of a crouching boy by Ron Mueck, through a sound room and doubles back





past a series of morphing screens, before taking you back down toward the floor. For an art gallery, it would be too energetic, and the presentation of the work has the effect of denying its artistic quality. From the way it is captioned and illuminated, it could be just another exhibition installation. But this is not an art gallery, and with the Dome's enormously ambitious goal of attracting 12 million visitors during the year, it could only attempt to offer a less subtle experience.

The preliminary design emerged from a model made by bending a strip of Perspex into a continuous structure of floors, walls, and ceilings; the result provides a fluid journey through a sequence of glass-fiber-reinforced polymer ramps and planes that seem to fold over each other. There is also a steep, cantilevered, ladderlike wall, 25 meters (82.5 feet) long, and a cantilevered bridge, 33 meters (109 feet) long.

Some of the conceptual ideas are very strong indeed. A series of epoxy-resin tubes winds its way through the pavilion, in which a colony of giant leaf-cutter ants, half a million strong and specially imported from Trinidad, has been installed. The colony, intended as a demonstration of social organization, has resolutely refused to emerge into view. Elsewhere, software glitches occur.

HANDRAILS THAT OWE NOTHING TO HADID HAVE BEEN INSTALLED EVERYWHERE AND SHARP EDGES BOXED IN.

Still more troubling has been the collision between Hadid's flashy architecture and the efforts by health and safety officials to defuse the structure's aesthetically explosive qualities. Handrails that clearly owe nothing to Hadid's design have been installed everywhere. The sharp edges have been boxed in with what looks like plywood, and slots in the translucent, internally lit, glass-fiber-reinforced polymer panels covered over, presumably to prevent the fingers of small children being thrust in them.

Toward the end of the installation process, when voters' positive reaction to the Dome became less certain, politicians hit the populist button as hard as they could. In response, the dome organizers insisted on taking a hand in the content on a more detailed level, in a way that fights with the exhibit's design and with Hadid's approach.

Don't forget, however, that it's not just Britain that can mess up these things when it come to expos. Think about New York's World's Fair in 1964—Robert Moses' less-than-happy swan song. Given the Expo's difficult task to assimilate so many conflicting viewpoints, Hadid has worked wonders in the most trying of circumstances, despite all the tampering. If only the Mind Zone could be liberated from its surroundings. ■

Credits (continued):

Artists/Exhibit Collaborators:

Neville Brody (Research Studios), Richard Brown, Nancy Burson, Brian Butterworth, Helen Chadwick, Hussein Chalayan, Richard Deacon, Escape, Ryoji Ikeda, Herbert Lachmayer (with Matthias Fuchs and Sylvia Eckermann), Langlands & Bell, Ron Mueck, New Renaissance, Urs. B. Roth, Gavin Turk

Engineers: Ove Arup & Partners (structural and building services)

Consultants: DCAB (cladding design); Hollands Licht (lighting)

Construction manager: McAlpine

Laing Joint Venture

Contractor: Hypsos Expopartner

Sources

Tensioned membrane for

Millennium Dome: Birdair

Steel: Watson Steel (contractor)

Glass-fiber-reinforced polymer

panels: SP Offshore

Epoxy-resin sheet wall panels:

SP Offshore

WWW For more information on the people and products involved in this project, go to **Projects at:** www.architecturalrecord.com

The Dome's steel masts shoot through the pavilion, dramatizing the entrance (below), while surfaces of epoxy resin and glass-fiber-reinforced panels give corridors, bridges, and elevators (opposite) an eerie glow.



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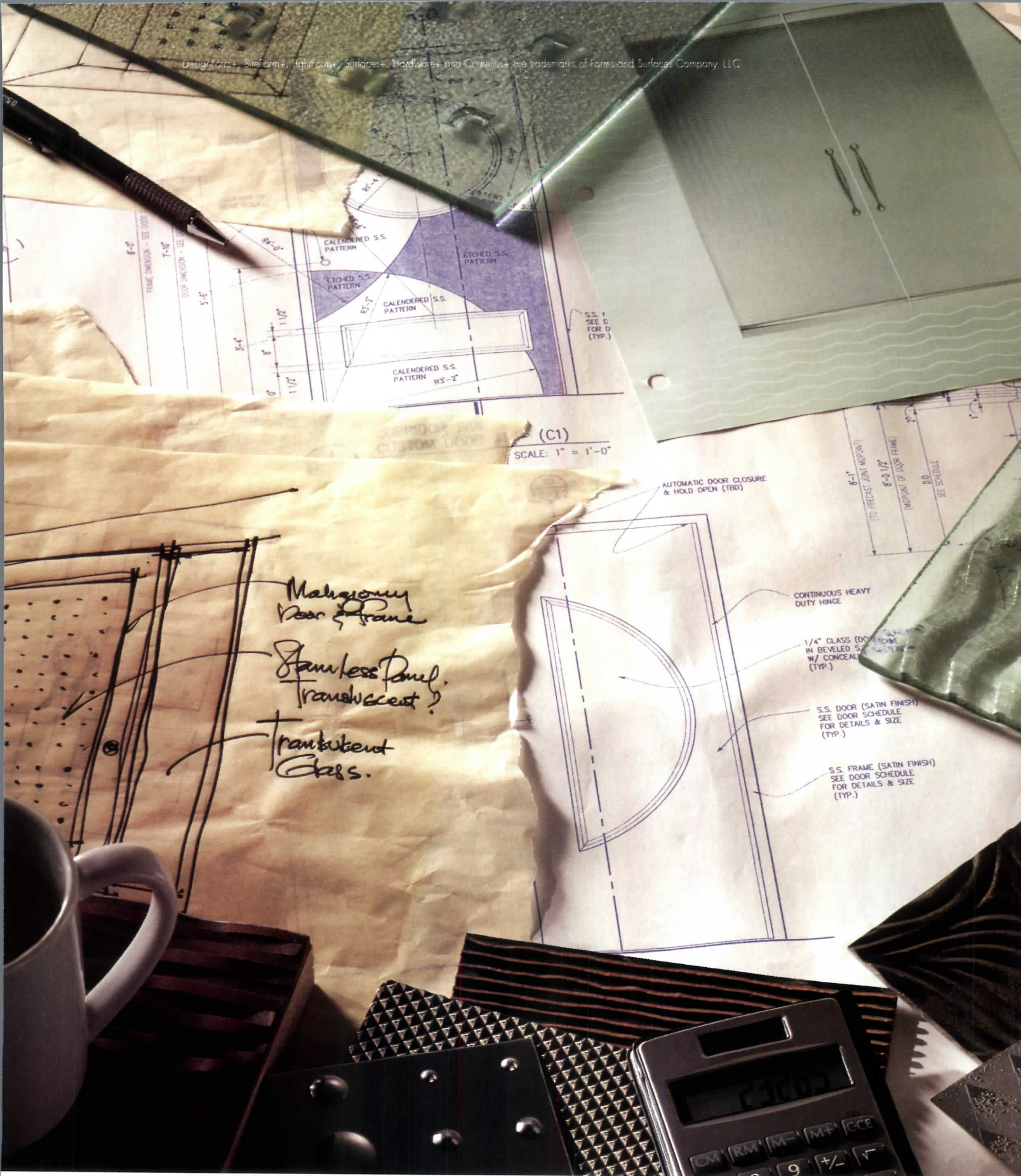
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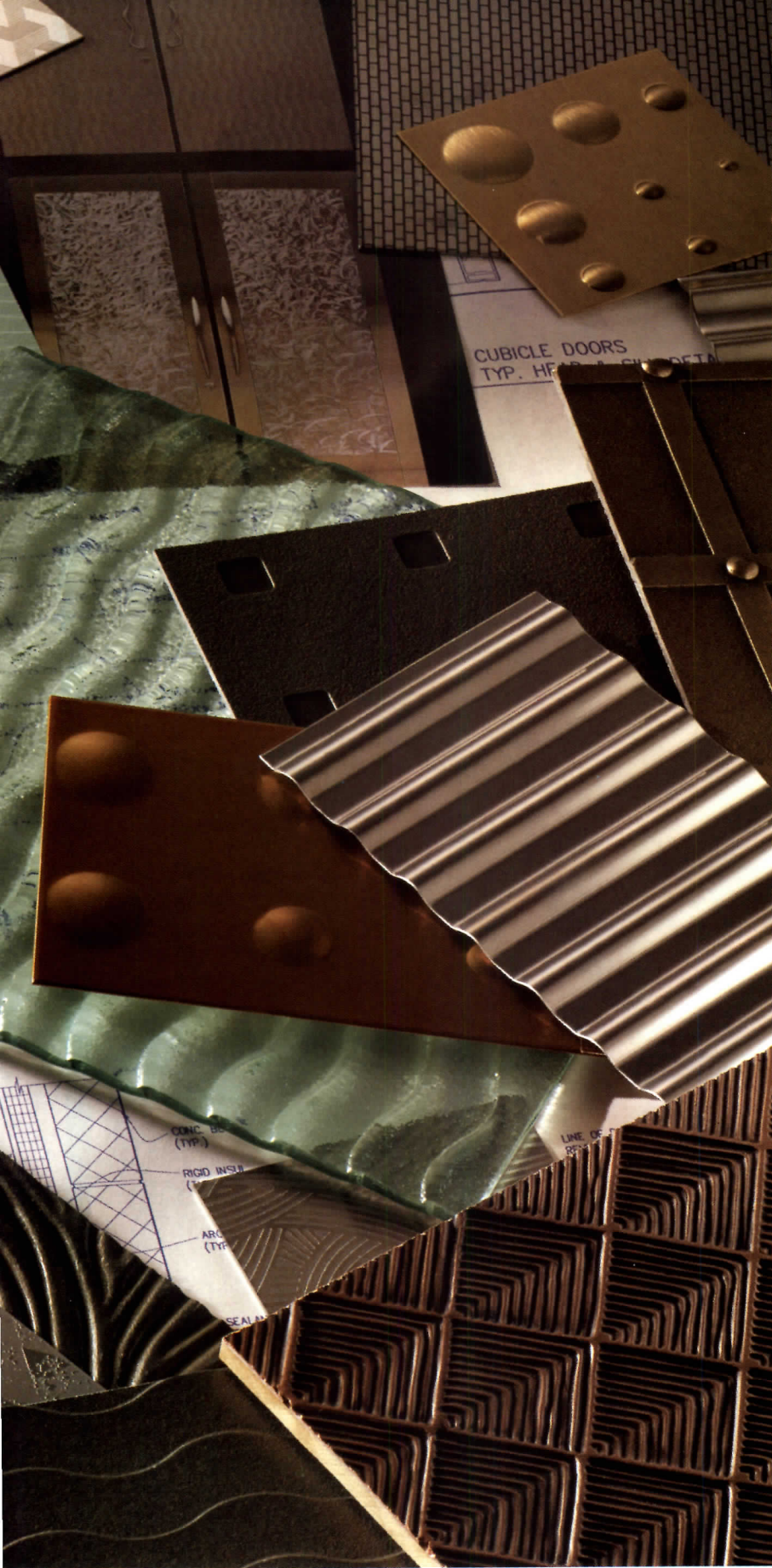
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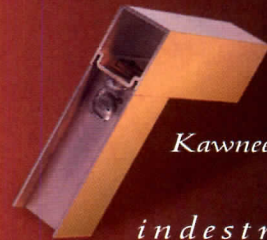
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TRANSIT STATIONS

Engineering Civility

LONDON UNDERGROUND'S 11 NEW JUBILEE LINE STATIONS EVOKE MYSTERY AND WONDER BY FUSING ARCHITECTURE AND CIVIL ENGINEERING.

By James S. Russell, AIA



1.

Bermondsey

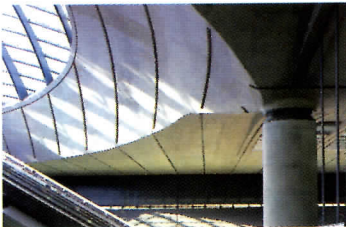
Ian Ritchie builds a glassy ticketing pavilion that gives way to a subterranean shadow world.



2.

Canada Water

The Jubilee Line Extension Architects draws together two rail lines and a bus station with a glass pavilion that beckons from afar.



3.

Canary Wharf

In a concrete bathtub set in East London's watery docklands, Foster and Partners creates monumental splendor.



4.

North Greenwich

Alsop & Störmer conjures a world of high-tech twilight in the shadow of London's Millennium Dome.

At Canary Wharf, passengers headed to the new extension of London Underground's Jubilee Line step onto a bank of escalators under the graceful curve of a glass-panel canopy. As they glide down to the ticketing level, a space of Basilican scale and calm opens before them, revealing the train platforms, 90 feet below grade. At the North Greenwich station, visitors to the Millennium Dome rise from platforms past what appears to be a stainless-steel boat hull hung between eerily lit walls of translucent-blue glass. At Bermondsey, fingers of daylight stab the platform edge through a web of beefy concrete braces. And at Westminster, escalators and stairs appear to pick their way through a Piranesian network of concrete columns and steel braces.

Ten London-based architects have transformed the prosaic civil-engineering palette of bored tunnels, cut-and-cover retaining-wall boxes, and floor braces into a (mostly) underground experience with qualities the passenger might least expect: wonder, mystery, even rugged beauty. It is no easier to build such complex structures to a high design standard in England than it is in America. The daunting engineering and astronomical per-mile costs of underground rail-transit systems make them a difficult endeavor under the best of circumstances. But boring the 10-mile line beneath a historic city shot through with existing subway lines and the fragile foundations of thousands of buildings can make a shambles of cost estimates and schedules (as indeed, in this case, it did).

Once the concerns of landowners, citizens' groups, and politicians factor in, these kinds of projects, however badly needed, are often shelved as too ambitious. Earlier attempts to build an east-west line along the south side of the Thames River had failed because soil conditions much poorer than those on the north side had added to the usual impediments.

That's why completion of the Jubilee Line has been greeted as something akin to a miracle. One poll registered its popularity as greater



Wall-restraining ribs diffuse daylight in the serene, top-lit hall that greets transferring passengers at MacCormac Jamieson Prichard's Southwark Station.

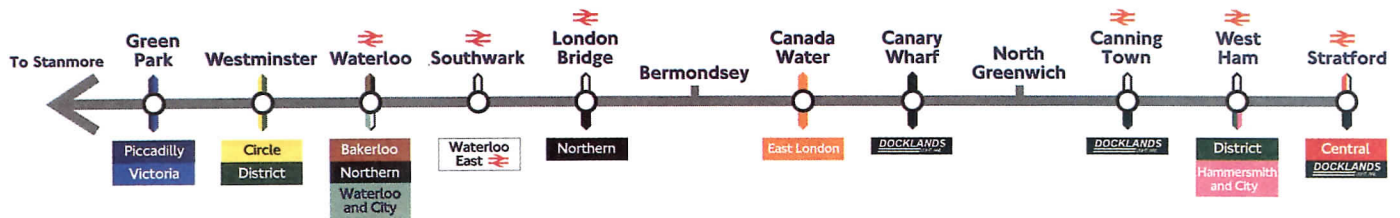
Jubilee line ↘

Jubilee line ↘

← King's Cross
Backflow Pass

Waterloo East →





Left: At Southwark Station, pylon-mounted beacons and stainless-steel panels evoke the orderliness of a submarine.

Below: Seating, signage, and track-edge doors by JLE Architects adapt to each station.

ffects to lead the teams. “Architects look at how to rethink engineering underground,” he says, and he felt they would push engineers to discover more creative solutions. Not just any architects would do: “They had to speak engineers’ language.” At first, Paoletti could not recruit the architects he wanted. London Underground had long ago lost its design luster, asking architects to compete on a fee basis to slap tiles onto concrete boxes. He cajoled. They signed on.

Paoletti also had a clear vision: “I wanted the stations to be a fusion, one in which you could not tell where the engineering ended and

than Richard Rogers’ dome. Nearly everyone involved lauds Roland Paoletti, the chief architect of the extension for London Underground, for making this excellence possible. “He let us rethink things from first principles,” comments Shaun Russell of architect Alsop & Störmer.

RECORD has devoted an entire Building Types Study to the Jubilee Line [see also July 1999, page 114] not only to show the diverse means by which the design teams interpreted their similar yet highly complex assignments, but also to present the equally diverse ways that infrastructure can invigorate rather than (as is too often the case) blight communities.

Paoletti was brought into the project by London Underground in 1990. It had a new chairman, Wilfred Newton, and a new managing director, Dennis Tunnicliffe. Newton and Paoletti were well aware of the challenges—political, financial, urbanistic, and technical—that had to be met to get the extension built. But they had a plan, one that had helped Newton and Paoletti get 36 stations built in 12 years in Hong Kong. “You get the working drawings done and out to tender [bid],” says Paoletti, “By getting money and jobs invested in the project, the government finds it can’t cancel it.”

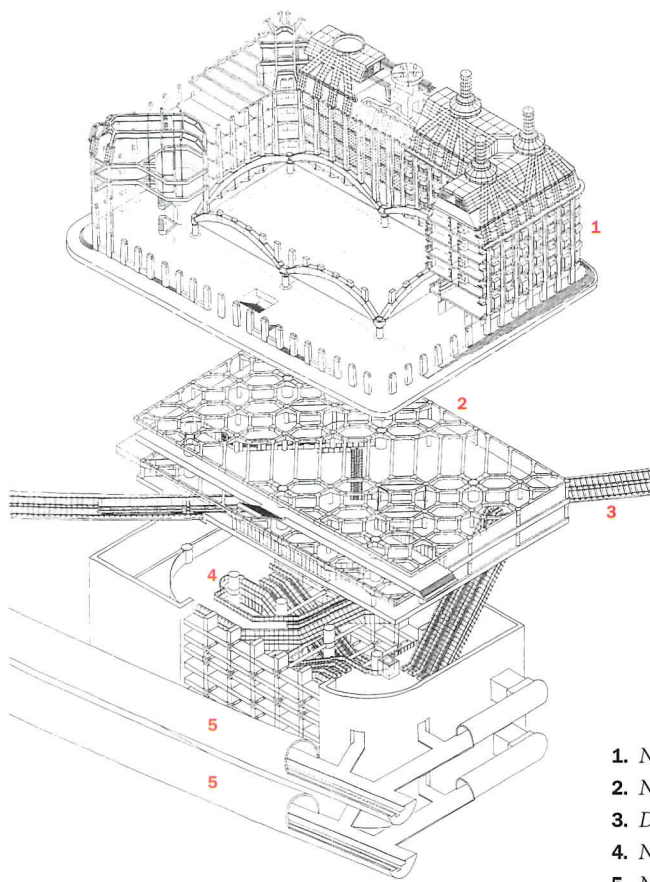
The Jubilee Line was administratively fenced off from the rest of London Underground to get drawings and bids ready in one-third the usual time. Paoletti also formed an in-house group, JLE Architects, to design systemwide elements, which later took on the entire design of two stations. Because of the credibility he had built in Hong Kong, Paoletti was given wide discretion in awarding the design contracts. It would have been typical to add architects to teams led by civil engineers. Too often, Paoletti says, the result is “labyrinthine tunnels, confusing layouts, and formless areas with palliative decorations.” Instead, Paoletti hired archi-

the architecture began,” he explains. “Each station is very different, but the common theme is making architecture of the heavy engineering.”

The impetus for the revival of the project was Canary Wharf, the American-style “new downtown” erected on the former docklands far east of London’s traditional business center, the City. The Docklands Light Railway, added to serve the new office complex, proved woefully inadequate. Olympia & York, Canary Wharf’s developer, promised to defray much of the cost of extending the line to the development.

By 1992, London Underground had bids and working drawings in hand, but the value of Olympia & York’s vast portfolio of properties in





1. *New parliament building*
2. *New structure*
3. *District/Circle Line*
4. *New stair hall*
5. *New Jubilee Line*



Above: The Jubilee Line's in-house-designed signage and lighting systems, used systemwide, hang from a metal-panel-lined tunnel at Waterloo.

Below and top left: Michael Hopkins' Westminster stair hall reveals the engineering viscera undergirding existing lines and Hopkins' Parliament building above the stacked Jubilee Line tunnels.



Right: JLE Architects inserted contemporary elements among Waterloo Station's 19th-century vaults.

Below: Upper-level platforms cantilever from concrete piers in Troughton McAslan's Canning Town Station. Curved glazing protects stairs.

London and America was plummeting, a victim of commercial overbuilding. "The engineers around me were very jittery," says Paoletti. The Jubilee Line became instead the impetus for saving Canary Wharf and spurring regeneration of declining east London neighborhoods. It did not hurt that the bids had come in under budget and that an exhibition of the stations' design—as well as worldwide attention [June 1993, page 120]—brought a wave of public approval. The project went ahead.

The design teams knew in advance that some of the stations posed truly vexing conditions, calling for on-the-spot innovation. At Westminster, simply finding a place to carve a shaft for stairs, elevators, ventilation systems, and escalators taxed the team nearly to the breaking point.

Every proposed solution seemed to Paoletti like the dime-store game where you must tilt a board to nudge five tiny little balls into five equally tiny holes. In this project, he says, "when you got four balls in, the fifth would always pop out." To solve the problem, architect Michael Hopkins threaded stairs and escalators through a Piranesian network of columns and shafts that support a new diagonal grid structure aligned to the overpassing District/Circle Line (which was kept in service even as workmen dug underneath). The new support for the existing line, in turn, formed the foundations for a new Parliament building, also by Hopkins, which is under construction.

The stations at Waterloo (by Paoletti's JLE Architects) and London Bridge (by Weston Williamson, Architect) posed unique challenges, too, as they connected to commuter-rail stations housed under massive 19th-century iron-and-glass train sheds. "In pure engineering terms, these are the last places you should put stations, because they are built under crumbling Edwardian and Victorian vaulting and viaducts," explains Paoletti. He compares the delicacy of construction work required to open-heart surgery. The brick-vault, masonry-arch, and cast-iron architecture of the existing buildings frame the inserted concourses, which are infilled with a contemporary kit-of-parts consisting of cast concrete, glass panels bolted to tubular uprights, perforated metal panels, and direct and indirect lighting.

The all-new stations take far more diverse forms. A drum-shaped entrance leads to an expressionistically curving and inwardly canted masonry and blue-enameled-glass mezzanine in MacCormac Jamieson Prichard's Southwark station—a collaboration of the architect with artist Alexander Beleschenko and YRM/Anthony Hunt engineers. Brooding, backlit pylons beckon passengers to track level.

JLE Architects also completed Ron Herron's design for Canada Water and created key elements common to all the stations, such as new turnstiles, ticket windows, and suspended trays that unite signage, lighting, speakers, and alarms in one linear armature. Each element is in itself an authoritative piece of design that also adapts chameleonlike to the varied station environments. As contractors encountered a spectacular



range of unexpected conditions, the project came slowly and expensively to completion late last fall, in time for the city's millennium celebrations. (The final cost is said to have been \$5.4 billion.)

The success of these idiosyncratic designs comes because the designers listened to Paoletti's dictums, inspired by his mentor, Pier Luigi Nervi. The engineering, says Paoletti, should be "something more than it seems to be." And yet its clarity, with regard to way-finding and engineering, "should put the passenger at ease. Nothing in the architectural fit-out should look added on." Whether the success of the extension will embolden London Underground to take on other additions remains to be seen. The system is scheduled for privatization.

And what will Paoletti do now that his great work is done and he has collected a Cross of the British Empire? "I will stagger into the hospital and get the two new hips I've long needed," he replies. "Then I'll wait. Something will turn up." ■



Bermondsey

Jubilee Line Extension, London

I

IAN RITCHIE BUILDS A LIGHT-FILLED TICKETING PAVILION, WHICH GIVES WAY TO A BROODING, SUBTERRANEAN PLAY OF SHADOW.

By James S. Russell, AIA

Architect: Ian Ritchie Architects—*Ian Ritchie, Phil Coffey, John Comparelli, Simon Conolly, James de Soyres, Toby Edwards, Christopher Hill, Mark Innes, Toke Kharmpej, Ian Montgomerie, Raita Nakajima, Henning Rambow, Paul Simovic, Anthony Summers, Gordon Talbot, design team*

Engineers: *Sir William Halcrow and Partners (civil); Ove Arup and Partners (structural)*

Consultants: *Lighting Design Vienna (lighting); Paul Gillieron (acoustical); Charlie Funke Associates (landscape)*

Construction: *56-foot-deep box excavated for access, connecting to platforms installed in twin-bored tunnels*

Capacity: *4,000 passengers per hour*
Completion date: 1999

Sources

Glass roof: *Seele*

Structural steelwork: *Rowen Ltd.*

Galvanized-steel escape stairs: *Britannia Fabrications*

Double-curved beam: *Van Dam*

Maintenance systems: *Atrium Gantries*

WWW For more information on the people and products involved in this project, go to **Projects at:** www.architecturalrecord.com

Program

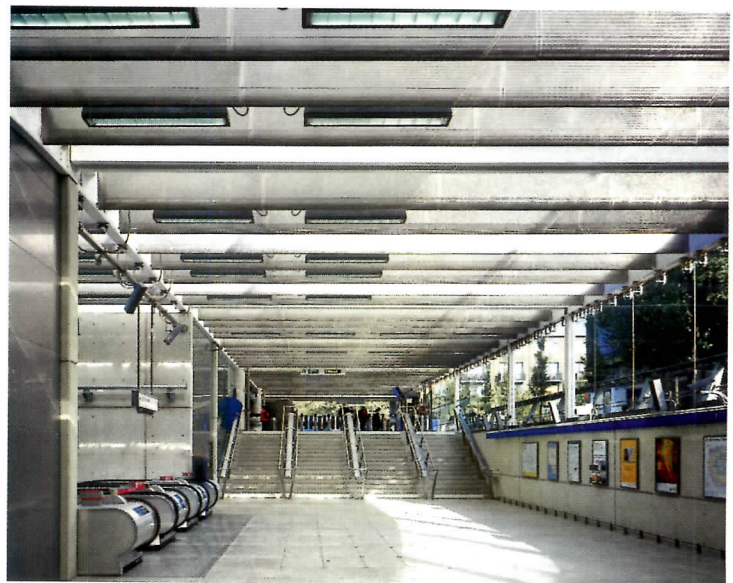
The smallest-capacity station on the Jubilee Line Extension, Bermondsey provides access to a densely populated neighborhood not previously served by the Tube system.

Engineering

The site was too small to dig a pit for the entire station. Instead, drillers brought the tracks to the station in standard 13-foot-diameter tunnels and then bored 23-foot-diameter tunnels to make room for the platforms (bottom). Contractors built a box containing shafts, escalators, elevators, and stairs from the top, casting a horizontal diaphragm slab to hold back the earth. The box was then dug and poured downward, with horizontal braces added to form a massive open-webbed truss. Where additional shafts were needed, they rise above ground clad in copper and swathed in plantings.

Expression

Ritchie is known for elegantly detailed glass walls, and for the entrance pavilion, he designed special clamp-on fittings (top). A translucent-glass roof over the stair hall drives daylight (directed by vertical metal blades under the roof) six stories down to track level. "We made Bermondsey a special station precisely because the environs were not," comments JLE Architects' Roland Paoletti. ■



Daylight sifts through horizontal exposed bracing trusses above the platform, which convey the subterranean force of earth bearing on the shaftway walls.



Canada Water

Jubilee Line Extension, London

2

JUBILEE LINE EXTENSION ARCHITECTS BRINGS TOGETHER RAIL AND BUS LINES WITH A GLASSY PAVILION THAT BECKONS FROM AFAR.

By James S. Russell, AIA

Architect: Ron Herron Associates, preliminary design, executed by Jubilee Line Extension Architects—Roland Paoletti, Deirdre Lennon, Vivian Cummins, Chris Todhunter, Stephen Wright, Robert Birbeck, Robert Dowling, Phil Seaward, Tara Breen, Desmond Lavery, Andrew Green, Alan McGuire

Engineer: Benaim-Works Joint Venture (structural)

Contractor: Tarmac Construction

Construction: 66-foot-deep, cut-and-cover box of reinforced concrete; bus canopy cantilevered from metal truss wrapped in glass

Capacity: 6,700 passengers per hour

Completion date: 1999

Sources

Boom systems, ceilings, and specialty metal: Astec

Collapsible gates to entrances: Bolton Gate Co.

Road-edge balustrades: Hollaender-Rainier

Glass: Marcos Summers

Profile-sheet roofing: Barry Collum

WWW For more information on the people and products involved in this project, go to **Projects at:** www.architecturalrecord.com

Program

The Jubilee Line Station at Canada Water had to act as a beacon, calling itself out amid an amorphous landscape of crumbling industrial sheds and low- and high-rise housing projects. Above grade, a canopy for connecting bus lines was required. Inside, the station had to offer a clear means of conveying passengers from street level to the existing East London line, then down another level to the Jubilee Line tunnels.

Engineering

Most of the below-ground areas were created using conventional cut-and-cover, reinforced-concrete construction. One area was built top down, beneath a site-cast slab, to minimize disturbance to neighbors.

Glass-roofed canopies, supported by tubular trusses branching from a single row of columns (opposite top) protect passengers as they enter the drumlike entrance pavilion (right in top photo).

The metal-clad canopies for the bus station (left in top photo) cantilever from a square “beam” built up from rods and cables, tipped on its edge, and wrapped in glass.

Expression

The lanternlike glazed drum of the ticketing pavilion signaling the presence of the Underground line “has created status almost overnight,”



says JLE Architects' Roland Paoletti. The glassed-in truss supporting the bus canopy refracts daylight into the usually dim recesses of the bus-loading area.

Elevators and stairs are massed under the entrance pavilion in an abstract sculptural composition (opposite bottom). A

curving wedge of space unites the two below-grade lines. An oval opening divided by columns leads travelers to the existing East London line. Another similar stair drops one level more to the new Jubilee Line. Daylight from the ticketing hall penetrates to the new platforms (above). ■



Canary Wharf Jubilee Line Extension, London

3

FOSTER AND PARTNERS DESIGNS A STATION OF MONUMENTAL SPLENDOR SET WITHIN A CONCRETE BATHTUB FLOATING AMID THE WATERY DOCKLANDS.

By James S. Russell, AIA

Architect: Foster and Partners—Norman Foster, HON. FAIA, David Nelson, Gerard Evenden, Rodney Uren, Richard Hawkins, Ross Palmer, David Crosswaite, Armstrong Yakubu, Chris Connell, Toby Blunt, Charles Diamond, Glenis Fan, Lulie Fisher Mike Greville, Lee Hallman, Caroline Hislop, Eddie Lamptey, Stuart Latham, Muir Livingstone, Niall Monaghan, James Risebero, Danny Shaw, Tim Shennan, design team
Engineers: Posford Duvivier, De Leau Chadwick (civil); Jubilee Line Extension Project (mechanical, electrical); Ove Arup & Partners (structural)
Consultant: Claude Engle (lighting)
General contractor: Tarmac Bachy Joint Venture

Construction: Reinforced-concrete cut-and-cover construction
Capacity: 16,000 passengers per hour
Completion date: 1999

Sources
Metal canopy: Mero
Waterproofing: Ruberoid Contacts, Services
Glazing: ISIGLASS
Entrance, sliding doors: Hüppe
Escalators, elevators: Kone

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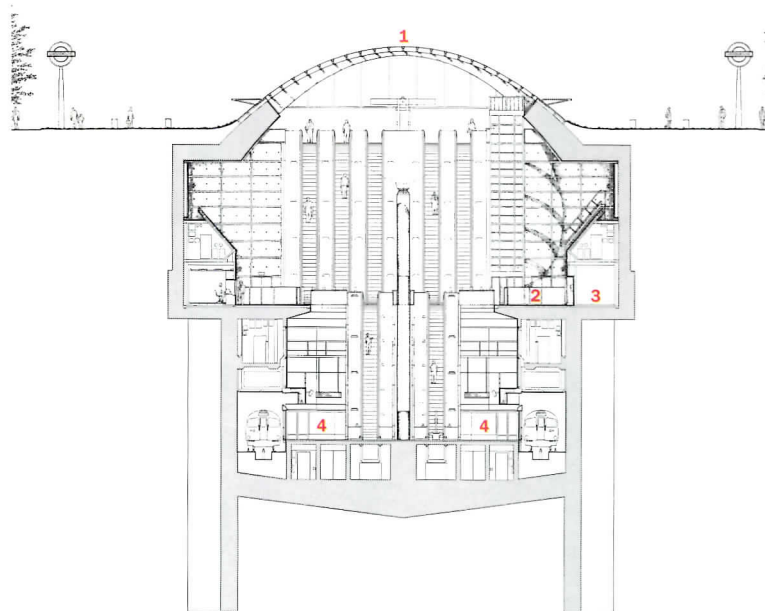
Program

Improving access to Canary Wharf, what may one day be one of Europe's largest business centers, was key to getting the entire Jubilee Line Extension funded. Located just south of the dense core of Canary Wharf, the station has the highest capacity of any along the new line. A predicted 16,000 passengers per peak hour in early years may ultimately rise to as many as 40,000.

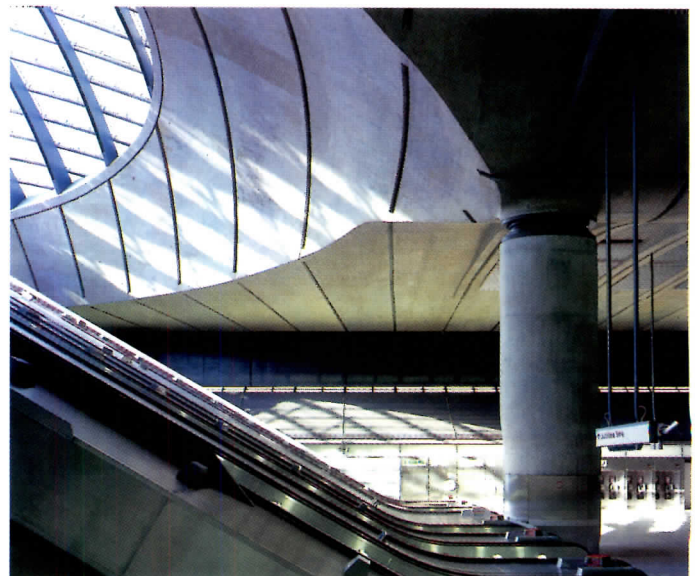
Engineering

Because the station location is surrounded by inlets of the Thames River, dewatering and waterproofing were among chief engineering concerns. Twin-wall coffer dams formed a kind of bathtub. Then 160,000 tons of water was pumped out to create a foundation bed. Dewatering wells kept the drained area from flooding throughout construction. Dozens of deep piles anchor the base slab of the station, resisting 220,000 tons of water pressure. T-shaped, 85-foot-deep diaphragm walls formed the outer retaining-wall enclosure of the station.

Inside the station, a single row of cast-in-place columns support site-cast, concrete roof panels (opposite). Elliptical bearings at the column capitals move in response to geological pressures. Steel-and-glass canopies (right) swell in a gentle curve to protect the three entrances.



- 1. Glass and metal canopy
- 2. Ticketing level
- 3. Shops
- 4. Track level





West Plaza
Canary Wharf

DOCKLANDS
LONDON

For the largest and loftiest of the new Jubilee Line stations, Foster and Partners inserted generous stairway openings at the ticketing level to convey the structure's openness all the way to platform level.

CANARY WHARF



↑ Jubilee line

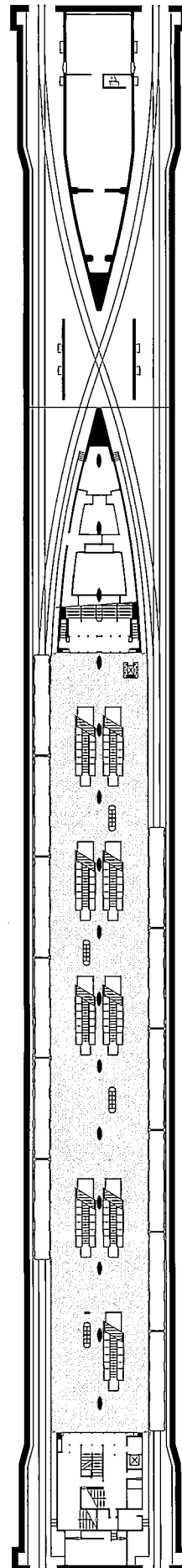
A single row of columns convey the monumentality of the station without making its underground realm seem oppressive. Daylight seeps in at either end through glass entrance canopies over the main stairs.

Expression

Passengers entering the Canary Wharf station pass under one of three elegantly arced canopies of glass panels mounted on curving steel frames. A park covers the rest of the station. Though large, the canopies only hint at the vastness of the space below, which gradually opens to its 300-yard length and 115-foot width from an intermediate ticketing level. The center of the ticketing level is left open at the eastern portion of the station length, leaving the platform level open to the structure's full 75-foot height. The station's large capacity requires 20 escalators to serve it. An equally massive set of exit stairs is located at either end of the station, along with fresh-air, exhaust-air, and elevator shafts. Shops wrap the long edges of the hall on the ticketing level.

The openness of the design aids way-finding, thus minimizing the need for signage. The impressiveness of the station is no accident, according to Paoletti. "We spent much more on some stations than others. We spent a great deal on Canary Wharf to indicate that its special nature within this high-rise skyscraper district was to do for Canary Wharf what the Opera House did for Sydney. On a unit basis, we may have spent more at Bermondsey and Canning Town, but that's because those are down-and-out areas."

While improving access will no doubt benefit these communities, Paoletti sees the architecture itself as a kind of beacon of urban renewal—both because it establishes a new higher standard of construction in struggling neighborhoods and as a point of pride for residents. Whatever the spending levels, "none of the stations looks poor," explains Paoletti, "just different." ■



PLATFORM LEVEL

N ←

↑ Jubilee line

North Greenwich Jubilee Line Extension, London

4

**ALSOP & STORMER CONJURES A WORLD OF HIGH-TECH TWILIGHT
IN THE SHADOW OF LONDON'S MILLENNIUM DOME.**

By James S. Russell, AIA

Architect: *Alsop & Störmer—Will Alsop, Christopher Egret, Peter Angrave, John Smith*

Engineer: *Benaim Works Joint Venture*

Contractors: *McAlpine Wayss & Freytag Bachy Joint Venture (general), Drake & Scull (electrical and mechanical)*

Capacity: *12,000 persons per hour, more if the second entrance is constructed*

Construction: *Concrete cut-and-cover*

Completion date: *1999*

Sources

Stainless-steel cladding: *Darchem Engineering*

Blue-glass wall: *T&W Ide*

Steel and glass balustrades: *D&B Darke*

Public-area ceilings: *Architectural Feature Services, Diamond Project Services*

Terrazzo: *AW B. Simpson & Son*

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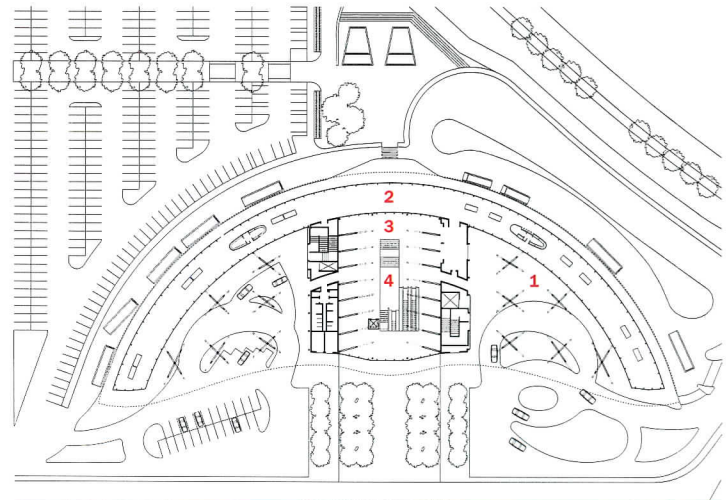
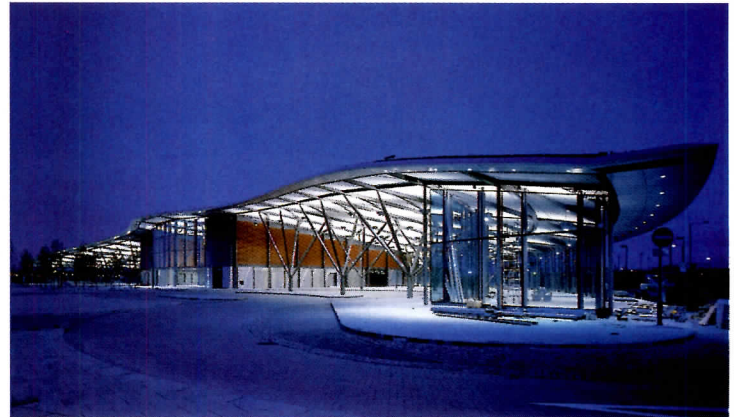
Program

At the time of design, the emptiness of the North Greenwich peninsula seemed vast: It was a "brownfield," where the empty stacks of a gas works, one of London's largest industrial complexes, had once flared. The stop, not originally planned for the line, was added with financial contributions from British Gas to spur redevelopment. It also accommodates a third tunnel for a planned branch line.

Only later would the presence of the station prompt planners to choose this site for the Millennium Dome. Now, an Underground Station that bears more than a little resemblance to its site's earlier occupant pulses below London's new star attraction. Passenger capacity can grow, if necessary, by opening a second entrance, which was originally planned but never built.

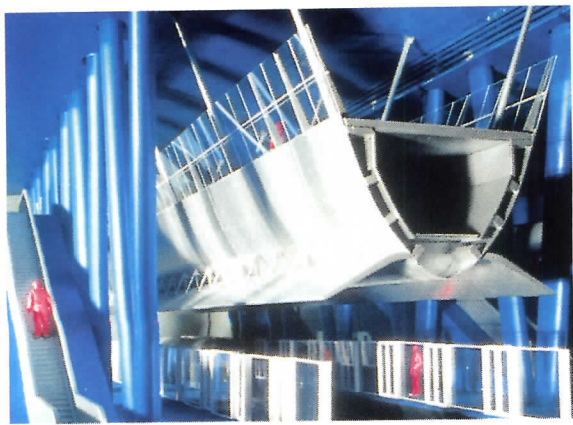
Engineering

With ample open ground, conventional cut-and-cover construction proved to be the most straightforward solution. Because of its adjacency to two of the line's under-river crossings, the station is 82 feet deep. It is also unusually wide to fit the third tunnel. At one time, Alsop & Störmer conceived the ticketing level as open to the sky. The designers peeled away its edges and supported it on massive criss-crossed horizontal braces, which would express the forces pressing



Instead of a glazed roof, the North Greenwich Station received a bus-transfer facility (photo and plan above) procured by a separate contract. It was designed by Foster and Partners.

- | | |
|--------------------------------|----------------------------------|
| 1. Auto drop off/pickup canopy | 3. Lobby |
| 2. Bus waiting canopy | 4. Access to Underground station |



Top: Platform with protective sliding doors.
Right: Ticketing level.
Above: Model showing suspension system.



The stainless-steel-wrapped ticketing level looks like a conveying device slipping through the blue-tile-clad supports. By pulling the mezzanine into the center of the space, the platform level opens up all the way to the roof.

against the station's outer walls. Not only would passengers easily find their way to track level, but the scheme would also allow daylight to thread its way through the suspending structure to the platforms. Ultimately, the structure was beefed up to accommodate an air-rights structure over a solid roof, and a bus station and park-and-ride lot were built.

Though the earlier scheme was discarded, some of its elements found their way into the completed design. Two rows of inclined columns run the length of the platform, supporting a massive roof above the ticketing-level mezzanine (model, previous page). The hull-like shape of the underside of the mezzanine encloses smoke-extracting ductwork; winglike appendages direct the flow.

Expression

With its partially exposed galvanized-steel ceilings, suspension cables, and braces, North Greenwich evokes a high-tech world of shadows. The architect further dissolved the station's apparent edges by backlighting blue-tinted-glass sidewalls. Concrete enclosing walls and the inclined ovoid concrete columns were clad in blue mosaic tile. In contrast, the mezzanine suspended within the enclosure was faced in stainless steel. ■



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Crossing Safely to the Other Side

FOUR CASE STUDIES ILLUSTRATE METHODS FOR DESIGNING ONE-OF-A-KIND PEDESTRIAN BRIDGES

By Wendy Talarico

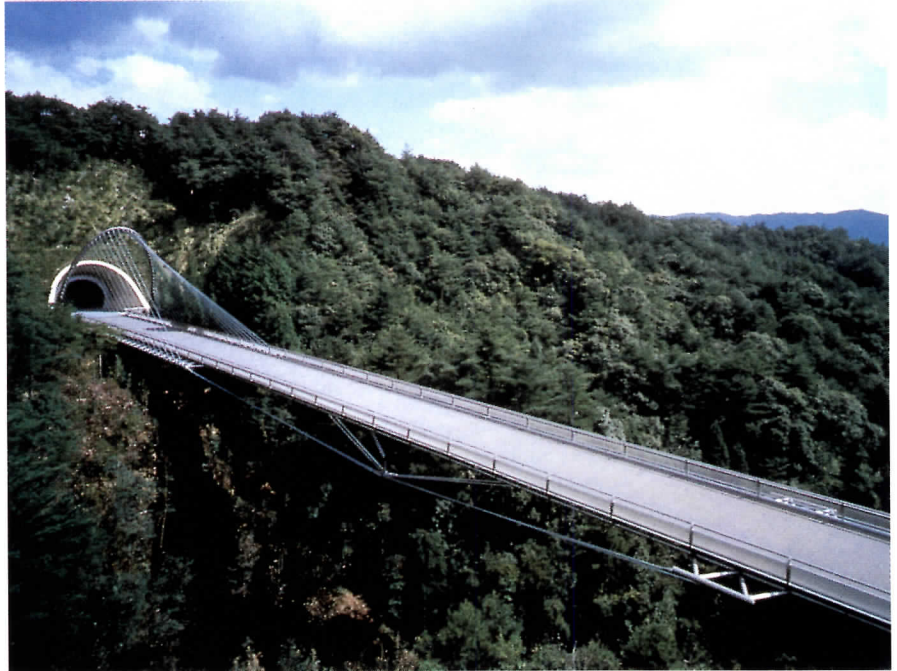
A bridge, whether a tree spanning a creek or something as sophisticated as Santiago Calatrava's Alamillo Bridge in Seville, Spain, is perhaps the purest of structures, expressing its purpose in each connection and member. Traditionally, bridges fell in the realm of the engineer, as structures ruled more by technology than design. But in three of the four pedestrian bridge case studies that follow, they represent collaborations between architect and engineer—and the resulting back-and-forth process—that yield the most graceful solutions.

Engineers give a bridge purpose and make it effective; architects give it expression. “The engineering is the basis for the architecture,” says New York-based Wendy Evans Joseph, AIA, who created the Rockefeller University Bridge with local structural engineer Matthys Levy of Weidlinger Associates. Levy and Joseph worked more closely on the bridge than they might have on a building. That’s typical of bridge design, says Levy. “Still, the form is inspired by many other things as well, such as the neighborhood, the historical context, and who the users will be,” says Joseph. “This bridge couldn’t have been built anywhere else.”

Jim Eyre of London-based Wilkinson Eyre Architects, who designed the Lockmeadow Millennium Bridge in Maidstone, England, agrees that pedestrian bridges, more than vehicular ones, must respond to their surroundings. “They are closer to the landscape and the buildings,” he says. “The people who use the bridge must feel it is a part of the community.”

Special structures

In the world of bridges, those intended for people instead of vehicles are



I. M. Pei's Miho Museum footbridge in Japan conducts visitors from a tunnel across a 400-foot span over a canyon approximately 100 feet deep.

considered specialty structures. They use a hybrid of design and safety standards from many sources, including guidelines for vehicular bridges and the Americans with Disabilities Act. Recommendations for load, deflection, vibration, and connections are contained in specifications developed by the American Association of State Highway and Transportation Officials (AASHTO) in Washington, D.C. This organization draws its members from the Federal Highway Administration, state highway and transportation agencies, and private businesses.

AASHTO also writes vehicular-bridge standards, which include safety recommendations for bridges with walkways. These recommendations are referenced in the pedestrian specifications. For example, balusters must be spaced close enough that a 6-inch sphere cannot pass between them.

If a bridge is privately owned, adherence to these standards is optional, though it does offer a way for architects to limit their professional liability, says a spokesman for the Federal Highway Administration. If a pedestrian bridge is in the public domain, however, designers must typically meet the standards or even exceed them.

State or local highway agencies often modify AASHTO standards (which are considered minimums) and add their own safety requirements. For example, if a bridge is open to the public, it must have guardrails of a certain height—usually 42 inches. (If bicycles are allowed, the handrail height requirement is raised to 54 inches.) Some states are more stringent than others; in parts of New York State the minimum height is 60 inches. Wire mesh, wrapped from one side of a

CONTINUING EDUCATION



Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 160 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Describe the design standards that govern pedestrian bridges.
2. Discuss the pros and cons of various bridge construction methods and materials.
3. Identify the objectives of pedestrian bridge design for communities and how they affect architects.

deck to the other, is often required by localities on pedestrian bridges spanning roadways to prevent people from throwing objects onto the street.

Design is also governed by the Americans with Disabilities Act, which dictates the slope of access ramps, shape and size of handrails, and minimum widths for the deck.

Types of bridges

Most architects have a good working knowledge of basic bridge design. The bridge case studies in this article, except for the Duisburg Bridge, are cable-stay, which means the deck is supported by cables stretching from a tower, usually in a fan array. A suspension bridge, by comparison, uses hangers or suspenders, radiating from a bridge cable, to support the deck. The configuration of the cables and the towers that support them is determined by the bridge's weight and factors such as pedestrian and wind loads. The Duisburg is a suspension cable bridge that is backanchored (or backstayed) to make it arch.

Cable-stay and suspension bridges are two of the most economical design types, according to Mike Abrahams, a structural engineer and manager of the structures department at Parsons Brinkerhoff, an architecture and engineering firm in New York City. Without a lot of infrastructure beneath the deck (such as that required by arch bridges), the cable-stay configurations are more slender than truss or arch bridges and can be lower (and shorter) while still achieving minimum clearances. "The thinner structure," he adds, "is also more elegant."

A more recent trend, particularly in Europe, favors pedestrian bridges with innovative structural combinations. Examples of these engineering hybrids include a pedestrian bridge in England that floats on steel tanks but still has the ability to pivot, thanks to hydraulically controlled cables. Other bridges combine cables, supporting arches tipped at varying angles, and complex trusses, as well as curves and operable features, as does the arching Duisburg Bridge.

"The pedestrian bridge is a smaller, lighter structure than a vehicular one. You can do more interesting, dramatic things and be more creative with a pedestrian bridge," Abrahams says. At the same time, the "signature bridge," a one-of-a-kind structure, is becoming popular as an icon that represents a community. This was certainly the case with the Lockmeadow Millennium Bridge. While this structure sought to blend with its historic surroundings, it was also meant to signal visitors' arrival.

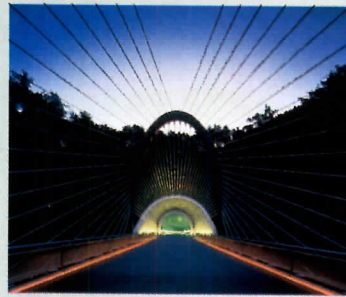
What's it made of?

The materials used depend on the location of a bridge, how well maintained it will be, its span, the amount and type of traffic that it must carry (some pedestrian bridges support vehicles), and, of course, aesthetics. Local regulations and concerns about vandalism and safety may affect the choice of materials.

In general, concrete is easier to maintain than steel, which must be painted. It is difficult, however, to achieve artful forms with concrete. Stainless steel, which doesn't need painting, is good for details and railings. Aluminum is light and strong, but often too expensive. Wood and stone are wonderful for small spans, but expensive and bulky for large ones.

Beyond the fact that deck materials should be nonslip, low-maintenance, durable, and weather-resistant, there are few limitations. Concrete, metal, and epoxy can all work well. Panels are often required to allow ready access to the infra-

continued on page 158



CASE STUDY

Miho Museum Bridge

Architect: I. M. Pei, New York City

Engineer: Leslie E. Robertson Associates, New York City

I. M. Pei, FAIA, tells a well-known Chinese fable about a fisherman who blunders into the entrance of a secret ancient community while wandering through a peach orchard. He spends a magical afternoon with the inhabitants but, once he leaves, never again finds the entrance. "My client knew this story well," Pei says of Mihoko Koyama, one of the leaders of a large spiritual association in Japan. "When I told her I was thinking of this while designing the passage to the Miho Museum, she smiled."

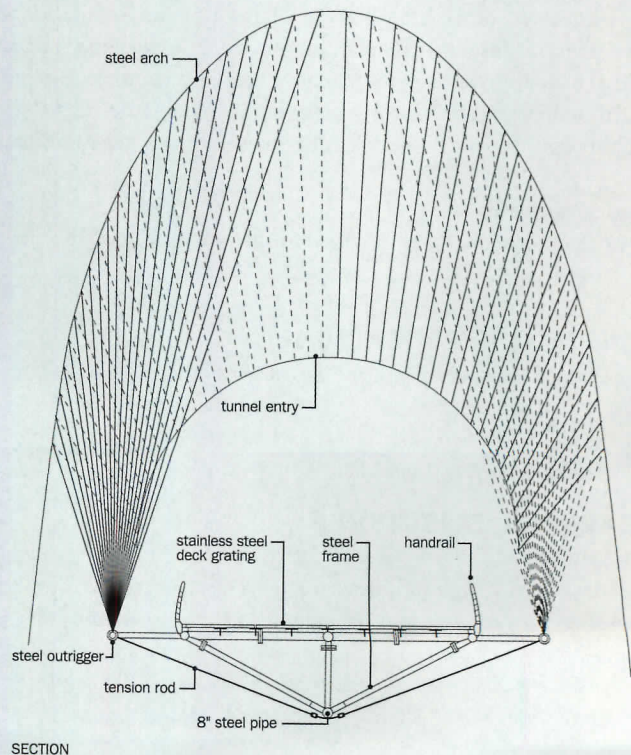
Entry to the museum, about an hour from Kyoto, requires cross-

ing a sacred canyon, which had to remain untouched. Pei needed to find a way to bring visitors from the parking area, a half-mile away from the site, across the canyon. His solution: a curving, stainless-steel-lined tunnel that opens onto a cable-stay pedestrian bridge.

The bridge's web of 44 slender posttensioned cables looks more like a parting veil than the support system for a bridge. The cables seem to launch from the elliptical mouth of the tunnel, through which they are anchored. "Though they are two different elements," says Pei, "I wanted them to feel like one continuous progression."

Getting the right amount of tension in each cable was imperative. "They had to be 'twanged' to get the proper frequency of oscillation," says Leslie E. Robertson, structural engineer.

The cables are threaded through the steel arch, which is tipped at a 45-degree angle to the deck. Mounted on socket joints, the arch tips in response to heavy winds or traffic loads, taking up slack in the cables. Aesthetically, the arch is composed of a series of plates that have depth and shadows. "There is joy in seeing



SECTION

how something functions," Robertson says.

The cables are strung through fittings attached to steel outriggers at 6 ½-foot intervals. These are part of a triangulated frame, which conducts the forces through tension rods to an 8-inch-diameter steel pipe that runs 6 ½ feet below the deck.

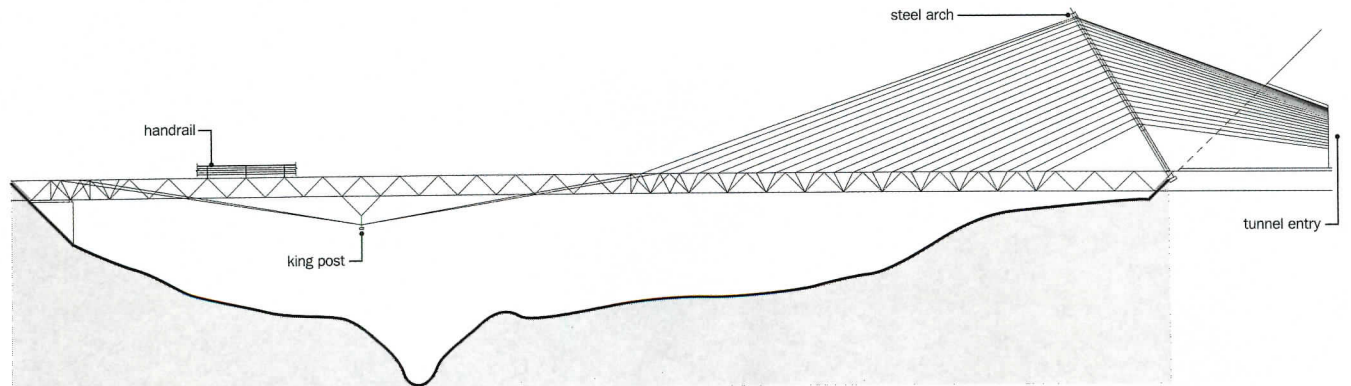
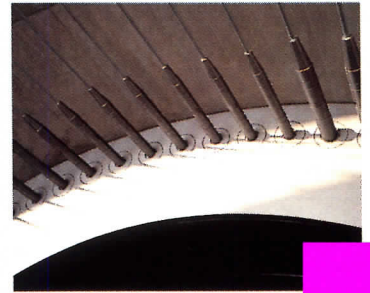
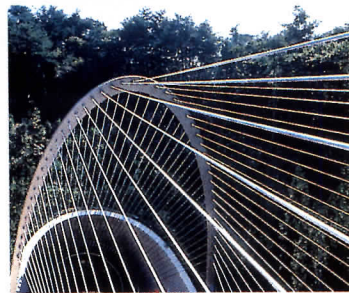
A second posttensioned cable system under the deck fastens to a king post beneath the freespans portion of the frame. These cables limit deflection and provide uplift so that the bridge bows slightly upward at midspan, enhancing the sense of arrival and directing the flow of water off the bridge. "It's a structure that's all about balancing loads and equalizing stresses," says Pei. "The engineering brilliance lies below the bridge."

The 18-foot-wide deck is stainless-steel grating with a porous ceramic infill. Water percolates through the ceramic beads and drips to the canyon below.

The balustrade is a series of perforated stainless-steel sheets. The perforations have a slight screening effect, providing a sense of security for those who would rather not see over the edge.

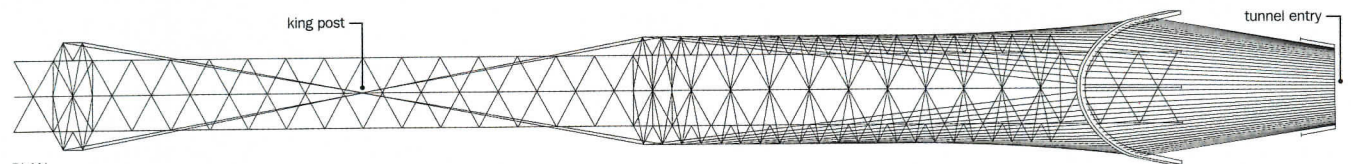


The 44 cables resemble a parting veil as pedestrians pass from the tunnel to the bridge (above). The posttensioned cables fan out (right) after passing through threaded rods in the arch (far right) and are anchored to the space frame.



ELEVATION

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PLAN

CASE STUDY

Rockefeller University Bridge

Architect: Wendy Evans Joseph Architects, New York City
Cost: \$125 million
Engineer: Weidlinger Associates Inc.

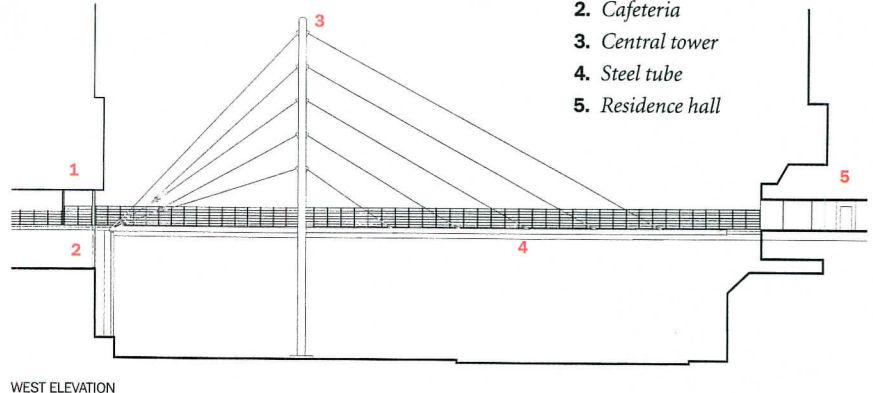
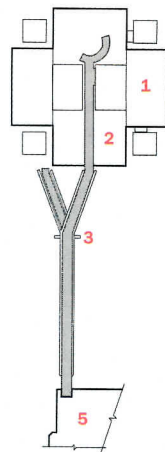
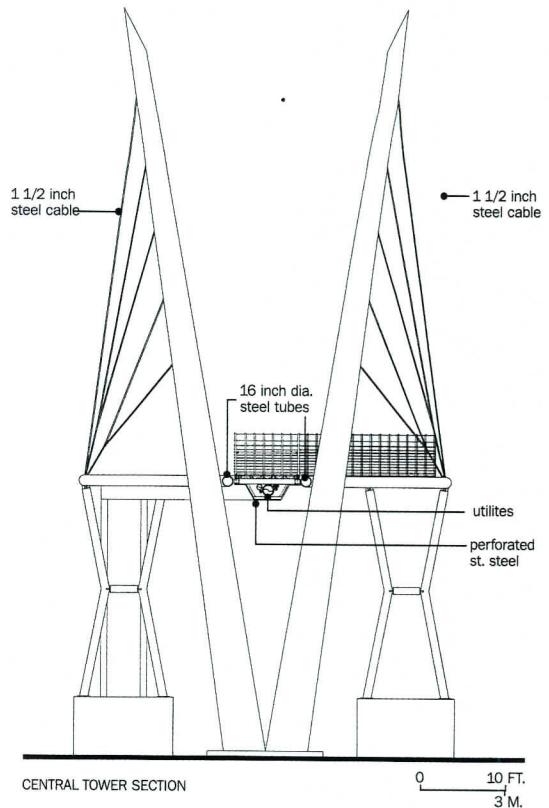
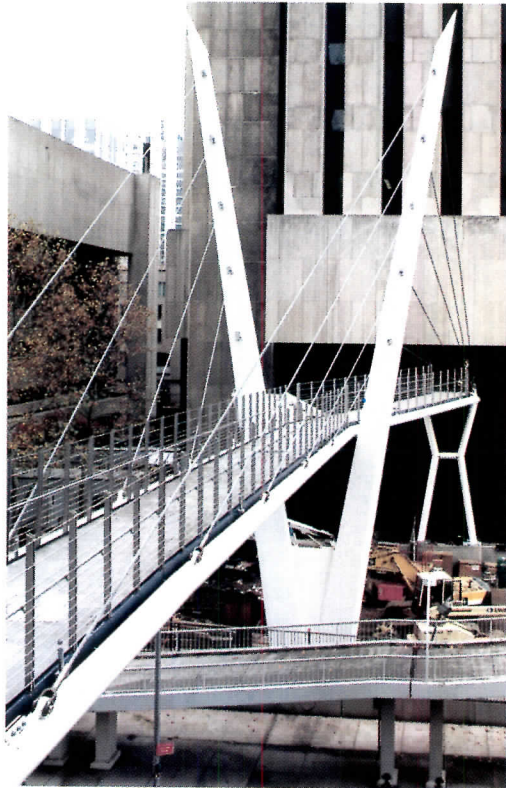
Rockefeller University is not a conventional university campus, but a collection of primarily laboratory research buildings on Manhattan's East Side. Though the 90-year-old buildings located at the East River edge of the campus are thoughtfully sited, many of the newer structures were, says Joseph, "plopped down with little thought given to the interstitial spaces."

One such "plopped down" building is a residence hall at the south end of the campus. Located across an off-ramp from Franklin D. Roosevelt Drive, the building offered no safe route for residents walking to the main campus. Several researchers were injured while dodging cars.

To get the occupants across the street safely and to unite the building with the rest of the campus, the university decided to connect the residence hall to a laboratory building across the street with a pedestrian bridge. The bridge also offered a way to bring utility and telecommunication lines to the hall from the university system.

To achieve these goals and preserve the 63rd Street view corridor, the engineer and the architect settled on a cable-stay bridge with a V-shaped, 89-foot-tall central tower. The tower shape responds to a split in the bridge on the lab building end; to the left, the slender bridge meets the utility access area and to the right it pierces the lab building.

The 118-foot straight span is 34 feet above the street. The 1 1/2-inch supporting cables are anchored to rock beneath the residence hall and attached to the bridge at gussets along two 16-inch-diameter steel outriggers. The deck is suspended between these steel tubes, which are chamfered



just shy of their termini to create a lighter feel. Pipes and utilities run beneath the deck, encased in perforated stainless steel.

After the split, each leg of the bridge extends 45 feet. The right leg, however, continues through the building and is suspended from ceiling beams over a two-story cafeteria. "It's wonderful to be at one of the tables and look up at the bridge," says project architect Robert Furno. "It's as if exciting things were happening up above." The bridge terminates at a stairway and elevator bank, which lead to an outdoor plaza renovated with detailing similar to that

used on the bridge.

The deck is flexible epoxy composite with a black granular nonskid surface that mimics the look of granite and matches the black granite stairway. The railing, horizontal layers of 1/2-inch stainless-steel rods, is capped by a cube-shaped stainless-steel rail.

Large expansion joints were necessary between the bridge and the buildings at either end. These junctions are "mechanically and structurally complex" due to varying rates of expansion and contraction between the structures, says Matthys Levy, the structural engineer.

The bridge plan splits into a "Y" beyond the V-shaped tower (above) to accommodate pedestrians and utility lines.

The bridge was preassembled from four pieces, including the tower, by a steel fabricator in Canada and shipped to New Jersey. One evening, after midnight, a crane was erected on-site, and the bridge was convoyed over the George Washington Bridge (which links New Jersey and Manhattan) and hoisted into place. By morning rush hour, the main span was set in place, the cables were attached, and the crane was dismantled.



A Panel Discussion

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CIRCLE 50 ON INQUIRY CARD

CASE STUDY

Lockmeadow Millennium Bridge

Architect: Wilkinson Eyre Architects
Engineer: Flint & Neill Partnership

Near the center of Maidstone, an hour outside London, sits an old palace classified by the British government as an ancient monument, “the highest grade of historic sites,” says architect Jim Eyre, of Wilkinson Eyre Architects. Eyre was charged with designing a pedestrian bridge to stretch from near the foot of the palace, across the River Medway and its floodplain, to a new “leisure center” on the other side.

The bridge had to be sensitive to the historic site, yet inviting enough to lure people to the new center. It also had to accommodate boats on the river and be sturdy enough for those occasions when this placid body of water surges and foams across its floodplain. Lastly, construction access was good on the floodplain side of the river, but poor on the other, a condition that drove the structural design.

The 260-foot span, half of which was over the river and half over the floodplain, is bisected by a concrete pier, which serves as the base for the masts. In the event of a flood, the pier acts like a ship’s cut-water, cleaving the river’s flow.

The 49-foot-tall, cigar-shaped masts lean outward, separated by a 90-degree angle, to keep their height in scale with the nearby historic structures. They appear lightweight, almost filigreed, and seem to blend with the trees. “We wanted the bridge to blend with its surroundings,” says Eyre. The cable-stay bridge is supported by two 2-inch-diameter cables that run between the masts and connect, via delta plates, to two additional cables on each side. The four cables support the cantilevers in either direction. These link to the bridge deck with steel anchors and high-strength bars stressed through the deck assembly. The cables are anchored to the ground at the central pier.



The deck tilts up slightly over the river to allow boats to pass. Developed by the architect and the engineer, the aluminum deck system, which is being patented in England, serves as both the frame and the finished surface. Aluminum is lightweight and strong, which allowed the deck to be slender. It is also recyclable, an important consideration in energy-conscious Europe, Eyre says.

The deck is composed of a series of interlocking U-shaped channels held together with high-

strength bars to form panels, each measuring 7 feet by 26 feet. There are 230 of these panels on the bridge. The assembly has good damping properties, so vibrations are minimized. The top surface of the deck is grooved to give a rough non-skid texture.

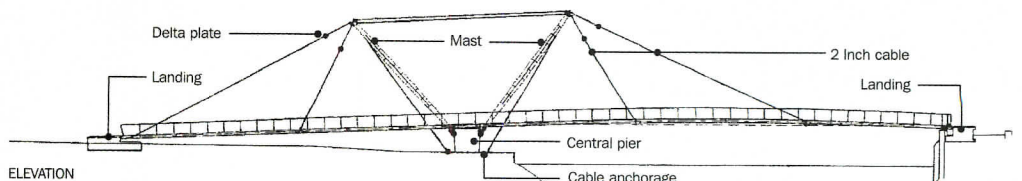
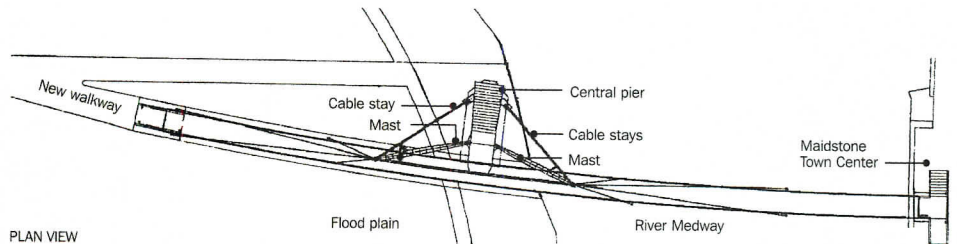
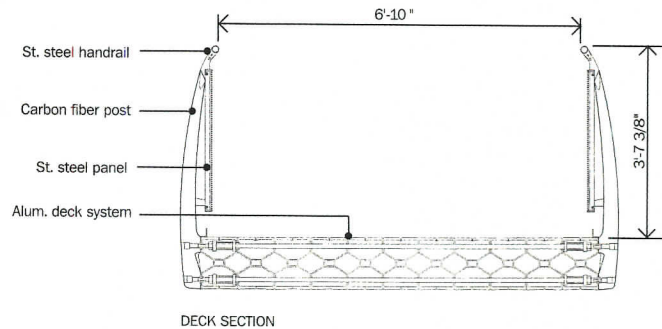
The baluster posts are carbon fiber, a strong, lightweight material much like fiberglass that’s often used for race-car bodies. It was selected for the shapes that can be achieved—in this case, a slight curve—at a lower cost than cast

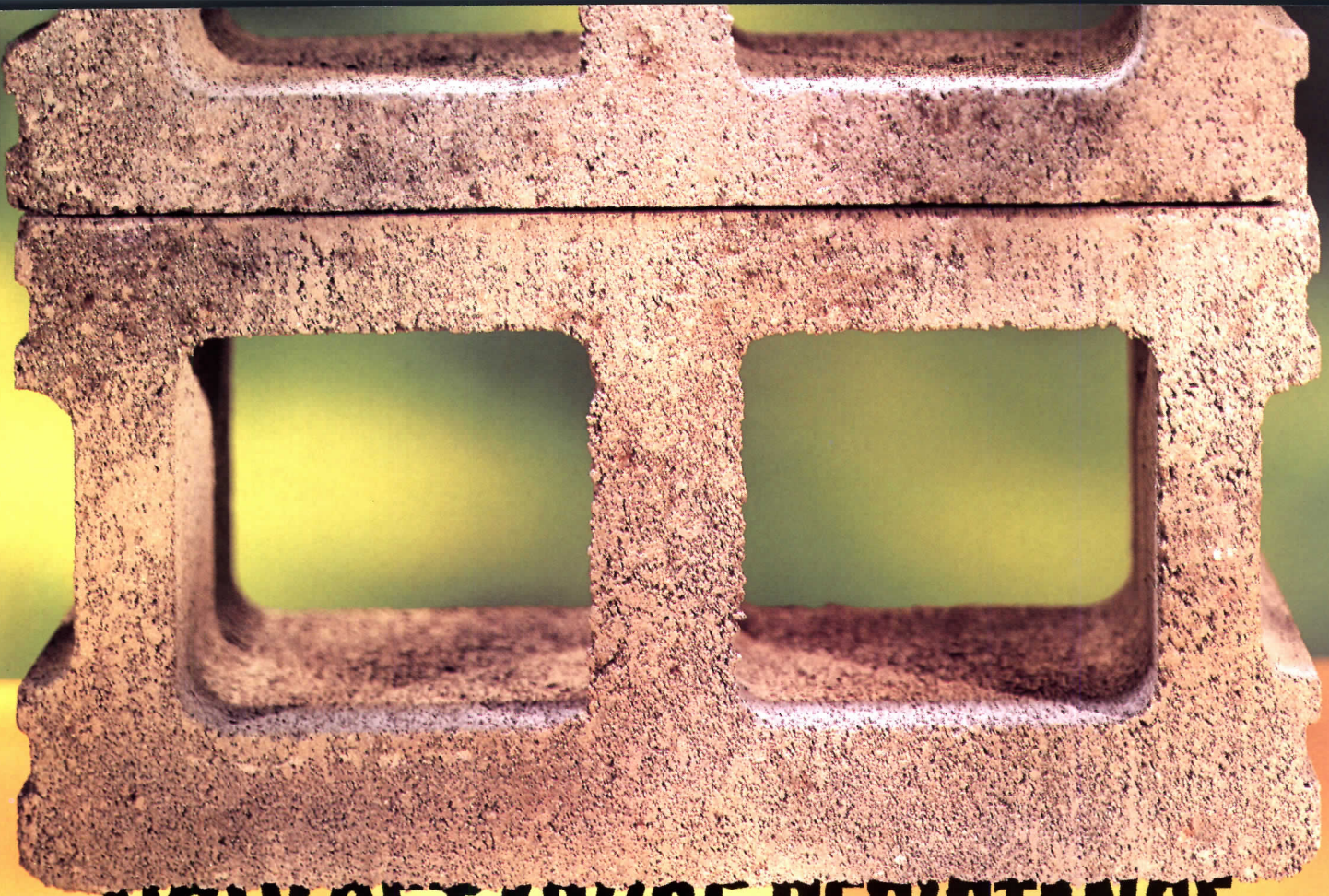
The slender cable-stay bridge at Maidstone (left) spans both a river and its floodplain. The cables are strung from two lacy masts (above).

aluminum or steel. The balusters and the handrail are stainless steel, a better wearing—but expensive—surface than carbon fiber.

When one walks on the bridge, it has a slight bounce, much like the simple bridges that span creeks and gulleys. “We like that movement,” Eyre says. “It’s rather like going for a hike.”

- | | |
|-----------------------------|---------------------|
| 1. Stainless-steel handrail | 9. Walkway |
| 2. Carbon-fiber post | 10. Cable stays |
| 3. Stainless-steel panel | 11. Mast |
| 4. Aluminum deck system | 12. Landing |
| 5. Maidstone town center | 13. Central pier |
| 6. River Medway | 14. Mast |
| 7. Center pier | 15. Two-inch cable |
| 8. Floodplain | 16. Delta plate |
| | 17. Cable anchorage |





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CIRCLE 51 ON INQUIRY CARD

CASE STUDY

Duisburg Pedestrian Bridge

Engineer: Schlaich Bergermann and Partner

It is unfortunate that pedestrians cannot stay on the Duisburg Bridge as it arches, catlike, to make room for boats passing underneath it. "These safety restrictions take the joy out of a structure like this," says Jorg Schlaich. "I'd like to sneak out there and ride it up sometime."

Stretching over a harbor on the Rhine and linking the center of Duisburg, located north of Cologne, with a new development on the other side of the harbor, the bridge has a span of 242 feet (254 feet when it is fully arched) and is supported by both suspension and backstay cables. These two support elements are complementary. The suspension cables carry the weight of the bridge, but the backstays, joined to the masts at either end, lift the bridge.

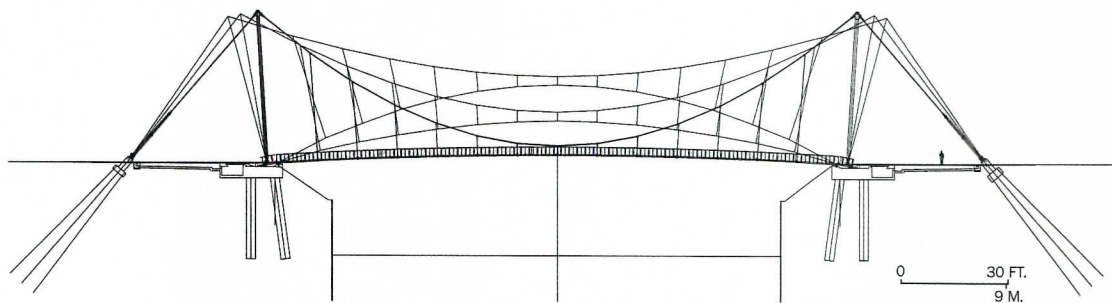
When a ship approaches, the harbormaster presses a button that sets the bridge in motion. First, red lights flash, warning pedestrians off the structure. Hydraulic jacks, inserted in the four backstay cables, shorten the cables, forcing the masts to tilt backwards and causing the deck to arch upward. The jacks can be stopped at any point, allowing the bridge to be only partially lifted. The process is simply reversed to lower the bridge.

The 66-foot-tall steel masts are set on hinges that allow them to tilt. The suspension cables are attached at one side of each mast head, while the backstays join at the other side. "This was an important detail; failing to configure it correctly would have caused the masts to bend during the lifting process," Stein explains.

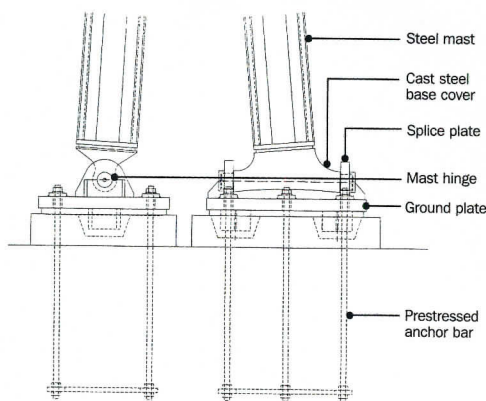
But the real "geometrical trick," as he calls it, is the flexure of the deck and handrails. The 12-foot-wide deck is made of prefabricated concrete slabs that rest on a steel frame. On this frame, spaced about 17 feet apart, are hinges that attach, via suspenders,



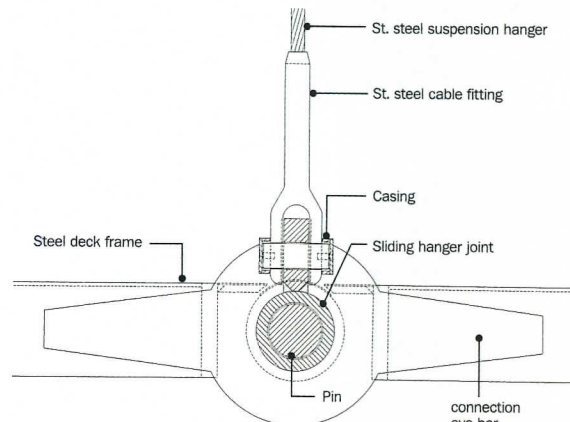
"A geometrical trick" is how the engineers of the Duisburg Bridge describe its arching action. The masts at either end tilt back, pulling the suspension cables taut. This forces the hangers attached to the deck to lift, thereby raising the deck.



ELEVATION



MAST DETAIL



HINGE DETAIL

to the bridge suspension cable. As the backstays shorten and exert pressure on the bridge cable, the hinges are pulled upward. The deck lengthens as the bridge arches, pulling additional material from pockets in the abutments at either end of the bridge.

The handrails are also connected to the steel frame. As the bridge lifts, the rails, left unconnected over the hinges, split.

"Watching the bridge lift is a wonderful sight," Schlaich says, "especially when you know all the complexities that go into it."





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CIRCLE 52 ON INQUIRY CARD

continued from page 150 structure, so the material should not interfere with this purpose. Also, if the bridge needs to support an occasional vehicle, the deck must be wide enough to do so—generally at least 6 to 10 feet.

When a pedestrian bridge spans a highway, it must direct water to either end of the structure so that it doesn't drain onto the road. This requirement can get complex, particularly when the bridge stretches between buildings. One common solution is to install gutters or piping along the edges or the undercarriage of the deck.

While open grating allows water to drain through, an acceptable solution over highways, it can compromise pedestrians' sense of security, not to mention that open grates aren't comfortable underfoot and offer no wind shield.

Footbridge designers should also consider how to remove snow from a deck. Heating cables can keep snow off a deck, but they use a tremendous amount of electricity. It's preferable to make the bridge accessible to a small plow.

Good lighting

People traversing a bridge at night need enough light to feel safe. In urban areas—the setting for most pedestrian bridges—ambient light is usually plentiful. Still, some artificial lighting is necessary, not only to help pedestrians see the way and others crossing the bridge, but also to accent architectural features, including entry and exit points.

"The lighting designer should be brought in early on," says Robert Prouse, a lighting designer with H. M. Brandston & Partners Inc. in New York City. "That way the lighting can be integrated into the bridge structure." At the Duisburg Bridge, openings were left in the balusters to hold lighting. When the bridge was completed, lamps were

easily slipped into place.

If a bridge passes over navigable water, the U.S. Coast Guard regulates the under-bridge lighting. Indicator lighting (red and green) signals the location of a channel. Similarly, tall masts, especially those close to an airport or on a flight path, may require Federal Aviation Administration lighting on top.

Prouse recommends lighting that respects the inhabitants of buildings surrounding a bridge. "No one wants a great big light shining into their home, no matter how much they like the bridge," he says. In addition, the needs of drivers must be considered when the bridge is over a highway. Excessively bright lights on a bridge make it difficult for drivers to see other cars.

Vibration and loads

AASHTO provides standards for pedestrian, wind, and occasional vehicle loads and deflection. But designers should also be aware of expansion and contraction forces, which can be particularly strong given a deck's exposure to the elements. There are also erection stresses if a bridge is preassembled.

Vibration caused by people walking or running will not cause a bridge to shake loose, but it can make a structure feel unsafe. "If the bridge is shaking when you walk across, you feel like it's going to come down," Abrahams says. "It's like walking on a trampoline."

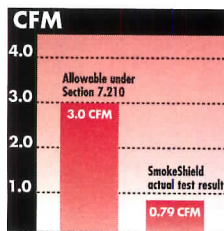
Stiffening handrails and support cables reduces vibration, as does specifying a deck material with some give—asphalt or epoxy versus steel, for example. But in many cases, a little bounciness is desirable. "We wanted people to know they were on a bridge; a little movement and sway is part of the experience," Eyre says. "That's part of what pedestrian bridges are all about." ■

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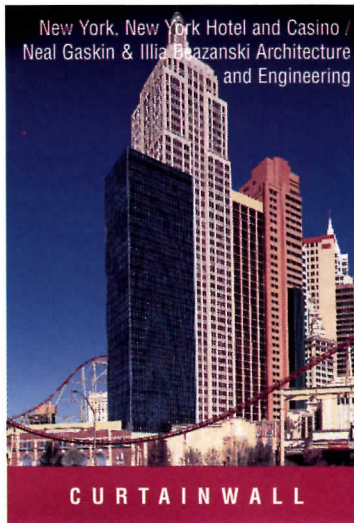
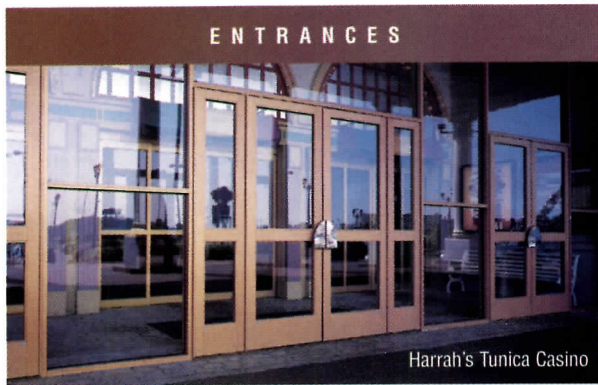
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CIRCLE 54 ON INQUIRY CARD

BRIDGING THE GAP: HOW TO SPECIFY A PEDESTRIAN BRIDGE

Specifying a premanufactured pedestrian bridge is not an ordinary task for an architect, but it's a process worth understanding.

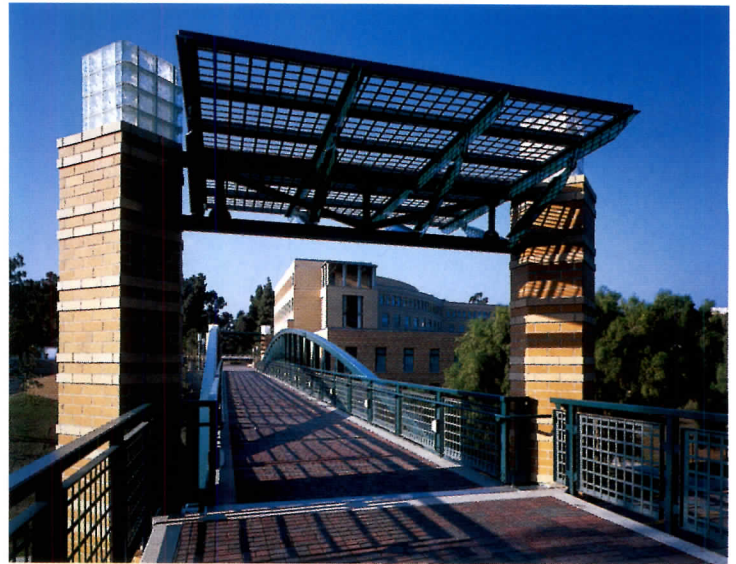
Manufacturers need to know the dimensions (width, span, and camber), style, and whether pipes or external attachments for gas, electric, or irrigation lines are needed.

Most pedestrian bridges are designed for an evenly distributed live load of 85 pounds per square foot, unless the bridge serves as a building's sole exit or entry. In that case, the requirement increases to 100 pounds. Bridges designed for moving vehicles carry a load of 1,000 pounds per square foot.

Other engineering factors include snow and wind loads, deflection, and vibration. The method for anchoring a bridge to a site depends on codes, materials used, and weather and soil conditions. This is normally the purview of a local engineer.

Although these bridges are prefabricated, architects can choose from various designs and deck materials that make the bridge appropriate to the setting. Steel bridges can be painted to match surrounding buildings. Weathered steel forms a protective rust coating. Deck materials include wood, concrete, metal grating, or asphalt, each with advantages and limitations. For example, snow and rain removal are simplified with metal grating, but the material is hard on users' feet and provides little protection from drafts.

Depending on the time of year (business can be especially brisk during spring and summer), a bridge typically takes 12 weeks from the order date to produce. Delivery is most cost efficient when a bridge is shipped in few pieces, but roads and the site must be wide enough to accommodate these pieces. Steadfast Bridges, for example, can



AC Martin Partners specified a Steadfast bridge for the UC Irvine Humanities Center.

ship a 12-foot-wide, 70-foot-long bridge in one piece to most places. Even the largest pedestrian bridges can be installed in less than a day by using a crane. *Rita F. Catinella Bailey Bridges Inc., Greenville, Ala. 800/477-7320. www.baileybridge.com*

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- ◆ Read the article “Crossing Safely to the Other Side” using the learning objectives provided.
- ◆ Complete the questions below, then check your answers [page 216].
- ◆ Fill out and submit the AIA/CES education reporting form [page 216] or file the form on ARCHITECTURAL RECORD’s Web site at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. How are the AASHTO guidelines used in designing pedestrian bridges?

2. Which structural types of bridge design are normally used for pedestrian bridges?

3. What are the factors to consider when selecting bridge materials?

4. What do communities often look for in bridge design?

5. What is the impact of vibration on pedestrian bridges?



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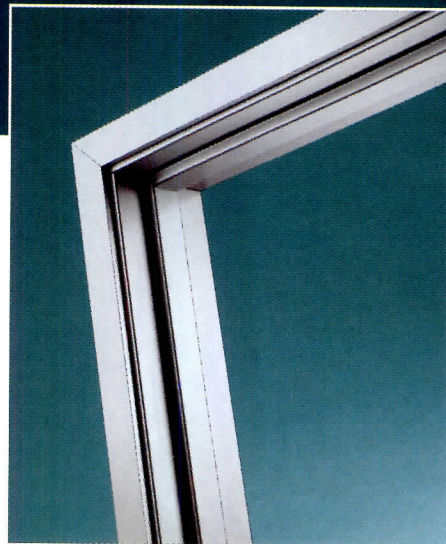
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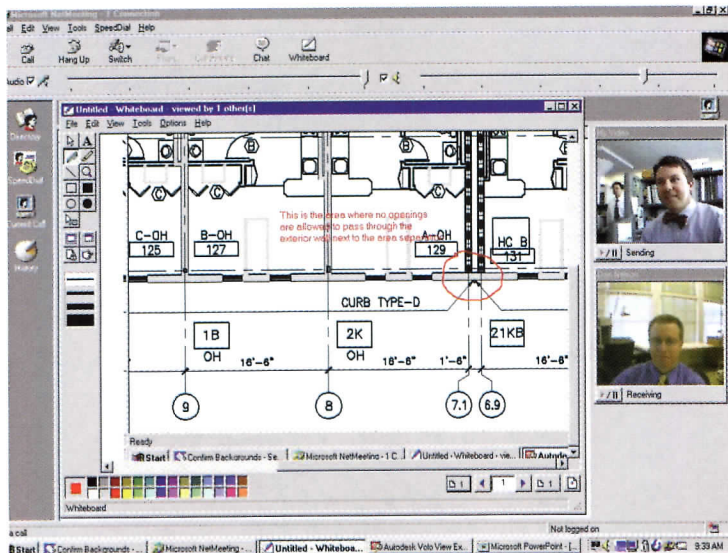
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Tech Briefs



GOOD NEWS FOR ARCHITECTS SEEKING BUILDING PERMITS ON THE INTERNET

It's just a matter of time until building permits are obtainable online. But thanks to new software applications—as well as a decision by the California State Board of Architectural Examiners to allow legally binding “digital signatures,” to authenticate the identity and professional status of the sender—architects are a few steps closer to making online permitting a reality.

“Digital signatures are easier to describe by defining what they are not,” says Zane Paxton, AIA, president of G-4 Consulting Inc. in San Carlos, Calif. Paxton works closely with a nonprofit organization called Joint Venture: Silicon Valley Network (www.jointventure.org/initiatives/smartpermit), which promotes collaboration between municipalities, high-tech manufacturers, and construction industry leaders [“Future,” June 1999, page 228].

Digital signatures are not a digitized image of a handwritten signature. Rather, they are actual transformations of an electronic message that is made using cryptography. In the process, the digital

signature is tied to the document being signed and to the signer.

Several cities are working toward an automated permit process. Architects in New York City submit application forms on disk to reduce paperwork and speed approvals. In Charlotte and Houston, architects apply for permits and check the status of plan reviews and inspections online.

But Joint Venture, which works with eight cities in California to develop Web sites that track and review electronic submissions, is closest to fully automating the permitting process.

Part of the credit for this goes to new software that's aiding the permitting process. This includes Autodesk's free Volo View Express, which lets non-CAD users view, measure, and mark up on-screen drawings. Adobe's portable document format (PDF) converts any document, including handwritten notes, to Web format. And Microsoft's NetMeeting allows architects and code officials to discuss and redline projects during electronic whiteboard sessions (above).

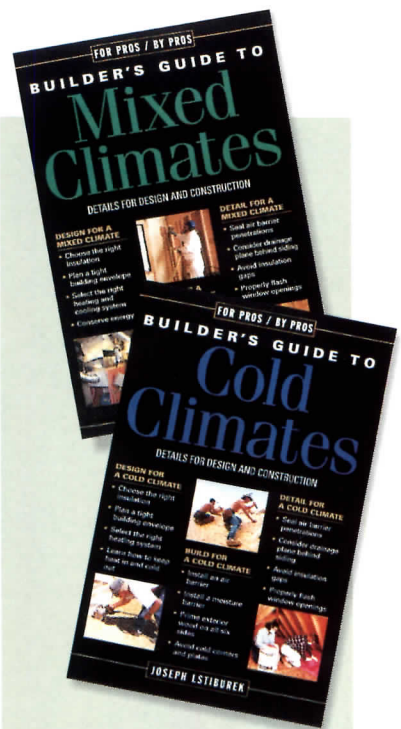
IMPROVING NEW YORK'S ENVIRONMENT

New York State governor George Pataki recently proposed a tax break for builders who construct buildings in ways that reduce pollution, waste, energy use, and indoor-air contamination. Many states, including New York, already have financial incentives encouraging developers and building owners to improve energy efficiency, but the tax-credit program, whose impact would be much broader, is probably the first of its kind in the country.

The plan requires that an architect assess construction documents to certify that they meet certain green standards. Builders could get a tax credit of up to 5 percent of the cost of the environment-friendly technology or materials; 6 percent if the building is in a poor area. More would be available if tenants also adhere to green standards. An extra 2 percent credit would be available if building tenants also adhered to the standards. *Wendy Talarico*

SAVING ENERGY ONLINE

A study released by the Center for Energy and Climate Solutions shows that the Internet-based economy promises to deliver important environmental advantages—especially energy savings. For example, buying a book online reduces the amount of energy used per book sold in the traditional manner by a ratio of 16 to 1. Shipping 10 pounds of packages ordered online via overnight air uses 40 percent less fuel than driving roundtrip to the mall. Also, the Internet may ultimately reduce the amount of commercial building space that's needed by 5 percent, save 2.7 million tons of paper every year, and significantly reduce traffic congestion. *W. T.*



Advice on the Nitty Gritty of Residential Design

One can tell that *The Builder's Guide to Cold Climates and Mixed Climates* (The Taunton Press, two volumes, 335 and 328 pages, respectively) is a good, informative read; both are written by building scientist Joseph Lstiburek, an authority on moisture-related building problems. Lstiburek, is a dynamic lecturer adept at distilling complex concepts into clear language. It makes sense that his books would be just as concise.

The volumes feature sections on designing foundations, framing, HVAC, plumbing, and insulation systems according to various climates. There's a chapter in each book about designing a house to fit not only the site, but also the microclimate that exists on the site. The appendix includes a once-and-for-all explanation of vapor retarders and where to put insulation in relation to them. But best of all are the pages and pages of clear, understandable, and detailed drawings. *W.T.*

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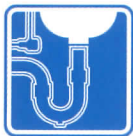
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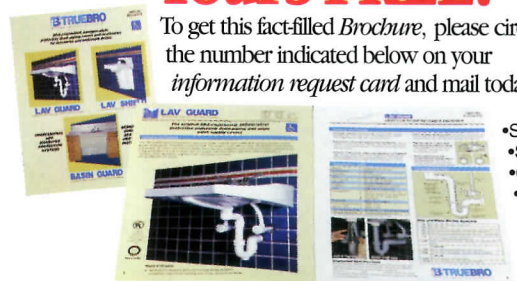
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Enron (l) and Lucent (r) boardrooms, by Paoletti Associates

Window on the World

Imagine that the CEO of a major corporation has just called a meeting to order, and one of the board members makes a motion to discuss a proposed acquisition. The CEO leans forward, and presses a button on a small touch screen. Within seconds, the lights dim, the curtains close, two LCD projectors descend from the ceiling, and the walls at the opposite ends of the conference table magically transform into large projection screens.

The financial officer plugs his notebook into a nearby control panel and sends the latest figures on the merger to one of the projection screens. The CEO presses another button, and the second screen reveals the CEO and his management team at the company about to be acquired. As discussions begin between the two companies, the cameras automatically move to each member as he or she expresses an opinion. As the meeting moves along, presentations are made which include videos and other graphic demonstrations of products in use, plant operations, marketing activities and advertising campaigns. After hours of long distance give and take, the basis for a merger is hammered out to everyone's satisfaction.

Pure fantasy? Not at all. This scenario is played out daily in boardrooms, war rooms, presentation centers and other business communications facilities throughout the world. In order to stay ahead of competition from around the globe, corporations are now more than ever before equipping their boardrooms with the tools they need to make real-time, split-second business decisions. In today's speed-intensive corporate environment, the success of a company is often reflected in the form and function of its meetings/communications facilities.

A boardroom shows the kind of company that you're dealing with, explains George Chin, a vice president and studio director

with Gensler, an architectural firm based in San Francisco. It represents a firm's signature, so it's not surprising that companies often put a disproportionate amount of their money into the areas that the public is likely to see — reception areas, client conference areas, and boardrooms — while spending far less per square foot on private work areas.

What starts as a small remodeling job can take on a life — and a budget — all its own.

Usually budgetary constraints have a tendency to go by the boards because so many groups get involved with these kinds of projects, explains Nathan Chess, a project manager with Hird/Blaker, an architectural woodwork firm based in the Bronx. You've got your basic in-house facilities that are planning it, as well as your IT groups, your MIS people, and your AV squad. And everybody is saying, Listen, you have got to have this. As it gets kicked around, high-level executives become involved who might not normally be involved in an architectural project.

Most AV consultants take a needs-based approach. They spend time interviewing executives — especially those who will be meeting in the boardroom — to find out how the room will be used. We try to do it in layers, says Peter Schmidt, a project manager with CDAI. We start with a general discussion. What types of meetings will be in the room? How many people will be in these meetings? Does everyone have an active role in the meeting, or do some people serve in an advisory role?

Part of the interview process involves deciding who will have the responsibility for the technology after the construction is completed. You have to think about who will be the stuckee, says Michael Leiboff, a principal with the New York-based AV consulting firm Shen Lisom & Wilke. Who is going to be charged with the responsibility of not only operating the room during the important presentations, but providing maintenance and support and — to a certain extent — beating the drum for the technology?

A Collaborative Process

Most high-tech boardrooms involve both an architect and an AV consultant, so there's generally some give-and-take concerning the appearance and performance of the room. It's the fight between form and function, says Chris Maione, with Costello Maione Schuch (CMS) in Long Island, New York. The compromises usually involve hiding the technology from view. A retractable projection screen might be concealed in the ceiling, controls might be mounted in a table drawer, or flat-panel monitors might rise out of



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the table. A high-profile boardroom will have tiny microphones embedded into the table, where a not-so-public training room will have gooseneck microphones for better audio.

The give-and-take between the architect and AV consultant can also involve a series of design tradeoffs. Maione and Chin worked together on a Mercedes-Benz boardroom. A horseshoe-shaped table had been planned, leaving the middle of the table open to the carpet. When, at the end of the project, Mercedes-Benz opted for a solid table, Maione requested that the ceiling be changed, because he had been counting on the carpet to adsorb some of the sound. A table can also affect the visual quality of the videoconference. When you have AV, the surface shine has to go away, because otherwise you get a reflection on the people there in the room, says Chin.

When videoconferencing is involved, Maione will work up a list of AV preferences for the room, such as light-colored fabric, carpet that isn't too ornate, a plain ceiling, or additional lighting. Without that information, our designers might meet with the client and come up with something entirely different, says Chin. The client

MORGAN STANLEY DEAN WITTER

Located in New York. The Morgan Stanley boardroom can communicate via audio- or videoconferencing with many of the company's branch offices throughout the world. It also hosts important press events. Located on the 40th floor of the building, the boardroom is connected to a 6th-floor master control room via fiber-optic cables. A camera in the front wall provides a wide view of the room, and a camera on a back side wall focuses on the podium. A voice amplification system allows people at either end of the 30-foot table to clearly hear the people at the other end.

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RGB SPECTRUM Computer/Video Scan Converter	Pictoretel Concorde Videoconferencing CODEC
Sony RVP 6010 LCD Data/Video Projectors (2)	Ascend Multiplexer and Modem

may want to see dark traditional wood, ornate Oriental carpets on the floor, and chandeliers. We take what the client wants and what the AV guy requires and come to some sort of happy medium.

Lighting is especially important for videoconferencing. There can be so many lights, it looks like a studio, says Chin. You may need literally dozens of lights in the ceiling just to light the space for broadcasting. The higher-than-normal light levels can, in turn, affect the choice of decor. For example, the material on the walls should be reflective, but not so reflective that it casts shadows.

The use of videoconference cameras can affect other design decisions. Video images can make everything appear to be two-dimensional, creating some unusual optical effects, if not handled

properly. The portraits of past CEOs could be confused with the living-and-breathing participants at the table, and vertical or horizontal lines on the wall could appear to pass through the heads of the board members.

Videoconferencing also requires that companies alter the way they hold their boardroom meetings. You can't just have a wild meeting where everybody is talking back and forth, because the equipment is geared to jump to whoever is talking, says Dennis Paoletti of San Francisco's Paoletti Associates, Inc. With auto caption goes caption microphone mixers, the system picks up whoever's sound is closest to the microphone. If I start talking, my microphone is on, and everybody else's is off. If other people jump in and start talking at the same time, you get these random bursts of energy over the system. There needs to be a protocol for running the meeting.

The technology is there to support the meeting

... not the other way around, says Randy Triz, a senior associate with Shen Milsom & Wilke. Fortunately, with today's highly automated systems, the boardroom participants don't have to be ruled by the AV equipment. Many boardrooms are outfitted with touch-panel screens with common-sense labels, such as PowerPoint Presentation or Videoconference. By pressing a single button, you can trigger a sequence of actions, including closing the curtains, adjusting the lighting, switching on various cameras and microphones, and routing connections to specific video monitors and sound systems. We've gotten to the point where if the person at the third chair from the end of the table is speaking, the system knows where that person is, turns his microphone on, and shuts the other microphones off until someone else speaks, says Triz. It also trains a camera in his direction automatically.



Morgan Stanley boardroom by Costello Maione Schuch

High-Tech, High-Security

They sound like props from a James Bond movie (anti-eavesdropping devices, bullet-proof doors, and hidden passageways). In fact, they're an integral part of many corporate boardrooms.

These high-tech devices are designed to maintain the confidentiality of the participants conversation and protect the participants from malicious harm.

Privacy and security are big, big issues, says Costello Maione Schuch's Chris Maione. His firm handles many of the top financial institutions in New York City. Most of the boardrooms that CMS has been involved with undergo bug sweeps before each meeting. Some of CMS clients perform a bug sweep of the whole building, while others continually limit access to the floor of the building that contains the boardroom.

Thinking about using a wireless microphone? Think again. A Fisher Price baby listening device picks up a wireless microphone just fine, says Maione. Corporate spies could also use an inexpensive scanner radio to monitor the conversation. As a result of advancing technologies, companies have to rethink their usual ways of doing business. One company had spent many thousands of dollars to equip its boardroom with the latest privacy measures only to discover that the board members used cell phones inside the boardroom to discuss confidential mergers. The inexpensive scanner radio that can be used to pick up a wireless microphone can also be used to pick up cell phone conversations.

One of the more elaborate measures that corporations use to ensure the privacy of their meetings includes vibrating the walls and windows to evade eavesdropping. We flush the walls with white noise to prevent external eavesdropping devices or devices that might be fixed to the walls, says Maione. He installs tiny speakers into the wall that emit a steady stream of static. You don't hear it, because the noise is in the wall. Instead of picking up the boardroom conversation, a listening device detects only the noise. CMS has installed several of these systems, which are completely hidden from view. Another common method for preventing electronic surveillance is to install a half-inch sheet of lead or copper around the entire room.

If walls have ears, so do windows. Most boardrooms are situat-

GUY CARPENTER & COMPANY

Providing an impressive view from the 51st floor of the World Trade Center, Guy Carpenter's boardroom has a full complement of presentation and videoconferencing gear. In addition to functioning as a boardroom, the space is used for brainstorming, presentation practice, and customer presentations. The room features AV control panels at both the lectern and table, as well as a computer-based workstation at the rear of the room.

GUY CARPENTER TOOL BOX

Sharp XG-E3500U video projector
Autopatch 4 YDM Matrix Switcher

PictureTel 4500 videoconference codec
Creston custom-configured control system

ed in a corner office with a spectacular view, explains Maione. You can point a laser at a window and pick up the voices within the room. The glass vibrates from the voices, and the laser measures the vibration. The guy at the other end has an earpiece and something that resembles a gun, which points a laser beam at the window. The best way to counter this form of corporate espionage is to mount tiny mechanical motors into the window frame to vibrate the glass. Like the white-noise wall speakers, the technology is hidden from view. The motors are usually installed above the ceiling line.

Maione has seen a broad range of boardroom-based security measures. We did a room with a hidden elevator door as a measure against terrorists, he says. Other anti-terrorist devices include boardroom entrances that automatically deadbolt or become impenetrable gates, enough stored food to last several days, and razor blades attached to the lining of the air conditioning ducts to prevent anyone from crawling through.



California Teachers Association boardroom by Paoletti Associates

CEO Wants and Needs

One thing is certain in the process of designing and constructing a high-tech corporate boardroom: Most CEOs don't have the time to become involved in the technical details. However, Randy Triz of New York-based Shen Milsom & Wilke, is spending more and more time talking with CEOs, CFOs, and presidents. They have a goal and vision for the room, he explains. They know that when it comes to their sweetheart room, they need to impart the information themselves. Triz says that executive involvement is especially important for high-tech boardrooms because the technology can't run the meeting. If we're going to be successful, we need to obtain the most concise information — and that has to come from the person with the vision that started the room.

While today's automated control panels make it much easier for non-technical people to control complex operations, it will always be a challenge to fully CEO-proof the controls. Chris Maione of Costello Maione Schuch was explaining to a group of executives that the touch-sensitive control panels are as easy to use as a cash machine, when one executive looked at him and said, I don't know how to get cash from a cash machine.



Presentation room Guy Carpenter's boardroom (above), and (below) by Shem Milsom & Wilke



NEC Technologies PlasmaSync® Monitors and MultiSync® MT projectors Unleash Entrepreneurialism in USC Students

How do you prepare today's MBA candidates to be tomorrow's e-commerce business moguls? If you're at the University of Southern California's Marshall School of Business, the answer is simple: total technology immersion.

At USC's newly opened Popovich Hall, a 55,000-square-foot graduate learning center, more than 2,000 graduate students and professors are awash in the latest display and presentation technology. The technology communicates lessons more effectively and also creates an environment where the emerging world of e-commerce is so ubiquitous that it's taken for granted.

In designing the presentation solution for Popovich Hall, Jonathan Yormark, Ph.D., associate dean for Information Resources at the Marshall School, turned



tors, two PlasmaSync® gas plasma monitors and a multitude of other display products.

After one semester of use, Popovich Hall gets high marks. "The faculty and students, love it," explained Yormark. "One of the big successes is the growing acceptance of the technology among professors. The design of the presentation system has to work for the entire faculty, from those who have no interest in the technology to those at the other extreme who have no interest in using the traditional chalk and blackboard. So the technology has to be both easy-to-use and flexible enough to meet the needs of this range of users."

Eight Popovich classrooms are each equipped with two NEC MultiSync® MT projectors. Professors can display video and data from six sources, including S-video, composite video, data and graphics from laptop computers, and other sources. "With two projectors, there's a huge jump in flexibility," Yormark said.

"Professors can switch from a laptop to a document camera displaying an article from Fortune magazine or even a

videostream of a presentation in another classroom. They also can display two side-by-side images to really make a point."

Additionally, 17 student collaborative learning rooms in the Popovich Experiential Learning Center have NEC MultiSync® MT projectors to let groups of six to eight students preview presentations of their solutions to problems posed by professors.

"We chose NEC because their projectors are very high resolution, extremely bright — so bright that they work well in a full-lights-on environment — and superbly quiet," he said. "All of our classrooms are designed to be voice-only, no-mike environments. We rejected two other manufacturers because their projectors made too much noise."

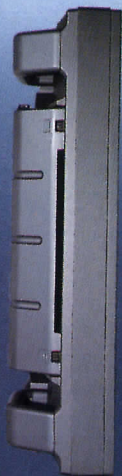
All this technology is intended to acclimate students to the business settings they will face upon entering the work force. "Students work all day in an environment that matches or exceeds the Internet-based world that they live in," Yormark said. We have created a framework where the world of e-commerce is taken for granted, where exotic technology now becomes routine."



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Table Manners

It's the centerpiece of any boardroom, and often the focal point for the room's design and technology. Yet most people have no idea how much work goes into designing and constructing a boardroom table. The tables are generally custom designed for each installation. For a large and elaborate boardroom, an architect might create 100 drawings for the entire room, and an AV consultant might create 30 to 40 drawings for the audio-video equipment. According to Nathan Chess with the architectural woodwork firm of Hird/Blaker, the table might require 5 or 6 drawings and 20, 30, 40, or 50 sections, details, and elevations. Other woodwork in the boardroom might require another 30 to 40 drawings.

Even the most traditional-looking boardroom tables can hide some very untraditional electronics. Chess refers to high-tech boardrooms as Star Wars rooms. They want it to be sexy with all the bells and whistles, he says. They want everything motorized — sliding walls that slide away, tables that slide apart, things that pop up, and things that move down. Literally at the flick of a remote control switch, the lights will come down, the shades will draw, and the walls will slide away revealing a rear projection system.

The high-tech controls are usually integrated into the table, often hidden from sight. You'll have keyboard pullout trays at certain sta-

microphones with papers. Inside the table, there's a subsystem of wires — audio cables, video cables, fiber-optic cables, and power cables. The structural elements that support the overall tabletop also act as raceways and interconnections for all of our electrical work.

Strange, But True

Chris Maione of CMS recalls the time he was asked by a Chinese trade group to build a karaoke system into its boardroom.

Bill Othick of Dayton-based AAC remembers the time an electrician drilled a hole through B. F. Goodrich's million-dollar 300-year-old Persian rug. The electrician actually cut it with his utility knife, so he could run a wire through it, explains Othick. The electrical contractor had to pay the bill to hand stitch it back together.

Sometimes the transportation charge can vastly exceed the cost of the item being shipped. Hird/Blaker's Nathan Chess has been involved in projects where the equipment had to be hoisted into the building by a crane. For a project four years ago, the rear projection screen itself was something like 30 feet by 20 feet, explains Chess. The screen cost about \$15,000, but it cost \$150,000 to get it into the building. It was going up to the 27th floor, so they had to peel the skin off of the building and peel the windows out. In a similar situation, another company hoisted two screens by crane. They

**"Most high-tech boardrooms involve both
CONSULTANT, so there's generally some**

**AN ARCHITECT AND AN AV
GIVE-AND-TAKE."**

tions. When microphones and speakers are required for audio- or videoconferencing, Chess usually builds a combination microphone-speaker into the table near each seat. The challenge is to embed the microphones into the table so that they don't seem to be there, but make them noticeable enough that the participants don't cover the

built one behind a wall for storage, in case the first one ever became damaged. The cost of the screen was relatively small to what it cost to get it into the building.

What's ahead for high-tech boardrooms?

Expect them to become increasingly more sophisticated, as corporations demand up-to-date information and instant communications. Expect the systems to be easy to control by people who couldn't care less about the technology. To fully compete in tomorrow's business world, corporations will have to integrate presentation and communications technology into the workplace — at all levels. Having someone wheel in a slide projector, sit it in the middle of the table, and speak over the noise doesn't come across as professional anymore.

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The Serino Coyne boardroom created by CMS

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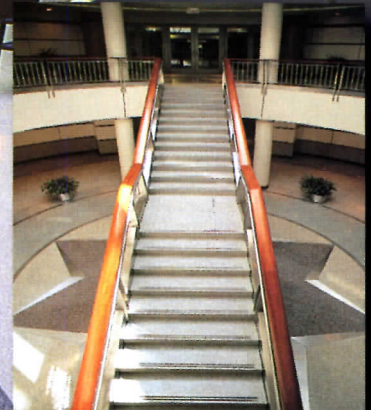
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CIRCLE 60 ON INQUIRY CARD

The Internet and new software make room for architects in facilities management.

By Eric Teicholz

Facilities management is the art of juggling the people, places, and equipment that constitute a company's real estate holdings. It is, in the words of one architect, what happens after the building is done. People who are facilities management practitioners may be part of a division within the company, members of a property management firm, or, more recently, architects themselves.

Designers entered the world of facilities management about 30 years ago when vendors of property-related software found ways to link a company's real estate databases to the CAD drawings generated by architects. Computer-aided facilities management, or CAFM, is a generic term used to define any software applied to facility management tasks. Examples include programs used to track space availability and physical assets, such as furniture and equipment; schedule shop personnel; maintain occupancy plans; or analyze and manage relocations, such as space planning and forecasting, help desk and maintenance work management, furniture layout, asset management, room scheduling, energy management, and construction project management.

Facilities management tasks vary among different architecture firms and change over time. The size of the client also determines what services are needed. In general, clients with real estate holdings less than 75,000 square feet don't need facilities management or are too small to generate a profit for architects with facilities management divisions.

CAFM is, in many ways, a natural extension of an architecture firm's work because architects not only create and maintain the drawings, but they also understand the building systems and program. "Disconnecting architecture from what facilities managers do is inefficient," says Susan Mosby, principal-in-charge of facilities management for CDFM² in Kansas City, Mo., an architecture firm that generates about 10 percent of its revenues by providing CAFM services.

Design and construction—the fun part for most architects—account for only 15 percent of the life-cycle costs of a building. But designers who offer their clients CAFM have an opportunity to participate in, and generate revenue from, ongoing maintenance and services required during the remaining 85 percent of the building's existence. CAFM also may serve as the basis for a better, more lasting client relationship. "One of our clients wanted a 50,000-square-foot addition. Using CAFM software, we did a study that proved they could reconfigure the offices within the existing envelope and forgo the addition," Mosby says. "For less than \$10,000—the cost of the study—they saved \$5 million. It seems that we also lost that design business, but just a few years later, the client needed that addition and more. We've done all their subsequent design work."

Eric Teicholz is an architect and founder of Graphic Systems Inc. (www.graphic-systems.com), a CAFM consulting company. Currently, he is writing Facility Management and Design Handbook (McGraw-Hill), his tenth book.

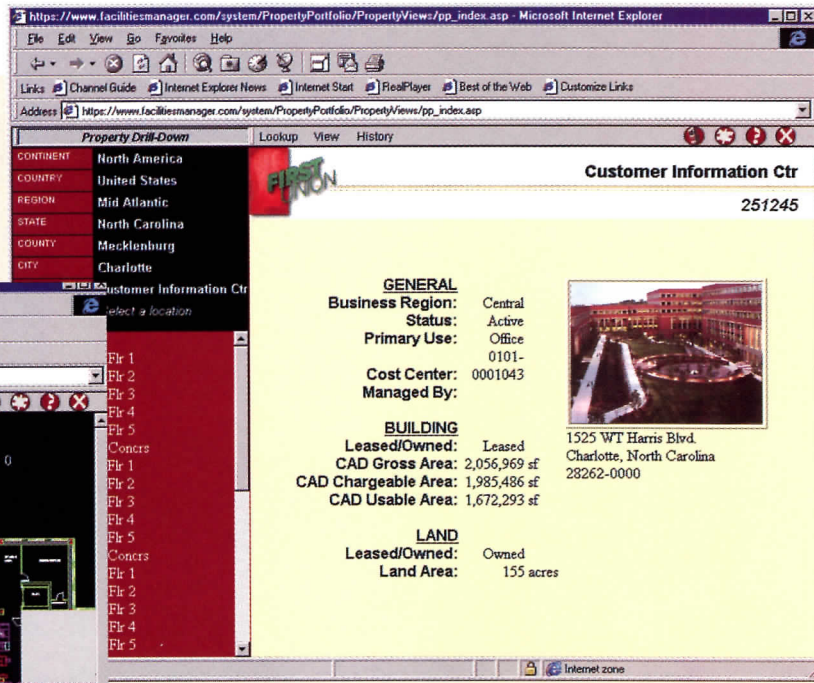


Performing a company's facilities management tasks forges a different type of relationship between client and architect, one that is more of a partnership. "We have such an intimate knowledge of our clients' business and how they use their space," Mosby adds. "Our solutions are much different and, I think, much better as a result."

The evolution of CAFM

When facilities management tasks were first computerized, software vendors wrote stand-alone applications using office automation software, including spreadsheet, database, and word-processing programs. As computers became more powerful, these vendors started linking graphic software—principally CAD and database software—to offer integrated management applications that shared data.

Software developers evolved along two paths, which remain today: either they create software for new applications, or they build links from CAD or other graphic programs to third-party software packages that perform various facilities management functions. An architect acting as facilities manager might, for example, use a CAFM package for generating CAD drawings and tracking space occupancy, but use a specialized



First Union Bank's Customer Information Center in Charlotte (opposite bottom) is one of many properties for which Little & Associates Architects provides a Web-based property portfolio. This offers a building overview (above) and tracks occupancy for each floor (left). Access to the high-security site, which contains confidential information, is limited. The architects also design some bank branches (opposite top) and provide them with CAFM.

third-party software package for forecasting space needs or for generating stacking and blocking diagrams for space planning.

Most CAFM vendors, such as FIS (www.fisinc.com), Peregrine (www.peregrine.com), FM:Systems (www.fmsystems.com), and Archibus (www.archibus.com), build facilities management applications on top of

“DISCONNECTING ARCHITECTURE FROM FACILITIES MANAGEMENT IS INEFFICIENT.”

existing CAD software, such as AutoCAD and Microstation. Others, such as Drawbase (www.drawbase.com) and Aperture (www.aperture.com), develop their own CAD capabilities by linking to external CAD software.

In the early 1990s, powerful database software from companies such as Oracle or Sybase was introduced. These let the user pull in information as needed from various programs located on a corporation's server instead of retaining all the information on the desktop. Suddenly, it was possible to disburse software applications and databases throughout an organization, eliminating much data redundancy, speeding up processing time, and making it easier to access a broader base of information.

For example, CAFM software, operating on a manager's desk, might extract human-resource information or financial data from different departments within a network. This data could then be used for occupancy reviews or project management purposes.

Enter the Internet

In the mid-1990s, Internet access gave software vendors an opportunity to link disparate and multiple sites to provide users with ready access to database queries, CAD views, financial reports, work schedules, occupancy analyses, and other aspects of CAFM. With the Internet came intranets and, more recently, extranets, both of which carried additional implications for facilities management.

The Internet is used by facilities managers in many of the same ways architects use it: to seek information on materials, services, and products; to make purchases; to communicate with others; and to download software or plug-ins. Individual software applications are easy and inexpensive to obtain on the Web. An architect needing, for instance, a graphics program to draw a specialized space can pick up what is needed online. For example, VISIO 2000 (www.visio.com) offers facilities man-

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CIRCLE 61 ON INQUIRY CARD

CASE STUDY

Little & Associates Architects, Charlotte
Employees: 550
Employees in facilities management: 38
Revenue from facilities management: 10 percent

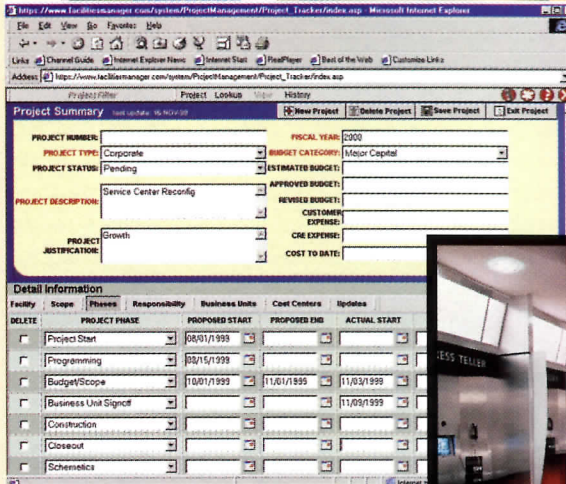
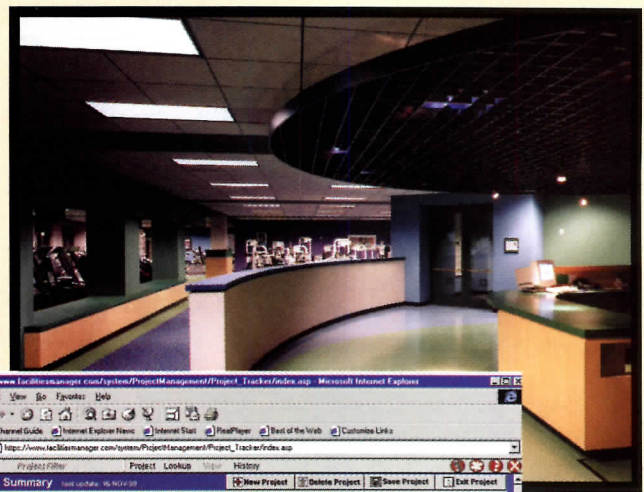
About seven years ago, a client of Little & Associates asked the architects to track the company's occupancy. Because Little was already doing most of the financial institution's interior upfits, maintaining the occupancy information was easy.

The client wanted "more and more" help in managing its properties, says Susan Hensey, director of Little's facilities management division. Soon the firm was involved in space tracking, real estate portfolio management, lease and internal rent management, strategic facility planning, asset management, property maintenance, and area

calculations. Today, the division, the fastest growing within the firm, has architects who specialize in facilities management and provide these services on-site in cities up and down the East Coast.

The company hosts its own project extranets with Framework Technologies software (www.framework-tech.com), and rents extranet space from Bidcom (www.bidcom.com), depending on the needs of the customer. When construction is complete, the contents of the extranet are moved onto a CAFM Internet site that the client can access as needed.

The facilities management division is still an adjunct to Little's main focus: architecture. "The CAFM service creates ongoing relationships. With some of these clients, we still have to compete for work, but we have an 'in,'" Hensey says. "When you know more about the client's wants and needs, you can provide better architectural solutions."



First Union Bank (above right) is one of Little & Associates largest design and CAFM clients.



agement software modules that are used for designing rooms, linking to databases, generating reports, or inputting information. These facilities management applications are available at very low cost.

Susan Hensey, director of facilities management for Little & Associates, an architecture firm in Charlotte that specializes in serving retail and financial clients, uses these Web-based products frequently. "I download what I need, then throw it away when I'm done. It's quick and usually free," she says. "I can also subscribe to a new program for the term of the contract with the client."

But not all packages link easily and run well together. In fact, most CAFM software vendors try to control online access to their software and do not link to other Web-based software programs very efficiently. The new Web-based products are likely to pose a threat to traditional CAFM vendors, unless these vendors change their Internet software architecture, too.

The Internet also threatens to fragment the practice of facilities management. Functions that were traditionally the domain of facilities managers are increasingly performed by others within and outside the company. Business units don't have to go through facilities personnel to make purchases of things like workstations. They can go to the Web and, using standards set by the company, place the order directly. That means less paperwork and faster delivery. It also siphons facilities management functions and disburses them through the organization. For architects, it offers, once again, an opportunity to sell services throughout an organization, not just to a facilities management department.

Intranets are valuable, too

Corporate intranets were—and continue to be—the primary venue for sharing the reports generated by CAFM software. Initially, these were generated in HTML. The problem was that the data was only as current as

the last posting. For example, a member of the facilities management team might post an occupancy analysis, which looks at the physical location of people within a building. That report would have to be manually updated on a regular basis or it would quickly become obsolete, especially at a flexible company where team structures rapidly change.

Reports can now be generated in real time, thanks to technology that interacts with the CAFM software directly. Someone using a corporate intranet can download the latest version of the data when it is required by a particular application.

There are other advantages of having intranet access to facilities management reports. It allows department heads to check the status of their furniture orders, for instance, or to verify the company's design requirements and specified vendors before ordering certain components. These reports can be used to schedule conference room space, check the construction status of a new facility, schedule a move, or even find a caterer to supply food for a corporate event. Access to all this information may be limited, or there may be graduated tiers of security.

Extranet impact

The next leap in facilities management is using project Web sites or extranets for facilities management. Extranets offer document management services and track project data in the form of drawings, specifications, and change orders. The secured extranet site links the design consultants with clients, engineers, contractors, subcontractors, and other members of the design and construction team.

Within the past 18 months, more than 60 software vendors began offering project Web site software. If an architecture firm is large enough, this software can be loaded on its computers, offering greater control over the information generated. Another option is to rent access

CASE STUDY

CDFM², Kansas City, Mo.**Employees:** 45**Employees in facilities management:** 8 to 10**Revenue from facilities management:** 6 percent

"We think of ourselves as strategic partners with our clients. We not only develop the real estate, we keep it going for its life cycle," says Susan Mosby, principal-in-charge of facilities management for CDFM².

The architecture firm, which does about 60 percent of its business in corporate and public-sector work, with the balance in interior design, launched its facilities management division about seven years ago when a major client asked for help in managing its real estate department. "Taking this on proved that we did know how to manage major square footage," Mosby says.

Among the services the firm

offers are property management, lease administration, space management, data and telecommunications, cabling, tracking of work orders, and move orders. It uses AutoCAD for design drawings and Archibus to connect the drawings to the databases. CDFM² also uses Microsoft Access to get information in and out of Archibus and tie into the client's software. The latter includes specialized systems for work orders, leasing, and roof management.

There are reasons why other architecture firms avoid facilities management: it's not as glamorous as design work and it's a substantial business commitment. Mosby, however, is convinced that facilities management has made CDFM² a better firm. "When we are doing architecture, we look at it in the mindset of property management. That leads to better solutions—we understand details that are easier to maintain, bay dimensions that will benefit changing use patterns, and other more practical aspects."



Projects designed and managed by CDFM² include a renovated office building and interiors for DST Systems Inc., a mutual funds services firm in Kansas City, Mo.

to software hosted on the vendor's computers. Some software vendors offer free project Web site access. Autodesk spent about \$50 million developing a site, Buzzsaw.com, that provides complimentary project Web site access in an effort to get the design industry to use the Autodesk portal.

Despite the apparent ease of access, clients, consultants, contractors, subs, and others have been slow to adapt to this technology. This is likely to change and extranets, by controlling who is accessing, using, and managing facilities management data, will continue to change the relationship between architect and client. "We're finding the client is more involved up front in a new project and in every step of a renovation," Hensey says. For example, human resources might want to know how a move will affect staff members, finance might want to track project costs for budgeting and capital planning purposes, and business unit managers might want access to floor plans to configure offices.

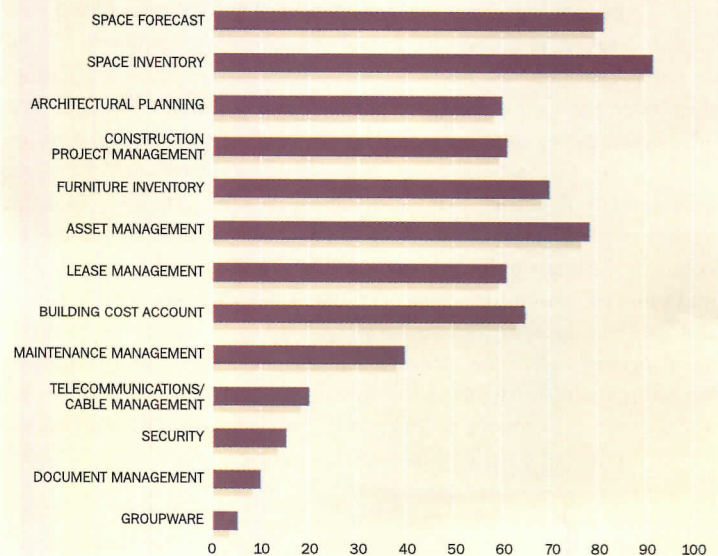
Hensey sees extranets as increasingly important for client communications. Information is gathered as the project progresses and then transferred to an ongoing CAFM system for analysis, maintenance, and reporting. Extranets, which serve as repositories for documents and communications during construction, are ready-made archives. Instead of shutting extranets down when a project is finished, the architect can host the information on a local server and provide the building's facilities managers access. Posting this information—as well as reports, schedules, and other information generated by CAFM software—on the Internet gives the illusion that the facilities management service is located in the client's office.

The promise of E-commerce

To use Internet parlance, we are entering a B2B world; business-to-business sales via the Internet are expected to increase tenfold in the next four years. Project Web sites, for example, let remote users share documents,

and construction materials and services will most certainly be purchased on the Internet, with manufacturers bidding online for the business.

The Internet will continue to exert an ever-increasing influence on how facilities are managed. Meanwhile, the number of architects offering facilities management services is likely to grow as more clients request this service. And software vendors will respond with flexible programs that are available via the Web to accomplish facilities management tasks. ■

WHAT CAFM IS USED FOR

While managing space inventory and assets makes up the largest percentage of CAFM applications today, growth in project Web sites promises to shift this focus.

Digital Architect

Making project collaborations effective

By Jerry Laiserin, FAIA

Now that most architects rely on computer and communication technologies to perform office functions and project work, these systems are influencing how architecture firms work together. The connectivity afforded by digital tools makes possible new levels of coordination and management control in single-project associations, more formal joint ventures, and permanent partnerships created by mergers or acquisitions.

Expertise by associations

An "association" involves two or more firms providing architectural services for—and sharing the credit and fees from—a single project. For example, national or international firms expert in particular building types, such as convention centers, museums, and performing arts spaces, associate with local or regional firms knowledgeable of local codes, contractors, and approval processes. Often, the firm providing construction documents or construction-administration services will be named "architect of record." Some firms associate for the purpose of seeking a project, while others hook up after one firm already has been awarded a principal role in the work.

Differences in the roles of the participating firms affect the technological side of the collaboration, according to Tim Rice, AIA, information systems manager at LMN Architects in Seattle. This 130-person practice frequently shares project responsibilities with other firms. LMN has served as the design or building-type consultant to other firms, as the prime architect with

local associates in distant cities, and as the Seattle architect of record for out-of-state practitioners.

In particular, Rice distinguishes between projects with a distinct hand-off from one firm to another at the end of some designated phase and projects with continuous collaboration across multiple phases. For those with a distinct hand-off, explains Rice, it is critical that the "handee" monitor the "hander's" progress, starting at the very beginning of the drawing-file setup, so there are no unforeseen problems when the drawings are exchanged.

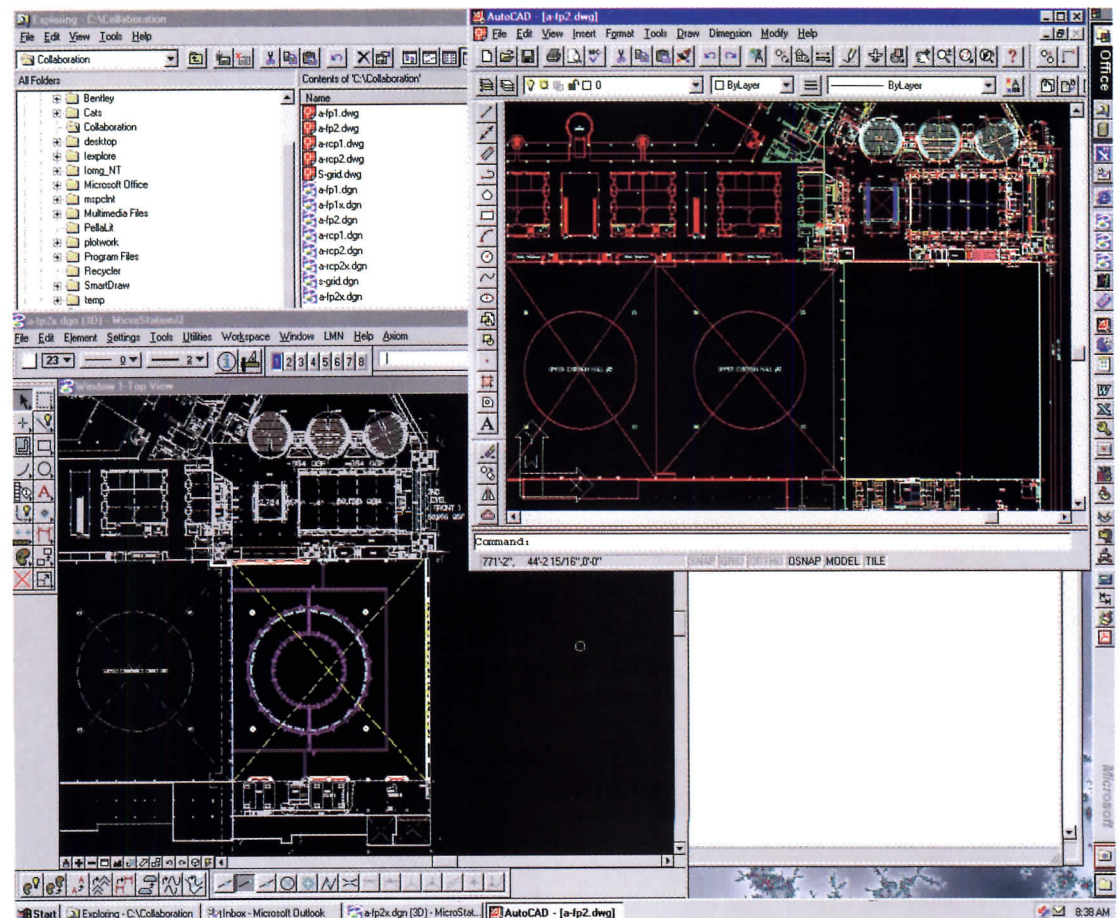
The best technique to avoid such surprises, says architect Elizabeth Skowronek, the associate in charge of technology at 90-person Gwathmey Siegel & Associates in New York, "is for knowledgeable parties on both sides to sit down at the early stages and work through all the issues, like setting which office standards will apply to the project documents." Skowronek finds that the variety of CAD systems is rarely an issue as long as both firms agree on the basic choices of drawing conventions, layer/level naming, and so on.

Collaborations across multiple

project phases pose greater technological complexities, more file translations, and additional coordination issues. LMN has participated in many such continuous collaborations and, according to Rice, derives many design and practice advantages. But these collaborations may also create inefficiencies.

"The whole point of CAD features like reference files is the efficiency of drawing things only once and then referencing them in to other drawings. If one firm works on base floor plans while another firm handles details, however, that dynamic linking

When collaborating firms use different CAD programs, such as Autodesk's AutoCAD (bottom) and Bentley's Microstation (inset), special care must be taken with file conversions.



Contributing editor Jerry Laiserin, FAIA, develops collaborative strategies for architects and their technology providers.

of reference-file information is broken," Rice says. He also finds that the alternate method, known as "round tripping," in which each of the collaborating firms takes turns successively editing the same file, can cause data degradation on every translation. The best course, Rice says, is to decide which firm will own which drawings during which phases. This means that each firm will spend some additional time and money redrawing in its own files those changes made by the other firm.

Joint ventures

The Jerde Partnership International in Venice, Calif., specializes in themed environments, like the Mall of America in Bloomington, Minn., or CityWalk at Universal Studios in Los Angeles. According to architect Thomas Jagggers, Jerde's vice president and chief technology officer, many of the 125-person firm's projects are so large that they need to form joint ventures with other architects for to execute construction drawings. While there is no clear dividing line, joint ventures typically entail closer collaboration over a longer term than do associations, which are looser and more ad hoc. Consistent with this closer collaboration, Jerde emphasizes a fully integrated technology process for joint ventures that includes the choice of tools, the level of standards, and an insistence on high-speed communication capability.

Jerde has developed a process of two-way workflow that Jagggers calls Construction Document Administration. Says Jagggers, "This is based on all participants matching our tools: Microsoft Office, AutoCAD, 3D Studio, Internet-compatible E-mail, and file transfer protocol (FTP). The entire team needs to have comprehensive, universal standards that are flexible enough for all team members to participate." Because CAD layers play such a crucial role in such standards, Jerde developed its own

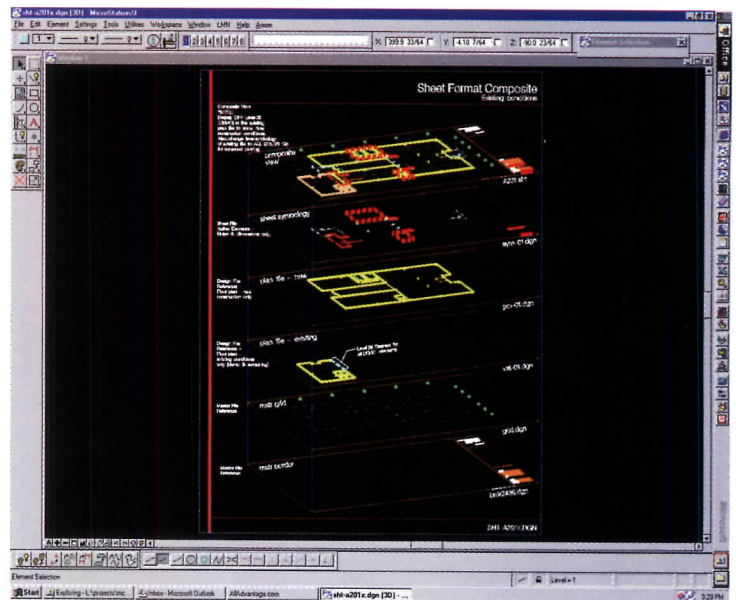
layering system. Jagggers finds the AIA's CAD Layer Guidelines too inflexible to accommodate the multiple engineering disciplines, landscape architects, environmental graphics designers, and others involved in large international projects.

Another significant coordination issue for joint ventures is keeping the team's software in synch throughout a multiyear project development cycle. "We may start a project today with AutoCAD 2000 as our software standard," observes Jagggers, "but by closeout in 2005, most of the team will have upgraded two or three times and some members may no longer be on the same version." This problem is equally true for scheduling or word-processing tools. While not imposed as a contractual obligation by Jerde on its joint venturers, the firm issues a project book of standards with the expectation of conformity throughout.

A high-speed connection to the Internet has now become part of that "expectation of conformity." An ISDN link at 128 kilobits/second (128k) is the minimum acceptable, in Jagggers' opinion, and is widely available in the Pacific Rim countries where the firm works extensively. Jerde prefers its joint venturers to have a fractional T-1 connection at 384k or faster, wherever it is available, especially as the firm expands its electronic workflow to include not just CAD files but also scanned images, 3-D models, and digital project photos. Jerde recently installed an in-house video-conferencing system. Even renting the video connection with the joint-venturers at \$600 per hour saves substantially on travel time and expense for distant project locations, like Hong Kong.

Mergers and acquisitions

When two firms permanently combine resources, the resulting transaction may be characterized for legal and accounting purposes as a merger or an acquisition, but the effect on the combined practice is identical. In either case, many of the same technological concerns of an association or joint venture apply. The permanence of the relationship, however, demands a deeper sense of commitment by the new partners.



Architects sharing work need to establish strict procedures that define which firm is responsible for which files.

"People need to go in assuming there will be compromise on both sides, and they should expect to make a significant investment in getting all the technology up to the same high level," states Carl Roehling, FAIA, president of the Midwest group of regional offices within SmithGroup Inc. in Detroit. Within the past few years, this 1,000-person multidisciplinary firm has increased the number of its offices by more than 50 percent through mergers and acquisitions of firms in Manila, San Francisco, Michigan, and Washington, D.C.

SmithGroup was bigger and had more resources than the firms it absorbed and "therefore brought a higher level of infrastructure," according to Roehling. Merging CAD software, E-mail systems, and local area networks was generally easy because the compatibility and conversion issues associated with these mainstream tools are well known. Merging some applications proved problematic, however, when the staff members of a merger partner expressed preferences for tools that did not match the firm standard.

For example, when some merged employees had to switch word-processing applications, the firm had to provide document-conversion templates and additional training to smooth the transition. In other instances, change in procedure, not

software, was the issue. Some project managers in merged offices preferred the immediacy of keeping their own job-costing spreadsheets over having to wait for centralized accounting reports to be disseminated from SmithGroup's Detroit headquarters. This reluctance was overcome by making the reports, generated in the CFMS/Advantage accounting system from the Harper and Shuman division of Deltek Systems, immediately accessible via SmithGroup's wide area network (WAN).

The firm's WAN also supports an Intranet, or Web browser interface to internal files [March 1999, page 39], that enables everyone in the far-flung practice to share the same view of the same information at the same time. This technology makes mergers more effective because communications and connectivity knit the organization into a cohesive whole. Roehling concludes that "earlier waves of mergers among distant partners did not work as well from a management perspective, but now communication substitutes for transportation, making a large firm much easier to run." ■

WWW For more information on project collaboration tools go to **Digital Architect** at: www.architecturalrecord.com



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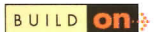
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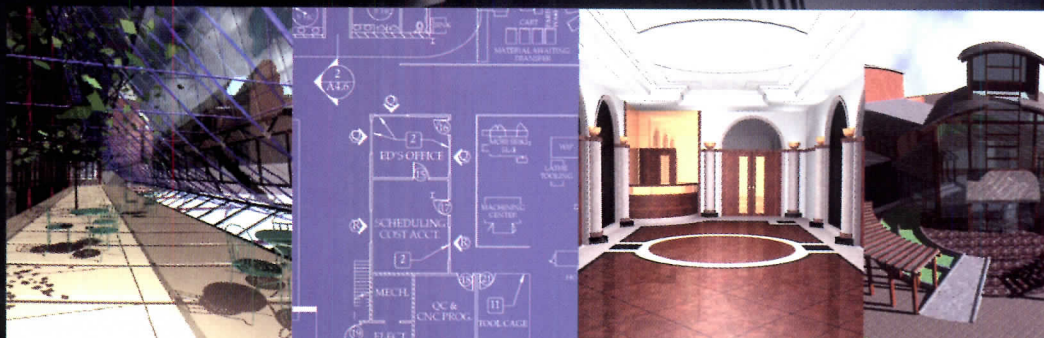


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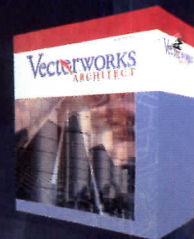
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Software Reviews

Six new packages with a focus on CAD

By Jerry Laiserin, FAIA

New name, same quality

VectorWorks Architect, Diehl Graphsoft



VectorWorks creates 3-D images like this one quickly.

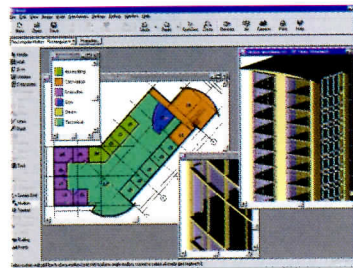
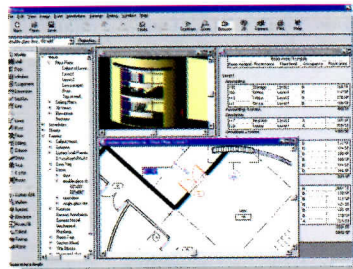
Big-name, big-budget CAD tools often impose extensive overhead in drawing file setup. So, many architects keep a copy of MiniCAD around for quick 3-D studies, interior perspectives, and so on. Recently renamed VectorWorks, the former MiniCAD is a general-purpose design tool. The latest version, VectorWorks Architect, expands the product's architecture-specific capabilities with a range of tools for walls, roofs, and stairs, plus libraries of architectural components, such as windows and doors.

Windows and Mac versions of VectorWorks reflect the original MiniCAD's ease of use. Drawing setup is simple, 3-D models are easily extruded from plans, and rotatable perspectives are quick to do. The new architectural components merge seamlessly with the rest of the interface, offering drag-and-drop convenience for most design tasks.

MiniCAD always delivered a high level of functionality for a low price. VectorWorks extends that value into the emerging realm of object-oriented CAD—all of the software's new tools and libraries are actually integrated software objects; the computer representation of a door has a degree of data awareness rather than being just a dumb collection of line seg-

ments and arcs.

Unfortunately, architectural objects created in this program generally do not retain their "intelligence" when transported to another program—a problem that is not unique to VectorWorks. The soft-



At last, Revit delivers 3-D CAD.

ware nevertheless maintains a price performance edge over its competitors.

System requirements: Pentium PC with Windows 95/98/NT4.0/2000, 32MB RAM (64MB for NT), and 100MB free disk space; or Power Macintosh with System 7.5 or better, 48MB RAM, and 100MB free disk space.

Contact: Diehl Graphsoft, 10270 Old Columbia Road, Columbia, Md. 21046; 410/290-5114; www.diehlgraphsoft.com

Rev it up!

Revit, Revit Technology Corp.

Revit, a radically new software system from a startup company,

delivers on the formerly unfulfilled promise of 3-D CAD for architecture. Although there are some minor gaps in this initial release, Revit's benefits are so compelling that all architects, regardless of the CAD system they are now using, should consider it. This is software that fits the architectural design process as smoothly as an Armani suit.

CAD researchers have long known the benefits of "object CAD," or the ability to link 3-D architectural CAD entities, such as doors and windows, to data, such as sizes and quantities. But it wasn't until powerful hardware at low prices became widely available that CAD software developers added object-oriented capabilities to existing software. The founders of Revit have an additional advantage over other CAD vendors: they are from a CAD company, Parametric Technology, that specializes in mechanical design. As a result, they approach CAD for architecture with a blank screen and an unbiased keyboard. The resulting software is fresh and functional.

In Revit, everything is an object, from the obvious drawings, models, and components, to the less expected schedules, notations, and dimensions. Need to resize a door? Edit it on the plan, elevation, section, perspective view, or even the door schedule, and all other views update automatically. This ability to coordinate every view delivers time savings and quality improvements that many other CAD programs rarely deliver.

Add in a no-risk, pay-as-you-go licensing scheme with in-depth Internet support, plus full AutoCAD compatibility, and the resulting

package is virtually unbeatable. The only minor drawbacks for early adopters will be the absence of Microstation compatibility and some limitations in developing large-scale detail drawings. But these should be worked out within months, according to the company.

System requirements: Pentium PC with Windows98/NT/2000 and Internet connection.

Contact: Revit Technology Corporation, 300 Fifth Avenue, Waltham, Mass. 02451; 781/839-5300; www.myrevit.com

Next generation CAD

ARRISCAD-2001, Sigma Design International

An "arris" is a sharp edge produced by the meeting of two surfaces. This cutting-edge software has long been the 3-D architectural package of choice. Now, in its newest generation, ARRISCAD, sports an easy-to-use screen interface that enables officewide management of multiple projects.

Sigma Design International is one of the few CAD companies headed by a hands-on, practicing architect. That direction shows in the many convenience features geared to daily chores in the studio. While a fully interactive 3-D building model remains a mouse-click away, ARRIS goes out of its way to make the appropriate 2-D drawing tools and symbols easily available for the task at hand. For example, a palette of "repeated items," like columns and light fixtures, helps speed up plan layouts.

While the latest Windows interface still contains hints of ARRIS's 1970s origins on UNIX-based mini-

Software Reviews

computers, the newly refined version is more powerful, yet much easier to use. Sigma's emphasis on ease of use extends to the purchasing and setup of the system, with the software available already installed on select preconfigured versions of leading PC brands like Micron and Dell. These system bundles offer outstanding savings in money and time. Unlike many competing vendors' "shrink-wrap" product offerings, ARRIS comes with extensive training, support, and consultation options.

Contact: Sigma Design International, 7228 England Drive, Alexandria, La. 71303; 888/990-0900; www.arriscad.com

Staging a comeback

DataCAD 8.5, DataCAD LLC

In the early days of DOS-based PCs, DataCAD's keyboard shortcuts and special macro commands made it a standout for architectural productivity. There was even a time when DataCAD bore the imprimatur of the AIA. But a succession of managerial and ownership transitions and shifting marketing strategies paralyzed product development during the crucial transition from DOS to Windows. With version 8.5, DataCAD is staging a comeback.

DataCAD, as the name implies, was an early adopter of linkages between drawing elements and external data, such as a bill of materials. Though not as sophisticated as the drawing and data links in newer object CAD programs, the links in DataCAD serve the needs of nearly 200,000 registered users. Similarly, the user interface emphasizes convenience and speed in 2-D drafting because that's what users tell the developers they want, even though quick and easy 3-D is available in the package.

The plethora of task-specific tools and commands cluttering the screen interface and the underlying code is problematic. It's confusing to novice users and unwieldy for the program developers. DataCAD is, however, still the best low-cost, full-featured tool for architectural drawing.

System requirements: Intel 486 processor or better, with Windows 95/98/NT4.0, 32MB RAM (64MB for NT), and 100MB free disk space.
Contact: DataCAD LLC, 20 Tower Lane, Avon, Conn.; 860/677-4004; www.datacad.com

Old pro learns new tricks

ArchiCAD6.5, Graphisoft

Considered one of the best 3-D CAD programs for architecture, ArchiCAD strengthens its position with the powerful new features in its latest release. Among these is a new drawing management capability for reference files, called hotlinking, which makes this version suitable for small and large projects.

Here's how it works. When CAD first emerged on the primitive PCs and Macs of the early 1980s, software developers had to scale their ambitions to the file-size limitations of the available hardware. Many chose a system of reference files whereby parts of a drawing or project were parceled out among multiple files that referred to each other. This system kept file sizes manageable so firms could handle larger projects.

However, this approach works better for 2-D drafting than for integrated 2-D and 3-D design, called "virtual building." The developers of ArchiCAD use an integrated 3-D virtual-building approach, with all the design elements and related data in one project file. By adding the reference-file capability of hotlinks to its virtual building model, ArchiCAD now combines the best of both worlds.

ArchiCAD is one of the few architecture-specific CAD programs still available for both PCs and Macs and allows users to switch easily



This estate was designed by MontAlto Architecture using the new ArchiCAD 6.5. This version permits hotlinking among reference files.

between 2-D and 3-D work modes. The software is marred by its limited Internet connectivity, at least compared to its competitors, but that is a small quibble in an otherwise world-class product.

System requirements: Pentium PC with Windows95/98/NT4.0/2000, 64MB RAM, and 300MB free disk space; or Power Macintosh with System 7.5 or better, 96MB RAM and 200MB free disk space.
Contact: Graphisoft US Inc., 235 Kansas Street, San Francisco 94103; 415/703-9777; www.graphisoft.com

Sharing updated files

EZ, Sigma Design International

The World Wide Web was expected to become one of the great equalizers, enabling anyone who owned a computer equipped with a browser to view any file created in any program on any other computer anywhere in the world.

Web browsers, however, simply present files drawn from elsewhere, usually a centralized server. But because architectural drawings, documents, and data are updated and changed around on local computers, the material on the centralized server is likely to be out of date. Project extranet services

that rely on copying files to a centralized server suffer from this drawback as well.

Independent of the Web, however, any Internet-connected computer can be a server, making local documents available to others without first dragging copies around to central servers. Viewing files collaboratively, wherever they might be, with neither a Web browser nor a centralized Web server, is the mission of EZ.

Initially marketed as ARRISview, to identify it as a viewing tool for ARRISCAD files, EZ also allows users to view and mark up any file. None of the collaborators need the software that created the file, and virtually unlimited users in diverse locations can concurrently share an interactive view of a file. Because only the changes to files are transmitted, the responsiveness of communication is much faster than browser-based file viewing. Though it is not free, as most browsers are, EZ is inexpensive for its power and functionality.

System requirements: Pentium PC with Windows 95/98/NT4.0/2000, 16MB RAM, and Internet connection
Contact: Sigma Design International, 7228 England Drive, Alexandria, La. 71303; 888/990-0900; www.ezarchitect.com ■

New Products

Commercial door manufacturers and specifiers can expect positive-pressure fire testing to become a more prevalent issue in the industry, according to John Geniesse, technical manager of the Door and Hardware Institute. ADA requirements also remain an important concern for the melange of commercial doors available. *Rita F. Catinella*



20-, 45-, 60-, AND 90-MINUTE POSITIVE-PRESSURE FIRE DOORS OFFER CODE COMPLIANCE

With the acceptance of 1997's Uniform Building Code (UBC) 7-2, the International Conference of Building Officials dramatically changed the standards for design, testing, and certification of fire-rated opening protection systems to more accurately reflect real fire conditions. For a door to be labeled in compliance with the code, the labeler needs to know the details of the final installation, including hardware, frame type, lite kit, and gaskets to be used.

VT Industries has developed a line of positive-pressure doors that meets UBC 7-2-1997 requirements. In a positive-pressure burn cycle, the face veneer burns off and a ½-inch edge strip burns off; then, an intumescent layer expands to seal off the opening from smoke. VT doors arrive at the site ready to hang, while most other fire-door systems require application of an exposed intumescent seal to the door jamb. VT engineering has built all the positive-pressure require-

ments into the doors, making installation simple. The doors do not require a special frame, special hardware, or additional time or expense, and some VT doors do not require intumescent material in the door to meet UBC 7-2-97.

Doors are available with wood veneer and high-pressure decorative laminate faces and can carry fire ratings up to 90 minutes. To achieve "S" rating, a fire-rated smoke gasket (supplied by others) must be applied around the perimeter of the frame. Approved hardware includes mortise locks, cylindrical and card locks, deadbolts, and standard hinges.

Twenty- and 45-minute fire doors can use up to 1,296 square inches for lites; 60- and 90-minute fire doors can utilize up to 100 square inches for lites. Larger lite sizes are available using special materials. 800/827-1615. VT Industries Inc., Holstein, Iowa.

CIRCLE 200

GARAGE DOORS OFFER LEVELS OF VISIBILITY

The AlumaView Model L (top) features a 1 ¾-inch-thick door with a durable narrowline rail construction. Available with or without sectional aluminum panels, this model has a maximum opening width and height of 14 feet. It is available in any of Raynor's 187 ArmorBrite colors or with a clear anodized finish.

Raynor's StyleForm Commercial Decade ShowCase model (bottom) features a woodgrain texture, two-sided steel design, galvanized steel track, and durable, steel-wheel, ball-bearing



rollers. 800/4-RAYNOR. Raynor Garage Doors, Dixon, Ill.

CIRCLE 202

FOLDING GLASS WALL OFFERS AN ALTERNATIVE TO TRADITIONAL SLIDING-GLASS DOORS

Traco Skytech Systems' Mirage folding-glass wall, shown here at the Back Bay Brewing Company in Boston, offers an alternative to common sliding-glass doors. The product provides a 92 percent opening and is easily integrated into an existing structure or new construction. The glass wall is available in standard units up to 20 feet wide by 6 feet, 8 inches high and in custom units up to 10 feet high. A custom-manufac-

tured trolley system with fully sealed bearings and nylon rollers supports the weight on the floor, allowing the user to open and close the accordionlike door with ease. The standard wall comes with Low-E double-insulated glass, heavy-duty aluminum framing, and a flush-bolt locking system at the top and bottom of every second panel. 570/752-1111. Traco Skytech Systems Inc., Bloomsburg, Pa. CIRCLE 201



New Products

► Stainable steel doors

Madera stainable steel doors have a rich grain pattern engraved in their steel sheets. The embossed six-panel doors (with narrow lite or half glass) feature wood-grainlike engraving in the same direction as the stiles and rails. These doors are available in 6-foot, 8-inch and 7-foot heights for use in up to three-hour positive-pressure fire openings. 615/661-5030. Ceco Door Products, Brentwood, Tenn. **CIRCLE 203**



▼ Revolution of the masses

The Crane Fulview Door Company manufactures custom and standard revolving doors in aluminum, bronze (muntz metal), stainless steel, and wood and offers a selection of power-assisted, two-way security, and exit-only doors. Crane Fulview's revolving door was intended to capture attention at the Cheesecake Factory in Chicago, designed by architect Jordan Mozer. The satin-finished bronze enclosure and soffit fit into the custom entrance of the restaurant. The door features painted wood wings with oval glass. Other installations include the Milwaukee

County Courthouse and the NBA Store in New York City. 800/94-CRANE. Crane Fulview Door Company, Lake Bluff, Ill.

CIRCLE 204



▼ Intumescent-free fire doors

By using Firestop I and Firestop II products in 20- and 45-minute fire-door assemblies as stiles and rails, Georgia Pacific can offer intumescent-free positive-pressure constructions for UBC 7-2-1997 compliant fire doors. 800/BUILD-GP. Georgia-Pacific Corp., Atlanta. **CIRCLE 205**



◀ No visitors allowed

The Rasco Industries' Bug Blocker overhead screen-door system can be installed behind existing rolling steel doors to reduce pest infestation while providing necessary security, cooling, and ventilation. The tight-fitting rolling screen door is designed for manufacturing, food-processing, and warehouse facilities, among others. Once mounted, either door—screen or steel—can be operated independently to regulate air-flow. 612/479-6097. Rasco Industries Inc, Maple Plain, Minn. **CIRCLE 206**

► Door frames in a snap

Chicago Metallic's prefinished door/frame systems achieve a professional look that eliminates the need for painting on the job site. Easily installed by one person, the frames attach to wood or metal studs and can be erected in less than 10 minutes. The casings are mounted on the preinstalled clips, thus concealing all mounting fasteners. 800/323-7164. Chicago Metallic Corp., Chicago. **CIRCLE 207**

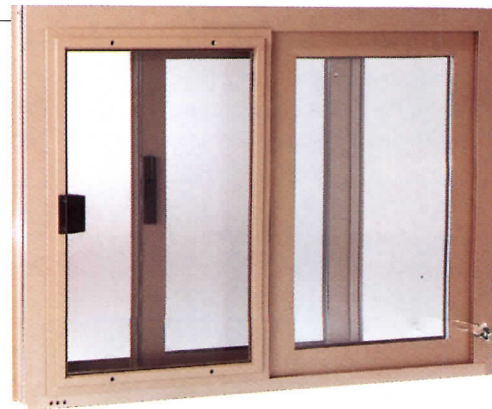


► Heavy-duty sliding doors

Wausau's sliding doors are ideal for extreme climates, such as wet and windy coastal regions. High-rise offices, hotels, condominiums, and apartments needing water resistance and severe structural loading protection are well suited for the sliding doors.

Wausau's Series 5100 bead-glazed sliding doors meet the industry's most stringent requirements and have been tested to AAMA AW60 ratings. Integral blinds can be added for privacy and easy maintenance. The doors come in seven

finishes or custom colors for matching both exterior and interior color schemes. Insect screens can also be finished to match the window color. 877/678-2983. Wausau Window and Wall Systems, Wausau, Wis. **CIRCLE 208**



Think Positive.



For Positive Pressure Requirements with Aesthetic Appeal,

Think VT.

Life Safety Standards

New fire door requirements are now code per UBC 7-2-97. Positive pressure testing more accurately reflects real fire conditions. VT Industries has responded with door construction that addresses life safety standards while maintaining the visual integrity of the total opening including the VT Edge.

Innovative Construction

The VT fire label is your assurance that door construction meets your specification. All positive pressure requirements are built into the VT door per Category A guidelines as outlined by ITS/Warnock Hersey.*

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Select from SolidStyle™ wood veneer and PermaClad™ decorative laminate doors to complement any project design. Take one look and you'll agree that for positive pressure fire door requirements with aesthetic appeal, think positive. . .think VT.



* Where smoke & draft control is required by local codes, an approved smoke gasketing must be added to the frame.

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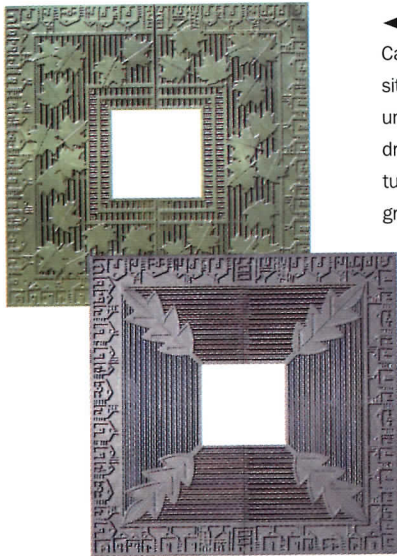


IMPACT-RESISTANT WINDOWS/DOORS



Products Briefs

One of the best ways to appreciate a city is to step outside it for awhile, and what better place to do that than in a public park or garden? The products below can help turn any landscape into a sanctuary. *Rita F. Catinella*



◀ Detailed metal tree grates

Canterbury International is a full-service site-furnishings company, offering clocks, umbrellas, seating, trash receptacles, drinking fountains, bollards, and sculptures for public spaces. All metal tree grates are available in cast aluminum, cast iron, or cast bronze; some models are available in stainless steel. Three-, four-, five-, and six-foot square, round, or half-square/half-round sizes are available. All grates are ADA compliant. 800/935-7111. Canterbury International, Los Angeles.

CIRCLE 209



▲ Sleek-styled teak

Country Casual offers a complete line of classic English-style solid teak garden furniture. The company's new solid teak-wood bench and armchair possess a scalloped top rail, curving armrests, and a specially engineered seat section

designed for comfort. Maintenance-free without paint or preservatives, natural teak weathers to a silvery gray patina. Country Casual's timber is sourced from countries with a commitment to replanting their trees. 800/284-8325. Country Casual, Gaithersburg, Md. **CIRCLE 210**

▶ International inspiration

The Copenhagen Bench is offered in two sizes for either two or three people.

The frame is powder-coated cast iron, and the slats are made of Pau Lope, a durable, responsibly produced hardwood resistant to moisture, insects, and vandalism.

877/929-0011. SiteForm+, Forms + Surfaces

Company, Carpinteria, Calif.

CIRCLE 211



◀ Fountain of youth

After analyzing historic site photos, Robinson Iron faithfully recreated this cast-iron fountain, as well as the circular Gothic fencing and railing around Brooklyn Borough Hall, in Brooklyn, N.Y. The fountain is the focus of a multimillion dollar project in this urban setting. Custom gazebos, columns, entrances, and facades are also possible. 800/824-2157. Robinson Iron, Alexander City, Ala. **CIRCLE 212**



▲ Happier trails

The Presidential Trail at Mt. Rushmore was surfaced with Trex Easy Care Decking to ensure no splinters for visitors and to reduce the amount of upkeep needed.

Trex is made with recycled and reclaimed plastic and wood and requires no special tools or fasteners. 800/BUY-TREX. Trex Company, Winchester, Va. **CIRCLE 213**

▶ Durable furnishings

The Plainwell Bench's sturdy, powder-coated cast-aluminum frames resist rusting, chipping, peeling, and fading. Seating surfaces are available in ipe, jarrah, oak, or maple. Ipe and jarrah are exterior hardwoods that are difficult to mar. They weather to a soft pewter-gray finish that requires no maintenance. Plainwell litter receptacles also have powder-coated, cast-aluminum frames. Side panels may be specified in wood or extruded aluminum. The durable polyethylene top is attached by a cable to prevent the bench from getting lost or stolen. 800/521-2546. Landscape Forms, Kalamazoo, Mich.

CIRCLE 214



Products Briefs



▲ Recognizable features

Tectan is a new formaldehyde-free chip-boardlike material for wall panelings, flooring, furniture, and architectural

interior decorations. The material is made from 100 percent recycled beverage cartons, yogurt cups, and other waste. Throughout the manufacturing

process, the cartons are treated in such a way that no other materials (such as toxic glues) are needed. The surface is coated with a water-resistant recycled foil. Tectan offers good sound proofing and insulation and

can be recycled itself. 410/581-2610. Richter USA Inc., Owings Mills, Md.

CIRCLE 215

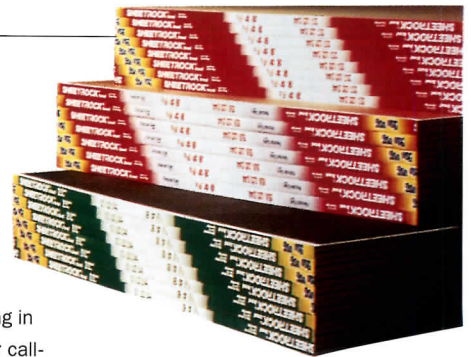
► Rounding out the selection

Marvin's Clad Ultimate Double Hung Round Top window is available in eyebrow and spring line configurations and is engineered to allow both sash to operate. The window offers paintable or stainable jambs and site lines that match Marvin's original Clad Ultimate Double Hung window. 888/537-8268. Marvin Windows and Doors, Warroad, Minn. **CIRCLE 217**



► Snappier panels

USG has begun a new process to manufacture the company's flagship Sheetrock brand gypsum panels. The panels are now easier to install than traditional gypsum panels, resulting in faster hanging time and fewer callbacks for contractors. The panels snap more crisply and the edges require much less rasping time than other types of drywall. The board's added



strength makes it more rigid and easier to carry and hang. 800/USG-4YOU. USG Corporation, Chicago.

CIRCLE 218



▲ Cool fridges

Sonrisa is offering a European-designed enameled-steel refrigerator in 200 colors. Featuring a large cooling area and small freezer section, the retro-industrial styled fridge is big enough to accommodate more than 8.5 cubic feet of food storage. 323/935-8438. Sonrisa Furniture, Los Angeles.

CIRCLE 219

► Zero plus one

Zero US Corporation's Working Tables, designed by Italian designers De Pas, D'Urbino, Lomazzi, are based on a modular structure that allows for a range of functions, configurations, and aesthetic results. A single set of components can produce extendable conference and meeting tables, bar and restaurant tables, reception desks, retail check-out counters, or computer workstations. 401/724-4470. Zero U.S. Corporation, Lincoln, R.I. **CIRCLE 220**



◀ Initial design

The Fog chair, designed by Frank Gehry, FAIA, features a contoured seat, back, and arm pads made of polished, anodized cast aluminum; its frame is tubular stainless steel. A urethane spring mechanism attached to the chair back allows for a subtle, five-degree articulation. Available with or without arms, Fog can be used indoors or out. The chair is the second furniture design developed by Gehry in collaboration with Knoll, and the name appropriates the architect's initials. 212/343-4000. Knoll, New York City.

CIRCLE 216



INSPIRED DESIGNS NOW ARRIVING AT GATE A

Contemporary yet historical. Beautiful yet secure. And it had to give more than three million parking patrons a well-marked path to their flight. From the beginning, the new garage at National Airport was a study in contrasts.

The finished project is a shining example of steel and glass block. Pittsburgh Corning Glass Block. "We started with the vertical elements of the garages — the elevator towers — and using the VUE® pattern, turned it into a virtual

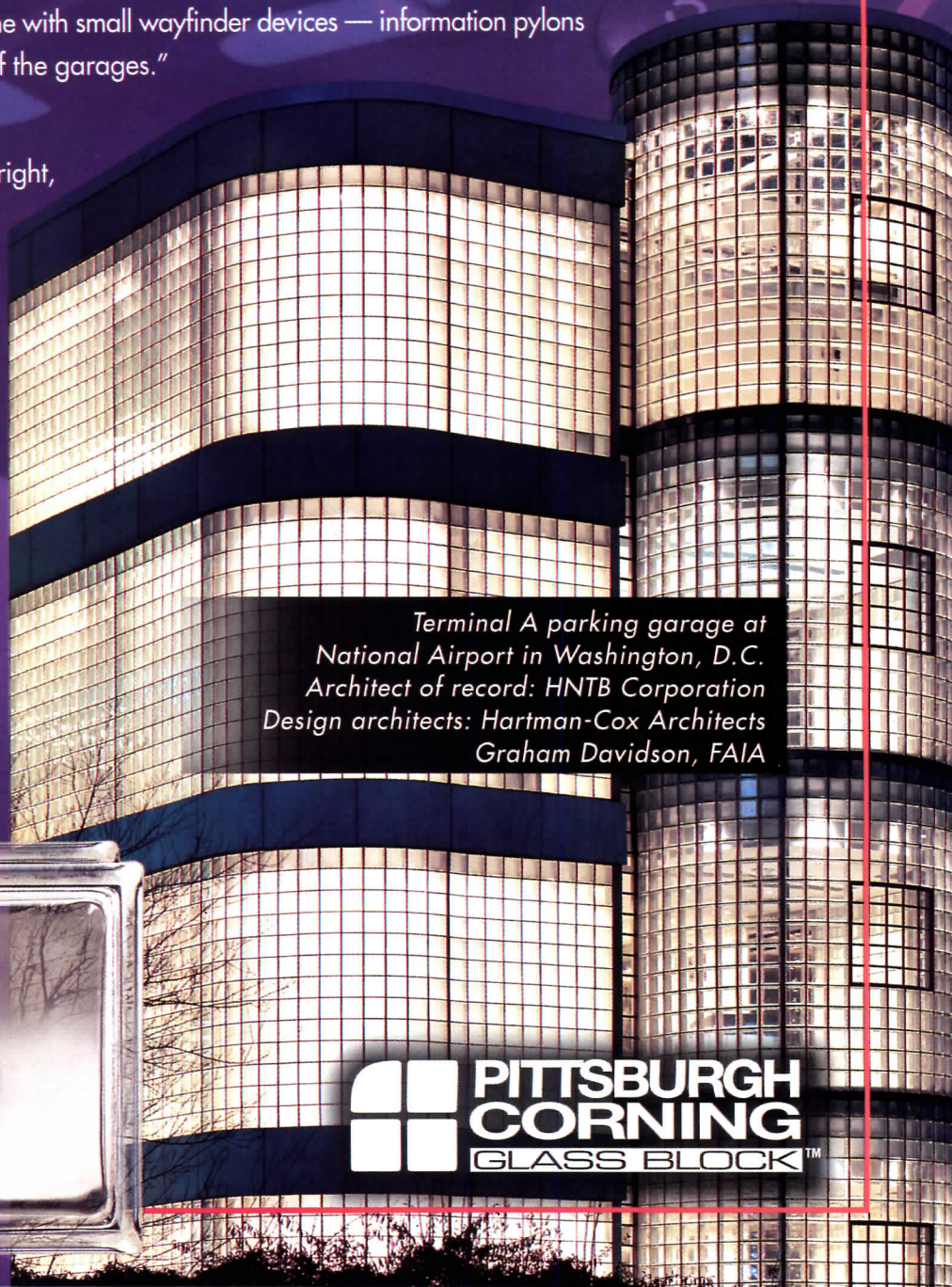
wayfinder system. Then, we continued that theme with small wayfinder devices — information pylons using ESSEX® AA — throughout the interior of the garages."

— Graham Davidson, architect

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*Terminal A parking garage at National Airport in Washington, D.C.
Architect of record: HNTB Corporation
Design architects: Hartman-Cox Architects
Graham Davidson, FAIA*



Product Briefs

▼ Arts studio collaboration

The Alpha Workshops Collection includes five patterns in a total of 11 fabrics (including 2 sheers and 9 upholsteries) developed in conjunction with The Alpha Workshops, a nonprofit decorative arts studio that trains and employs designers and artists with HIV/AIDS. 212/627-7766. Pollack & Associates, New York City.

CIRCLE 221



◀ Suited for leisure

One of Brown Jordan's newest offerings for the hospitality market, Streamline, transforms vinyl seating through the application of translucent and opaque tubular vinyl, tinted with natural, reflective colors. Parallel lines of tubular vinyl in the seat and back surfaces securely support weight and appear corrugated, allowing rays of light to pass through. 626/575-0126. Brown Jordan, El Monte, Calif. CIRCLE 223

► Natural progression

The Echoes Natural line for corporate and commercial environments follows the Echoes Architectural collection. All Echoes carpet patterns are precision NeoTec loop designs constructed of durable 100 percent DuPont Antron Legacy nylon (except for Basket, which is DuPont Antron Lumena) and feature DuraTech soil-resistant technology and permanent static control. The nature-inspired patterns (with names such as Grass, Marble, Canyon, and Sand) harmonize with Mannington Commercial's sheet flooring and vinyl-composition tile products. 800/241-2262. Mannington Commercial, Calhoun, Ga. CIRCLE 222



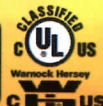
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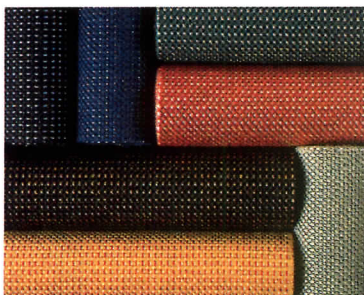
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Product Briefs

▼ Alternative backing

Blumenthal Wallcovering and Fabric offers the Duraprene technical wall-covering base, an industrial, eco-friendly wall-covering base made of fused and pressurized cellulose fibers from renewable-resource trees and paper-mill by-products and fiber bonded with natural latex. Duraprene is the most recent technical development in the company's series of vinyl alternatives. 800/367-8885. Blumenthal, Canaan, Conn.

CIRCLE 224



▲ Sculptural doorpulls

Voli offers the VP800 series of doorpulls for main entrance doors, designed by sculptor Rick Aber and architect Sherrill Broudy. They wanted to achieve a monolithic, functional form without the typical standoffs found on most doorpulls. Each doorpull is individually sculpted in wax and then cast by the lost-wax process in stainless steel or bronze. The series is available in polished, satin, duotone, and patina finishes. 800/686-7879. Voli, Summerland, Calif. CIRCLE 225

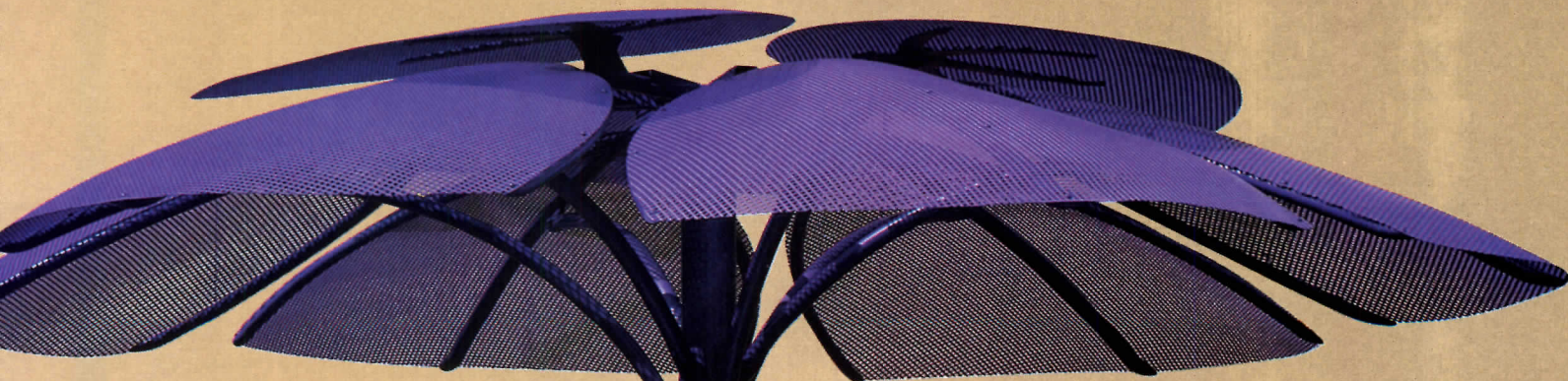
▼ Laminate shake

The Presidential TL Tri-Laminate shake shingle from Celotex incorporates three layers of durable materials and yields a tr laminate asphalt shingle that has the look and feel of a wood shake. The top layer is a heavy-weight fiberglass mat with high-quality weathering-grade asphalt and the highest grade granules.

The two additional base layers are also made of the same components as the top layer. Compared to wood shingles, the Presidential TL has a lower installation cost, the ability to withstand higher winds, and resists termites and rot. The Presidential TL also has a UL Class A fire rating. 800/CELOTEX. Celotex Corporation, Tampa. CIRCLE 226



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*Patent pending
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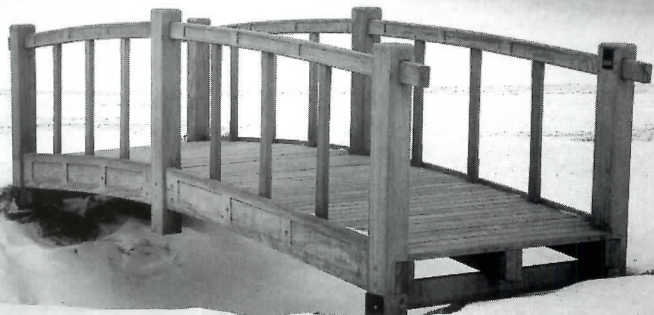
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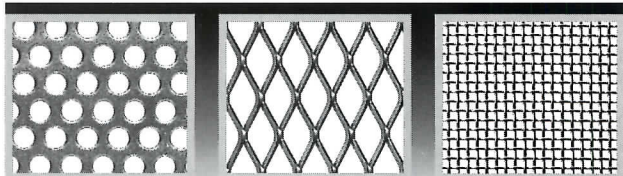
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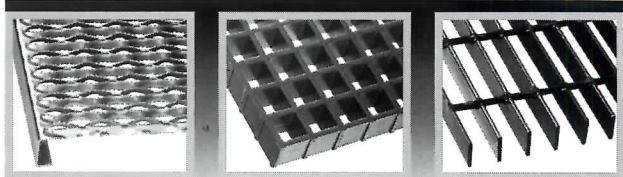
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Product Literature

Indirect-lighting brochure

Columbia Lighting's IPR brochure features new photography and performance information. 509/924-7000. Columbia Lighting Inc., Spokane. **CIRCLE 227**

Fire-rated glazing

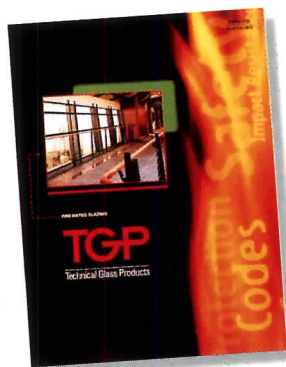
TGP has released a new fire-rated-glazing brochure featuring installation photography, product descriptions, and specifications. 800/426-0279. Technical Glass Products, Kirkland, Wash. **CIRCLE 228**

Exterior-siding CD

Reynolds Building Products introduces its new *Picture Perfect* computer software program that allows users to coordinate exterior siding and accessories in a variety of colors and styles. 800/528-0942. Reynolds Building Products, Macedonia, Ohio. **CIRCLE 229**

Know your hardwoods

The Hardwood Manufacturers Association has published *Guide to American Hardwood Species*. The booklet profiles the 21 major commercial U.S. hardwood species and includes general descriptions, working properties, physical properties, and typical uses for each.



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Specification guidelines for North American hardwood interior applications www.hardwoodcouncil.com

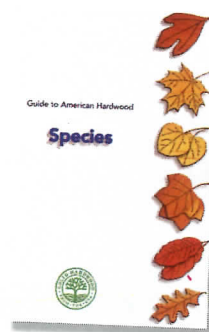
800/373-WOOD. Hardwood Manufacturers Association, Pittsburgh. **CIRCLE 230**

Improve IEQ in schools

A brochure from Steril-Aire describes how schools may use UVC germicidal lights to enhance indoor environmental quality (IEQ) and reduce maintenance and energy costs. 562/467-8484. Steril-Aire Inc., Cerritos, Calif. **CIRCLE 231**

Y2K-compliant door brochures

Woodfold-Marco introduces its completely updated accordion-folding-door and roll-up door brochures. All accordion and roll-up doors are custom-made to size. 503/357-7181. Woodfold-Marco Mfg. Inc., Forest Grove, Ore. **CIRCLE 232**



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Product Literature

doors; storefronts; and curtain walls are all available in as soon as 15 days. 800/221-4169. EFCO Corporation, Monett, Mo. **CIRCLE 236**

Mantel catalogue

A detailed catalogue features Pinecrest's mantel collection, which consists of nearly 300 designs taken from the 18th, 19th, and 20th centuries. 800/443-5357. Pinecrest, Minneapolis. **CIRCLE 233**

Sealing-systems catalogue

Zero International's 2000 catalogue features new products, listings, specification guidance, and full-size schematics for hundreds of components and integrated systems for blocking air, light, and sound, as well as flames and smoke. 800/635-5335. Zero International Inc., Bronx, N.Y. **CIRCLE 234**

Residential windows

Andersen's *Residential Product Guide for Professionals* includes casement improvements, prefinished interiors, and hardware finishes. 800/426-4261. Andersen Windows Inc., Bayport, Minn. **CIRCLE 235**

Rapid-shipping program

EFCO has released new guidelines and product specifications for its express rapid-ship program. Projected, casement, fixed, sliding, and hung windows; sliding

Architectural woodcarving

A free CD-ROM called *Digital Art Library*, which contains computerized line drawings of wood-carved architectural design elements, is now available for professional architects, builders, and interior designers. 310/532-1400. Enkeboll Designs, Carson, Calif. **CIRCLE 237**

Workstation brochure

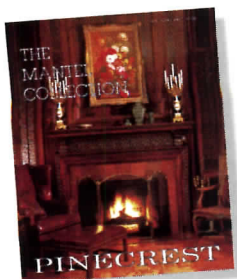
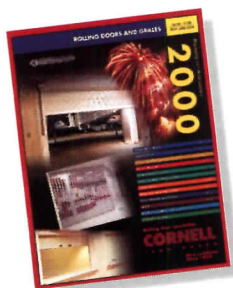
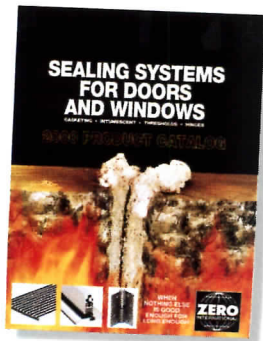
Haworth's new Premise brochure highlights the flexibility of the Premise workstation, along with reproducible floor plans and 3-D renderings of the system. 900/344-2600. Haworth Inc., Holland, Mich. **CIRCLE 238**

Rolling doors and grilles

Cornell Iron Works' new catalogue features rolling doors, fire doors, insulated doors, counter doors, grilles, and closures. 800/233-8366. Cornell Iron Works Inc., Mountaintop, Pa. **CIRCLE 239**

New lighting collections

Progress Lighting's five newest collections are featured in a comprehensive color catalogue. 864/599-6000. Progress Lighting, Spartanburg, S.C. **CIRCLE 240**



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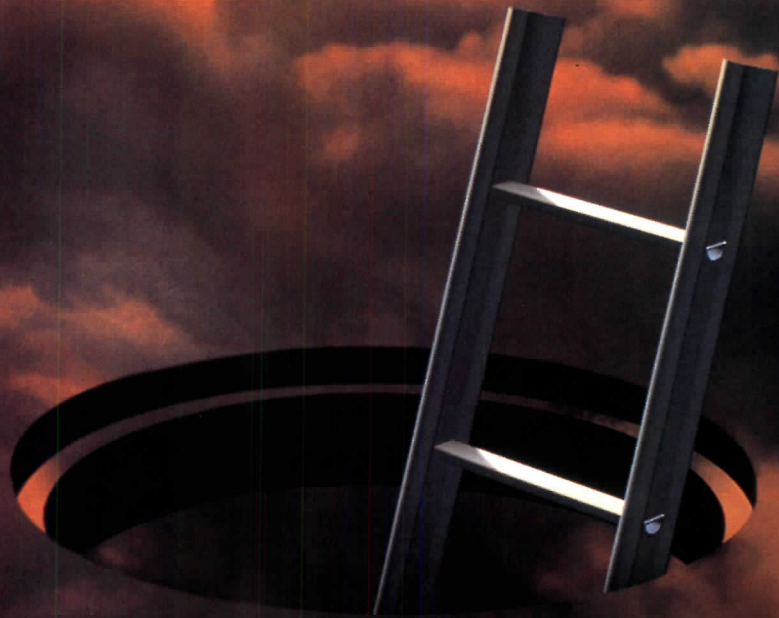
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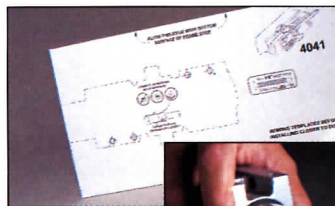
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CIRCLE 76 ON INQUIRY CARD

SOM continued from page 74

years. Recognizing Bunshaft's remarkable oeuvre as well as the contribution of the entire firm, the AIA gave SOM the inaugural Firm of the Year Award in 1961.

In between heydays, there were some dark times in the firm. Not too long ago, rumors circulated that SOM—long considered one of the most venerable firms in the business—would close its doors. That was in the early 1990s, the period Childs refers to as “the depression.” Rampant growth during the 1980s engendered bad habits and high overhead. In 1989, the firm's gross receipts reached a record \$157 million; the staff peaked at 1,500. The sheer quantity of work cost the firm quality control. “We tipped too far toward becoming a big production firm,” says Childs. “From a design standpoint, this was the lost generation.” By 1993, the nationwide slump in the commercial real estate market had bankrupted a number of developer clients, more than halved revenues, to \$67 million, and whittled the payroll to 557 employees. To make matters worse, there were lawsuits and countersuits with former partners precipitated by the firm's inability to pay the retirement income to which the partners alleged they were entitled.

Where no one lives on account of the pace

The crisis compelled SOM to revisit its entire approach to management, marketing, design, and project delivery. In so doing, the firm transformed its culture to a model much closer to what the firm's founders, Louis Skidmore and Nathaniel Owings, envisioned when they established SOM in 1936. Partner Mustafa Abadan, AIA, explains, “During the 1970s and 80s, the firm lost its direction. We have returned to our roots.”

About a decade ago, SOM reinvented itself with an eye toward the future and positioned itself to ride the great wave it is currently enjoying—in terms of its design and planning skill but also vis-a-vis the firm's internal organization. At SOM's beginnings, Skidmore, with his legendary business acumen, was the managing partner. Management has always been embraced as a discipline at SOM, just like architecture, engineering, and urban planning. According to Gottesdiener, one of the office's managing partners, “My job is to balance design with the business side of architecture. It used to be only corporate clients who demanded this but my role has evolved to include all clients. In a sense, my responsibility is to the client first and the firm

second. We believe that if our clients are doing well, we are doing well.” More than half the firm's work comes from repeat clients, a tribute to the firm's ability to deliver good design while simultaneously managing the process in the client's best interest. Stephen Ross, chairman of The Related Companies and client for Columbus Centre and Random House, calls SOM “a firm that has the total capability to create a project that is beautiful and cost effective. They create great architecture but also speak the language of business.”

When Gottesdiener began working for SOM, his role was creating construction documents. He says he had no idea he had an aptitude for business, but somebody did. Since the firm's beginnings, SOM has been known for sniffing out and nurturing great talent. For several of the firm's partners, including Abadan, Duffy, Taylor, and Gottesdiener, SOM was their first, and only, job. They stayed put because SOM gave them unusual opportunities. Marilyn Taylor recalls that, at age 27, she was on her way to running the Stations Program of the Northeast Corridor Improvement Project, which she directed from 1978 to 1985: “It was extraordinary that the partners of SOM thought that I could run that project. But somebody counted on me to do it. For the right people the opportunities here are great.”

Nat Owings once said, “I've produced the people who produce the buildings.” Few, if any, firms train and sustain successive generations as intensively as SOM does. Partners continually scan their ranks for successors. “The first thing I was told when I became a partner was that I had to find my replacement,” says Gottesdiener. Duffy says the senior partners today are “sustaining the partnership by bringing along the next generation of people.”

As a result, the firm has a deep talent pool that virtually ensures its longevity. These are the people who will lead SOM in the future. Despite the firm's age and venerable reputation, “we are hardly a conservative force,” asserts Taylor. Gottesdiener says his firm is “a young firm right now, not in age but in attitude. We are reflective of the phenomenal change in the world and are testing old standards.” While SOM's long legacy of good management and award-winning design work certainly factors into the New York office's current success, this spirit of experimentation and the desire to encourage a dialogue on “issues of our time, our place, our clients,” in the words of partner Stephen Apking, AIA, will ensure that the firm has a lasting place well into the future. ■



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CIRCLE 77 ON INQUIRY CARD

AMERICAN CITIES *continued from page 82* successful than “inelastic” ones, which he defined as those cities trapped within a hostile ring of suburbs. Elastic cities have less racial polarization and smaller income disparities and such metro areas also grew faster, asserted Rusk, a former mayor of elastic Albuquerque.

Antisprawl activists see metrowide planning agencies (such as Portland, Ore.’s elected metropolitan council) as better able to coordinate such sprawl-inducing activities as restrictive zoning, sewer extensions, and highway expansions. Such environment-enhancing activities as setting aside greenbelts and preserving sensitive ecological areas are best handled at the metro level, say environmentalists. Orfield says solutions to

IS ARCHITECT-DRIVEN EUROPEAN-STYLE PLANNING THE ANSWER?

urban polarization can only be implemented on a metro level. He advocates tax-base sharing to give poorer communities a better chance to compete, and he wants to see privileged-sector barriers to affordable housing removed.

All these factors may portend a realignment of important government functions. Although numerous government entities exist that operate the utilities or coordinate highway planning within jurisdictions that unite cities and suburbs, few have broad planning powers or the dollars to back them up as such agencies often have in Europe and Asia. Planning across metropolitan areas could encourage higher density commercial and public development tied closely to transit and highway corridors. The benefits of a more European-style approach says Pietro Nivola in *Laws of the Landscape: How Politics Shape Cities in Europe and America* (Brookings Institution, 1999) are far fewer highway miles per

person, far lower rates of land consumption, far more efficient use of transit, and a much higher percentage of trips taken by bicycle and on foot.

These successes would also seem to vindicate the much greater role architects play in the planning of cities, especially in Europe. Consider the Netherlands, which has long conferred enormous powers on planners and architects. The central government defines how much urban growth can occur, in which cities it can occur, and what land may be consumed. Local governments devise master plans—often made by architects—that further determine where commercial, institutional, and residential uses may go. Specific tracts are then master-planned to a more detailed level, then a developer may be chosen by the local government in another competition. At no stage is the owner’s ultimate profit or preferred use judged more important than citywide planning and design criteria. In short, Holland is a country largely shaped by the vision of architects.

But Dutch people historically have shared far different values than Americans. They have trusted their future to planning agencies because they regard the good of the community to be more important than the aggrandizement of the individual (though there is now growing controversy about the degree to which design should come from above).

While the AIA and the Urban Land Institute (the chief think tank of the real estate industry) have signed on to many antisprawl “smart growth” initiatives, libertarian advocates are taking aim at the antisprawl agenda (the Dutch mode would be unthinkable). They urge recognition that American patterns of development, for better or worse, simply represent the collective decisions of landowners, writ large by developers as agents. Altering this system, they say, especially in pursuit of architects’ taste in urban *(continued on page 208)*

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AMERICAN CITIES *continued from page 206* development, tampers with very deep-seated American values.

Writer Gregg Easterbrook took up arms in the “pro sprawl” cause last year in the form of an article in *The New Republic* titled “Suburban Myth: The Case for Sprawl,” which largely echoes the libertarian Reason Public Policy Institute’s policy report, “The Sprawling Of America: In Defense of the Dynamic City” (www.rppi.org). Both contend that sprawl is not a significant problem, and that low-density settlement patterns reflect consumer desires, which should be respected. While analysts like Orfield argue that suburban subsidies “pull” residents

NO ONE CAN BE BLAMED FOR REGARDING THE URBAN FUTURE AS TOO ABSTRACT.

out of older cities, Reason and its allies argue that a substantial “push” comes in the form of higher taxes, higher crime, and poor schools found in older communities. It says that higher densities concentrate pollution and that infill development can be as environmentally damaging as leapfrog development.

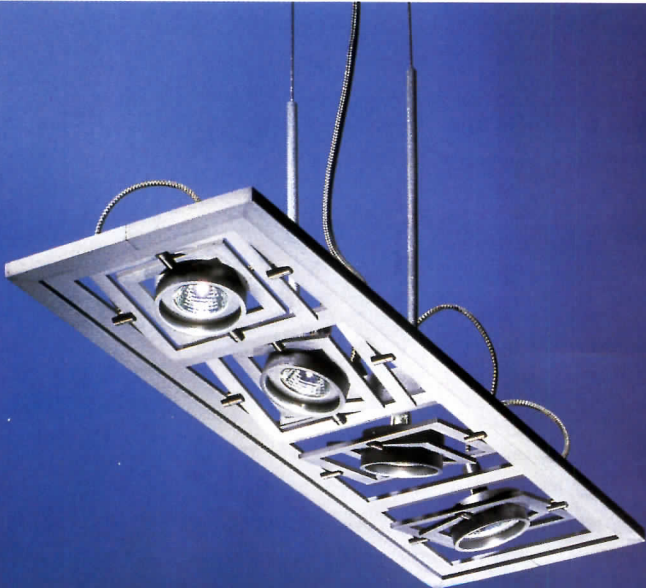
Nivola notes some other crucial distinctions. Both the low-density American patterns of urban growth and the high-density European ones are undergirded by tax and other government policies. America subsidizes drivers and subsidizes the purchase of large homes on big lots. Our tax system penalizes savers and urges consumption. European housing subsidies are often tilted to lower-income renters in government-sponsored housing estates. All forms of consumption are taxed heavily, so that the purchase of a large house or luxury car is an expensive purchase indeed. Gasoline is also three to four times more expensive outside the U.S. and Canada, primarily reflecting added

taxes. Noting that sales tax on autos is nine times higher in Holland than in the U.S. and 37 times higher in Denmark, Nivola says it should not be surprising that streets in Amsterdam or Copenhagen swarm with bicycles while hulking SUVs crowd American roads.

Likewise, Nivola thinks many of the measures promoted by antisprawl advocates won’t work unless government policies are radically changed. But he does not think Americans would willingly adopt the European anticonsumption bias. This may be the most important lesson of all. Countless American urban renewal schemes failed in the face of taxation and other policies that powerfully drove investment in another direction.

No one can be blamed for regarding the urban future as too abstract, too policy-driven—just too overwhelmingly complex. But just as architects’ forays into planning have often proved simplistic, the mechanisms of urban growth today operate with no overall goals and often at cross purposes.

And yet, the stakes are high in places like Park Forest. The shopping center is doing better, said Village manager Muchnik in a recent interview. But progress is hard won, she says, even in a robust economy. She can’t offer the generous tax abatements the western suburbs can, nor the infrastructure, cultural, and recreational opportunities their commercial tax base can underwrite. “For us to support vital government services, taxes are higher, which prevents business from coming here,” she explains. “It becomes a vicious cycle.” She does not expect change soon, but “eventually people have to wake up and recognize that it is really in the best interests of the whole region to work together cooperatively.” The Village, founded as an idealistic vision of emerging suburbia, is not willingly submitting to time’s harsh hand. ■



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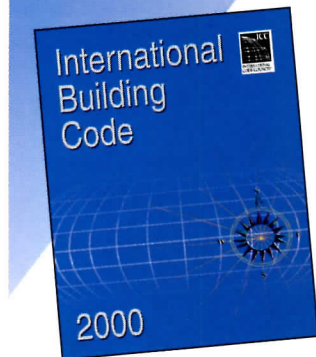
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Dates & Events

Calendar

At the End of the Century: 100 Years of Architecture Chicago

Through March 12

A traveling multimedia exhibition highlighting major trends in 20th-century architecture. Museum of Contemporary Art. 312/280-2660.

ModernStarts: Places

New York City

Through March 14

An exhibition demonstrating how particular spaces, real and imagined, urban and rural, were conceived and represented by artists between 1880 and 1920. Museum of Modern Art. 212/708-9750.

The Architecture and History of the Garment District

New York City

Through March 15

An exhibit on the loft buildings of this industrial neighborhood in the heart of Manhattan, presented in conjunction with a lecture series and walking tours. The Urban Center. 212/935-3960.

Ten Shades of Green

New York City

March 23 - May 13

Critic Peter Buchanan has curated this major traveling exhibition of sustainable design work by Norman Foster, Thomas Herzog, Michael Hopkins, and Françoise Jourda. The Architectural League of New York. 212/753-9173.

A Century of Design, Part I: 1900-1925

New York City

Through March 26

The first in a series of exhibitions surveying 20th-century design of furniture, metalwork, glass, ceramics, textiles, jewelry, and drawings. The Metropolitan Museum of Art. 212/535-7710.

Smart Growth and Choices for Suburbs

Washington, D.C.

Through March 26

Sponsored by the Environmental Protection Agency and national associations of homebuilders and realtors, this display focuses on planning strategies for inner, middle, and fringe suburbs.

National Building Museum. 202/272-2448.

Emerging Voices Lecture

New York City

March 30

The first in the Architectural League's lecture series features Tucson designer Rick Joy and David Miller of the Miller/Hull Partnership, in Seattle. Caspary Hall, Rockefeller University. 212/753-1722.

New York's Pennsylvania Stations

New York City

Through April 1

Photographs and renderings document both the now-lost McKim, Mead and White train station of 1909 and Skidmore, Owings & Merrill's proposed replacement. Miriam and Ira D. Wallach Art Gallery, Columbia University. 212/854-7288.

Triumphs of the Baroque

Montreal

Through April 9

An exhibition of European architecture from 1600-1750, with 30 large-scale models. The Montreal Museum of Fine Arts. 514/285-1600.

Scale: The Young Architects' Forum 1999

Washington, D.C.

Through April 16

On display are the Architectural League of New York's winners of its 18th annual competition for young architects. National Building Museum. 202/272-2448.

En chantier: The Collections of the CCA, 1989-1999

Montreal

Through April 30

Celebrating its 10th anniversary, the CCA displays the best of its collection of architectural drawings, renderings, models, and photographs. Canadian Centre for Architecture. 514/939-7000.

See the U.S.A.: Automobile Travel and the American Landscape

Washington, D.C.

Through May 7

This exhibition celebrates roadside architecture and the culture of the automobile, featuring photos by John Margolies, author of 10 books on the subject. National Building Museum. 202/272-2448.



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Ralph Rapson: Sixty Years of Modernism Washington, D.C.

Through May 28

The first comprehensive exhibit of the work of this Midwestern modernist, whose achievements encompass architecture, furniture design, and urban planning. The Octagon. 202/638-3221.

Retail Lighting Conference Fort Worth

June 7-9

This gathering, titled "Illuminate 2000," promises the latest techniques and hands-on learning for lighting designers, specifiers, and project managers. Texas Christian University. 800/828-7134.

Verner Panton Retrospective Weil am Rhein, Germany

Through June 12

Danish designer Verner Panton's relentlessly colorful 1970s furniture and installations are presented. Vitra Design Museum. +49/762/1/702-3200.

Frank Lloyd Wright: Windows of the Darwin D. Martin House Washington, D.C.

Through August 20

An exhibition of some 70 art-glass windows, doors, and skylights (both originals and reproductions) that Wright created for the house. National Building Museum. 202/272-2448.

Harvard Asia Design Conference Cambridge, Mass.

March 9-11

This conference will explore Modernism's inroads into Asia. Call 617/621-9963 or visit gsd.harvard.edu/asiagsd for more information.

Urban Wilderness—Chaos Transformed: Photographs by Irving Greines Washington, D.C.

Through March 21

This California photographer takes on the streets of Manhattan, focusing on the ephemeral nature of the urban landscape. AIA Headquarters Gallery. 202/638-3221.

Competitions

Best Practices in Affordable Housing

Entry deadline: April 30

The City Design Center at the University of Illinois seeks projects for an Internet catalogue of outstanding affordable housing in the U.S. Call 312/996-2076 or E-mail cdesignc@uic.edu.

Developments for Amphibious Living

Application deadline: March 1

Submission deadline: April 1

This ideas competition, sponsored by the Dutch province South Holland, is for designs that best show how living and working can take place in a watery environment. Entries will be made over the Internet. Information can be found at www.amfibischwonen.nl.

Ceramic Tiles of Italy Design Competition

Submission deadline: March 16

This awards program, with a \$20,000 grand prize, recognizes outstanding projects (completed as of February 28) by North American designers using Italian Ceramic tile. To register: 718/783-3160 or E-mail abbatec@mindspring.com.

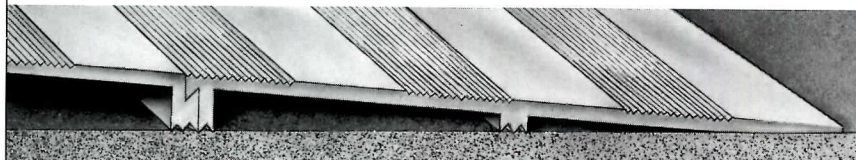
Business Week/Architectural Record Awards

Registration deadline: March 16

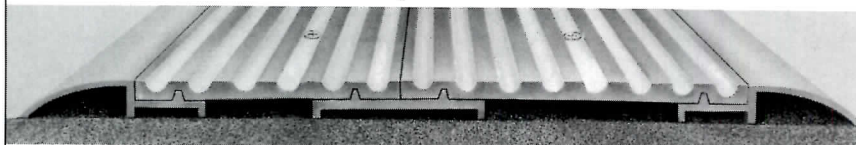
Submission deadline: April 18

This annual awards program recognizes distinguished collaboration between clients and architects to achieve strategic business goals. Entrants submit a mission statement and business plan describing how the project fits into an organization's overall goals. Eligible are public-

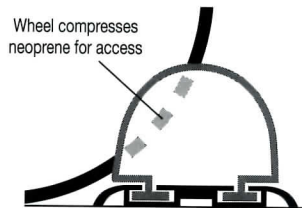
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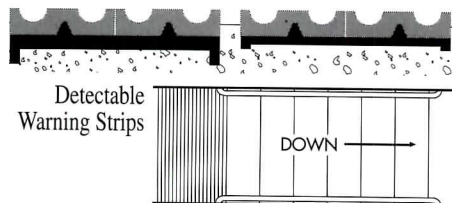


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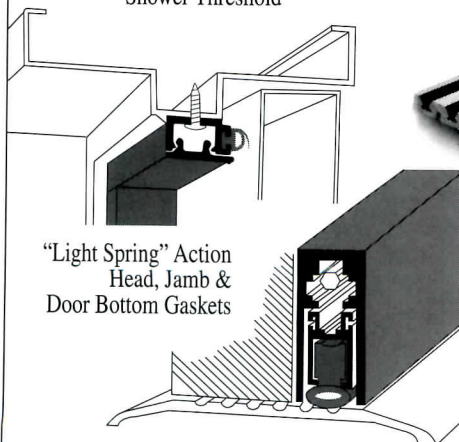


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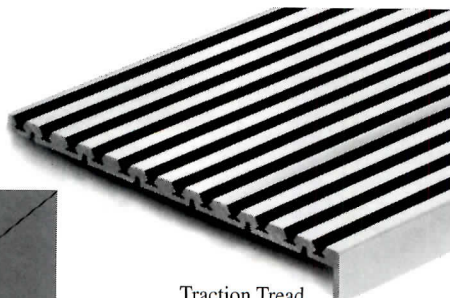
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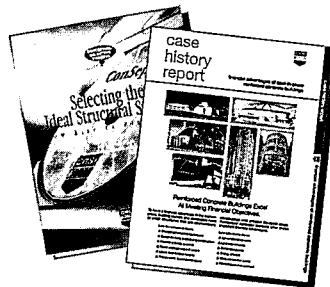
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AIA Young Architects

Forum/Germantown, Pa., Habitat Competition

Submission deadline: April 1

This design competition coincides with the 2000 AIA convention in Philadelphia. "Building Livable Communities" asks entrants to design an urban rowhouse prototype for Germantown, Pa. The competition is open to young architects (licensed 10 years or fewer), architectural interns, and students. E-mail mottc@aiaemail.aia.org.

Martin Luther King, Jr.

National Memorial

Registration deadline: April 1

Submission deadline: May 1

Entrants in this international competition to design the King memorial for its site on Washington's Tidal Basin are asked to embody "the man, the movement, and the message." Anyone can enter; interdisciplinary teams are encouraged. To register, send a check for \$75 accompanied by a letter listing the entrant's address, phone number, and E-mail address. Checks should be made out to "M.L. King Jr. National Memorial" and sent to Dr. E. Jackson Jr., Design Committee, Martin Luther King Memorial Project Foundation, Dept. 211, Washington, D.C., 20055. Visit cluser1.bellsouthonline.com/mlk to know more. ■

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ANSWERS

Questions appear on page 160. To receive CES credits, fill in the education reporting form below or on our Web site (www.architecturalrecord.com).

1. The American Association of State Highway and Transportation Officials (AASHTO) in Washington, D.C., writes minimum design standards for pedestrian bridges and vehicular bridges with walkways (or bike routes). Its specifications for pedestrian bridges include recommendations for load, deflection, vibration, and connections. If the pedestrian bridge is in the public domain, designers must typically stay within these standards or even exceed them. If a bridge is privately owned, adhering to these standards is optional, although by using them, architects can limit their liability. Some state or local municipalities or highway agencies add their own safety requirements to the AASHTO standards.

2. Pedestrian bridges are often cable-stay, meaning the deck is supported by cables that stretch from a tower, usually in a fan array. These cables are then anchored at the other side of the tower. Cable-stay and suspension bridges are two of the most economical designs; they don't require as much infrastructure beneath the deck as truss or arch bridges. As a result, they can be closer to the street and, in many cases, shorter. They also have a more slender look.

3. Bridge materials need to be easy to maintain, resistant to vandalism and weather damage, and appropriate for the span. Local regulations and safety may also affect the choice of materials. Concrete is easy to maintain, but slender, elegant designs are difficult to achieve. Other materials, such as aluminum and stainless steel, offer different amounts of detailing options. Steel can be highly detailed, providing some relief, but it needs more maintenance because it must be painted. Wood and stone are suitable for shorter spans, but may be too bulky for large spans. The deck material must be durable, nonslip, and allow for water runoff or snow to be cleared off. Panels must often be cut into the deck material to allow access to the infrastructure.

4. Some communities are looking for a "signature bridge," an iconic design that identifies, and signals arrival at, their community. Pedestrian bridges, because they are normally smaller and lighter structures than vehicular bridges, allow more creative and dramatic designs.

5. Vibration caused by the impact of people walking or running on the deck of a bridge can make the structure feel unsafe, even though this force will not cause any damage to a bridge that's sizable. Vibrations can be lessened by stiffening the handrails and support system or by using a deck material that absorbs some of the impact of foot traffic, such as epoxy or asphalt. However, a little bounciness—the "trampoline effect"—is desirable. Movement and sway are part of the pedestrian bridge experience. ■



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"Crossing to the Other Side Safely" [page 149]

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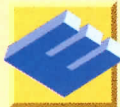
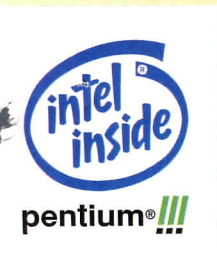
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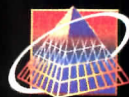
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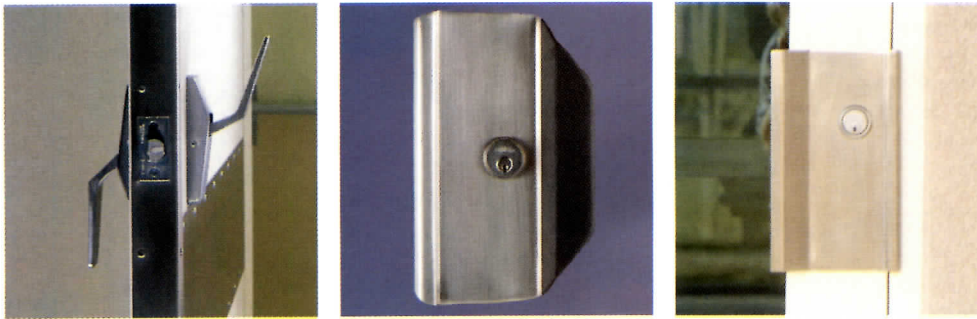


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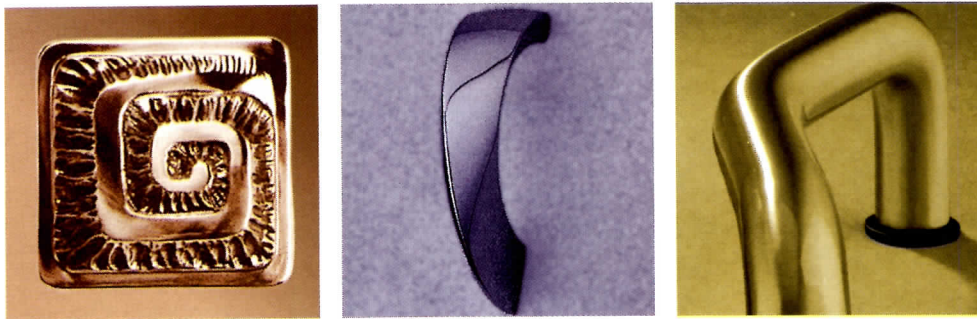
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ADVERTISERS INDEX

Bold: indicates page number.
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PAGE NUMBER	READER SERVICE NUMBER	ADVERTISER
52	28	A/D Fire Protection Systems Inc
224		A/E/C Systems
190	66	Adams Rite Manufacturing Co
232		AIA Convention
153	50	Alusuisse Composites Inc
215E	89	Ameritech
44-45	24	Andersen Commercial Group
35	19	Ann Sacks Tile & Stone
46		Architecturalrecord.com
51	27	Aristech Acrylics
2cov-1	1	Armstrong
23, 40		Autodesk
178	61	Autodesys
168		BARCO
56	31	Bentley Systems Inc
204	76	Bergerson
210	83	Bilco Company, The
185	63	Bricsnet US
240		Business Week/Arch Record Awards
181		buzzsaw.com
48	26	c-z.com
147	48	C/S Group
199	71	Canterbury International
53	29	Ceco Door Products
12-13	7	Celotex
86-87	43	Celotex
64-65	36	CENTRIA Architectural Systems
60	34	Cephren Inc
208	80	Charles Loomis
31	17	charrette.com
215W		COFES2000
200	72	Continental Bridge
42-43	23	Copper Development Association
158	53	Cornell Iron Works
214	88	CRSI/Concrete Reinforcing Steel Inst
220-221		Dell
186	64	Diehl Graphsoft Inc
18-19	10	DuPont Antron
21	11	DuPont Antron
54	30	EFCO Corporation
3cov	97	eZ
189	65	firstsource.com
165	58	Follansbee Steel
126-127		Forms + Surfaces
161	55	Georgia-Pacific
206	78	Gordon Inc
201	74	GR Plume Company
182	62	Graphisoft
213E	86	High Concrete Structures Inc
209	82	ICBO/Internat'l Conf of Bldg Officials
202-203	75	Ingersoll-Rand (LCN Division)
81	40	INSCAPE
244		International Design Conference
211	84	Italian Trade Commission
83	41	IWP

PAGE NUMBER	READER SERVICE NUMBER	ADVERTISER
75	39	J & J Commercial
28	15	Johnsonite
128	46	Kawneer Company Inc
37	20	Kim Lighting
167-174		Knowledge Industry Publications
4cov	100	Kroin Incorporated
2	2	landscapeforms
145	47	Laticrete International Inc
245		Lightfair International 2000
223	91	Lonseal
41	22	Madera Tile
84-85	42	Mannington Mills Inc
24-25	13	Marvin Windows & Doors
26-27	14	Masland Contract
200	73	McNichols Co
148	49	Metal Construction Association
39	21	Metalaire
208	81	Mortar Net
233	94	Nathan Allan Glass Studios Inc
207	79	National Gypsum Company
171		NEC
205	77	NECA/IBEW NLMCC
16-17	9	PCI/Precast/Prestressed Concrete Inst
63	35	Pella Windows & Doors
198	70	Pemko
197	69	Pittsburgh Corning
33	18	PPZ Wood Windows
8-9	5	PPG
30	16	Quartzitec
166	59	Roppe Corporation
6-7	4	Saab USA
22	12	Sarnafil Inc
73	38	Schott Corporation
174		Sharp
47	25	Sloan Valve Company
231	93	Smart Technologies Inc
219		SmartAge
157	52	SMI Steel Products
4-5	3	Solutia
172		Sony
66-67	37	StarNet
234-235	95	Sweet's, Div of The McGraw-Hill Cos
222	90	Technical Glass Products
58	32	Tectum Inc
162	56	Timely
194	68	Traco
225	92	Trimco/BBW
164	57	Truebro
241	96	Unicel Inc
14	8	USG Corporation
155	51	USG Corporation
159	54	Vistawall Architectural Products
88	44	Visteon
124-125	45	Von Duprin (Ingersoll-Rand)
193	67	VT Industries
175	60	Wausau Tile
10-11	6	Weather Shield Windows & Doors
213W	87	Wind2 Software
59	33	Wiremold
212	85	Zero International

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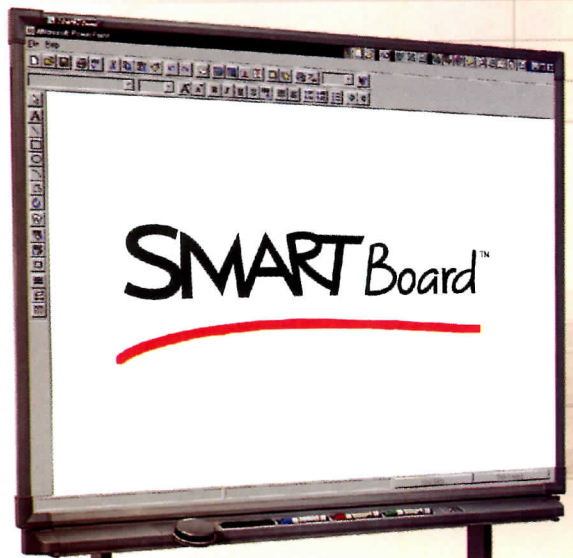
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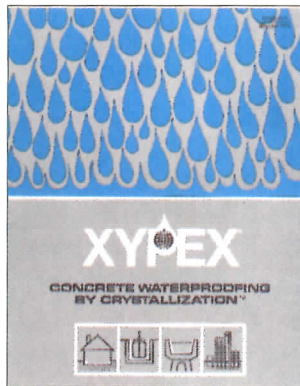


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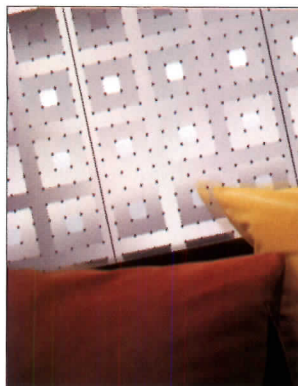


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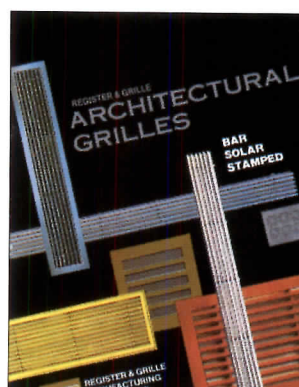


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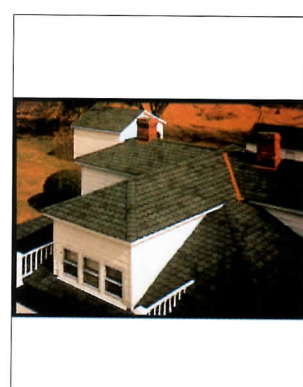


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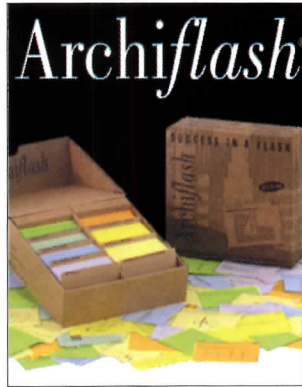


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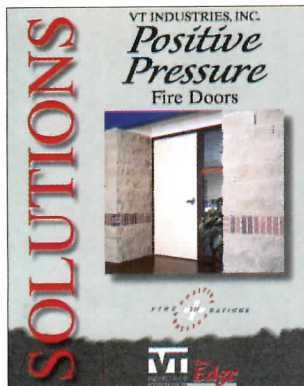


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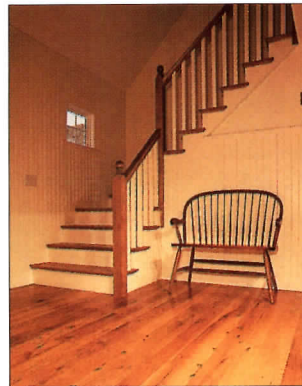


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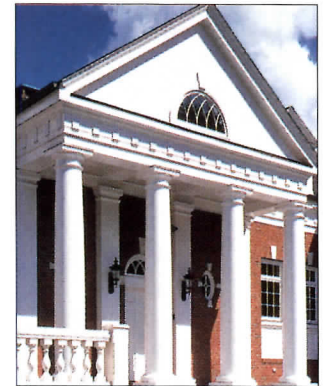


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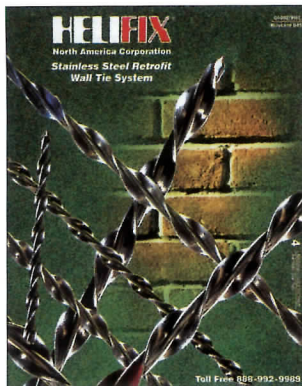


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The unique Helifix 'DryFix' stainless steel remedial wall tie system is used to stabilize and strengthen masonry walls in both high rise and domestic buildings. The 'DryFix' system involves no toxic chemicals or complex expander devices while providing a fast, cost effective, stress free result in most common building materials. Helifix ties may also be used in new construction and masonry refacing. Call 888-992-9989 for further information. Booth #1860 at CSI Show.

Helifix

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Matrix Composites Inc.



Chosen by a distinguished panel of Architects for Architectural Record as one of the best new finishes for 1999, Madera Tile is made from an exciting new material known as Lignasil®. Using 100% post-use hardwood in a patented process, Madera forges new ground in *green* building material technology. Several textures are available in an exciting range of solid colors and unique color blends for your sustainable design solutions. Call (800) 767-4495 www.maderatile.com

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Interactive Whiteboard

Rear Projection SMART Board™



The Rear Projection SMART Board™ is an interactive whiteboard that allows you to control projected Windows® or Macintosh® applications and other multimedia by pressing on the Board's large, touch-sensitive surface. Write over top of applications and your notes are saved for future reference and distribution. Architects and facility designers can request the SMART Product Kit by calling 1-888-427-6278 or by visiting www.smarttech.com/productkit.

SMART Technologies Inc.

CIRCLE 168 ON INQUIRY CARD

Xenon Luminaries

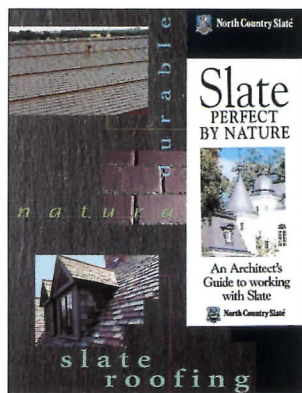


Space Cannon Illumination Inc. introduces the Litehose, the latest in linear lighting technology made of extruded, durable optical-grade acrylic. Available in different diameters and sizes, reflective paints and films are not required. The Focus is an architectural coloured luminaire utilizing a 1200w lamp source designed to work with the Litehose or separately. 1-888-705-1028.

Space Cannon

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Slate Roofing



Natural North Country slate. For enduring character, nothing else compares. No wonder—it's perfected by nature! Free product brochure showcases the wide variety of sizes and colors, and comes with our Architect's Guide to working with this remarkable roofing material.

North Country Slate

CIRCLE 170 ON INQUIRY CARD

Framing is E-Z

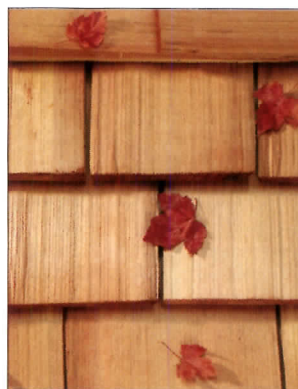


Framing a house is "E-Z" with Willamette Industries' E-Z Frame® System, high-quality engineering wood products with guaranteed consistent performance and availability at competitive prices. The system includes StrucLam® LVL, StrucJoist® I-joists, Willamette Classic/Premier/Premier Plus Glulams™ and E-Z Rim® Board. Call 1-800-887-0748 ext 400 for more information and a FREE Consumer Guide to Engineered Wood to share with your homebuyers.

Willamette Industries, Inc.

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Genuine Cedar Shakes

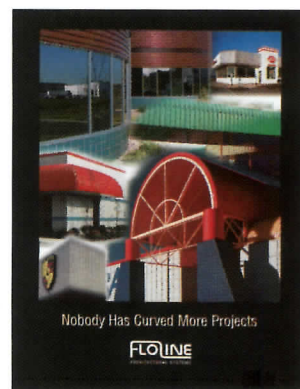


Cedar shakes have been a premium roofing material for centuries, & their combination of beauty & performance is unbeatable in terms of value for the dollar. As the most tested of all roofing materials, cedar shakes have proven durability, even under extreme conditions. For fire hazardous regions, such as California, Meeker offers factory treated shakes with FTX® fire retardant. These shakes can be applied using various systems to achieve a Class A, B, or C fire rating. Call 800-663-8761 or www.meekercedar.com

Meeker Cedar Products

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Curved Panel Brochure From Floline



Color brochure illustrates the use of Floline curved panels on office buildings, industrial parks, mass transit, schools and retail projects. Applications include facades, roofs, walkway covers, cornices and fascia. Ideal for new construction as well as renovation. Unlimited custom designs; full range of contemporary colors and finishes. Nobody has curved more projects than Floline. Call 800-449-0193.

Floline Architectural Systems

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The Radius Curved Church Pew



Since 1919, New Holland Church Furniture has supplied churches nationwide with both custom & standard church furniture. Today, New Holland is the only manufacturer of "Radius Curved Pews" in the USA. As a certified member of the Architectural Woodwork Institute (AWI), you can be assured of our consistent high quality. New Holland has just developed all new product catalogs for our Pews & Solid Wood Chairs. New Holland Church Furniture, 313 Prospect St, New Holland, PA (800) 220-1465

New Holland

CIRCLE 174 ON INQUIRY CARD

Parallel Design Partnership Limited

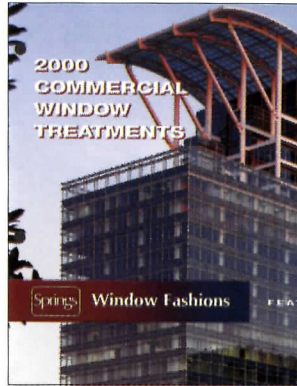


"ellen's brackets", an anodized-aluminum shelving system designed by M Ali Tayar, provides an elegant alternative to existing bracket-and-track systems. Cantilevered brackets come in two sizes, for shelves 3/4 or 3/8-in. thick and 10-in. deep. Wall-mounted tracks permit 1 1/2-in. adjustment of wood, glass or plexiglass shelves. For more info phone Parallel Design Tel: 212-989-4959 Fax: 212-989-4977.

Parallel Design

CIRCLE 175 ON INQUIRY CARD

Spring Window Fashions



Spring Window Fashions manufactures window treatments for commercial applications. Brand names and products include: Bali horizontal blinds, Graber vertical Blinds, cellular and pleated shades and drapery hardware and Nanik wood blinds. Call our Architectural Hotline at 800-327-9798 for answers to technical questions or to request faxed copies of product specifications. Plan to see us in June at CSI in Atlanta, Booth 1511.

Spring Window Fashions

CIRCLE 176 ON INQUIRY CARD

Site Furniture of Distinction

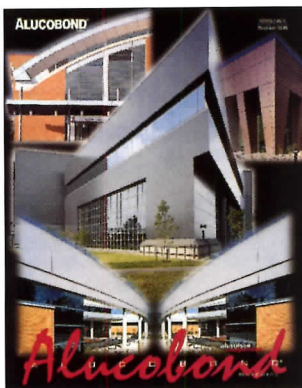


Keystone Ridge Designs, Inc. is the architect's choice for premier site amenities. Offering a full line of steel furnishings, we pride ourselves on exclusive designs and our patented powder coat finish, KEYSHIELD™, that is unparalleled in the industry. Quality, craftsmanship, and dedication to your creative vision are the hallmarks of Keystone Ridge Designs. For more information please call 1.800.284.8208 or e-mail KeystonRdg@aol.com. www.keystoneridgedesigns.com

Keystone Ridge Designs

CIRCLE 177 ON INQUIRY CARD

New Alucobond® Materials Brochure

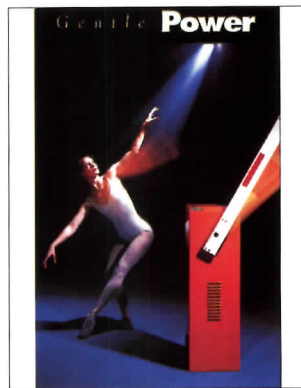


Totally new Alucobond® Material brochure in dramatic new format illustrates the use of Alucobond Material a variety of innovative applications and colors. Alucobond Material is the original ACM (aluminum composite material) and has been used on more than 50,000 buildings worldwide. Alucobond Material is always the affordable solution. For more information, call 800-382-6445 or visit www.alusuisse-comp.com

Alusuisse Composites, Inc.

CIRCLE 178 ON INQUIRY CARD

Barrier Gate Operations

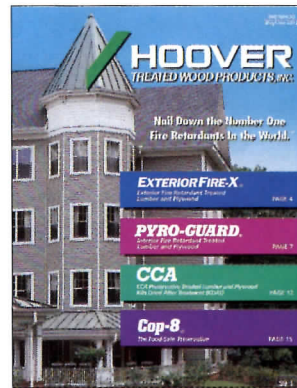


FAAC is the world's largest specialized manufacturer of hydraulic operators for barrier, slide and swing gate systems. Barrier features include 100% continuous duty operation, the ability to raise beams up to 23 feet long, and control panels with full system compatibility. High-speed and economy models available. Call 1-800-221-8278 for full color brochure or visit www.faacusa.com.

FAAC International , Inc.

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New Fire Retardant Treated Wood Catalog

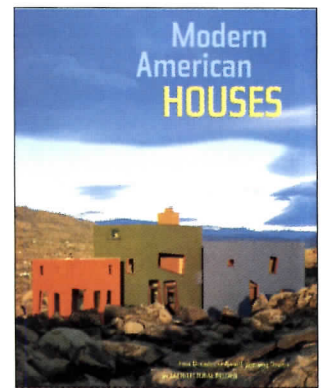


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Hoover Treated Wood

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Will Wright wants you to rule your own urban empire

Interviewed by Ingrid Whitehead

Game developer Will Wright puts another spin on the story of the Silicon Valley programmer who tinkers and turns bits and bytes into gold. With the launch of SimCity in 1989, Wright and business partner Jeff Braun turned a simulation "toy" into a game that lets users design, build, develop, and rule the city of their dreams. After seven incarnations of the original game, including a new one called "The Sims," and the merger of Wright and Braun's company Maxis with interactive software giant Electronic Arts, Wright comes out from behind the screen to tell RECORD what it's like to give ordinary people the power to be master of their own metropolis.

Q: *What are the principles behind your games? The Sims, which just came out last month, is based on the theories of architect Christopher Alexander from his book *A Pattern Language* [Oxford University Press, 1977]. He's really the 'anti-architect'. His gig is to empower regular people to design their own homes and become their own client, which is what The Sims is all about. You choose the people who live in the house—their personalities, temperament, what they do for work, etc.—and you design the house around them and their daily lives. It's a very elaborate dollhouse for adults, in which the human element is the crucial scoring device. SimCity was based on similar principles, as well as those of MIT professor J. W. Forrester's book *Urban Dynamics* [Productivity Press, 1969].*

Before you and Jeff Braun started Maxis you tried and failed to sell the SimCity idea to software developers. Now it's one of the best selling games of all time. Why the initial reluctance? It was very difficult for software companies to understand why anyone would be interested in playing a computer game that doesn't let you win or lose. With SimCity, you have to make a value judgement—decide what your goals for the city are. What is your ideal city? In computational terms, the game is an open-ended system. It's set up as a set of interesting problems that the player has to solve. It's critical thinking in the guise of play, which is why high schools and elementary schools are very interested in it.

I noticed some articles on your Web site (www.maxis.com) written by mayors. Who else plays these games? We've heard from various people who play the game, including mayors, city planners, and architects. The big win is the kids. It teaches them to work with complex systems. But the process of learning how decisions relate directly to the actions of the human element, such as in The Sims, is appealing to almost anybody.

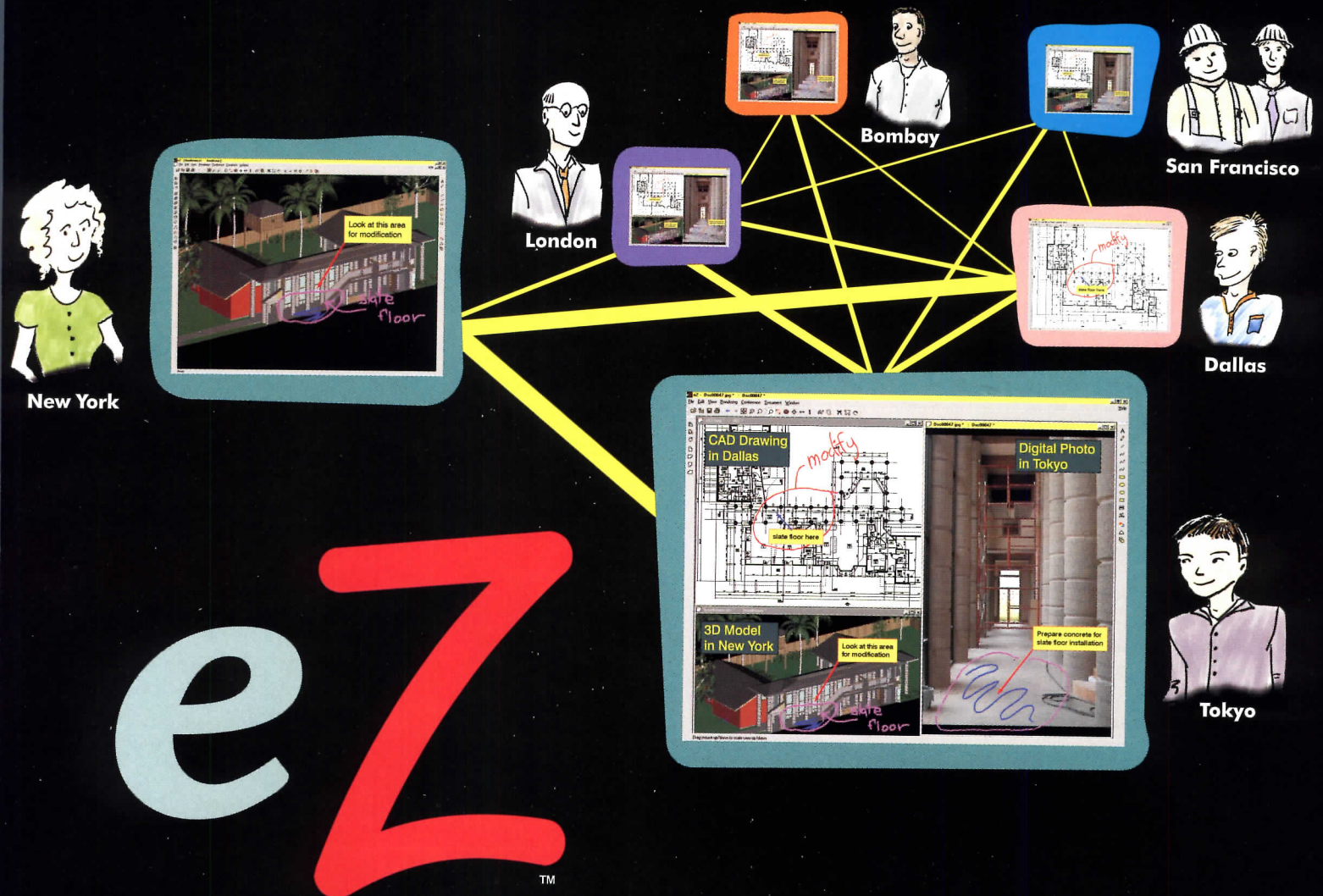
Can the game be used for more practical programs? When SimCity first came out we started an arm of Maxis called

Maxis Business Simulations, which dealt with such things as facility design. The Environmental Protection Agency was one of our clients, as well as Chevron. We dissolved that department after three years, because for us the main point was to develop programs that put the fun back into architectural and building software.

Do you spend more time enjoying the real world now that your simulated empires are providing entertainment to such a wide audience? Not really. I do exactly what I did before SimCity took off. I sit in front of a computer and play games. ■

Photograph by Carter Dow Photography

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