

INSIDE:
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PAGE 70



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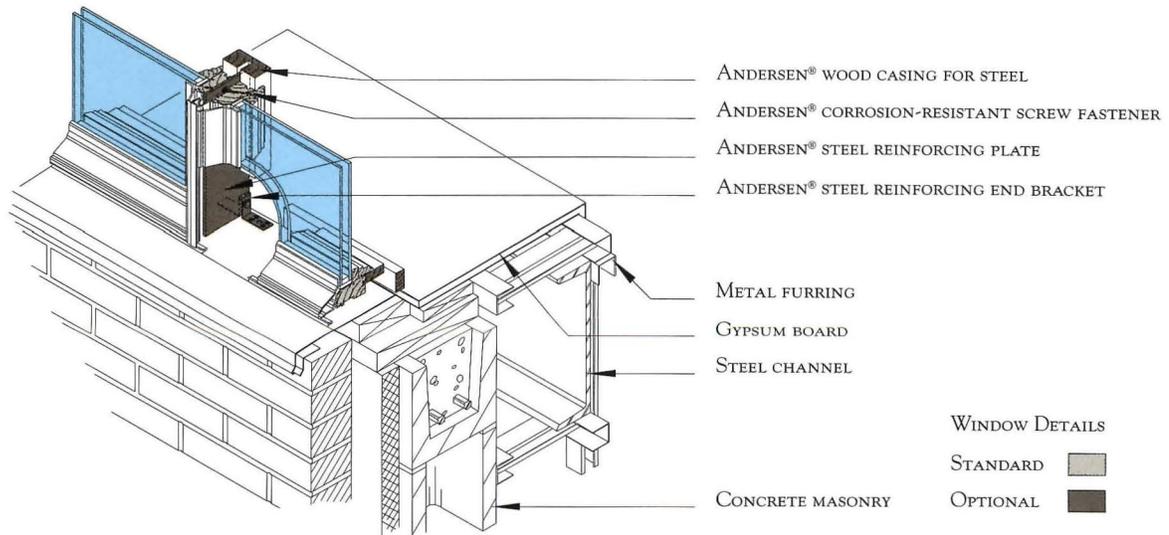


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Make Small Projects "Sing"
Regarding the article, "Why Architecture Still Fails to Attract Minorities" [record, July 1995, pages 32-33], which asks the question "How much can you really learn by doing toilets and garages?" and "How do we get from small projects to larger design opportunities?" our growing, black-owned firm (currently working on a garage for the New York City Housing Authority), would like to offer the following response:

One view is to see garages, entrances, and the like as "not design work." Another view (our view) is to see these types of projects as opportunities. These small-scale projects can be subjected to architectural ideas, both formal and technical. The size of the project should not limit architectural ideas, but focus the project on these explorations. If minority firms can make these small projects sing, then, we truly believe, eventually the world will have to acknowledge the devotion, talent, and originality of their makers.

In that context, for affirmative action to work, we believe a full project, or a discrete element, such as an auditorium—or a garage—is definitely, in the absence of a larger project, the preferred role for the minority architectural firm. For a firm to stand on its own, the project, or element, should allow the minority firm to take full responsibility, and credit, for their portion of the work. Full responsibility means taking the lead for the project's formal manipulation and technical solution, as well as its execution and management. Otherwise, human nature tends to suppose that the minority firm was merely "carried along" by its (major) partner.

I am convinced that there is a deep pool of talent, given the architectural ideas and love of the work already displayed by minority students and professionals. Although I, too, sometimes have my doubts if the day will ever come when the talents of minority architects are freely acknowledged and accepted, I really believe the only route to acceptance is through the undeniable quality of the work, even be it toilets and garages.

Everardo Agosto Jefferson
Partner
Caples Jefferson
New York, NY

Architects vs. Engineers?

Why can't architects get it right? Why does their leadership continually misrepresent and falsely characterize the reasons for the Department of Justice action taken by NSPE? The recent article in the July 1995 issue [record, pages 27 and 159] is as full of inaccuracies as are many other things I read that are coming out of the architectural profession related to this issue.

NSPE has never denied architects' unique skills, as you claim. Quite to the contrary, we know and believe that architects have a valuable role in the conception, planning and design of major buildings. However, those important talents and abilities can be successfully applied through more than one form of delivery system to the client. Architects do not have a God-given exclusive in the market of project management (prime professional).

Only arrogance, greed, and intransigent elitism could drive the position that only architects can serve as the prime professional on building projects. Quite to the contrary, engineering firms, employing the valuable
continued on page 34

October 1-31

Emilio Ambasz exhibition, "Architecture and Design in a New Relationship to Nature," Modern Art Gallery, Barcelona; fax 011/051/282-332.

October 3-5

A/E/C Systems Fall; Navy Pier, Chicago; 203/665-0153; fax 203/666-4782.

October 5-7

Silent auction by the Frank Lloyd Wright Conservancy includes bids on a weekend for two at Fallingwater. Auction highlights the Conservancy's conference in Milwaukee. Call 708/848-1141; fax 708/848-3878.

October 6-January 14

"Claes Oldenberg: An Anthology," a showing of 200 drawings, collages, and sculptures at the Guggenheim, New York City.

October 11-15

National Preservation Conference, Worthington Hotel, Fort Worth, Tex.; 202/673-4141.

October 11-November 7

"Beyond the Box," exhibition and exploration of urban design of superstores; Municipal Art Society, Urban Center Galleries, New York City; 212/935-3960.

October 11-January 14

"Architects of Image: Photography in the Heroic Age of Construction;" Canadian Center for Architecture, Montreal; 514/939-7000; fax 514/939-7020.

October 12-14

Royal Architectural Institute of Canada "Festival of Architecture '95" in Calgary; 613/241-3600; fax 613/241-5750.

October 19-22

The Association for Computer-Aided Design in Architecture conference, University of Washington, Seattle; 305/284-6521.

October 21-22

"The Ornament of Classical Architecture" seminar; New York University, New York City; registration, \$95 per day; 212/570-7374; fax 212/627-5740.

October 26

International Facility Managers
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M P A



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When Stewart Udall became Interior Secretary under President John F. Kennedy, an early effort of his was to try to turn the tide on monuments by shipping out all monuments occupying green space in Washington, D.C. He failed, but did end up returning the statue of William Jennings Bryan to his native Illinois. Today, thirty-four years later, the wheel has come full circle.

Perhaps society is searching for an emotional anchor in the turbulent ocean of space-travel and the Internet. That may be one cause of the dramatic proliferation of monuments and memorials—to wars, to heroes and heroines, to national and racial catastrophes, to historic industries, popular-music movements, archeological artifacts, even to a certain popular automobile model and a history-laden cross-country highway.

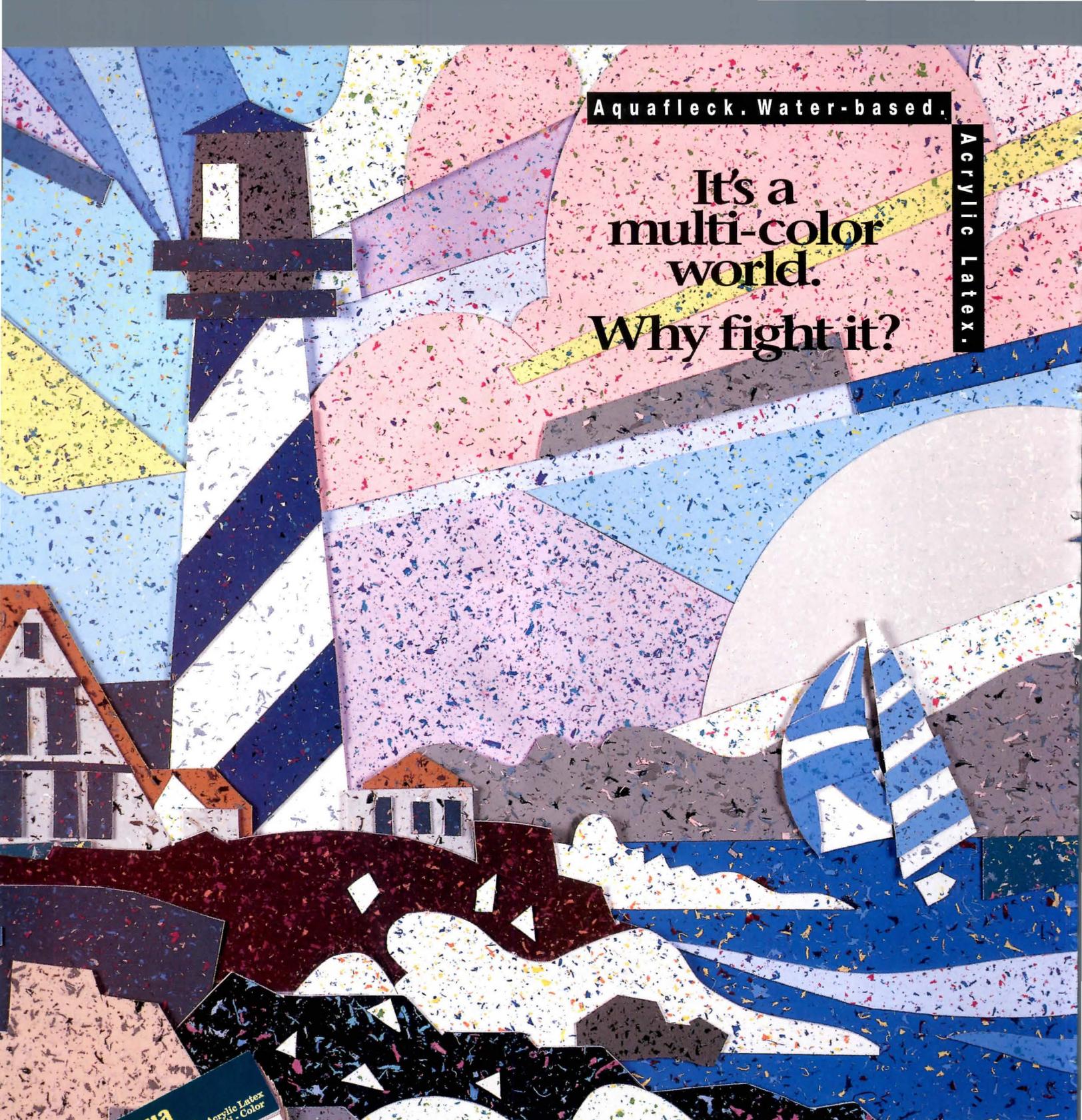
As the national capital, Washington, D.C., has become a special target for what James Reston, Jr. in a recent article in *The New York Times Magazine* calls “The Monument Glut.” It has to be a matter of concern at several levels—social, political and, not least, its impact on that city’s urban fabric. Indeed, as Charles Atherton, long-time secretary of the National Commission of Fine Arts, which must pass on all federal construction in Washington, pointed out to RECORD, the process of erecting monuments is becoming institutionalized. The creation of monuments is followed by the establishment of a foundation, designated to promote on-going interest in its cause via organized special events such as candlelight vigils, conferences, and tours. There are pressures to find ever more candidates; a group is reportedly campaigning to erect a statue on the Mall to Thomas Payne. Payne died in 1809; why so long?

One reason for the surge, in Atherton’s view, is the prodigious appeal of Maya Lin’s Vietnam memorial, which has spawned a whole new preoccupation with monuments all over the country, above all in Washington. But this comes at a price. The Korea, Vietnam, and the recently started FDR memorials (the latter with a 12-foot high, 800-foot-long wall) each consume some 7 acres of scarce downtown green space. Can a memorial to World War II be far behind?

For the architect, as well as the landscape architect, lighting designer, sculptor, and others, monuments offer an uncommon opportunity to experiment with new concepts, new ways of expressing in stone (and evoking in visitors) powerful emotions such as regret, admiration, celebration, nostalgia, even hate and fear. This month, ARCHITECTURAL RECORD features one such memorial to the past—a small but brilliant commemoration of Native American petroglyph art. Next month come monuments to the kofun period emperors of Japan, to the Corvette car, and to rock music.

But those projects are in Arizona, Japan, Bowling Green, Kentucky, and Cleveland. In Washington, there is surely a point of diminishing returns. Instead of focusing on America’s most famed men and women, its greatest victories and tragedies, and its most noted institutions, Washington may emerge as a giant historical theme park, with its stock of dignity diluted by too many memorials, each competing for the visitor’s emotions for a brief span before the guidebook says “move on.”

The process for erecting a monument in Washington is not simple. The requirements were toughened in 1986 but the criteria are piecemeal, and the likely outcome chaotic. There can be too much of a good thing. *Stephen A. Kliment*



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New York City

Glass Box Explodes at Museum of Modern Art Show

Light Construction, an exhibition at the Museum of Modern Art through January 2, 1996, shuns ideas of form to look at the surface of things. Curated by Terence Riley, its premise is far from superficial: that greatness in architecture during the last decade is often visible on a building's skin. To Riley, the Miesian glass box has finally exploded.

The architects featured are all driven by an interest in light and shadow, transparency and lightness—and their best work often ignores fashionable formal trends. Photos show, for example, Toyo Ito's Shimosuwa Municipal Museum, a long, amorphous form that sits along a lake like an upturned hull. Its aluminum-panel roof system—only inches thick—is draped over galleries like fabric. Also in the show are works by Jean Nouvel (his Cartier Foundation in Paris, bottom

photo), Herzog & de Meuron, Fumihiko Maki, and Rem Koolhaas. (Artists like the Finnish team of Kaakko, Laine, Liimatainen and Tirkkonen, designers of the "leisure studio" shown right, extend the roster beyond the usual suspects.)

Nouvel is an apt choice since he once mocked the idea of space altogether—claiming that today space is about quantity, not quality. In his Cartier Foundation, visitors pass framed openings to the sky, and arrive outdoors, only to see another view through a freestanding square of glass. There are no obvious barriers, and the relationship between objects, views, and people is ambiguous, changing with light and reflection. Of course, the photographs can't tell the whole story: they are themselves only the ghosts of real places. *Nicolai Ouroussoff*



© Jussi Trainen photo



© Philippe Ruault photo

Technical Update

Oriented Strandboard Under Attack: Top Producer and Experts React, Offer Solutions

Homeowners and their lawyers have attacked a composite-wood siding product made from oriented strandboard (OSB) for prematurely rotting and decaying. Charging that one producer, Louisiana-Pacific, supplied the OSB siding despite knowledge that the product was not holding up in wet, humid conditions, consumers are seeking restitution far in excess of the company's standard warranty, which agrees to pay twice the original cost of the siding. (The warranty did not cover the cost of removal or installation of replacement siding.) In Florida and Washington, where humid climates seem to have sped decay, the state attorneys general are investigating the siding. Its use is temporarily banned in some Florida counties.

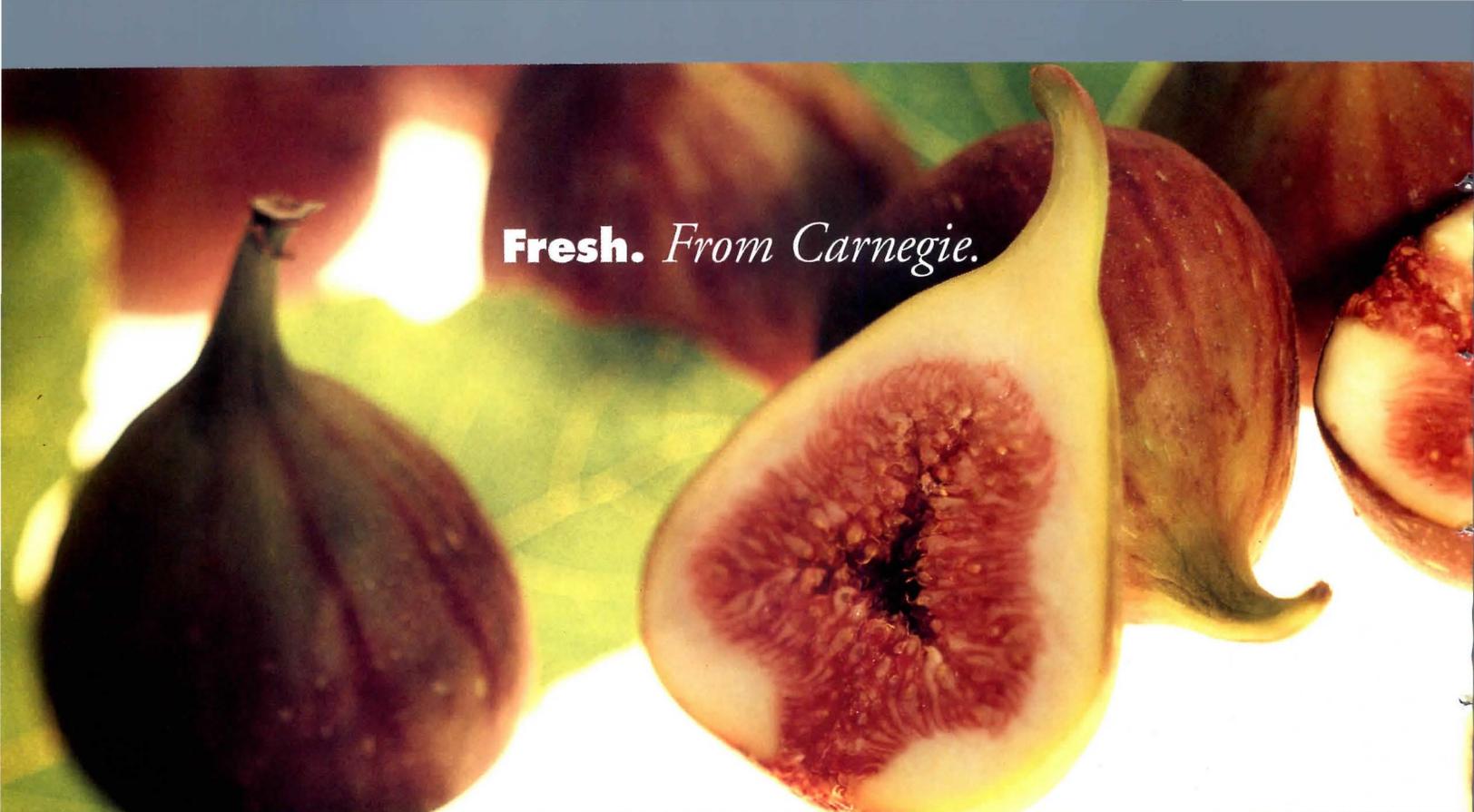
Louisiana-Pacific reportedly has paid claims on about 16,000 homes totalling \$46 million

since the siding was first introduced about a decade ago. "But the vast majority of OSB siding performs well," says Barry Lacter, spokesperson for Louisiana-Pacific, noting that the claims rate has been consistently under two percent, although the company has seen an escalation in claims since the product's travails have been widely reported and after the company advertised a toll-free number for siding queries.

Louisiana-Pacific pioneered the use of OSB siding, which is manufactured from wood strands—typically aspen and pine—and pressed together with resin under relatively high heat [much like other OSB products, see RECORD, September 1995, pages 36-41]. A few other companies manufacture products that are similar, but Louisiana-Pacific holds the lion's share of the market.

Last year the company began selling a redesigned OSB siding product. A resin-impregnated paper facing that always covered the exposed side has been carried to the unexposed side. The profile of the siding's drip edge was reconfigured to dissipate moisture better. While Lacter says the company has not done long-term testing of these changes, its normal testing process indicates this redesign will solve moisture-penetration problems, as long as the product is installed and maintained correctly.

"These changes are an improvement, but who knows how much," says William Dost, a wood technology consultant in Berkeley, Calif. "There are some fundamental flaws with OSB that are not being addressed, in my opinion. The company is relying on geometry *Continued on page 111*



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Frank Gehry's Walt Disney Concert Hall—His Masterpiece—Dances With Death

"Architects here are treated like 'the little woman' who doesn't know anything," says Frank Gehry, commenting on the demeaning tone of criticism that now surrounds what should be his masterpiece, the Walt Disney Concert Hall. In his hometown Gehry has run afoul of a byzantine design and construction process that has turned Disney Hall, part of the Music Center in downtown Los Angeles, from a \$132-million show-stopper into a \$265-million project on indefinite hold.

"We figured out exactly how to build the exterior skin, which we had control over, for the budget we had. All my life I have been trying to get the energy of the [initial] conception—the image—to stay intact. I thought we had figured out how to control the process, to realize that dream." In fact, Gehry used a French computer system developed for the aerospace industry to translate his models directly into fabrication drawings [RECORD, July 1992, pages 30-33].

The computer was also employed to balance the percentage of straight, curved, and wiggly shapes so that the overall skin would cost \$12 million. Yet, for all this seeming control, the architecture is only a part of a complex that includes a \$81.5-million garage paid for by a county bond issue, and, in an earlier scheme, a hotel. With such additions, the project became so complicated that when project architect Dworsky Associates handed in the

bid package, scared contractors responded with whopping construction bids.

For now, the garage is complete (it opens in the spring), but the project's heart awaits further funding. Hines Interests, a management company, was hired to do a cost analysis in the fall of 1994. In March it issued a report, estimating the cost of construction at \$227 million if work started today. With interest from the original gift and further contributions, there's only half that amount, \$115.5 million. So the Concert Hall has hired Milano, Ruff & Associates to develop a fund-raising plan that will be submitted to the Los Angeles County Board of Supervisors in December. It calls for halting the project until the remainder of \$265 million is raised, the projected cost if construction begins in 1998, the soonest the Concert Hall can imagine raising the money. The now-bloated cost is particularly ironic for Gehry, who built his reputation as a champion of inexpensive materials. He's building his complicated shapes on budget and on time in large projects in the Czech Republic, Korea, and Spain, where the steel prices for his Guggenheim Museum in Bilbao came in 10 percent *under* budget.

There is wide support for the project, even among politicians and a public stunned by the enormous economic difficulties facing the county, which may have to shut down hospitals and jails. "This is an important project

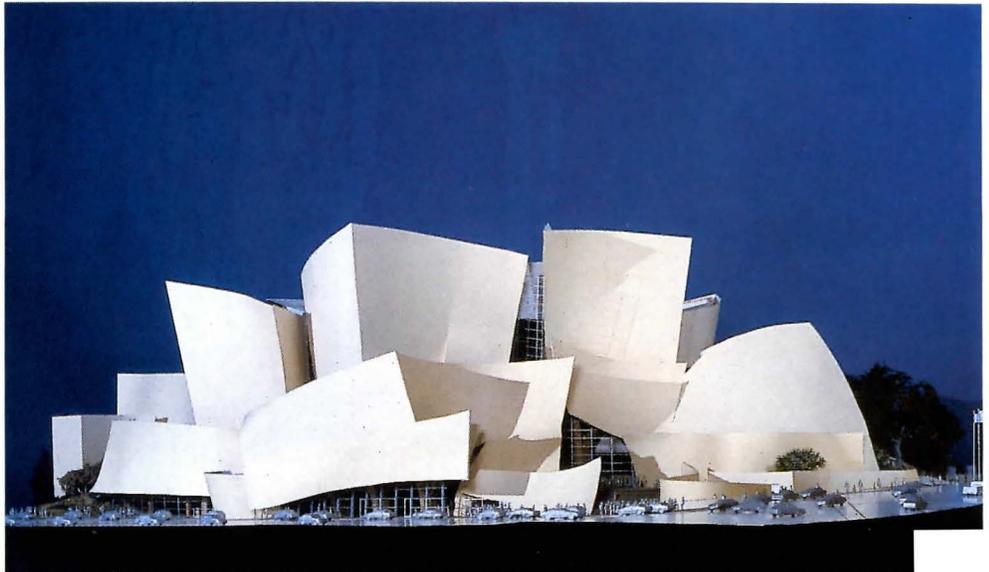
for the culture and the economy of the city," says county supervisor Zev Yaroslavsky. "It can't be allowed to fail. Beyond [creating] jobs, it is an important symbol for the city. It will be a landmark, like the Sydney Opera House or the Eiffel Tower. People will come to Los Angeles just to see this architecture. If it fails, it becomes another kind of symbol: that the city, even when a prominent family puts up \$50 million, can't make it happen. Los Angeles really needs a win on this one." The win, however, "will have to come from the private sector. The county has absolutely no money to put into this one."

Gehry himself has doubts whether the project will get built, but refuses to debate its social necessity. "I've always thought that architecture has social relevance, but it's not for me to argue," he says. If the county can't afford the building, he has an alternative that, though uncosted, has the added effect of measuring the city's civic-mindedness: insert the concert hall into the Pei Cobb Freed-designed Convention Center [RECORD, January 1994, pages 56-65], an under-utilized facility that doubled its size amid the recent economic downturn. "The acoustician can make it work," insists Gehry. Such a remedy would certainly not make Disney Hall the Eiffel Tower of Los Angeles, but it would rid the city of an albatross. Which outcome is more important?
Aaron Betsky



© Warren Aerial photo

The Walt Disney Hall project started in May 1987, when Walt Disney's widow, Lillian, and her family gave the Music Center \$50 million to create a new home for the Los Angeles Philharmonic. Gehry won the design competition (right). A garage now occupies the downtown site (above).

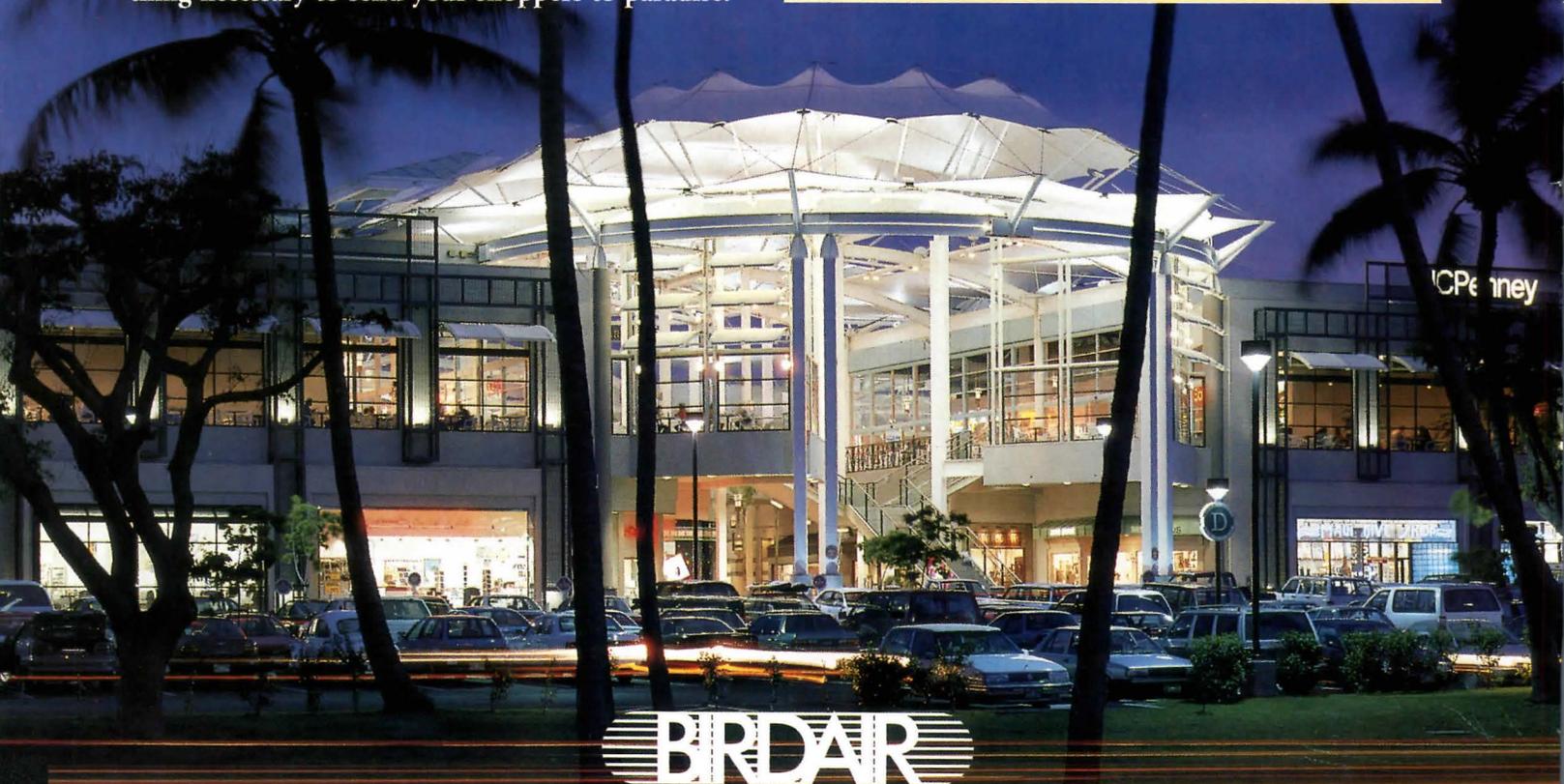


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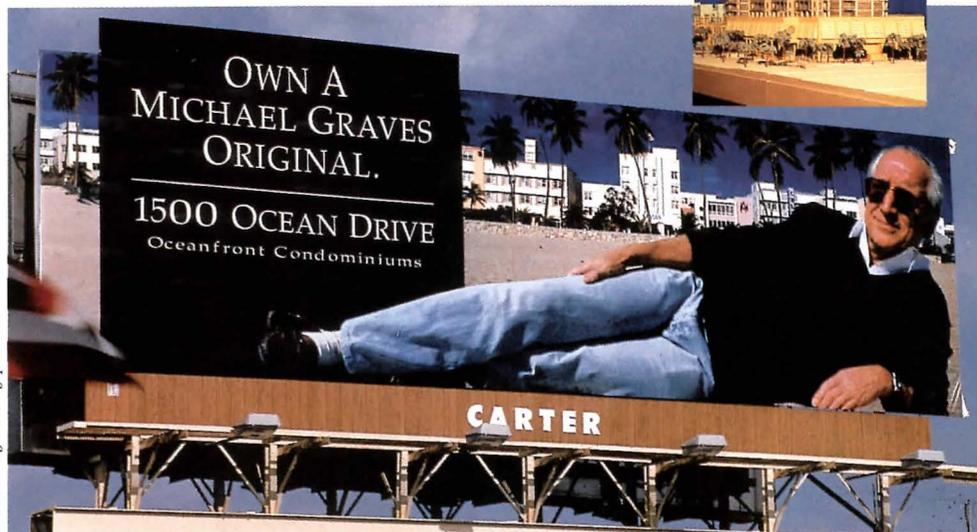
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What Becomes a Legend Most?



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Michael Graves has become a familiar face in Miami—literally. His larger-than-life image looms over the highway on billboards and adorns giant posters on the side of city buses. For months, his photo appeared in teaser ads in newspapers and magazines with tag lines like “Michael Graves (sic) books are in libraries he designs” or “Michael Graves classic tea kettle is a hot item.” Depicted in a black sweater and jeans, even the attire strikes a discordant chord in sultry south Florida.

All of this is part of an unusual ad campaign exhorting potential buyers to “live in a Michael Graves original,” a condominium that is to be built in Miami Beach (inset photo). The complex, called 1500 Ocean Drive, is in the city’s historic district with its more than 800 Art Deco buildings. It requires the controversial demolition of an existing Deco hotel and alteration of another. A life-size cutout photograph of Graves greets prospec-

tive buyers at the project’s sales center, where one room is devoted to a scale model along with fabric swatches and other material samples. Another contains a Graves “boutique” selling products he has designed. A red phone connects shoppers to the Graves shop in his hometown of Princeton, N. J.

Architects are so often sentenced to anonymity once the marketing of a project begins that this approach is unusual, to say the least. But is it effective? In Miami Beach, both Graves’s design and the ad campaign have rankled those who believe that a historic district is no place for buildings designed to stand out rather than fit in. Although 1500 Ocean Drive’s architecture is rife with allusions to Art Deco, it is definitely a Michael Graves—a hybrid hot-house flower in a field of native plants. *Beth Dunlop*

Milwaukee and New York City

Calatrava Stakes a Claim in the U.S.

Paris-based architect and engineer Santiago Calatrava was recently awarded two commissions in the U.S.—an addition to the Eero Saarinen-designed Milwaukee Museum of Art and a visitor’s center on Roosevelt Island, located in the East River between Manhattan and Queens. The center is part of a redevelopment scheme for the island that includes long-awaited construction of a monument to Franklin Delano Roosevelt by Louis Kahn. Work will begin in mid-1996. ■

Briefs

Toshio Nakamura, A+U editor, moves on—unexpectedly

Yoshio Yoshida, the publisher of *A+U*, the architectural journal that has played a key role in widening the dialogue between architects in the West and Japan, has fired long-standing editor, Toshio Nakamura. Nakamura, who is also a member of the Pritzker Architecture Prize jury, guided the publication for 25 years, and was able to bridge the gap between East and West while Japanese architecture was emerging as among the most important of the last decade. (In fact, 30 percent of the journal’s subscribers live outside of Japan.) Nakamura claims that the rupture was over content. “The reason is the difference of our editorial policy, his [commercial] view and my [intellectual] one,” Nakamura says. The firing has been protested by architects and theorists all over the world. Philip Johnson, John Hejduk, Kenneth Frampton, Richard Rogers, Peter Eisenman, and others are said to have written letters of protest and cancelled their subscriptions.

Ever more tourists to Mont St. Michel

France will spend \$12 million to preserve Mont St. Michel and make it more accessible to the many tourists that visit each year. The famous Benedictine abbey, which dominates an island in the northwest corner of France was constructed in the early 13th century and is one of the country’s most famous landmarks. A parking lot will be created on the Normandy Coast to keep cars off the island, and a new light-rail system will be designed to bridge the 1 1/4 miles to the island sanctuary.

Facelift for Harvard’s Memorial Hall

In Cambridge, Massachusetts, CBT/Childs Bertman Tseckares, Inc. will restore the tower of Harvard’s Memorial Hall. The brick and sandstone structure was designed by Ware and Van Brunt in the 1870s, and stands across the street from Harvard’s Graduate School of Design. Its roof has not been restored since replacement after a fire in 1956. Completion of the project is scheduled for fall 1996.

Norman Foster’s Air Museum

Construction has begun on the Norman Foster-designed American Air Museum at the Duxford Airfield in Cambridge, England [RECORD, October 1993, page 26]. The \$17-million project features an enormous hangar. *Continued on following page*

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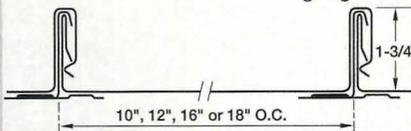
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A Slimmed-down MASS MoCA is Back on Track

Continued from previous page

like, vaulted hall crammed with vintage planes—some suspended from the roof structure—and a 270-foot-long glass facade.

Ferry terminal reinvigorated

Architect Beyer Blinder Belle and engineer STV Incorporated will renovate Hoboken, New Jersey's glorious Beaux Arts ferry and rail terminal. Designed by Kenneth Murchison in 1907, the terminal's most dramatic space is a 53-foot-high grand hall with a Tiffany glass skylight. Its upper concourse was once one of the world's largest open interior spaces. The terminal's copper-clad facade, with its six grand arches, now looks across the Hudson to lower Manhattan and Battery Park City.

Wes Jones goes to New Jersey, partly

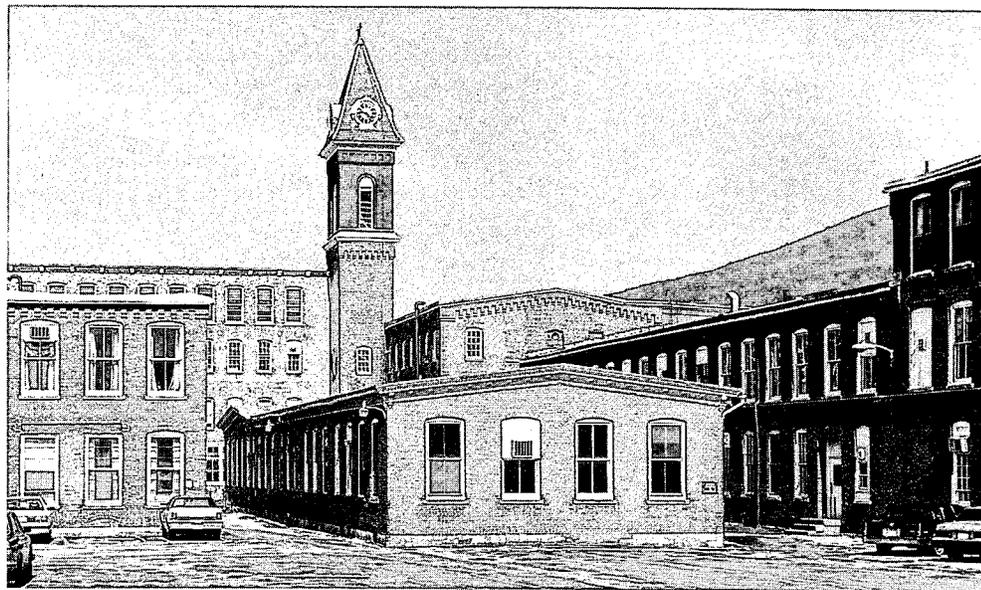
Wes Jones, previously a partner in the California firm Holt Hinshaw Pfau Jones, known for its technological expressionism [RECORD, June 1994, pages 104-111], will become design director of The Hillier Group's Philadelphia office. Headquartered in Princeton, N.J., the Hillier Group is one of the largest design firms in the United States. Jones intends to keep his San Francisco office open.

"Smart buildings" get high marks and low tax-rates

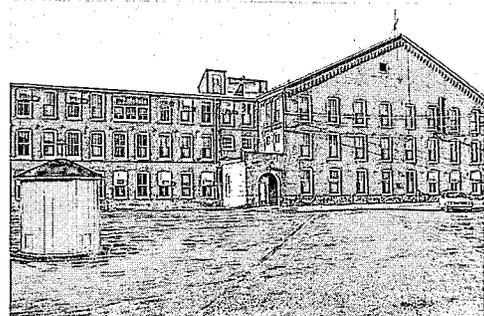
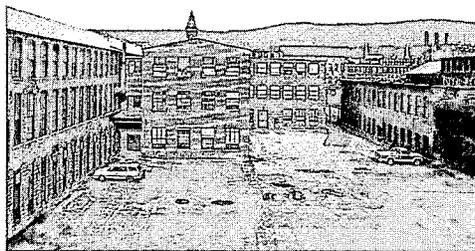
In New York, Governor George Pataki has signed legislation that grants tax exemptions to "smart buildings"—structures with high-capacity electrical lines better suited to today's technologically-oriented companies. The exemptions are part of ongoing efforts to attract and retain business in the Big Apple.

Los Angeles' T.C. re-opens

The Temporary Contemporary, adjunct to the Museum of Contemporary Art in Los Angeles, has reopened. The vast exhibition space, which was once a hardware store, was renovated in 1983 by Frank O. Gehry & Associates. Suited to large-scale installations, it was closed in 1992 because of an 11-acre development project in the surrounding Little Tokyo district. The development's fate is now uncertain and the hope is that the popular and idiosyncratic space will be made permanent. Currently on view at the Temporary Contemporary is "1965-1975: Reconsidering the Object of Art." ■



© John M. Kaufhold photos



Slowly, the Massachusetts Museum of Contemporary Art (MASS MoCA) is struggling to get back on its feet. Planners—among them former Williams College Art Museum director Thomas Krens—once envisioned a massive arts complex in the small town of North Adams, with 28 buildings of galleries and performance spaces, hotels and condominiums, all designed by a team that included Frank Gehry and Robert Venturi. State funds needed to realize this grand vision fell victim to government retrenchment, and Krens has moved to the Guggenheim Museum in New York City. Work has just begun on a more humble project.

The new MASS MoCA is the latest in a string of urban transformations for North Adams. At the turn of the century, the site was the home of a thriving textile industry. In the 1980s, most of the buildings were converted to house the huge transformers of an electri-

cal manufacturer. During the boom years of the 1980s, the mission became to once again revitalize the local economy of this sleepy town, this time—in a trend that now almost seems cliché—with art. Working with a reduced budget, Cambridge firm Bruner/Cott, a partner in the original plan, is now renovating 136,000-sq-ft of space in seven buildings and stabilizing the others. Most of the \$11-million budget will be spent on repairing collapsed roofs and protecting the buildings from vandalism.

The seven 19th-century brick mill buildings will become art spaces, although they will remain much rawer than originally planned. A "black box" will be constructed for dance and art performances. Later, additional repair work will be done to attract tenants; the rent will be used to fund future stages of the project. Planners hope to complete the first phase in late 1997. *Nicolai Ouroussoff*



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Berlin Struggles to Remake Itself

© This and black and white photos next page by James S. Russell



Soldiers once prosecuted the Cold War at Checkpoint Charlie. Now they pitch office space.

At Checkpoint Charlie, one of the most tragic sites of the Cold War, a developer's slogan plays on the words border-crossers confronted for 40 years. Instead, of "Stop, or we'll shoot!" the sign exhorts, "Stop, here we build!" Certainly the sign (photo above) represents an all-too-common trivialization of history, just as the excavations for the vast commercial development it advertises convey the intent to obliterate uncomfortable memories. But this is Berlin today, a city with a deep and tragic history that is now doing what cities rarely get to do: remake itself.

Berlin, severely damaged in World War II, then divided by the Cold War, and today struggling with reunification, is a unique case. In the euphoria that accompanied the Berlin Wall's 1989 demolition, it seemed a straightforward proposition to run the streets back together, to reconnect the split transit system, and to get on with creating a new capital of united Germany. In 1995, the city is a virtual construction site, with cranes visible everywhere on the skyline. But the legacy of 40 years of division and the lingering anxiety over the Nazi period has proven hard to overcome. The remaking of Berlin forces Germans to confront difficult issues of history and identity. And it offers lessons to the rest of the world on what we today think a city could or should be.

To Americans, who must constantly adjust to an ever-more pinched vision of civic place and public architecture, the extraordinary commitment by local and federal authorities to architecture as a vehicle for reunifying Berlin is mind-boggling. Felix Zwoch, editor of the German architectural journal *Bauwelt*, estimates that there are 300 to 400 significant projects underway in Berlin, including an entirely new quarter for the unified federal government, new schools, upgrading of the former East's substandard housing, and the restoration of the many jewels of German culture that lay neglected behind the Wall. Designers also have an important hand in repairs to the S-Bahn commuter-rail system (once operated by East Berlin), upgrading of the existing subway system, and a vast new main train station, which Berlin hasn't had since World War II (following pages).

What to remember; what to forget

Much of the rebuilding effort focuses on the Mitte district. Once the cultural, commercial, and governmental heart of Berlin, it had been neglected while part of the East. It is in Mitte that the debate about what Berlin should become is most sharply drawn, and, because it has so many places imbued with a tragic history, where emotions run highest. To place the seat of government closer to the former East, and to reestablish Berlin as a

world capital, the Reichstag—that symbol of failed democracy when burned in 1933 by the Nazis—will become the new home of Parliament. Though it was actually part of West Berlin, it was wrapped by the Berlin Wall, and isolated from the post-war center. It will become the anchor of a new axis of government buildings, according to a competition-winning master plan by Berlin architect Axel Schultes.

The outcome of the international competition for the Reichstag proved an exercise in ambivalence. In the first competition, the program was much too big for the building. Three winners whose schemes contradicted each other—Santiago Calatrava, Piet de Bruyn, and Sir Norman Foster & Partners—were asked to meld their ideas into one project. Ultimately it was reduced in scope and awarded to Foster.

After much study, the firm has produced a Modernist insertion that brings people-oriented transparency to the chief deliberative space and caps it with a dome that evokes its historical predecessor while enabling a daylighting and natural-ventilation scheme (next page). At this stage, it's watered down Foster; not nearly as powerful as the Carré d'Art in Nîmes [RECORD, October 1993, pages 62-71], yet not subdued enough to please preservationists. It's a far cry from the confident yet surprisingly open and unassuming parliament building completed only a few years ago in Bonn by the Stuttgart firm Behnisch & Partners.

Whose urban vision will prevail?

The developers who have flocked to Berlin don't escape its larger architectural debate either. Should the city fill its many gaps with street-hugging, masonry-faced buildings with punched windows that emulate the scale if not literally the actuality of 19th-century Berlin? This might be dubbed the "healing" approach that attempts to restore a traditional coherency and scale. Architects pursuing this path, who include Josef Paul Kleihues (best known in the U. S. for a contemporary art museum nearing completion in Chicago), the Cologne-based O. M. Ungers [RECORD, May 1995, pages 96-102], and Hans Kollhoff, have had the ear of Hans Stimmann, Berlin's senator of design and construction, whose

Postcards from 1995 Berlin: Potsdamer Platz, once no-man's land, sprouts construction cranes (1). "Philip Johnson" urges passersby to take space in his eponymous Haus (2). The Stalin-era's crumbling legacy (3) forces Berliners to debate its fate.



enormous power over what gets built is not now duplicated in any American city.

Or should Berlin recognize that it can never be as it was, and so forge a new path. Mary Pepchinski, an American architect, teacher, and writer in Berlin explains, "Only fragments of the old city are left. The assortment of modern post-war infill is the context today." Architects who don't accept the prevailing theory, dubbed "critical reconstruction," include Behnisch, Daniel Libeskind (who for a time gave up Berlin for Los Angeles), and respected younger firms such as Sauerbruch & Hutton and Ingenhoven Overdiek. They say they are frozen out of important commissions. [For examples of work by Sauerbruch & Hutton, Ingenhoven Overdiek, and Behnisch, see "The Intelligent Exterior" elsewhere in this issue.]

Indeed, Libeskind's extension to the Berlin Museum, which is working its way slowly to completion, couldn't be more at odds with the

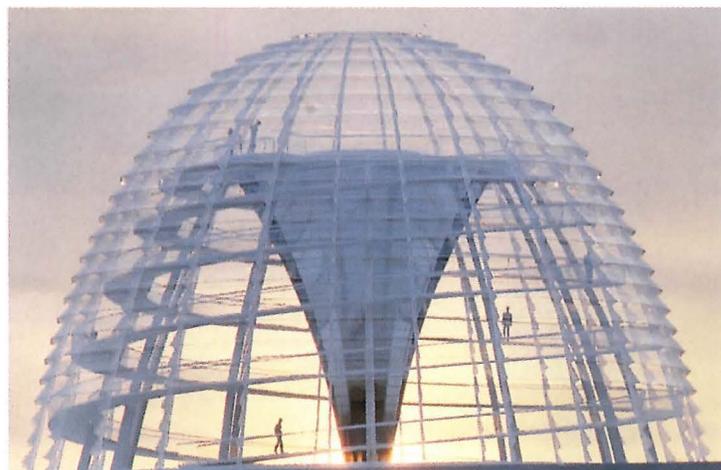
views of those who would like to see Berlin stitched back into a traditional whole. Not only is it historically loaded, in that it is intended to document the powerful influence Jewish life once had in Berlin, it is a disconcerting architectural statement. Its zigzag plan pokes into the street, and its slab-like facades dwarf the pleasing if architecturally inconsequential 19th-century house to which it is attached. Its elevations are fissured by slit windows that wrap corners and crisscross each other, seemingly at random. Whether the museum proves a powerful statement or simply a monument to Libeskind (as critics call it) remains to be seen; funding for programming the extension isn't committed, and a debate about what should be represented within it goes on.

First fruits of reconstruction

On Friedrichstrasse, once Berlin's most important shopping street, the advocates of restoring 19th-century scale have won out. For years the street was impassable to all but

After months of refinement, Sir Norman Foster & Partners' scheme for restoring the Reichstag as the new home of the unified Parliament was

approved (4). The solution, a compromise, adds an unmistakably Modern dome (5) that shares proportions with its long-demolished predecessor.



the most intrepid pedestrians as block after block was reconstructed, and as utilities and even the subway line running beneath were renovated. It is also along Friedrichstrasse that the first efforts of commercial redevelopment have been largely completed. The three blocks at the center of the area, one by Jean Nouvel, one by Pei Cobb Freed, and one by O. M. Ungers, are each handsome and built well. They lack the exuberance of American Postmodernism but also its often-kitschy cheapness.

"Look at the Nouvel," says Ken Lewis, an architect with Skidmore, Owings & Merrill, noting that its glass facade for department store Galleries Lafayette is almost a non-event. "He gave up on the street, and worked on the interior. This says it all about the constraints under which you work here." Lewis should know. Farther down Friedrichstrasse (indeed, at Checkpoint Charlie), his firm struggles to produce a mixed-use project. The current scheme (elements of which were

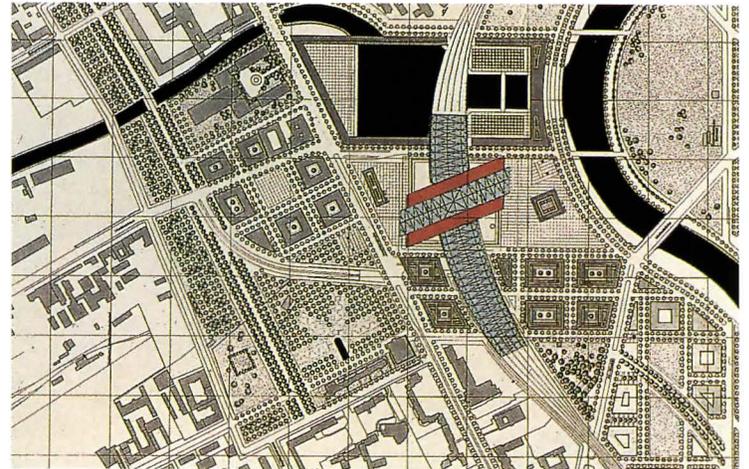
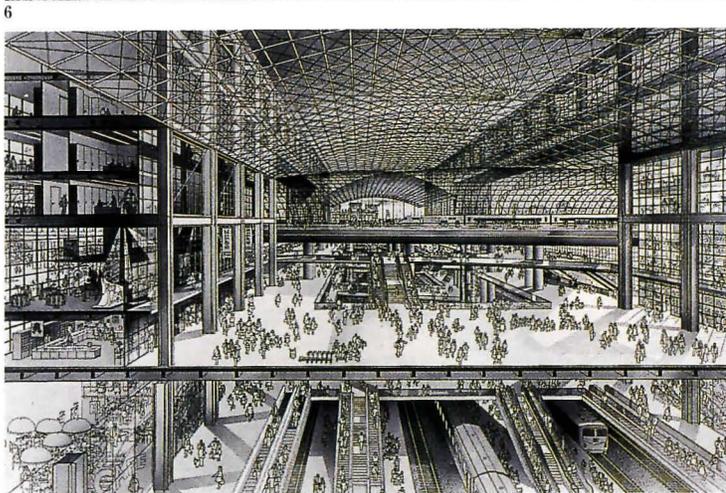
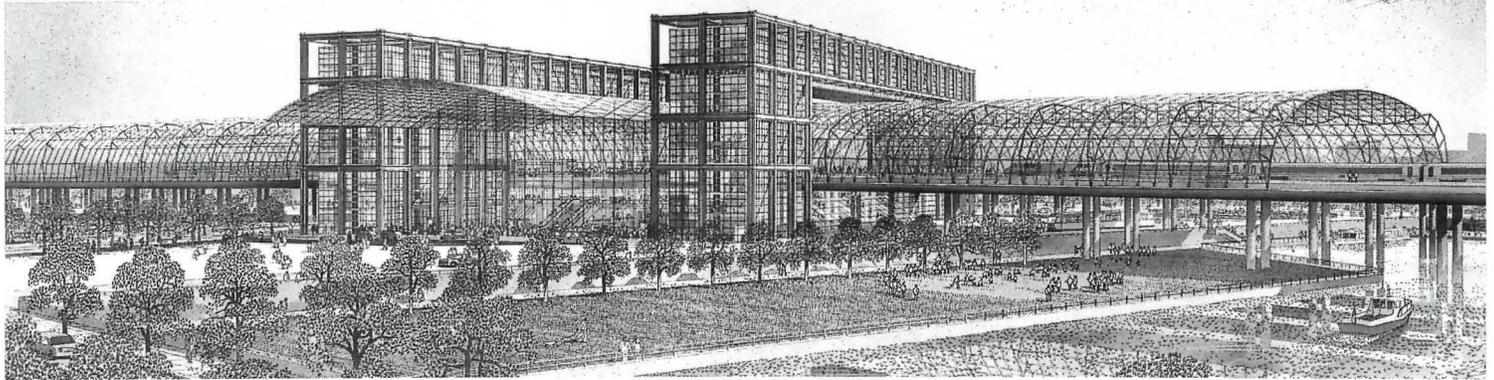
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The Lehrter Bahnhof, the new main train station, is emblematic of the huge scope of public investment in Berlin. (Its predecessor was destroyed in World

War II.) In architect von Gerkan, Marg und Partner's scheme, a sinuous, 1,400-ft-long trussed-glass hall (6) will cover elevated long-distance and com-

muter-rail trains (engineer: Jörg Schlaich). It intersects diagonal blocks that align with north-south tracks underground (7). These new tracks will extend

under the Spree River and the Tiergarten to keep the new government sector clear of above-ground rail structures (8).



not deemed historicist enough) looks to be a deconstructivist design trying to burst out of a tasteful modernist body. Lewis says the client's current market assessment will require adjustments in the design that must also pass official muster.

Anyone who thinks architectural debate in Berlin will settle into a battle over style (say, Libeskind vs. Ungers) is in for a rude awakening. Proposals for any site can strike a nerve, raising issues that demand more than a personal esthetic. First on many planners' agendas, for example, is the narrowing of the gigantic ceremonial avenues cut through the former East. (These vast asphalt landscapes, though they sporadically organize rows of Communist-style slab-block housing and phalanxes of ministries, bear an ironic resemblance to the leftover parking-lot precincts of American cities.) Not the least of the reasons to remake these boulevards is to end, as one observer put it, a planning tradition that made the efficient movement of troops its

prime consideration. To take on the task of allée-elimination with any consistency, however, means remaking a huge amount of the city, an unlikely outcome.

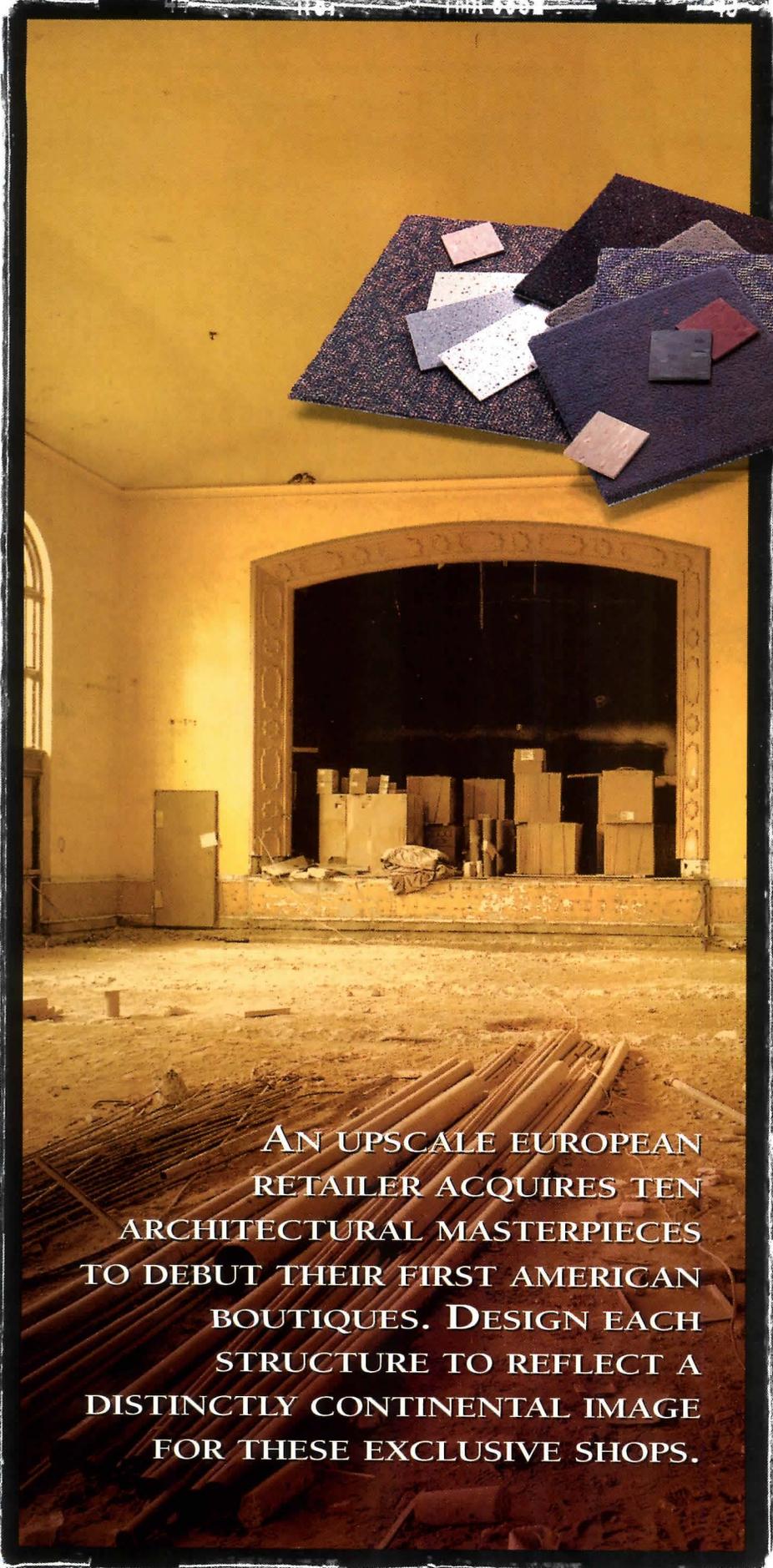
Walter Nageli, a Berlin architect, fears new esthetic orthodoxies are taking hold. One proposal was turned down, he says, for narrowing a street too much. Another controversy boils over whether certain artifacts of the divided-city era are worth saving—the Karl Marx Allée, for example, a crumbling Socialist Realist urban setpiece cooked up from equal parts Baron Haussman, Albert Speer, and Daniel Burnham (opposite). Or is the sheer banality of the ranks of 1950s glass-and-metal office slabs along Alexanderstrasse worth saving as a reminder of an otherwise soon-to-be obliterated past?

A passionate—and public—debate

Berliners—both citizens and professionals—are passionately involved in asking, if not answering, these questions. Public meetings

on new proposals attract crowds (hundreds of architects often participate, says *Bauwelt's* Zwoch), because people are genuinely concerned about the meaning and implications of schemes for the city's future. The question of whether Berlin's replanning is too parochial even had its day in Parliament, says architect Nina Libeskind. Berliners are also keenly interested in the competition for the new American embassy, to be decided later this month. The site on the Pariser Platz, to be rebuilt, is next to Berlin's chief urban symbol, the Brandenburg Gate. Competitors Bohlin Cywinski Jackson; Kallmann, McKinnell & Wood; Moore Ruble Yudell; Robert A. M. Stern Architects; and Venturi, Scott Brown & Associates will have to balance the needs of this very public site with embassy-security guidelines that push designers toward fortress-like solutions.

The passion of debate in Berlin is a far cry from America, where it seems that public
Continued on page 112



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LETTERS *continued from page 4*

services of architects, are successfully delivering outstanding major building projects to clients on a regular basis. This is a perfectly viable project-delivery system that works—owner's choice of prime professional, within existing licensure laws, with no artificially imposed limitations. But, no, that is not good enough for the leaders of the architectural profession. Legal and legislative action has and is being taken by the architectural profession to remove the existing legal authority of engineers to serve in the capacity of prime professional. Restraint of trade? You be the judge!

NSPE has taken no legal action in any state to take away from architects that which has been and is currently granted by law. It is too bad that the architectural profession can't truthfully say the same.

Engineers are bound by licensing laws to practice within their respective areas of competence. If an engineer's competence includes building design, and that right is legally granted by law (which includes the protection of public health, safety, and welfare), then that engineer should be able to pursue his/her profession, utilizing the services of

architects where deemed appropriate (as would be the case in many instances). To say that no engineer is capable of "putting it together and making it happen" in compliance with existing laws, and to the satisfaction of the client, is absolutely absurd and offensive.

NSPE has never held the opinion or position that engineers can do whatever we want, as was so severely misrepresented by Chet Widom, president of the AIA, in the July 1995 article. However, what was very clearly represented to Chet Widom, other AIA officers, NCARB officers, and others in attendance at the Architect/Engineer Summit Conference in April 1994 in Tucson, was that NSPE did not accept their outright refusal to discuss the prime professional issue. Furthermore, they were clearly informed that we would no longer simply maintain defensive positions under the onslaught of state legislative actions taken to unfairly corner the market for architects, under the insulting ruse that engineers are somehow inferior and should be subservient to architects.

NSPE has not sought to change existing state licensing laws to take anything away

from the architectural profession. All legal and legislative actions affecting our professions prior to and since the Tucson meeting have been initiated by the architectural profession, until NSPE said "enough," and contacted DOJ.

If leaders of the architectural profession had left "well-enough" alone and foregone the publication and distribution of its famous NCARB Handbook (untruthfully implying that it had been coordinated with the engineering profession), and, additionally, had not sought legislation to remove that which had been granted by law to engineers, there would be no pending DOJ investigation.

Cheap shots, greed, misinformation, untruths, arrogance and elitist dogma won't impress the Department of Justice, just as it obviously hasn't favorably impressed NSPE.
Thomas D. Hixson, P.E., L.S.
Past President, NSPE
Alexandria, La.

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Association panel discussion, "The Changing Environments in Health Care Facilities;" 6-7:15 p.m., 26 Bleecker St., New York City; 212/807-0400 for reservations.

October 26-31

"Using Computer Technology in Design Visualization and Presentation" gallery exhibition and open studio featuring architectural renderings and animation as well as software and hardware used to produce them; Tribeca, New York City; 212/674-6174 or 212/465-8734.

October 26-31

"Architecture in Perspective 10" convention and exhibition, Mayflower Hotel, Seattle. American Society of Architectural Perspectives, 52 Broad St., Boston; fax 617/951-0845.

October 31-November 4

"Celebrating Cities" meeting of Urban Land Institute, Pennsylvania Convention Center, Philadelphia; 800/321-5011.

November 2-3

National Housing Conference, "Saving America's Cities: Pay Now or Pay Later," Doubletree Guest Suites Hotel, Chicago.

November 10

Lecture by Ricardo Legorreta, "Mysterious Mexico," New York School of Interior Design, 170 East 70th Street, New York

City; 212/472-1500, fax 212/472-3800.

November 10

Build Boston convention and exhibition, World Trade Center, Boston; 800/544-1898; fax 617/329-8090.

November 16-19

"Symposium on Healthcare Design," Hyatt Regency, San Diego. Center for Design Health, 510/370-0345, fax 510/228-4018.

November 17

"Designing Building Security," one-day symposium on security issues, National Building Museum, Washington, D.C. Sponsored by the AIA and The McGraw-Hill Companies, 8:30-5:30 p.m.; \$195 for AIA members and government employees; \$250 for others. 202/626-7453, fax 202/626-7518. Also, on exhibit at the museum, "World War II and the American Dream: How Wartime Building Changed a Nation (through December 31); and "We Will Be Back: Oklahoma City Rebuilds" (through March 17).

Competitions

• Two international competitions and UNESCO prize for Architecture: Competitions for "Housing and Public Space in the Historical Center of Barcelona" (UNESCO Prize reserved for students of architecture); "The Environs of the Barcelona Football Club"; "Service Area for the Port of

Barcelona." Registration deadline: Oct. 31; UIA Congress, 011/343-301-50-00, fax 343/412-39-64.

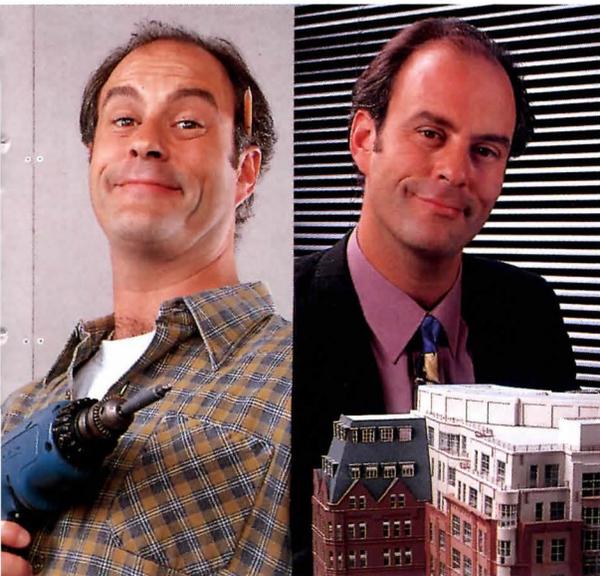
• National Trust for Historical Preservation awards program to commemorate downtown revitalization, open to communities that qualify; winners receive \$5,000 prize. Entry deadline, November 1; 202/673-4141, fax 202/673-4299.

• Architecture Awards Program sponsored by the U.S. Institute for Theater Technology for design of large and small projects for old and new theaters; entries due November 6; call Tim Hartung, Architecture Commissioner, 212/807-7171 for details.

• Two-stage competition for the Donor Commemorative (a major work of art for the facility's lobby) at the Living Arts Centre, Mississauga, Ont., Canada. Open to architects and designers, craftspersons, and artists; 905/306-6100, fax 905/306-6101.

• Key West AIDS Memorial competition, November 25 deadline; 305/292-7722, fax 305/292-2162. ■

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MARBLE FROM GREECE

Using Greek Marble to Reposition Your Property: A Discussion with Beyer Blinder Belle

While the economy has begun to head into its much-discussed soft landing, the construction industry has experienced a delayed but dramatic recovery in 1995. The chief beneficiary of the increased business has been the retrofit and renovation sectors of the industry, as owners of both commercial and residential properties contemplate extensive upgrades of existing buildings. To make these buildings more competitive in the tight real estate market, owners and their architects and designers are turning to refined building materials, including marble from Greece, to craft a distinctive image for their properties.

One architectural firm that has been heavily involved in this renovation work is the nationally-acclaimed, New York-based firm Beyer Blinder Belle, and marble has featured heavily in its projects. Most recently, the firm has been engaged in the conversion of the former Hampton House hotel, located at 28 E. 70th Street in Manhattan, into a condominium apartment building.

Natural materials, led by stone and wood, dominate the design. In particular, Beyer Blinder Belle's architects have specified the use of rich marbles in the master bathrooms for the floors, wainscoting, showers and baths. Marble will also be used in the foyer and reception hall, as well as in other locations throughout the apartment.

According to Richard Southwick, the partner at Beyer Blinder Belle supervising the project, marble is the material of choice for luxury renovations because "it conveys a richness that announces a building has been reborn."

The architects did consider other natural stones, such as granite, for the interiors, but opted instead for marble as the predominant luxury material. "Marble wears very well," says Southwick. "Unlike polished granite, which can be easily scratched, marble is highly durable. Select marbles are extremely appropriate for use in kitchens. A wide range of colors complement kitchen cabinetry and appliances, and marble is more stain-resistant than granite."

Whereas some renovations call for extensive conversion, others focus instead on the preservation and modernization of historic properties. Beyer Blinder Belle was retained for the major renovations of Grand Central Terminal and Ellis Island, and its work on the Cathedral of the Madeleine in Salt Lake City, Utah won the firm the National Trust for Historic Preservation's highest Honor Award.

Acting upon the mandate of the Vatican II proclamation, Beyer Blinder Belle was charged with updating the Cathedral of the Madeleine's architecture, and marble figured prominently in

"Marble from Greece evokes some of the greatest cultural achievements of the Western tradition... Imagine, Plato and Homer surrounded by the same stone."

this modernization and restoration project. The architects' concept called for a stone that would blend effortlessly with the Cathedral's carved natural wood and vibrantly-colored paintings. Marble was used for the inlaid floor surrounding the altar and for the altar itself. "Marble was both literally and figuratively at the center of the scheme," says James W. Rhodes, principal preservation architect at Beyer Blinder Belle.

"Marble possesses a natural poly-chrome, allowing it to fit in perfectly with the multi-colored wall paintings," comments Rhodes. "Marble was an ideal material with which to update the Cathedral, to make it look friendlier and more inviting, to parallel the liturgical modernization that Vatican II demanded from the Church."

The natural polychromatic qualities which first drew the Cathedral of the Madeleine's architects to marble continue to attract potential users. "Between varieties, even within a single stone block, marble provides a rich palette for artistic expression," Rhodes notes. "No two pieces of marble are alike. That is marble's challenge, but that is also its reward."

Architects involved in renovation and restoration projects, like Rhodes and Southwick, are excited about the design possibilities they can achieve and the unique impressions they can create using the myriad of Greek marble types. Greece possesses one of the most expansive arrays of marble colors in the world.

Rhodes intends to consider using marble from Greece more frequently in his projects. "Marble from Greece evokes some of the greatest cultural achievements of the Western tradition," he says. "Imagine, Plato and Homer surrounded by the same stone."



Cathedral of the Madeleine

© Richard Prehm

About Beyer Blinder Belle

Now in its 27th year, Beyer Blinder Belle is among the best known and most respected architectural firms in the country. Led by the firm's five partners, the staff of 75 highly skilled architects, preservationists, conservators, designers, and planners has undertaken a wide range of notable projects, including the Main Building on Ellis Island; Grand Central Terminal in New York; the Cathedral of the Madeleine in Salt Lake City, UT; the New York Yacht Club; the U.S. Naval Academy Chapel in Annapolis, MD; Barney's Women's Store in New York; and the Henri Bendel store on Fifth Avenue.

Beyer Blinder Belle has been honored with a number of national design awards, including the Bard Award, Henry Bacon Medal for Memorial Architecture, Presidential Design Award, *Time Magazine's* 1990 Ten Best Designs of the Year, and several National Trust for Historic Preservation Honor Awards. Most recently, the firm received one of the profession's highest honors, the 1995 Firm Award from the American Institute of Architects.

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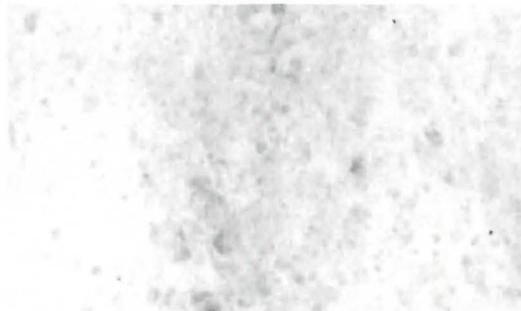
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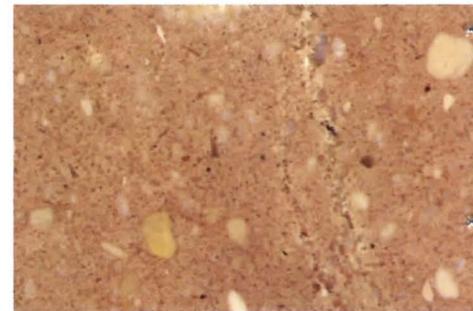
Black of Levadia



Whitish of Helikona



Ash White of Paros



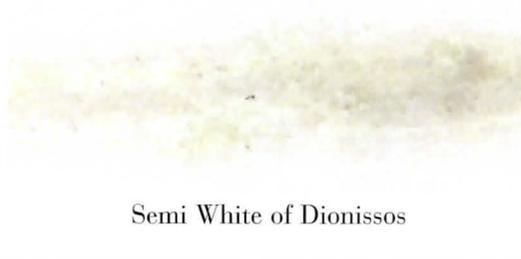
Pink of Arta



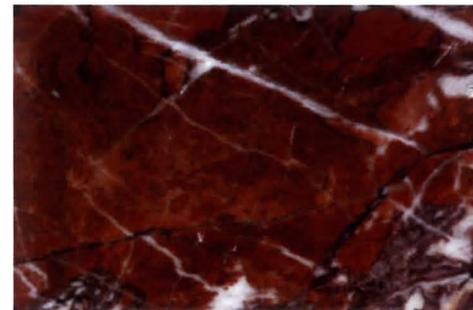
Beige Breccia of Karnezeika



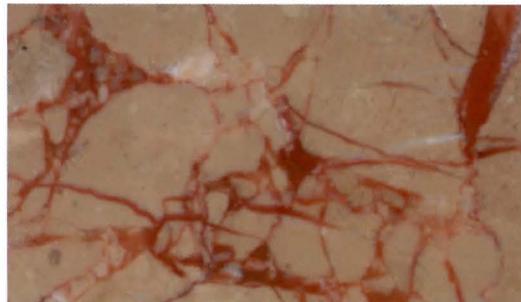
Pink of Lafkos



Semi White of Dionissos



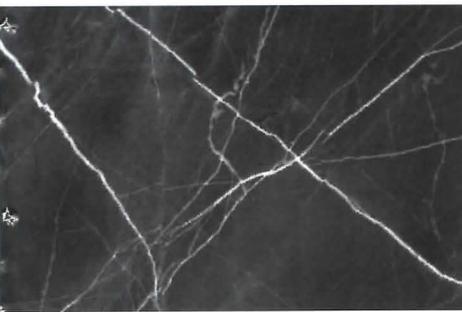
Red of Eretria



Beige Breccia of Mycenae



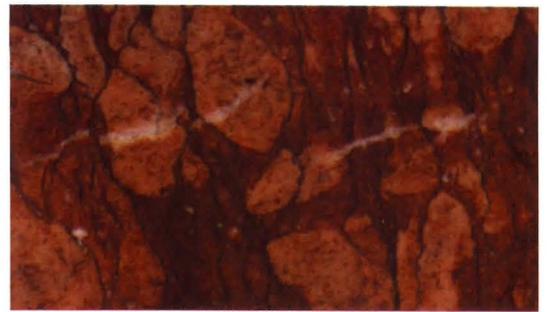
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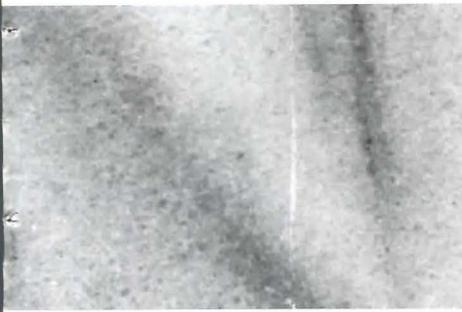
Black of Damasta



Pink of Levadia



Brown-Red of Fanari



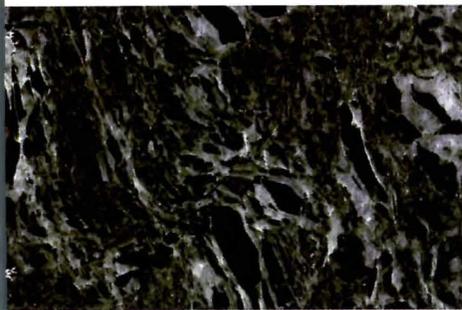
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Ash-Colored of Moundros



Green of Styra



Green of Tinos



Ash-Colored Crystallina of Thassos



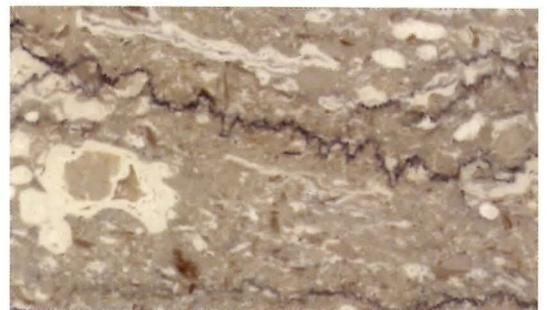
White of Volakas



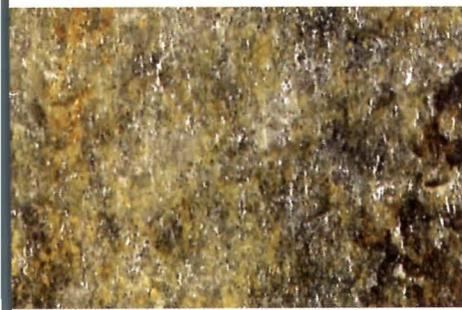
Semi-White of Aloides



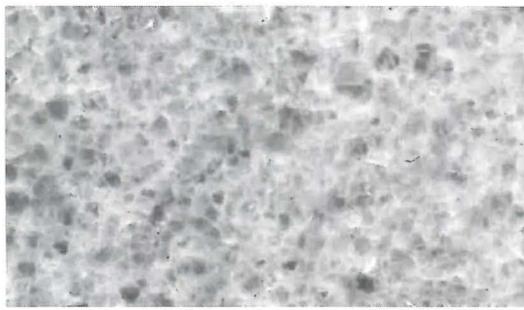
Beige of Ligourio



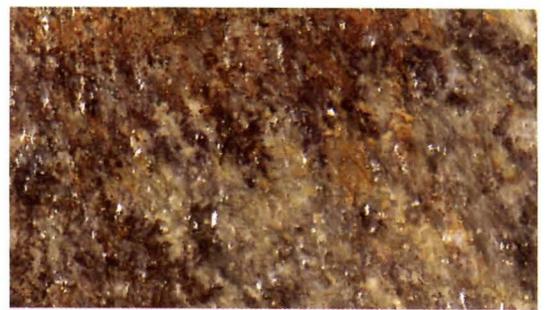
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Schist of Karistos



Ash-Colored Crystallina of Chalkero-Kavala



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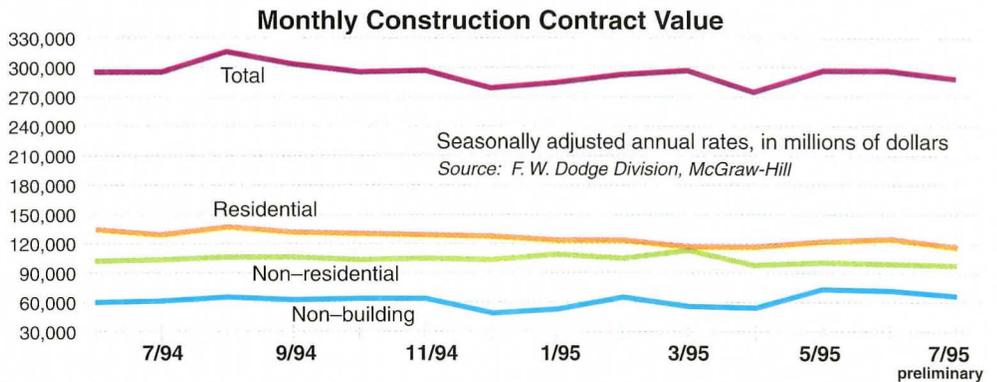
The Many Colors of Greek Marble



Indicators

Soft landing for construction volume

July construction volume slipped 3 percent, paced by a 5-percent drop in single-family housing and an 8-percent slide in the much-smaller volume of multi-family construction. Weakening demand for commercial and industrial facilities was offset by resilience in store construction and continued strengthening in office construction. Corrections work pushed a 3-percent advance in institutional building. Total construction for the January-July period was down 1 percent compared to the same period a year ago. ■



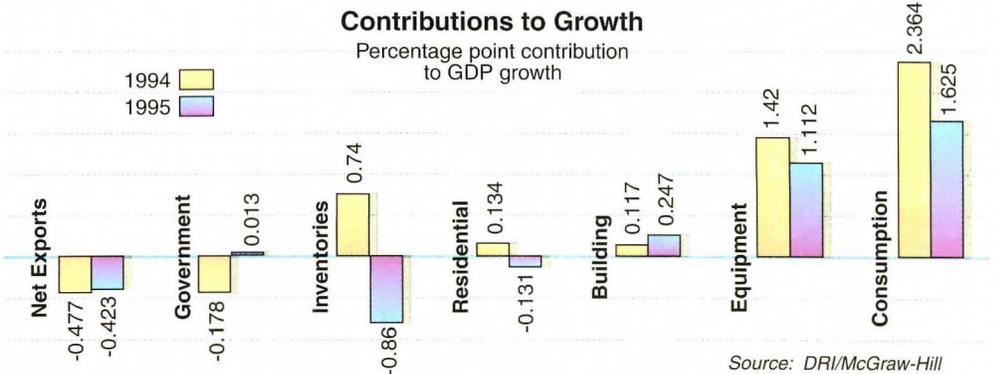
Can you afford your market?

Thinking of moving? Should you choose a high-cost location hoping that higher incomes support more building? Maybe not: Inexpensive Dallas, Houston, and Kansas City have relatively high incomes. Go for affordability? Some low-house-price places (Tucson and some Florida cities) are costly because incomes are low. Costs on the east and west coasts (say, Central New Jersey and San Jose) are "low" relative to high income. High-growth locations (Charlotte, Las Vegas) tend to be cheaper but not cheap. ■



Construction growth fuels GDP

The Federal Reserve has "gotten just what it was trying for" in slowing growth, reports DRI, the economic-forecasting arm of The McGraw-Hill Companies. Thus construction was able to contribute more to gross domestic product (GDP) without pushing inflation up. (Excess inventories took the steam out of growth instead.) DRI predicts that the Fed will cut rates again—good news for construction. Markets, though, worry that the Fed won't be able to check inflation, portending more tightening later. ■



Short Takes

• Housing: Headed upward again?

Though housing starts and home sales have wobbled this year, investment analysts at Lehman Brothers predict a solidly upward path for the next year and a half, according to *The Wall Street Journal*. Thus, architects can benefit both from new construction and remodeling. Others see pending weakness, noting that employment remains lackluster and many boomers have already bought.

• Canary Wharf on comeback trail:

Awash in empty space, the \$3-billion office complex in London's docklands once seemed

emblematic of the late-'80s collapse. It is now three-quarters leased and may be sold to a consortium that includes its original developer, Paul Reichman.

• **Metals bible:** Covering all architectural-metal types, L. William Zahner's *Architectural Metals: A Guide to Selection, Specification, and Performance* (New York: John Wiley & Sons, 388 pages, \$89.95) is a welcome resource as architects increasingly exploit metals' expressive potential. Zahner works on demanding projects by Frank O. Gehry, Antoine Predock, and others. ■

Are There Too Many Architects?

By R. Gregory Turner

Timing is everything, the saying goes. Architects can certainly testify to the truth of that adage. A generation ago, the profession was riding a wave of good fortune generated by a sudden explosion of building activity. Today, each architect's piece of the construction pie is about a third of what it was 40 years ago. No amount of talent, hard work, and slick marketing will alter this circumstance for most architects. Only changes in the economic structure of the profession will.

It's not that the U.S. economy has been so weak—real-dollar per-capita spending on construction in the country has generally been in a holding pattern since the early 1970s. Rather, the laws of supply and demand have caught up with practitioners of architecture. Continuing, yearly jumps in construction spending in the two and a half decades after World War II encouraged the entry of thousands into the field. Even in the past 20 years, as spending has leveled off, the number of people working in the architectural arena has nearly tripled. This massive increase in supply has reduced per-architect construction spending to levels not seen since World War II. If recent trends continue, we may be heading toward spending levels on the order of those experienced during the Depression.

Throughout this article, continual reference to the term "demand" will be made. It will be assumed that this demand for architectural services is directly proportional to the overall level of building activity. As a gauge of construction activity, figures from the U.S. Department of Commerce are used; these measure construction put in place. Also, figures from McGraw-Hill/F.W. Dodge are used, which quantify building-construction contracts. Although the latter are more directly related to the demand for architectural services (the former include utilities, highway, military, and other such non-building construction), they are not available for the entire century. Since the F.W. Dodge numbers track at about 50 percent of the Department of Commerce figures,

R. Gregory Turner, AIA, is founder of a Houston-based architecture and planning firm which bears his name.

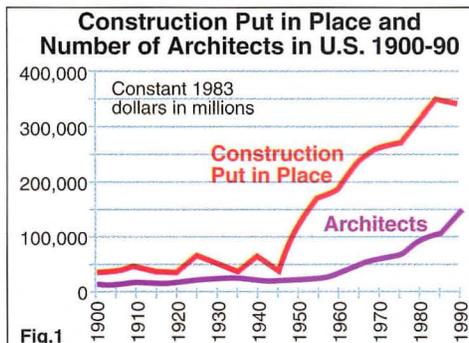


Fig. 1

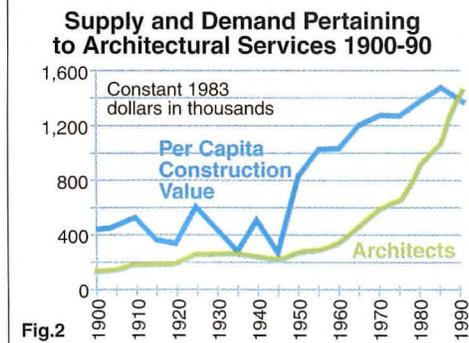


Fig. 2

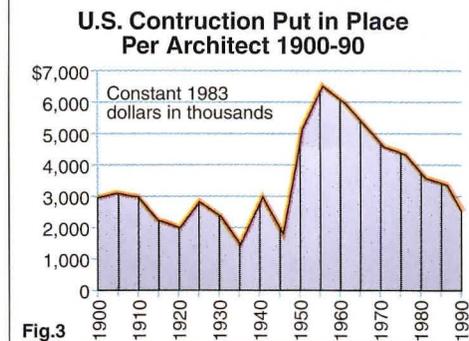


Fig. 3

extrapolation from the government figures can still be considered an accurate barometer of demand for architectural services. Further, all monetary values quoted are real-dollar amounts, expressed in 1983 dollars, unless otherwise indicated.

For those surveying the American architectural landscape in 1945, the career outlook was anything but certain. Total spending on construction in that and the previous year had fallen back to levels more like the first two decades of the century. Per-capita spending showed an even worse picture, ranging close to the Depression. Despite a more than 10 percent drop in the number of architects in the prior decade, the dollar value of construction per architect had dropped to about

one-half its historical high. Moreover, the general trend through the first four and one-half decades of the 20th century, albeit irregular, was decidedly downward.

If we look at the market for architectural services prior to 1945 in the simplest economic terms—supply and demand—we begin to understand what developed in the profession in the second half of the century. The years 1900 to 1925 illustrate a relatively rapid response to increasing demand: the number of architects more than doubled, as did the value of construction (interrupted only by the war years from about 1915 to 1920). When demand fizzled in the 1930s and 1940s, supply adjusted downward quickly. In the first half of the 1900s, per-architect spending kept within a narrow range—from about \$1.5 million in 1935 to \$3.0 million in peak years. These may have seemed like severe fluctuations at the time, but they came to pale in comparison with the decades after the 1950s.

Riding the post-war tidal wave

The end of World War II launched a 40-year tidal wave of building activity which catapulted the careers of I.M. Pei, Philip Johnson, Gordon Bunshaft, William Caudill, and thousands of other lesser-known architects. All of them benefited immensely from a historical circumstance which may not be repeated in our lifetime. The year 1946 saw a near-doubling of the previous year's level of construction volume. The following four years saw an average growth per year of about 20 percent. This was true whether one used as a yardstick total construction put in place or, more important to architects, building-construction contracts. By 1965, real-dollar construction activity was approaching 700 percent of its level at the close of World War II. By the time this wave had peaked in 1986, construction spending was 10 times its level in the pre-war period. U.S. per-capita spending on construction peaked in 1980 at a level well over two-and-one-half times greater than the pre-1945 high.

Since the early 1970s, the national trend in construction spending shows stagnation. However, the more pronounced trend is the cyclical swing of construction activity between the levels of about \$300 billion and \$400 billion (\$1,200 and \$1,600 per person).

Today, per-architect construction spending hovers near the low levels of World War II. R. Gregory Turner argues that architects' abysmal income can't rise without changing the supply/demand ratio.

These gyrations seem minor given the overall spending levels for the 1974 to 1993 time period, but in actual dollars they are on a scale considerably greater than the boom and bust cycle of the 1920s and 1930s. These recent ups-and-downs may be understood most clearly through the lens of the asynchronous regional performances of the U.S. economy. The oil shock in 1973, along with other factors, put a chill on construction in the Northeast and Midwest from roughly 1974 to 1982. This was offset by the boom in the Southwest in the late 1970s and early 1980s. As the oil patch crashed after 1981, the surge in construction activity on the East and West Coasts pushed demand up once again, until it peaked in 1986.

The mid-1980s collapse

Since 1986 there has been a precipitous decline in demand, which was not arrested until 1992 and 1993. Are we in the nascent stage of cyclical upturns such as those in the 1977-78 and 1983-84 time frames? Or are we in a temporary interruption of a long descent to levels more in keeping with historical spending in the U.S. prior to World War II?

As for the supply of architects in the post-war period, figure 1 (opposite) graphs total constant-dollar construction expenditures in this century, and superimposes the number of architects, according to U.S. Department of Commerce figures. Figure 2 does the same with per-capita construction expenditures.

Note that the number of architects stated by the Department of Commerce does not necessarily accurately show the number of architects practicing in architectural or A/E firms. Many architectural careers have developed outside of the traditional firm, such as in project-management roles for owners and developers, or in facilities management. However, two factors make the government figures at the very least useful. First, in recent years the government numbers track with the number of employees working in firms owned by AIA members, though they show higher numbers. (This is consistent with the structure of the profession, which is not exclusively an AIA domain.) Second, architectural careers, whether they exist in traditional firms or in ancillary fields, are still dependent on the level of demand for con-

struction-related services. Where exactly these services are rendered is, in services-demand terms, a moot issue.

Was the post-war era special?

While demand skyrocketed in the years immediately following World War II, the supply of architects grew only modestly. It wasn't until after 1960 that the supply of architects began to ramp up. Growth in the supply of architects accelerated until it finally slowed in the late 1980s—about a decade and a half after demand had stagnated. Architects fortunate enough to be practicing in the 1950s and 1960s reaped a windfall (figure 3). Construction put in place on a *per-architect* basis peaked in the late 1950s at a level more than double the average in the pre-war era. Since then, it has been declining virtually unchecked.

Consider the effect of these shifts in supply and demand on the total output and price of architectural services. By 1955, the supply of architects had risen 30 percent since 1945. However, demand had risen by almost 300 percent. With the modest increase in architects from 1945 to 1955, the price architects could charge increased, as did total output of services by the profession. Between 1955 and 1975, the supply of architects as counted by the government shot up by 252 percent. The growth in AIA membership was about the same and demand for architectural services increased only about 60 percent.

Architects' declining position

An examination of the past 20 years reveals in more detail the declining economic position of the profession. This was brought about principally because the rapid growth in the number of those practicing architecture did not slow to any significant extent until the late 1980s—after the stock-market crash of 1987, the savings and loan debacle, and other factors put a lid on construction activity in the Northeast and California (figure 4). Even in the past five years, the number of architects has continued to grow, albeit at a much slower rate. In combination with stagnant total demand, this has yielded the situation illustrated in figure 5—declining real-dollar construction expenditures per architect. Demand for services on a *per-architect* basis today is about half what it was in the mid-

1970s. In 1990, spending per architect approached a level which hitherto had been considered no more than a distant memory. Although demand appears to have gone up in the past two years, construction growth has been anemic compared with corresponding points of previous upturns in 1976-1977 and 1983-1984.

One mildly encouraging sign is the stabilizing of architecture graduates. Since the middle of the 1970s, the number of architectural degrees awarded at all levels annually has held steady between about 12,000 and 13,500. Students wised up early. Because of this, *per-graduate* construction expenditures have held relatively constant between \$10 million and \$15 million annually. Even at this level, too many people are entering the field. At least we are past the days of unbridled growth in architectural-degree programs.

Wreaking havoc on earnings

In real dollar terms, the shifts in supply and demand since 1973 have wreaked havoc on the earnings of architects. There has been a minimal expansion in demand, accompanied by a greater than doubling in the supply of architects (AIA membership has also increased more than two-fold in this same span). Prices may have been artificially maintained by fee schedules promulgated by the AIA. The consent decree that ended fee schedules came at a bad time in terms of demand. At any rate, by 1975 the trend was unmistakable: slowing demand, and exponential growth in supply. The acceleration of these trends would ultimately put a brake on fee growth, and in fact send it into the free fall that occurred in the 1980s and 1990s.

Had anyone bothered to examine the fundamental economics of the profession in the late 1960s or 1970s, the evidence of market deterioration was overwhelming. This should have raised plenty of warning flags in the profession and universities. With clients gaining the ability to choose among many qualified firms for any project, architects have been forced to differentiate on the basis of price. The downward sloping curve in figure 6 is testimony to this. Between 1985 and 1991, the price architects could charge (as represented by net billings per architect) declined by more than 20 percent.

As further evidence of the profession's eroding economic strength, consider net billings per employee in AIA member-owned firms, which dropped from \$38,850 to \$38,400 between 1989 and 1991. For the most recent five-year period, stable supply, in conjunction with decreasing demand, has depressed both total output by architectural firms and price. When price is depressed, it ripples through to the compensation received by all members of a firm. Research shows a consistent real-dollar income loss by AIA firm principals since the late 1980s. Only principals in larger size firms saw a modest uptick in compensation last year—the only good news in any firm size in the past half-decade. Notice the similarities among figures 5 and 6 in recent years. Demand, output, and price walk in lockstep.

“A better approach is to attack the problem from the demand side . . . to encourage new construction, with its concomitant demand for architectural services.”

Two issues dealt with only peripherally have been productivity in the profession and perceived value—topics left for future study.

Both affect the demand for architectural services independent of construction activity. A decline in productivity can cause lower unit billings if architects are spending more time to provide services for the same volume of construction. A case for this could be made in light of some of the “defensive design” practices which have become more commonplace in response to increasing litigation.

On the other hand, the desktop revolution offers opportunities to increase output through the use of CAD and other software. The value of architectural services, as perceived by clients, has declined at the same time that other professionals—interior designers, construction managers—have moved into areas traditionally considered the turf of architects. In recent decades, clients have come to value aspects of the architect's services far less than before, and have looked to substitute other providers. Thus, even in a

rebounding market, architects' market share (and net billings) may not improve.

Signs of hope

Despite these daunting trends, not all signs are negative. The market share of architects has been rising, as architectural firms' net billings—as a percentage of building construction contracts—have generally been higher in the 1990s than in the 1980s. However, this may be due more to the growing prevalence of remodeling projects. Since these are typically more complicated than new structures, fees tend to be higher for individual projects. Lest we get too optimistic, remember that all this means is that architects are getting a slightly larger piece of a much smaller pie. After all, total building construction contracts

in 1993 were only 76 percent of their peak in 1986.

Supply stabilizes. And demand?

Supply has been stabilizing. The big question is, what will happen to demand? Even with a constant supply of architects through the turn of the century, real-dollar spending on construction must rise each year for architects' earnings to keep pace with inflation. If the weak recovery of 1992-1993 is not sustained, and real expenditures begin to decline again, the profession as a whole is in for some difficult times.

Given the collapse of the savings-and-loan industry and generous real-estate tax write-offs (the source of easy money which fueled the construction binge in the 1980s); the persistent excess inventory in commercial building types; the ever-more burdensome regulatory environment stifling real-estate development; continuing low inflation (which helps make real estate an unattractive investment); the completion of the transfer

of the American work force from blue-collar work to service-type jobs; increasing global competition; and the debt load of governments at every level, the fundamental economic conditions that could generate and sustain a prolonged period of increased construction activity may simply not be there and may not reappear for some time.

What can the profession do? The problem has been caused by classic factors of supply and demand, and both sides must be attacked.

Reduce the number of architects?

First, supply. The profession could make a coordinated effort to shrink the number of architects plying their trade in private practice. Attempts could be made at the state-board level to greatly reduce the number of architects obtaining licenses each year. The universities could shrink their architecture departments. Individual professionals could discourage young people from embarking on careers in the field. All of these efforts and more could certainly cause a contraction in supply which could push up prices in the short term, even in a flat market.

However, there is risk in this approach. It does not appear that state licensing boards have ever effectively limited supply in the past. More powerful forces than the profession—namely, our consumers—might block such a move. In this age of consumer advocacy, this might not be good public relations (although ironically, our profession—not, strictly speaking, being “necessary”—is one of the few examples where the customers are far more powerful than the providers). Moreover, the architectural profession is relatively small and underfunded compared to the realtors, developers, contractors, and others who could lose leverage if the number of architects was reduced.

To adjust supply, we should look toward the universities and individual effort. Already, students shy away from architectural studies. Further efforts should be made to introduce undergraduate-level students and other young people to a realistic assessment of the economic conditions facing the profession. The marginally interested should be urged to consider other endeavors for their own benefit as well as the profession's as a whole.

Perhaps the biggest drawback to relying too much on contracting supply is the decline in output which is likely to go with it. If, then, there are not enough architects around to meet an increase in demand—even a temporary one—our consumers are likely to look elsewhere to satisfy their needs. This can only embolden architects' many challengers—such as engineers, contractors, and interior designers—to expand their offerings of competing services. Supply contraction is a viable strategy in the short run only.

A better approach is to attack the problem from the demand side. In short, we should do everything possible to encourage new construction, with its concomitant demand for architectural services. One strategic advantage is that this puts architects on the side of their customers. Most clients want to build things, and they should be helped in every way possible. Also, clients and prospects should be made more aware of the wide range of benefits the profession can bring to construction projects. Increased demand will not only expand total output by architects, it will support improved fees as well. The profession could, if it manages supply better than in the past, begin again to offer good career opportunities to young people.

Drivers of success

These are the changes I think the profession should make.

- *Sell the services clients want.* Ironically, the profession itself is actively engaged in limiting demand for our services. An AIA study summarized in the October 1993 issue of the *AIA Memo* showed that the top two drivers of business success for architects and engineers are product/service quality, and project management. About a third cited the former. Guessing for a moment that about a third of those respondents saying product/service quality are thinking of design quality as opposed to, say, construction documentation, that means only about one-tenth of the profession overall is reliant primarily on design quality for success. Yet the profession sells only design, as illustrated by the high profile given to the design-awards programs. It should come as no surprise that potential clients look elsewhere or come reluctantly when a design award is not a high priority. This is particularly unfortunate given that

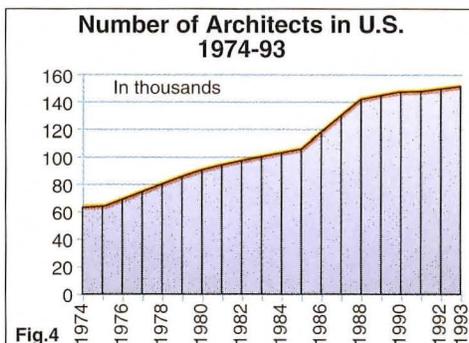


Fig.4

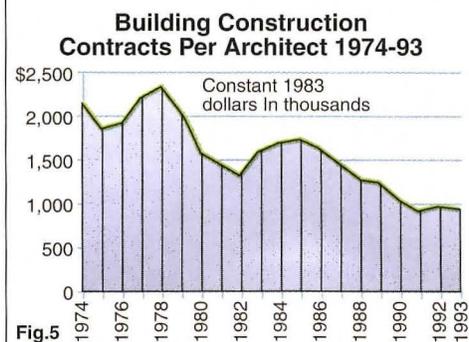


Fig.5

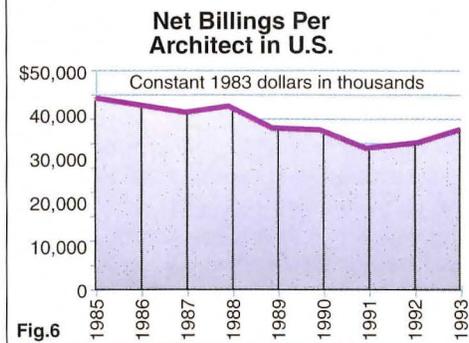


Fig.6

the same AIA study showed that more architects than contractors consider project management the main driver in their business success. Yet the profession has failed to mount an effective defense against inroads made by others into this service—one which should be architects' most marketable asset.

- *Reduce regulation.* Another limitation is that members of the profession often come down on the side of regulation, which tends to obstruct building activity. Architects have embraced such things as zoning, environmental regulation, and the Americans with Disabilities Act, seeing fee potential in ancillary services related to such regulation. Yet these potentials are illusions. As indicated above, we may never again see levels of build-

ing activity the previous generation saw. We surely won't if we continue to support those who place roadblocks in the way of design and construction. The longer and costlier the building process becomes for our clients, the less of it there will be. No amount of small-change consulting work can compensate for the revenues lost due to lower construction volume. There is no substitute for robust building activity.

- *Focus on the private sector.* In the past, architects have also supported government expenditures on construction. This is consistent with encouraging more demand, but the government usually does not allocate resources as efficiently as the private sector. In the future, we should advocate allocating construction spending where it can do the most good the fastest. Reduced taxes, which fuel economic growth in the private sector, will do more good than government building-construction projects slowed by politics and bureaucratic red tape. There is no substitute for a strong private-sector construction economy (which typically accounts for 85 to 90 percent of all building construction).

It's OK to make a profit

The diminished market position of architects is no excuse for failure. Certainly, conditions now are still far better than those experienced in the depths of the Depression. Moreover, many other U.S. industries have seen equally competitive situations arise in recent decades. One only has to consider the automotive industry—in the doldrums in the 1980s but seeing record profits in recent years. Despite tough conditions—even because of them—these businesses restructured and prospered. Likewise in architecture, there have been success stories, and these should be celebrated. If there is one lesson to draw from all that has been presented herein, it is that architects must learn better how to work toward their own economic self-interest. This may not sound idealistic, but the alternative is the surrender of leadership in the building industry, continued diminishing stature of the profession, and a decline in the architectural "standard of living." These will not serve the profession or society well. ■

Code Changes May Affect Fire-Door Design

By Elena Marcheso Moreno

When a building fire breaks out, the first priority is to keep occupants safe from flames and smoke as they evacuate the building. Fire-rated doors, dually charged with providing a means of egress and serving as physical barriers, can be the critical link to life safety.

Fire doors are rated from 20 minutes to several hours, denoting the length of time they'll provide protection. It is the entire assembly itself—consisting of the door, framing, hardware, and accessories such as closures and astragal—that guards against the spread of fire and smoke. Each component must meet the overall rating of the assembly to be listed by a certified testing laboratory. Building codes and the National Fire Protection Association *Standard 80: Fire Doors and Windows* set minimum criteria for installing and maintaining fire-door assemblies to protect openings in walls and other passage-ways.

Improved materials, including hardware and glazing-light options, and increased market demand have led to more attractive fire doors and more opportunities to customize them without detriment to the door or the assembly's performance.

Each new product is tested within an assembly by Underwriters Laboratories or Warnock Hersey and labeled with an hourly rating. As in the past, a designer need only check the requirements of local codes, coordinate listed hardware with suitable labeled doors and frames, and then choose among the fire-door assemblies available to meet client needs and budget.

A push in a different direction

While the purpose of some building-code requirements can seem obscure at times, virtually no one argues with the need for fire-safe construction. Protecting lives is the highest priority. Period.

But the best way to assure that protection—through standardized product testing—has been contentiously debated since the early 1990s. Until recently, the standard test for fire doors was conducted under negative

Elena Marcheso Moreno, of McLean, Va., writes on architecture and its technology.

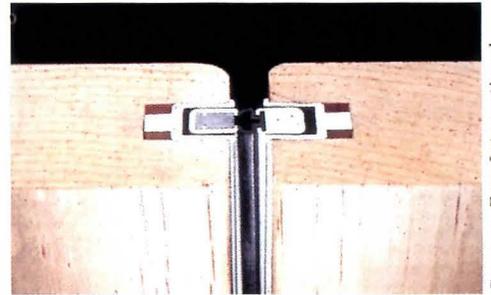
pressure. In this procedure, air flows into the test furnace, around protected openings. The protocol attempts to keep pressure on both sides of the test door equal to atmospheric. Then, a few years ago, a number of industry experts challenged this test as not representing actual building-fire conditions.

In a real fire, these opponents say, pressure on the fire side of the door is likely to be greater, creating the potential for flames and smoke to be forced across the barrier through indirect paths or openings. But supporters of the current negative-pressure testing procedure maintain that fire-door assemblies now being sold aren't a problem: there have been no deaths attributed to a door failure since testing started more than 80 years ago. Nor does the proposed revision test for the passage of smoke. Steven Wherry of the Steel Door Institute feels that this is definitely a case of "if the wheel isn't broke, why fix it?"

Yet, the model code groups (ICBO, BOCA, and SBCCI), led by ICBO, are all expected to enact code changes that require positive-pressure testing for fire doors in the near future. ICBO started the code-revision process in 1990, working to include requirements for positive-pressure testing (with a neutral-pressure plane at 40 inches above the door sill exposing the upper two-thirds of the door to outward pressure, similar to the international standards for fire-door testing). In addition, the U.S. standards are almost certain to include a controversial requirement for a hose-stream pressure test, which is supposed to analyze whether fire-fighting efforts may breach the fire barrier. (Late last month, ICBO was expected to have ratified the code change.)

Doors undergo revised test procedure

Originally, positive-pressure testing was to apply only to swinging doors. Manufacturers of sliding metal doors and folding doors were unsure whether their products would be added to the "must test" list. Now, about the only fire doors most people in the industry expect to be exempted are elevator doors. The variation in elevator-shaft stack pressures make it difficult to justify positive-pressure testing under any circumstance. The hardware, framing, and accessories for



Courtesy Zero International

all fire doors will also have to meet the demands of these proposed ICBO requirements, and will only be allowed in approved assemblies. The National Fire Protection Research Foundation in Quincy, Mass., recently issued two technical reports on positive-pressure tests on a variety of fire doors in both furnace and test rooms (see *Further Information*). Steel-stiffened doors, polystyrene-core hollow-metal doors, wood particle-core doors, and wood-faced mineral-core composite doors were all tested. In general, the doors survived positive-pressure testing, but a number failed during the hose stream test.

"The NFPRF project proves that there are doors currently on the market that will meet the new code requirements," says James Berg, a door and hardware consultant and head of Berg Marketing in Kansas City, Mo. "It also proved that some products won't meet the requirements without modification. These tend to be the less expensive products, so we can expect costs to rise as manufacturers redesign doors to satisfy the ICBO code."

Just how much more doors will cost has not yet been determined. Since most fire doors must be retested, points out Ralph Gerdes, a code consultant in Indianapolis, manufacturers are likely to shell out a few million dollars over the next two years. "That expense is going to be transferred to the cost of the product," he says. If the less expensive products don't survive positive-pressure testing, they just might be taken off the market.

Sealing against positive pressure

Like other components of fire-door assemblies, gaskets and sealing systems must maintain the rating of the door. Escape of hot air, flame, and smoke around the gasketing from the fire side of the door assembly to the

Labeled fire doors have worked well resisting the spread of fire. Now, impending code changes and more-severe test procedures may change the selection of protective assemblies available to the architect.



2 non-fire side could be deadly. Recent U.S. introduction of intumescent materials, popular in Europe as fire-door gaskets, is helping some manufacturers' products meet the conditions of positive-pressure testing.

"Simply defined, intumescent is a fire-stop material that expands when exposed to elevated temperatures, forming a char. This char is a coarse-blistery structure providing a highly heat-resistant barrier that blocks penetration by heat, smoke, and flames, as well as toxic gases and soot, for hours," says Elias Wexler, president of Zero International, New York City, which markets intumescent seals and gaskets.

As hot air under positive pressure is forced through cracks in door openings, the intumescent material embedded in the edge of the door and opening expands, sealing off air spaces and stopping the passage of hot gases. Failure won't occur until the flames actually burn through the door.

Most of the original intumescent materials were based on a sodium-silicate composition that expands in an explosion-like reaction (called a hard-puff) at temperatures above 500F. But the intumescent that Wexler markets for fire doors is considered a "soft" puff—it begins to slowly expand at 250F, the point where many organic materials begin to emit combustible and noxious gases. This controlled expansion has little chance of blowing open the door, a possibility with the single-action hard-puff intumescent, and it continues to expand gradually, reaching complete expansion at about 500F. The most suitable use of intumescent is seen for wood fire door assemblies but, according to Wexler, "intumescent action also benefits metal doors by expanding to seal the gap created by any warpage of the metal." In practical terms, even if ICBO does ratify



3 the proposed code revisions, it will be 1997 or 1998 before the changes are written into local codes. But door and hardware manufacturers will not be idle. New products will be developed and some old ones refined.

State-of-the market: glazings

Rated glazing and door lights will also be subjected to positive-pressure testing requirements as part of the door assembly. Recent products have added larger vision areas while meeting current codes, and some lights have already performed well under positive-pressure tests. Only a few years ago, glazings for fire-rated doors came in "vanilla only"—wired glass in a small opening was the best an architect could hope for in all but 20-minute doors. Now new materials developments are bringing 60-minute and 90-minute full-vision doors into the marketplace.

According to Scott Foote, of O'Keeffe's, San Francisco, SuperLite II, the gel-filled glazing his company markets for fire doors, limits heat rise to about 100F above ambient temperature, even when temperatures on the exposed side are above 1700F. It consists of two panes of clear tempered safety glass sandwiching a clear polymer gel. Sixty-minute rated doors can have 2,973-sq.-in. glazed openings. Another substitute for wired glass is FireLitePlus, a polished glass-ceramic made in Japan that is laminated to glass. These glazings are appropriate where there is a need for fire protection and visibility—computer rooms and stairwells, for example. But neither product is cheap, which explains why wired glass still has 90 percent of the market for fire-door glazings.

Fire-rated door cores

Five years ago salt-treated hardwood was the prevalent fire-door core-banding material. But the salt could leach out onto door sur-

Intumescent door gasketing, pictured before (1), during (2), and after a fire test (3), enables some door assemblies to meet positive-pressure testing requirements. In addition, intumescent seals can block the spread of smoke and gasses in fires. The gradual expansion of "soft-puff" materials allows egress through the door in a fire without compromising the fire- and smoke-stopping action of the seal.

faces, particularly in hot, humid climates. Today, cores for most wood fire doors with ratings of 45 minutes and above are a mineral composition. Georgia-Pacific and Weyerhaeuser manufacture cores for use throughout the industry. Fire-rated fiberglass-reinforced polyester doors, typically specified for wet, industrial uses such as food plants, are now being installed in multifamily housing.

Fire door dos—and some don'ts

While manufacturers go to great lengths to test their products, and architects design for fire safety, the as-built condition can fall short of requirements. Steve Sawyer, of NFPA's engineering department, points out that field alterations to wood or any other fire doors are not permitted by NFPA-80, unless performed by a labeled service. "This includes changes to the door such as openings for glazing and molding around framing, but I see these occurring all the time," he says. "All holes in a door should be cut in a factory."

More tips:

- Designers and project supervisors should verify that doors get placed in the correct openings. Often the assemblies for a project all get delivered to the site at one time, and the contractor will take the doors off their frames to avoid damage during construction. But someone needs to pay attention when they get rehung, so a 20-minute door doesn't go into a 90-minute opening.
- Attention is also the key to specifying door width. While a 60-inch opening for a double door might have a visual impact, NFPA engineer Sawyer reminds designers that one of those doors must be at least 32-inches-wide for egress.

- Make sure the proper hardware is called out on drawings and that the hardware has the same rating as the fire door. Both door and

Continued on page 111

CAD: Two Hot Areas

By Steven S. Ross

This month, we begin to delve into two hot areas in the CAD world. Cyco's AutoManager Workflow continues to help set the pace in the DOS/Windows world of CAD file management. As this package has evolved over the past four or five years, Cyco has broadened its focus from AutoCAD to MicroStation, Generic CADD, and other packages.

The need is certainly there—modern drawing files often are linked to each other, and to other types of files such as spreadsheets, databases, and word processing. Changes cascade through the links in confusing ways.

A bunch of high-end European-bred CAD packages are coming ashore in the U.S., too. They all combine drafting, presentation, and database elements. This all-in-one design also makes it easier to track pieces of a project as it evolves. Architrion (from France) and ArchiCAD (from Hungary), both originally Macintosh packages, led the way. We review another of these packages this month—MicroGDS Professional, developed in part in England. We'll be looking at others in the months ahead.

Oddly enough, many had predicted that by now there would be only a few players left in the CAD business—Autodesk and Bentley, mainly. The idea was that CAD packages are getting complicated and hard to write, and that everyone wants file-format standardization.

These worthy vendors certainly have a large slice of the market. And many U.S. competitors did retreat to small niches. But the software business has never tolerated hegemony for long (except perhaps by Microsoft). The market has expanded so much that even niches can be quite profitable. And CAD is no longer only for production drafting; designers are using it, and designers have a wider range of needs, drawing, and design styles.

Buying decisions are complicated, but don't complain. You have more choices and we have more to write about!

AutoManager Workflow 4.0

Vendor: Cyco International, 1908 Cliff Valley Way, Suite 2000, Atlanta, GA 30329, 404/634-3302, fax 404/633-4604, 800/323-1926, fax 800/821-2926 (from U.S. and Canada), CompuServe: Go CYCO.

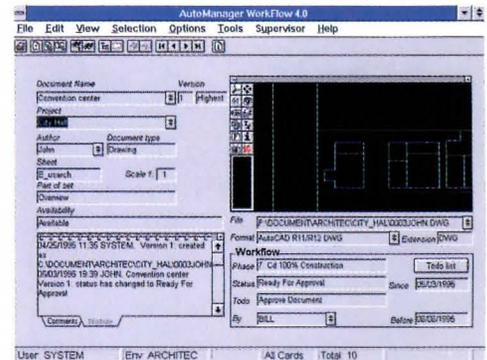
Equipment required: Intel-CPU computer (80386 CPU or newer), 8 MB of random-access memory, 20 MB of hard-drive space, math coprocessor (built into 486DX and higher CPU) strongly recommended.

Cost: \$799; deep network discounts available. Older versions available for as little as \$79/seat.

Over the past five years, more than 50,000 users have come to AutoManager to handle document management in a PC (DOS/Windows) environment. This latest version solves many problems for growing organizations that have been using AutoManager—it can handle 100 viewers or more on a single network (although we don't always recommend it for networks that large). Large organizations will find it much easier to customize than previous versions.

The best new feature is the "BriefCase." You use it to gather documents together and send them automatically—along with components of AutoManager that are necessary to handle them—even if the recipient does not have his or her own copy of AutoManager. Once a set of documents is checked out, AutoManager keeps them from being modified. When the documents come back for check-in you can compare them with originals and allow or disallow modifications. You can also "copy out" files, allowing them to be changed within AutoManager.

Despite the name, this is not an AutoCAD-only product. It comes with links to MicroStation, AutoCAD, AutoCAD LT, and Generic CADD. But it can be used with a wide range of file formats—everything from Ami Pro to XyWrite—with spreadsheets, dBase databases, advanced word processing, presentation packages, and most raster graphics thrown in. You also get personal messaging through MAPI (Microsoft Messaging API). All the major networking applications (cc:Mail, Lotus Notes, and so forth) support MAPI. Support is particularly seamless with Windows 95.



AutoManager Workflow's "card" screen lets you know everything about a specific document. You can bring new documents in easily, and each document has a card.

Version 4.0 comes with DOS and Windows versions in the same box. Although much of the installed base has been using AutoManager in DOS (or its earliest versions, sold under the AutoBase name), the Windows version has become much more capable. Thus you may be using a DOS CAD package, but you may want to run AutoManager under Windows, or under both DOS and Windows. (Cyco allows you to load both onto the same machine for the price of one license.)

AutoManager has always enjoyed a clean, intuitive interface. The new version is even better (especially in Windows) with more on the screen, better tools for finding documents, and better redlining. The navigator function helps keep documents in hierarchical order, and keeps track of revisions.

There are five levels of security, allowing access to different types of files, and different levels of editing.

Manuals: Three paperbacks, none easy reading. Major users should start with the administrator's guide before the user's guide. The developer's guide will prove useful to customizers.

Ease of use: The DOS interface is fine, but the Windows interface and functionality is much better. Upgraders will have trouble with redlining—the existing redline notes will disappear. (You can use the old version to move redlined drawings back into AutoCAD, and save the redline as a layer in the DWG file so AutoManager 4.0 can read it.)

CAD from around the world is as near as your computer store. The latest import is MicroGDS Professional from England, and more is expected to invade our shores in the months ahead.

Error trapping: It is a truism that “organizer” products like this, superimposed on a disorganized practice, will usually make things worse. In this case, however, we don’t agree. With the aid of a good system administrator, this package can only help. We are nervous about allowing files to be updated while they exist outside the system in a briefcase, but realistically, this is often necessary, especially with files (XREF in AutoCAD) that reference many other files. End a session with something on the screen, and it will be waiting for you when you return.

300 on Reader Service Card

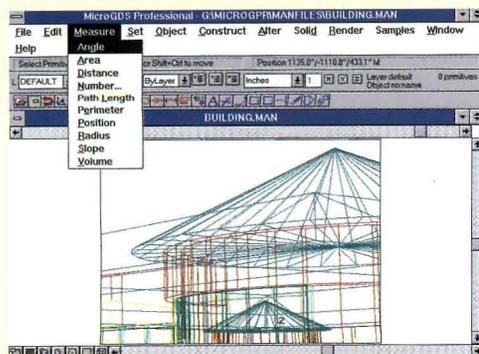
MicroGDS Professional 4.1

Vendor: Graphic Data Systems Corp., 6200 South Syracuse Way, Suite 250, Englewood, CO 80111, 800/678-4120, 303/741-8484, fax 303/741-8456, Compuserve 102367,150.

Equipment required: At least a 486 DOS-based machine with 8 MB of RAM. We strongly recommend at least a 75 MHz Pentium with 16MB. Full installation with sample files take 18MB of disk space. You need Windows 3.1 or newer.

Cost: MicroGDS Professional, \$2,995; Standard, \$450, Review (read-only), \$450. Hotline support at 6 percent of selling price. Volume discounts available.

The “professional” version of this full-featured CAD package includes rendering, multi-user, and more customization features than the standard version. The Review software is a read-only package that allows viewing and plotting.



MicroGDS Professional has a clean interface, and zooms are fast even on a slow machine because all the display list is available.

Drawing tools are good. But the package’s strong points lie in its ability to create presentation-quality renderings (everything from simply shading to Phong and ray tracing). The package includes tools for doing animations and walk-throughs.

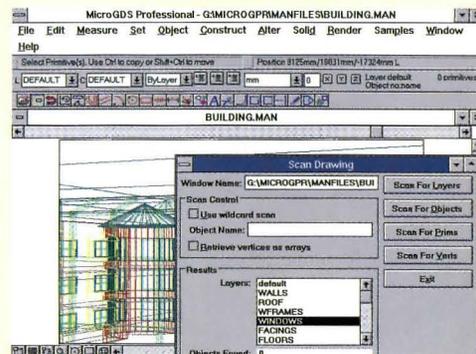
Add-on programs are written in Visual Basic. A number of add-ons come with the package; they include the animation and font-creation tools, and tools for cleaning up drawings. (As with some other full-featured CAD packages, you can specify an object but not draw it; MicroGDS has a tool that identifies and removes the resulting empty objects.)

The interface can be customized with floating palettes and so forth. That’s handy for offices that use different screen resolutions. (We used MicroGDS mainly at 1024x768 pixels, but took screen images at 800x600 for the illustrations seen here.) The look is mainly standard Windows with some nice oddities. The lower scroll bar, for instance, zooms. The one on the right changes eye point. The one on top spins a 3D object.

Only one project can be open at one time.

Manuals: Large user guide and tutorial; small manual for rendering engines; and separate programming reference.

Ease of use: Adequate drawing tools, great database links through Windows OLE and DDE. The package requires a copy protection device on the parallel port, which may interfere with other devices that attach to the port, such as external drives. Try putting the



You can scan layers, such as windows, walls, or roof, within the drawing.

device at the end of the chain—on the socket closest to the printer.

Error-trapping: Fine on a single-user station, good on a network. We ran this program under Windows for Workgroups 3.11 and Windows 95. It is a so-called WIN32S application (as is AutoCAD)—a 32-bit program that can run in 16-bit Windows 3.1 and 3.11. Those who upgrade from earlier versions should be careful: the new files are saved with the same file-name extensions, and new files cannot be read by older versions. This makes it difficult to upgrade a few machines at a time. Don’t switch between single-user and multiple-user mode, especially on a network; files are managed differently. Global changes (in a line style, for instance) can propagate across a set of drawing files.

301 on Reader Service Card

Archillustrator 4.0

Vendor: Archillustrator, P.O. Box 278, Puunene, HI 96784, 800/844-7578, 808/572-8637.

Equipment required: Any computer that can run AutoCAD 12 or 13 for DOS or Windows. Files take 13MB of disk space.

Cost: Full version, \$395; light version (not all functions available—for interiors, mainly), \$129. Unlimited technical support.

If you’re doing residential and small-office interiors, or brick-and-stick residential, Archillustrator may be for you. It runs as an AutoCAD add-in, and makes line drawings easy. It comes with nicely detailed door and window libraries, surface treatments (brick, stone, and so forth), and easy-to-use roof and stairway design tools.

Facade 2.6 [reviewed in RECORD, April 1995, page 35] is faster for roofs (and, in general, for creating simple exteriors) but, depending on your drawing style, you might like the final result more with Archillustrator.

Manual: Large-format paperback covers what you need to know.

Ease of use: Installation is mainly non-automatic. But once you have everything running, you’ll be fine.

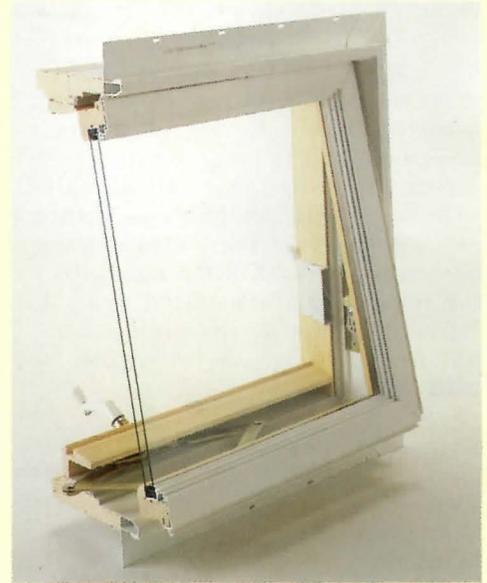
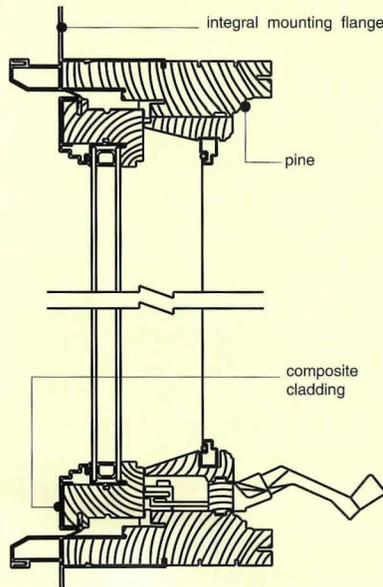
Error-trapping: Basically, as good as AutoCAD.

302 on Reader Service Card

Innovative Frame and Cladding Options for Windows

303. Co-extruded composite cladding

The Synergy Series frame has a UV-stable, minimal-maintenance exterior made of GE Plastic's Cycolac and Gelyo resins. Called Thermax, the cladding incorporates an integral nailing flange that also stiffens the frame. The material extrudes crisply, conveying sharp detailing for a more realistic, wood-like appearance. The wood core of the frame and sash are milled with grooves that accept the snap-in legs of the extrusions, which can be removed and replaced without damage if reglazing is necessary. Widely available on the West Coast, the Synergy window comes in white or dark-brown exterior color options. Interior surfaces are solid, clear pine without visible fasteners or holes. 800/824-7744. Sierra Pacific Windows, Irvine, Calif.



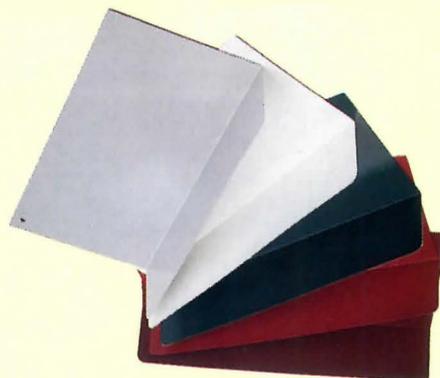
304. Multi-media windows

A first in the building-products industry, Andersen's CD-ROM walk-through of a recent church project comes complete with atmospheric birdsong. An interactive presentation of the fenestration designed for the Blanchard Road Alliance Church in Wheaton, Ill., by architect Walter C. Carlson, the disk effectively highlights how the manufacturer's reinforced joining materials permit a wood-framed window wall with perfectly square lights and no visible difference between standard Flexiframe mullions and reinforced members. Full-color detail drawings illustrate how the new reinforcement option, a steel plate 4-in. wide by as long as 12 ft, is concealed by a wood casing while stiffening the windows to meet high wind loads. For both Macintosh and PCs; free. 800/426-7691, x1251. Andersen Corp., Bayport, Minn.



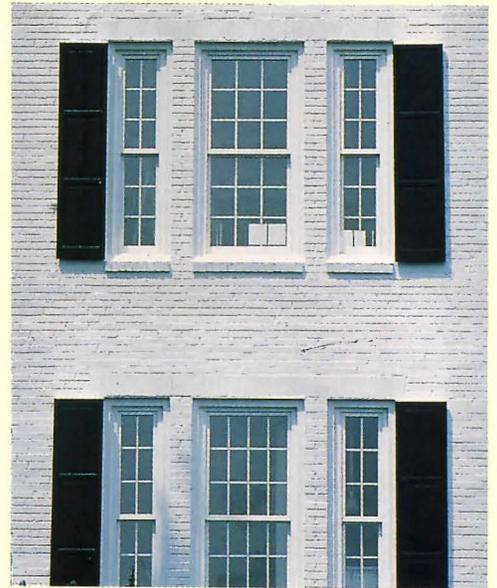
305. Motorized, colored roof window

Roto European-style operable skylights have added cladding and automatic-operation options said to minimize the unit's visual impact from both inside and outside. Sash and flashings can be specified in any of five different colors (below), to coordinate with roofing materials, including fiberglass shingles, cedar shakes, or clay tile. (Bronze-tone finishes are also available.) Motorized controls for the Sunrise II unit (right) are concealed behind a pine-veneer cove, and don't intrude on the frame profile or glazing. A new chain-drive mechanism opens the window to a preset level, or adjusts the sunshade, in response to push-button commands from a remote control. Status-indicator lights and a rain sensor are standard. 800/243-0893. Roto-Frank of America, Inc., Chester, Conn.



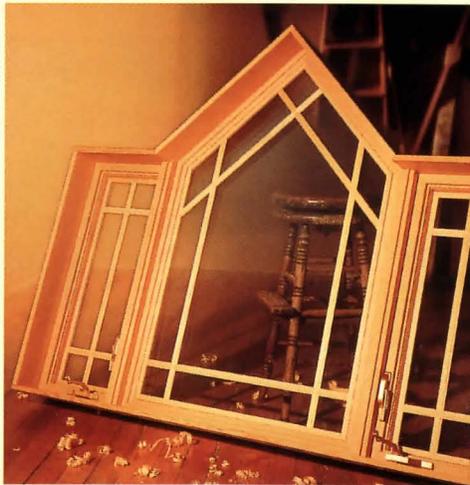
306. Super efficient—and all glass.

Owens-Corning's fiberglass window is a custom-size unit for both replacement and new construction, made in all styles including double-hung, casement, bows and bays, and awnings. Frames and sash (cutaway view, right) are made of Fibron, a system that consists of a core of rigid pink Fiberglas insulation, a structural lineal of fiberglass composite, and a white polyurethane finish. Frames have a narrow-profiled "wood look" (far right); while the finish is said not to fade or degrade over long-term UV and salt-air exposure, it can be painted. All hardware, crank mechanisms, and glazing can be serviced without compromising the window's performance. A typical U-value (total unit) for Fibron double-hung windows with low-E, argon-fill glazing is an energy-efficient .29. 419/248-8000. Owens-Corning, Toledo, Ohio.



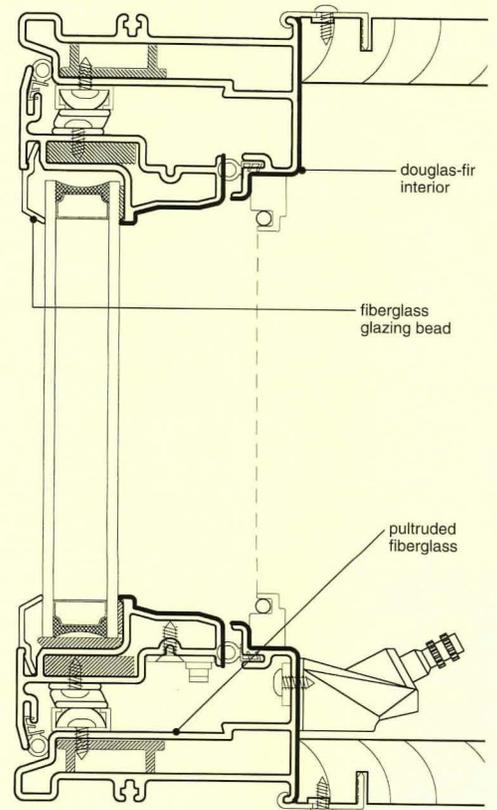
307. Fiberglass frame, wood interior

Milgard has figured out how to combine the thermal and low-maintenance benefits of a fiberglass window frame with the esthetics and warm feel of a natural-wood interior. Its WoodClad window, now available in 13 western states as well as parts of the Midwest, has a structural frame of pultruded fiberglass veneered with vertical-grain Douglas fir on all interior surfaces.

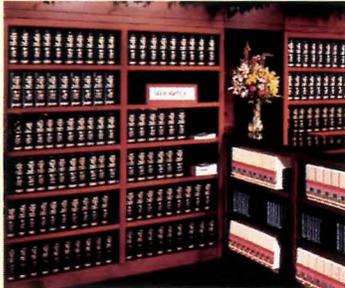


All interior wood components can be stained, varnished, or painted on site. While the exterior frame comes only in standard white, it can also be painted, if desired, using most primers and paints. The strength of the fiberglass allows frames and mullions to be as narrow as wood paning profiles, while maintaining rigidity. Windows come in standard and custom sizes and shapes, with or without wood grids. (A true-divided-light configuration is in development.) Typically, a single-hung unit with low-E glazing has a total-unit U value of .32. 800/MILGARD. Milgard Mfg., Inc., Tacoma, Wash. ■

Design and specification guides covering window and door systems for residential, multi-family, and light-commercial applications are featured in this month's Product Literature section, beginning on page 116.



CASEMENT WINDOW SECTION



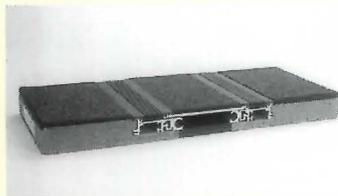
308. Wood-clad steel shelving
Woodtek storage combines the load-bearing capacity of four-post steel shelving with the custom-casework look of a wood surround. Durable enough for libraries, colleges, and law offices, the shelving accommodates any open-access media and most size requirements; available in a range of cherry, oak, and maple woods and 25 paint colors. 800/253-5668. Richards-Wilcox, Aurora, Ill.



309. Bauhaus-influenced rugs
Jack Lenor Larsen has replicated original designs by master weaver Anni Albers in hand-knotted wool rugs. Patterns shown are Interlace (left), a carpet design also used in Albers' series of "Line Involvements" lithographs done in the late '50s, and Parade Ground, based on a gouache executed when Albers worked in Weimar. Sizes: 6- by 9- and 9- by 12-ft. Larsen Carpet, Union, N.J.



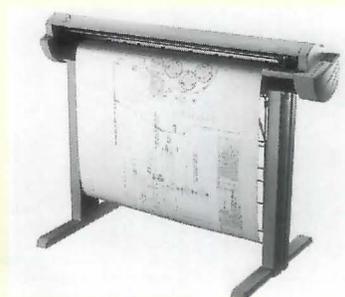
310. Commercial equipment
New cleanup appliances match the commercial-kitchen features of this maker's stoves. The dishwasher uses only 4.9 gallons of water, with a heating system capable of a 165 F wash cycle. The illuminated interior is stainless-steel; front-panel options include stainless steel (pictured) and eight colors of enamel. 601/455-1200. Viking Range Corp., Greenwood, Miss.



311. Low-profile seismic joint
The SeisMaxPlus expansion joint is said to accommodate vertical and horizontal seismic motion without buckling up to present a possible tripping hazard. The slider plates accept carpet, tile, or terrazzo to match the surrounding floor; elastomeric seals can be specified in colors to match. 800/677-4922. Harris Specialty Chemicals, Watson Bowman Acme Products Group, Amherst, N.Y.



312. Weight-sensitive seating
Innovative office and task chairs are said to be capable of maintaining continual, constantly supportive contact between the user and the chair by adjusting automatically to the weight of the individual as he or she shifts and flexes. The synchronic mechanism is offered in high- and low-back chairs; pull-up chairs complete the line. 800/849-0504. Girsberger Office Seating, Smithfield, N.C.



313. Wide-format inkjet plotter
A first for Xerox, the 2230ij is a 36-in.-wide monochrome plotter that can also do color highlighting. Described as the most effective way to add visual impact to black and white CAD drawings, highlighting can flag design changes or distinguish different layers. Accepts cut-sheet and roll-feed media. Price: \$4,495. 800/937-7397, x1125. Xerox Engineering Systems, East Rochester, N.Y.



314. Van Erp reproduction
A reissue said to be true to Dirk van Erp's Arts and Crafts design, save for substituting waxed and rubbed spun copper for the original trumpet of hand-hammered metal, the Oakland lamp stands 17-in. high with a shade of natural mica. Cost: \$333. A free 64-page catalog illustrates this lamp and other replica lighting fixtures. 503/231-1900. Rejuvenation Lamp & Fixture Co., Portland, Ore.



315. Bold and flame retardant
By using new yarn-drawing and weaving techniques, Laura Guido-Clark and Beverly Thome were able to create brightly colored, large-scale patterns in an all-Trevira FR fabric. Suitable for such heavy-use applications as hospitality and healthcare upholstery, these tapestry textiles are priced at \$34/yd. 800/727-6770. Carnegie, Rockville Centre, N.Y. ■

Short Takes

Tile makers to merge. American Olean Tile Company, a subsidiary of Armstrong World Industries, will be merged with Dal-Tile of Dallas. The Texas firm will be the surviving entity, with Lancaster, Pa.-based Armstrong holding a significant—but not controlling—stake.

Sale reconsidered. After giving the roofing industry and its prospects further thought, tire and rubber

maker Bridgestone/Firestone decided to stay in the building-products business, and has taken its Firestone Building Products Company, a wholly owned subsidiary, off the market.

Name change. Combining the initials of its Columbia, Prescolite, and Molcast brands, USI Lighting, Inc., of San Leandro, Calif., has renamed itself C•P•M Lighting, Inc.

More roofing . . . GAF Premium Products, Inc., owned by GAF Materials Corp., of Wayne, N.J., has purchased Supradur, a Pennsylvania maker of fiber-cement roofing and siding, including Supra-Slate. Structured as a purchase of assets, the acquisition gives GAF an extensive fiber-cement product line, with a shingle widely used for historic restoration and institutional roofs. ■

*Building Types Study 731/ Office Building
Renovation*

Architect's quest for basic values marks each of RECORD's featured projects in October:

- For his petroglyph museum outside of Phoenix (page 64), William Bruder employs tilt-up concrete panels and exposed-steel structure to create, in his words, "a built ruin" that transcends the temporal and "gets down to the bare root."
- In "The Intelligent Exterior" (page 70), German architects use sophisticated technology to introduce recently shunned natural ventilation and sunlight into today's highly thermal-conscious buildings.
- Errol Barron/Michael Toups Architects rejects a Postmodern solution to a program that called for a "Gulf Coast Gothic" church in Fairhope, Alabama (page 86), and instead opts for traditional Carpenter Gothic.
- Responding to historic context with a different approach for a civic exhibition and assembly building in Ulm, Germany (page 90), Richard Meier & Partners takes unapologizing Modernism to the center of a medieval square.
- Building Types Study 731 (page 100) explores major office-building renovation—the source of almost half the work in the office-construction market. Three dissimilar makeovers of once-obsolescent structures demonstrate architects' inventiveness in turning the tide of visual and economic decline.
Charles K. Hoyt

*Manufacturers' Sources
listed on page 115*

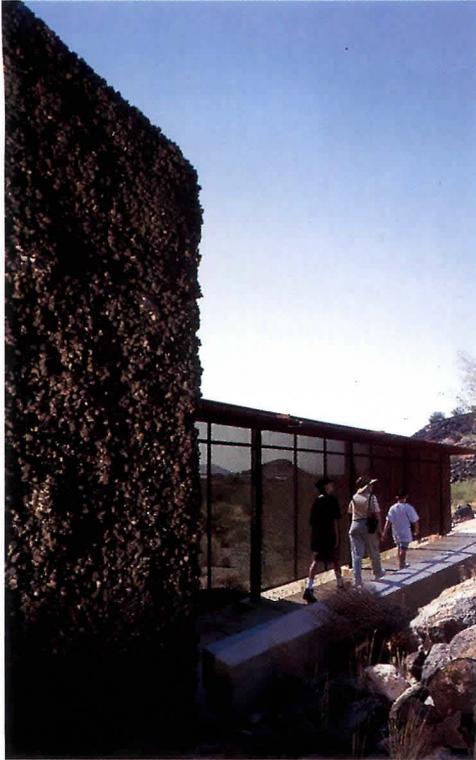
Stealth Inscriptions



*Nestled in the hills near Phoenix,
the Deer Valley Rock Art Center is
a small urban oasis that is both a
cultural and natural exhibit.*

*Deer Valley Rock Art Center
Phoenix, Arizona
William P. Bruder, Architect*





Like an extension of the archeologist's hammer, the Deer Valley Rock Art Center, which is still an active archeological site, opens up layers of human and natural structure to perusal.

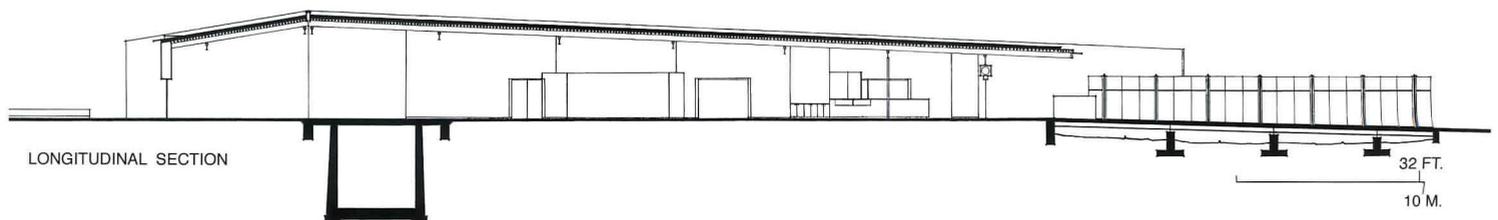
Out on the edge of the desert near Phoenix, two tides meet. One is the visible flow of red-tile roofed subdivisions gobbling up acre after acre of this seemingly barren terrain. The other only shows up periodically, when spring rains stream off the high plateaus and threaten to inundate those same suburban plains. Where these two meet, the U.S. Army Corps of Engineers drew a line in the sand: a two-mile long dam that marks the edge of where it is safe to build.

Here, Will Bruder has drawn his own line, a "stealth building" that directs visitors away from this confrontation between wilderness and settlement, to a place where human beings once inscribed their actions on the rocks. The Deer Valley Rock Art Center is a 7,000-square-foot building at one end of the dam. It introduces visitors to petroglyphs drawn by the Hohokam Native Americans, on a pile of rocks known as the Hedgepeth Hills. The Corps of Engineers paid for the building, which is now operated by Arizona State University. It is both an educational institution and, as director Peter Welsh points out, "an urban oasis that serves as a natural and a cultural exhibit."

In its design, Bruder, a local architect, sought to marry landscape and technology in both material and form. He constructed the building using the same technique as many non-residential structures in Phoenix: tilt-up concrete panels. The strips of bare concrete are covered with an aggregate of dark mining tailings, the material left over when rock is crushed to retrieve the ore inside. The tailings came from Superior, an old Arizona mining town. "The color," he points out, "is natural to the desert." It also makes the building disappear against the shape of the dam. The interpretive insertions of the Center continue in a series of pavilions that mark a path out to the actual petroglyph preserve. Slots in the walls keep the interior from becoming too oppressive, while windows lead the eye out to the rocks beyond. At the same time, the exposed ducts and unpainted surfaces of the spaces, says Welsh, "make no excuses and offer no impediment while bridging you over the gap."

The Center is merely an occurrence that allows visitors to experience the full view of the dam, then brings them inside to learn about its site and history through exhibitions and in classrooms. The building bridges over a ravine, moving the viewer from civilization out to the petroglyph preserve. Slots in the walls keep the interior from becoming too oppressive, while windows lead the eye out to the rocks beyond. At the same time, the exposed ducts and unpainted surfaces of the spaces, says Welsh, "make no excuses and offer no impediment while bridging you over the gap."

"This is like a built ruin," Bruder explains. "Although I wonder about our fascination with ruins, I also think they get us beyond temporal and surface considerations, down to the bare root. Every culture here has scarred the earth. This may be a desecration, but it also leaves a site that has to be investigated and re-investigated." *Aaron Betsky*



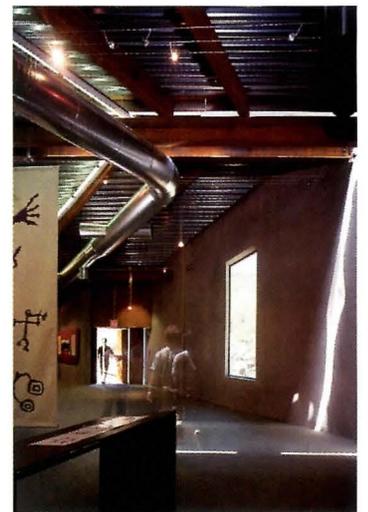




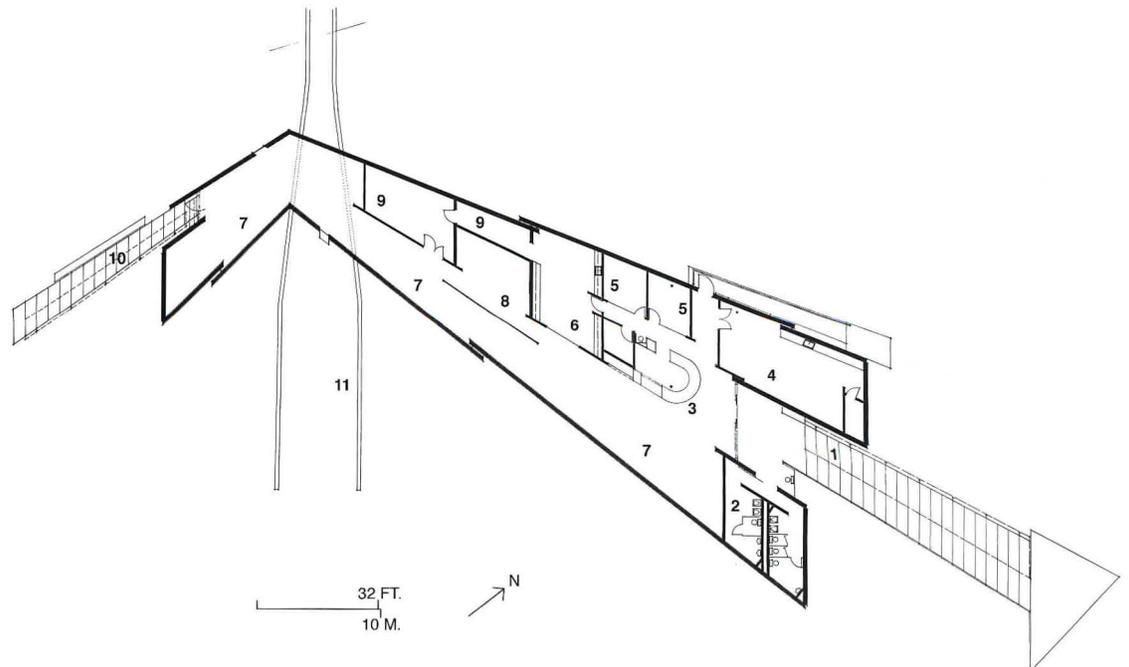
Expressing only as much shading and hvac equipment as necessary to make the desert habitable, the Deer Valley Rock Art Center is stripped to the bare bones to serve as a gateway from the city to the desert and its art.

Credits

*Deer Valley Rock Art Center
Phoenix, Arizona*
Clients: *U.S. Corps of Engineers;
Arizona State University*
Architect: *William P. Bruder
Architect—Will Bruder; Wendell
Blumette, Bob Adams, Beau
Dromiack, Rick Joy, Maryann
Bloomfield, design team*
Engineers: *Robin Parke &
Associates (structural); C.A.
Energy Designs (electrical)*
Landscape Architects:
Peridian; The Planning Center



1. Entry ramp
2. Restrooms
3. Reception area
4. Classroom
5. Office
6. Laboratory
7. Exhibition gallery
8. Video presentation
9. Curation storage
10. Exit to petroglyph site
11. Adobe-dam outlet channel





The Building Breathes

Making the building envelope active in regulating light and ventilation for comfort and energy conservation has seemed only a dream. Not any more. The projects in these pages show that clients and designers in Europe are pushing design to a new, higher standard, which may fundamentally affect the way we build. Below, Mary Pepchinski explains why Germany has taken the lead. Concluding this special report, three renowned engineers assess these still-not-perfected techniques. James S. Russell

By Mary Pepchinski

Though a widespread and growing trend, large buildings that employ environmentally responsible technologies are still the exception in most of Europe today. Germany appears to be the leader in this area for several reasons. To be sure, many German architects and engineers sincerely care about the effect their buildings have on the environment, but others realize that new technologies will be profitable in 10 to 20 years time; today's R&D will insure their share of the future, more-globalized, building-design market. Politically, Germany's powerful Green party also influences national environmental policies. The government, for example, estimates that by the year 2000, all environment-related industries will have spawned 1.1 million jobs.

Government at all levels—through legislation and subsidies—encourages construction of more environmentally responsible buildings. Last January, the new, federal thermal-insulation regulation went into effect, setting an energy-use standard 30 percent below current levels. A second phase, to take effect at the century's close, will reduce energy consumption to 50 percent of current levels. The federal Ministries of Building, Economics, and Education/Research subsidize development, testing, and implementation of new technologies—ranging from windmills and water-cleanup to solar dishes—and support research to verify long-term benefits. The allocations, though, are “modest,” says a federal official: DM 100-million (roughly \$70 million U.S.) for 1996. [Similar U.S. R&D is only \$53.7 million in 1995, however—ed.] The federal government and the European Economic Community (EC) also fund projects in former East Germany, as do many cities and federal states.

In a large city like Berlin, subsidies are available from public and private sources. The electrical utility underwrites solar technology for housing; the Berlin Senate sponsors similar programs for light industry, and the federal government contributes to energy projects that benefit industry, housing, public buildings, and large-scale development. The many funding sources makes for cumbersome bureaucracy, architects complain. Government is not the only source of support, however. Architects and engineers may develop a concept together, explains Christian Breusing of engineer Ove Arup & Partners' Berlin office, then present the ideas to the client, who decides whether to underwrite the extra costs or apply for a supporting grant. Many leading advocates—such as Thomas Herzog [pages 82-83]—have been working with such technologies for more than two and a half decades. ■

Mary Pepchinski teaches and practices architecture in Berlin.

Solar Arcade

*Rheinlbe Science Park
Gelsenkirchen, Germany
Kiessler und Partner, Architect*

Sited in a new park on a rehabilitated steel-plant site, the west-sloping glass facades of this center for solar-energy research enclose an arcade. The glass collects winter heat and light. In other seasons, heated air exhausts at the top of the building, drawing (via the stack effect) air cooled by a pond through retracted lower panels of the facade. Retractable blinds cover the glass in warm months. Awnings, blinds, and louvered, operable wall sections protect external offices and aid ventilation. Solar collectors crown the building. Munich-based Kiessler was associated with engineers F. Sailer, K. Stepan, and M. Trumpp. ■

Thermal Flue Tower

*Centre Internationale Rogier
Brussels, Belgium
Kohn Pedersen Fox with Samyn &
Associates, Architects*

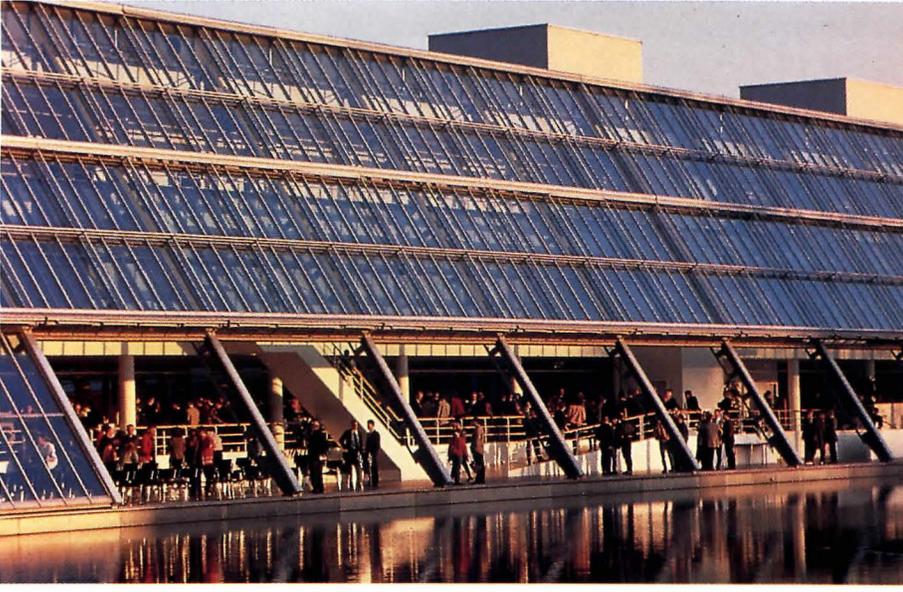
This 30-story tower, a partial rebuilding of a deteriorated 1960s landmark, reclads the exterior to avoid ductwork under low ceilings. London-based engineers Battle McCarthy teamed with KPF's London office in designing east and west facades that feature a 31-in.-wide “thermal flue,” which acts as a climactic buffer. Ductwork runs up this void and sunshades protect occupants. (Winter sun preheats supply air; in summer the ducts draw heat from offices.) Ice storage feeds ceiling-mounted radiant-cooling elements. A rooftop wind turbine generates electricity. ■

Dynamic Sun Shading

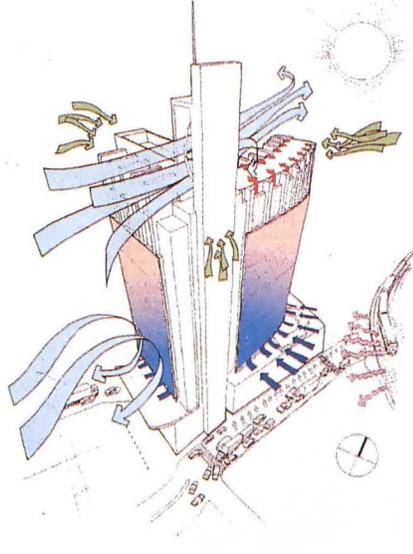
*Administration Building of the Charitable
Service of the Lutheran Church
Stuttgart, Germany
Behnisch & Partner, Architect*

This building was added when the original building (a largely naturally ventilated design by the same architect) proved too small. A narrow floor plate aids ventilation. A conventional curtain wall is enlivened by a broad roof overhang, upper floors cantilevered over lower floors, and canted metal spandrels, which offer fixed sun protection, aided by horizontally striped external blinds. To add visual emphasis at corners, the architect added metal grids and vertically striped fabric blinds. Schlaich, Bergermann und Partner were the structural engineers. ■

© Manfred Vollmer photos



© Eamon O'Mahony photos



© Christian Kandzija, Behnisch & Partner photos



Electronic Envelope

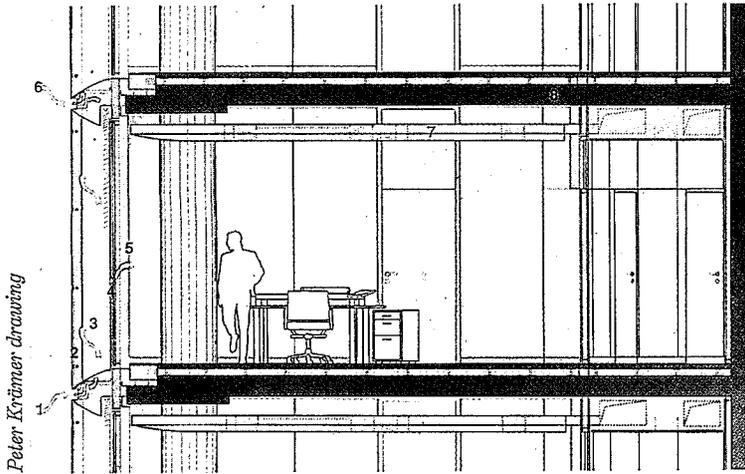
Headquarters for RWE AG
Essen, Germany
Ingenhoven, Overdiek, und Partner,
Architect

This 347,000-sq-ft tower, in construction, is possibly the most sophisticated of a new breed of environmentally sensitive skyscrapers. It incorporates elements that are increasingly finding their way into advanced buildings (section below):

• *A "thermal-flue" curtain wall:* The buffer zone created between two planes of glazing offers an insulating layer in all seasons and permits control of light and

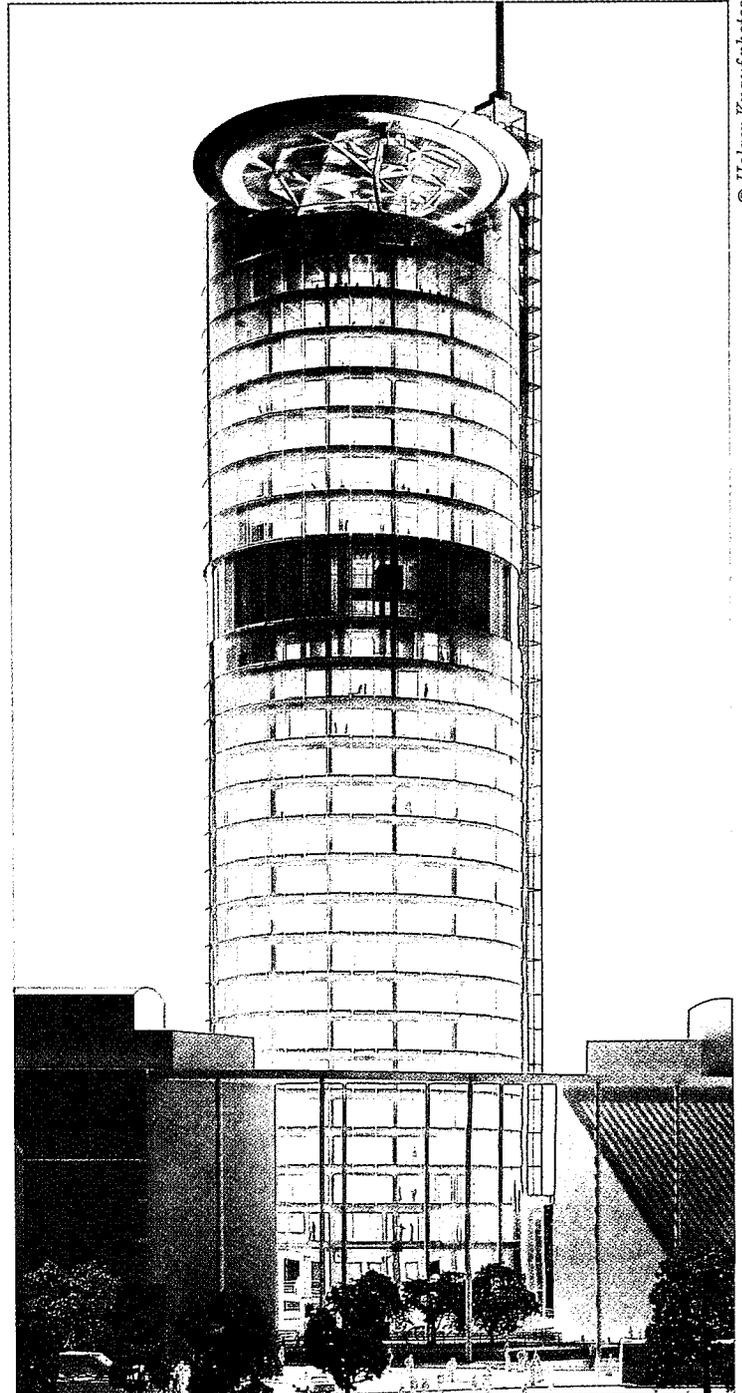
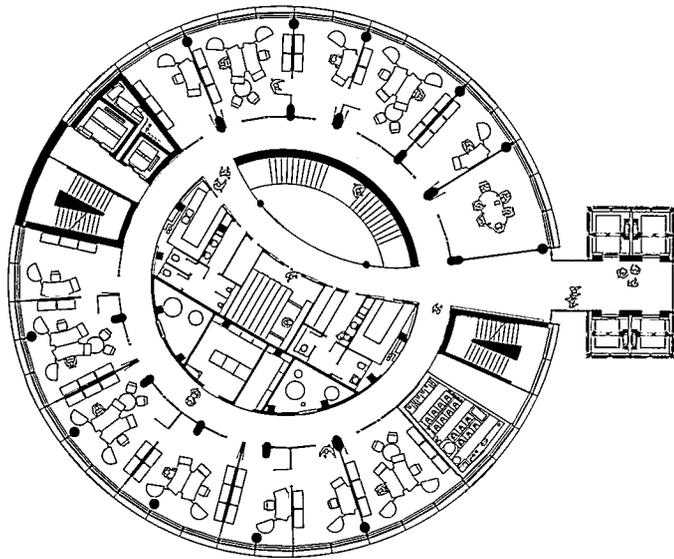
air by individuals and by a building-management system. In winter, the buffer zone captures solar heat, which can be admitted to offices by sliding open the inner glass wall. In summer, it exhausts excess heat from internal loads and the sun.

• *Heat-storing structure:* The mass of the exposed-concrete ceiling absorbs extra heat in daytime, radiating it back into the space when loads are lowest.



Peter Krämer drawing

- | | |
|---|---|
| 1. Fresh-air intake | 5. Internal blinds |
| 2. Single-pane clear glass | 6. Air exhaust |
| 3. 20-in.-wide buffer zone | 7. Integral radiant cooling/lighting unit |
| 4. Operable (sliding) insulating-glass unit | 8. Exposed "thermal" slab |



© Holger Krauß photos

• **Radiant cooling:** Cold water flows through pipes in a special ceiling-mounted radiant unit. The additional wall costs are offset by reductions in mechanical equipment and ductwork, with corresponding reduction in floor-to-floor heights (2 ft in RWE's case). RWE's thermal-flue wall features a "fishmouth" detail (top right) that admits fresh air to the 20-in.-wide buffer space at the bottom of each floor;

exhausting it at the top. (The intakes and exhausts are staggered laterally to avoid short-circuiting.) The radiant cooling is part of an integrated ceiling unit that contains ambient and spot lights, a light sensor, a smoke detector, sprinkler head, speakers, and sound-absorbing material (middle right). Users can control lighting, ventilation, and the shading devices through their computers or through wall-

mounted switches. The 30-story tower is only 105 ft in diameter (plan). Convenience stairs link adjacent floors. The loggia over the site entrance is topped with photovoltaic-coated adjustable louvers (bottom left). *J.S.R.*

Credits

*Headquarters for RWE AG
Essen, Germany*

Client: HOCHTIEF AG

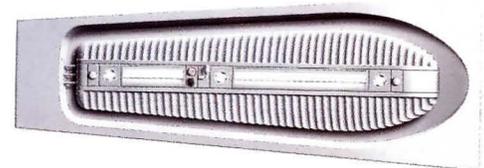
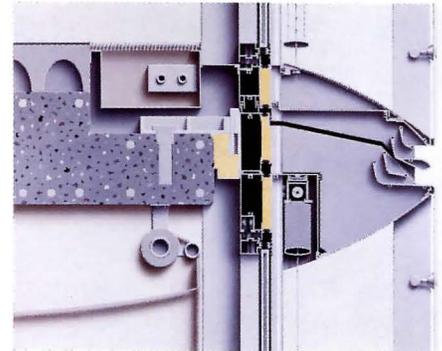
Architect: Ingenhoven, Overdiek

und Partner—Christoph Ingenhoven, Achim Nagel, Klaus Frankenheim, Klaus Osterburg, team

Engineers: HL-Technik AG, IGK Ingenieurgesellschaft Kruck (mechanical); HOCHTIEF AG Hoch-und Ingenieurwesen (structural)

Consultants: Josef Gartner & Son (facades); Wolfram Klingsch (fire protection)

Contractor: HOCHTIEF AG



© James S. Russell

The Intelligent Exterior

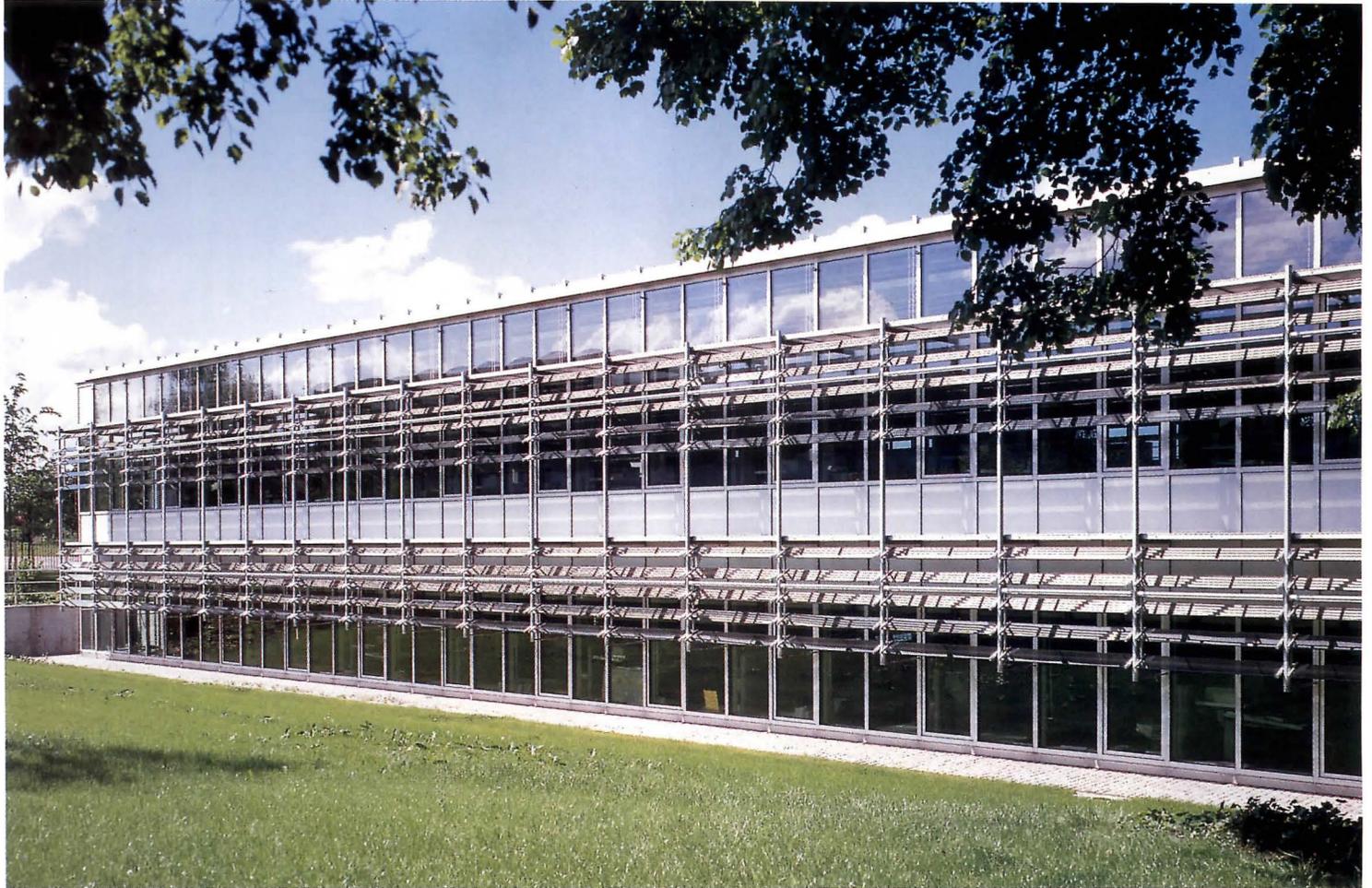
Motorized Sun Protection

*Design Offices for Josef Gartner & Co.
Gundelfingen, Germany
Kurt Ackermann und Partner, Architect*

Since Josef Gartner & Sons designs and constructs many of Europe's most innovative curtain walls, it sought to dramatically reduce energy use while improving building comfort in design offices the company built for itself. But Gartner didn't look only at the envelope. The cost of innovative curtain walls, with their controls and motors, can't yet be justified—even in high-energy-cost Europe—without a

design that optimizes thermal performance, lighting, and hvac. For these new technologies to find wide use, the equation that must be solved goes like this: Daylighting, natural ventilation, and radiant heating and cooling reduce the need for overhead electric lighting, hvac equipment, and ductwork. These advanced techniques also substantially reduce energy use and costs over the life of the building. Daylight-

© Photos courtesy Gartner

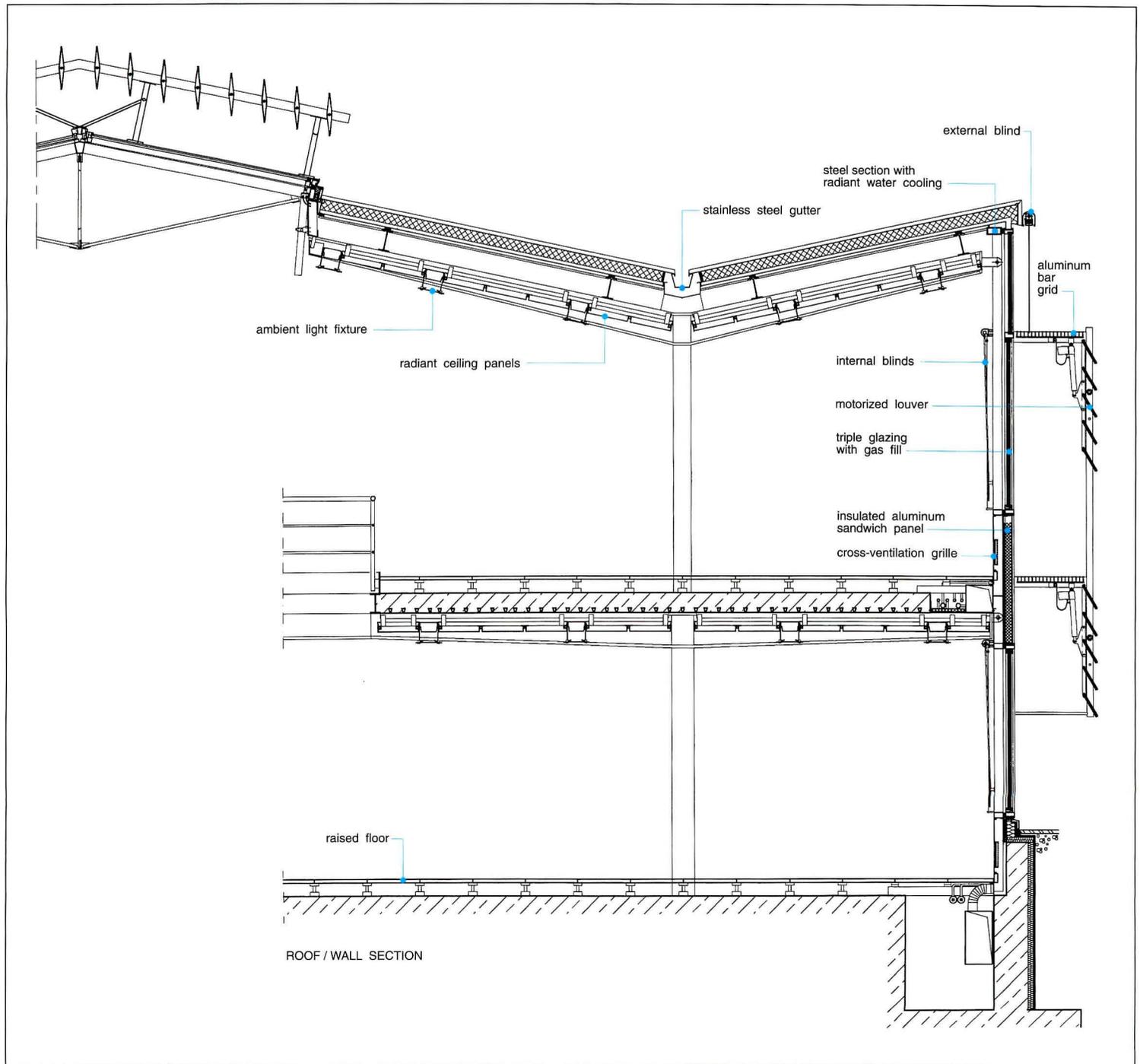


ing, however can only be used if the glazing system and adjustable shading devices control the amount and angle of light—and related solar heat—entering the space. This adds to up-front costs. Natural ventilation also requires control, and must be augmented by mechanical heating and cooling. Using less ductwork and equipment saves money, however, and mechanical rooms and floor-to-floor heights

may be considerably reduced, savings that can be applied to offset the costs of the more elaborate wall systems, lighting, and controls. Gartner's efforts are most evident on the exterior, where the wall is handsomely modulated by motorized louvers of heat-strengthened reflective glass (below and opposite). The blades transmit only 14 percent of incident light, so they can be tilted nearly shut, shading

without obscuring views. Held in a horizontal position, they can bounce the weak light of grey days up to the ceiling, where it diffuses deeply into the space. Retractable louver blinds protect the clerestory glazing above the motorized louvers. The skylighted atrium (following pages) is also protected by a louver system. These blades are aluminum and are much broader, minimizing needed adjustments. Most of

the time they can be kept in a vertical position and still offer shading. The computerized building-management system processes information from light sensors (on solar angle and intensity) and adjusts the angle of the external louvers and blinds to a light-transmitting mode, a light-guiding mode, or a shading mode as needed. (The system chooses a mean value over a period of time to avoid constant adjustment

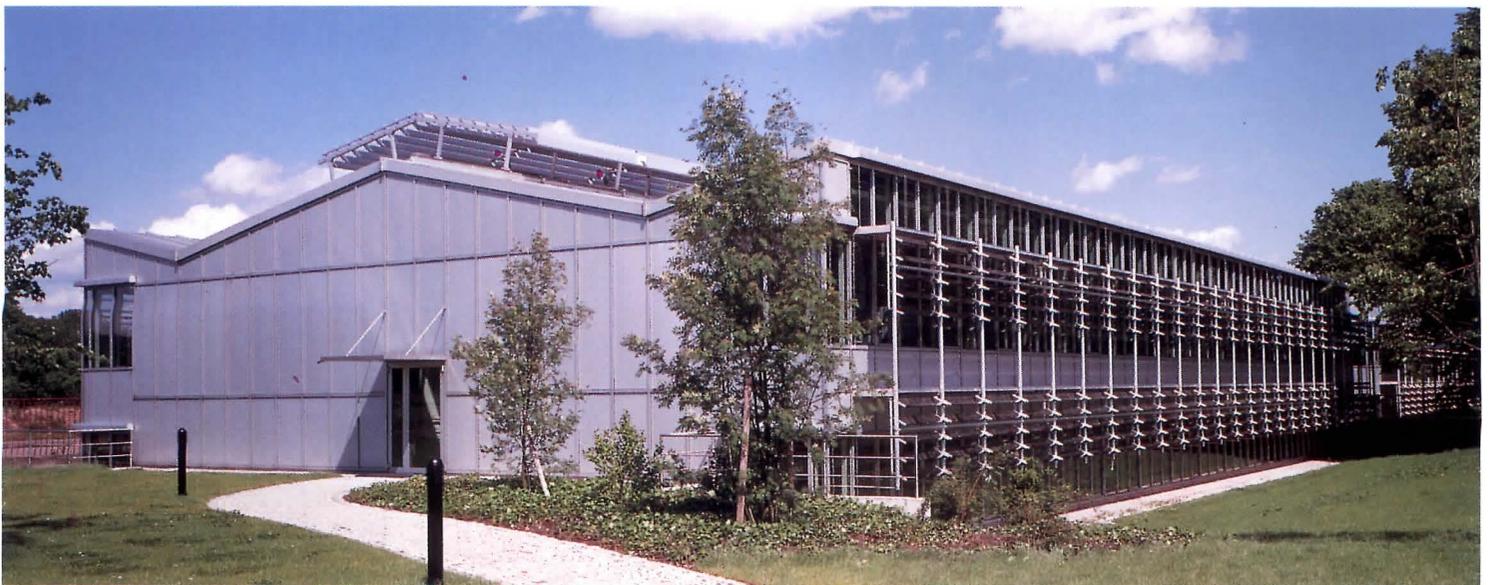


The Intelligent Exterior

when conditions change rapidly.) The curtain wall itself is a triple-glazed system that includes two infrared-reflecting layers and Argon-gas fill. The aluminum framing incorporates two thermal breaks. Gartner says the glazing reduces heat loss 70 percent compared to conventional double glazing. The glass framing is mounted on tubular-steel sections which integrate a water-carrying element so that the

tubes can radiantly heat or cool the space. The system improves comfort next to the windows by eliminating winter condensation, cold drafts, or radiated summer heat. (Gartner is supplying a similar wall system for the Intelligent Workplace project, being built at Pittsburgh's Carnegie-Mellon University—RECORD, June 1992, page 123.) Interior fabric blinds offer additional sun and glare protection. To supple-

ment daylighting, staff can switch on task lighting. Sensors also control ambient, ceiling-mounted light fixtures. To spread the light more evenly, typical high efficiency fluorescent fixtures were modified with custom reflectors that diffuse the light along the almost-white underside of a suspended-panel system that incorporates radiant water cooling (drawing opposite) and forms the visible ceiling plane. The

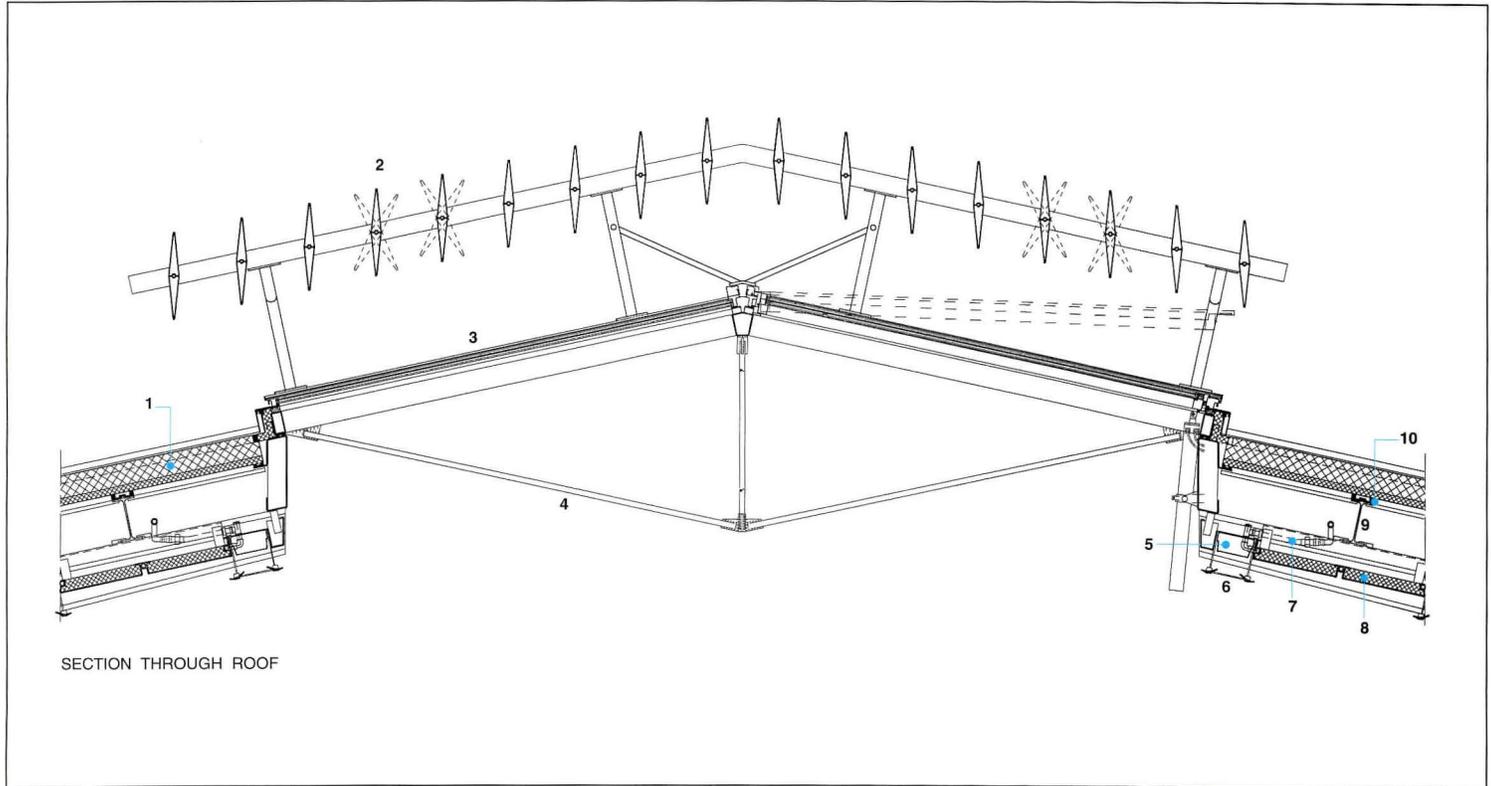


radiant panels work both by absorbing heat from surfaces and by convection: hot air rises, is cooled by the panels, then falls. Gartner made the panels by bolting perforated heat-conducting aluminum sheets to aluminum profiles that carry cooling water. With radiant heating and cooling systems, air is used only for ventilation. (In the U.S., it's usually the medium for heating, ventilating, and cooling.) Gartner

uses "displacement ventilation": low-velocity inlets, placed near the floor, supply slightly cool fresh air. Heat from occupants and equipment causes room air to rise, which draws the fresh air upward to the breathing zone. Ventilation is augmented by operable windows. *J.S.R.*

Credits

Design Offices for Joseph Gartner & Son Gundelfingen, Germany
Architect: Kurt Ackermann und Partner—Jürgen Felt, Marianne Habermann, Bettina Hamann
Engineers: Bernhard Behringer, Walter Müller (structural); Büro Dr. Karl Pitscheider (mechanical); Karl Gertis, Walter E. Fuchs (environmental sciences)



1. Aluminum sandwich roof panel
2. Adjustable aluminum louver
3. Triple insulating glass
4. Tension rod
5. Light fixture
6. Reflector
7. Radiant cooling
8. Perforated cooling panel
9. Steel roof support
10. Neoprene spacer

The Intelligent Exterior

Atrium Acts as Thermal Buffer

Daimler-Benz Offices and Housing, Berlin
Richard Rogers Partnership, Architect

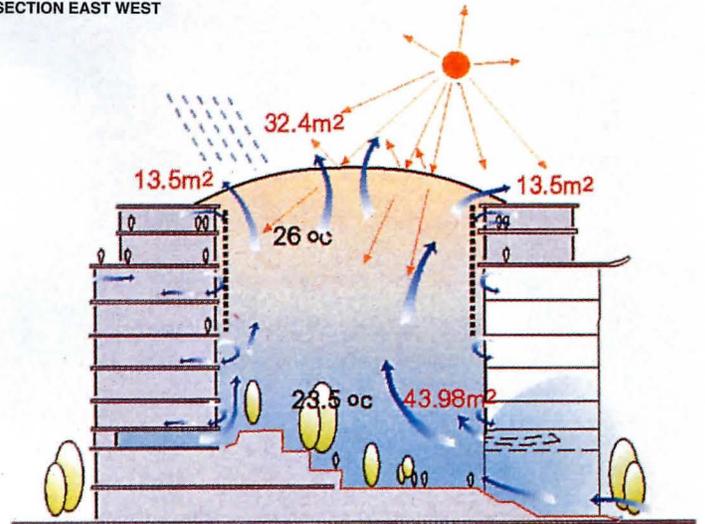
© Eamonn O'Mahony photos



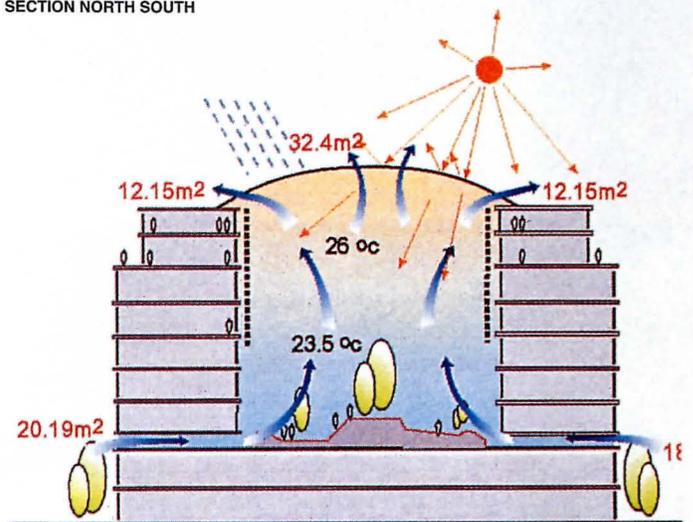
The Richard Rogers Partnership was awarded three sites in the vast redevelopment of Potsdamer Platz, formerly within East Berlin. In the master plan prepared by Renzo Piano, the blocks were intended to be full courtyard-type buildings. In developing the detailed program for client Daimler-Benz, Rogers opened the southeastern and northeastern corners of the two office/retail blocks (top two sites

in diagrams opposite) to capture daylight, open views to a new park, and encourage natural ventilation. The courtyards are capped by shallow glass domes (diagrams below) that mediate the climate within, making them usable year-round. Glass in the dome captures winter solar heat, keeping the atrium at an acceptable temperature for casual use. In summer hot air rising within the atrium vents at the dome

SECTION EAST WEST



SECTION NORTH SOUTH



perimeter, drawing fresh, cool air from a ground-level plenum, which evenly distributes source air. The architect accommodates retail at two levels near grade. Escalators and elevators within the courtyards provide a rich procession to the third-level office-building lobby (below). Offices are designed to be entirely naturally ventilated, with a targeted comfort level of not more than 60 hours annually

above 28 deg. C. (About 22 deg.—73F—is regarded as comfortable by most office workers.) To encourage air movement, the section of each the facade bay just below the ceiling pivots outward. The middle, vision section is fixed. The bottom section is split between a pivoting operable part and a fixed part. South-facing elevations are sheltered by a cantilevered roof section (photos opposite). A

housing project will be built on one of the sites (bot-tom structure on diagrams below). It's courtyard won't be roofed. The mass is carved away to admit more light to the courtyard; some units will further benefit from heat gains entering glazed winter gardens. *J.S.R.*

Credits

Daimler-Benz Offices and Housing, Berlin, Germany

Architect: *Richard Rogers Partnership—Laurie Abbot, Savine Caldrey, Mike Davies, Marco Goldschmied, Lennart Grut, Dennis Ho, Douglas Keys, James Leatham, Dan Macorie, Nick Malby, Richard Paul, Richard Rogers, Neil Southard, Wolfgang Wagner, Andrew Wright, John Young, project team*
Engineers: *Ove Arup & Partners*



Shutters Protect Highrise

*GSW Headquarters, Berlin
Sauerbruch Hutton Architects*

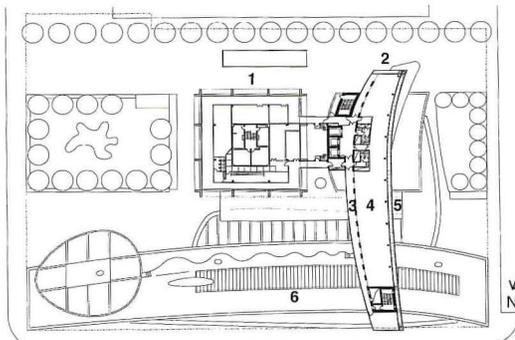
By carefully siting an unusually narrow tower, the Berlin-based architect was able to use an existing 1960s building (middle in photo bottom) to aid in solar screening. The new tower will consolidate offices of GSW, one of Germany's largest sponsors of social housing, on a single site. Because the floor plate is so narrow in the east-west direction (plan bottom), daylighting penetrates the full floor depth and the

main corridor of the single-loaded plan can become a buffer zone (diagrams opposite). Further, a sliding and pivoting perforated-metal shutter system, proposed inside the exterior layer of glass, would reduce afternoon heat gain on the west elevation (below), where sun hits during the warmest part of the day. The shutters are not needed on the east side because the existing building screens much of

© Charlie Stebbings photos



1. Existing tower
2. New tower
3. Corridor/buffer zone
4. Offices
5. Thermal flue
6. Low-rise offices below



TYPICAL FLOOR OVER SITE PLAN



the facade and heat gain is less because mornings are cooler. The shutters are located within a 1m (39-in.)-wide thermal flue (a readily maintained size), which exhausts heat accumulated from the sun and from offices via the stack effect. The flue also draws fresh air from east to west. A wing-like roof structure creates an airfoil so that prevailing breezes augment the natural buoyancy of waste heat. Individ-

uals can override the building-management-system control of shutters and fresh air. One reason the client was willing to try this innovative scheme is that it reduces above-ceiling ductwork. Each floor of the new structure connects to the existing building, which has smaller floor-to-floor heights than can readily accept today's conventional mechanical systems. The facade of the existing building (now in poor repair)

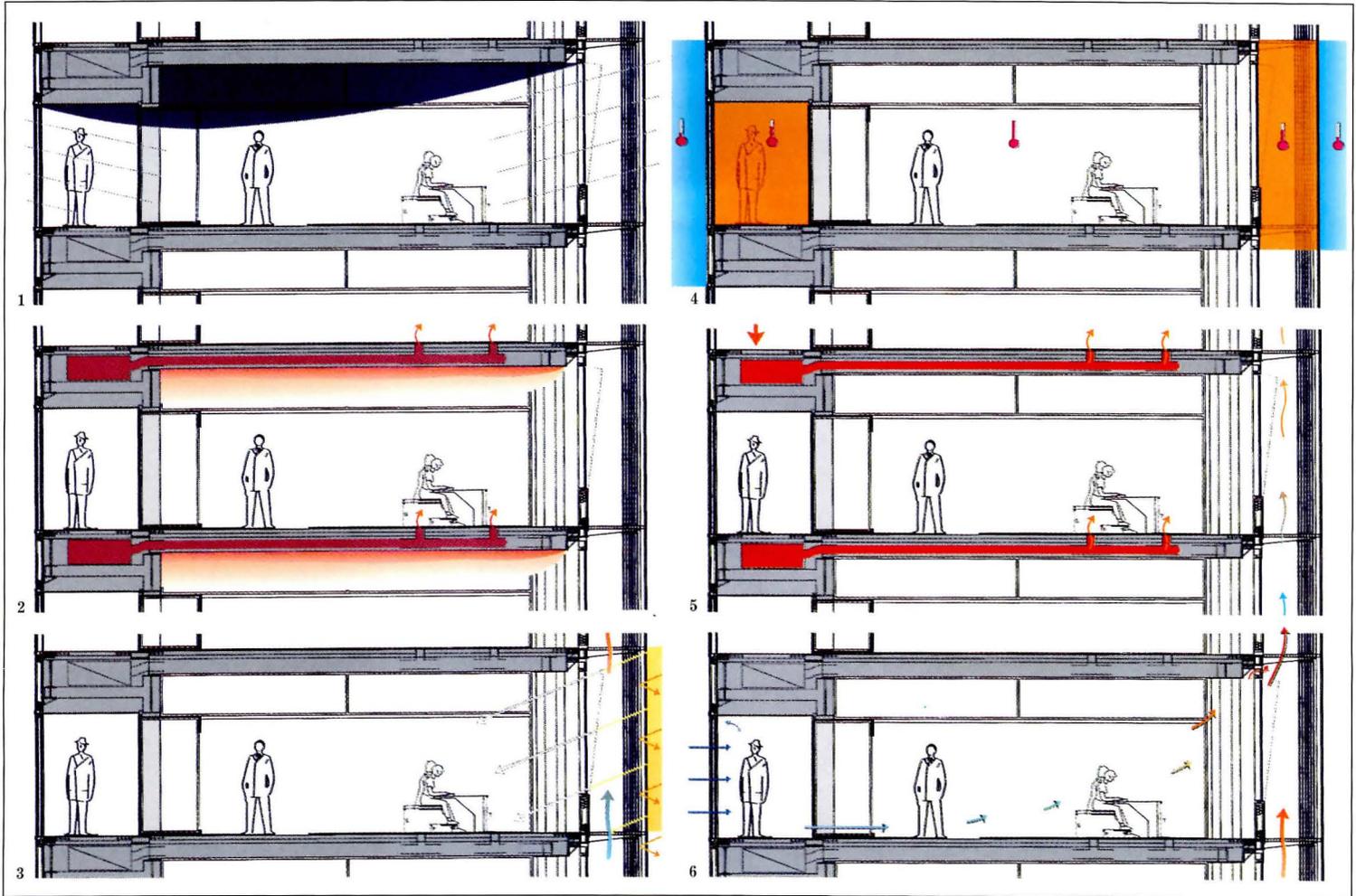
will be upgraded. The project is still in design, and the client recently asked the architect to consider a double-loaded scheme, which may mean that the corridor-as-buffer would be replaced with east-facing offices and a more robust east-elevation scheme.

Architect: Sauerbruch Hutton Architects—Matthias Sauerbruch, Louisa Hutton, Lucas Young, Anna Bader-Hardt, Brian Lilley, Christian Galvão, Felix Held, Govert Gerritsen, Jeff Kirby, Jens Ludloff, Moritz Theden, Stefan Wirth, team

Engineer: Arup GmbH (structural, mechanical)

Project Manager: Harms & Partner

Credits
GSW Headquarters
Berlin, Germany



1. Daylight penetrates the full depth of the office floor.
2. The thermal mass of the floor slab conditions the building in two ways: Cool night air runs through hollow cores, drawing out accumulated daytime heat. In winter, the slabs can be warmed at night, pre-heating the offices via radiation.

3. Perforated metal shutters within the outer layer of glass shade the west facade. The thermal flue carries out of the building accumulated heat from the shutters and solar heat gain.
4. The corridor on the east elevation is not mechanically heated and cooled to office standards, and thus forms a thermal buffer,

reducing loads on the office. The thermal flue on the west functions similarly.
5. In winter, warmth accumulated in the thermal flue will be redistributed evenly through offices via a heat-recovery unit.
6. The stack effect in the flue will assist natural ventilation by drawing cool air from the east to

the west. It can be regulated by operating louvers on the east elevation and windows between offices and flue.

Daylight Production

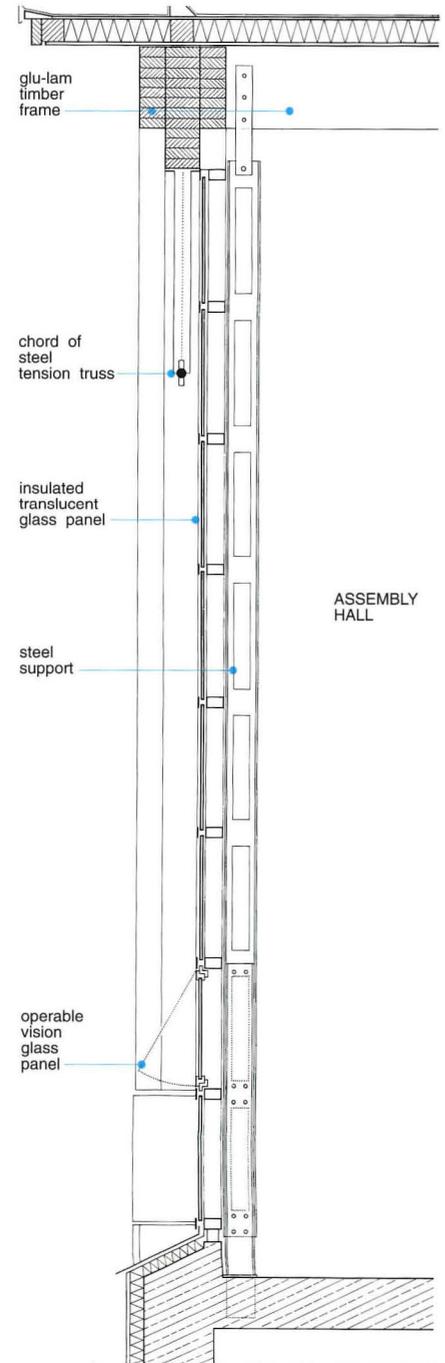
Wilkhahn Factory, Bad Münden, Germany
Thomas Herzog, Architect
Haag, v. Ohlen, Ruffer und Partner;
Executive Architect

© Dieter Leistner/Architekten photos



With the lines between factory and office blurring, it's only natural that techniques useful for offices can also be applied in a manufacturing setting. A case in point is this 36,000-sq-ft timber-framed production-hall addition to the campus of furniture maker Wilkhahn. Munich architect Thomas Herzog suspended wood and metal trusses for clear-span production spaces between trestle-like towers that contain

offices and service zones (photo below). Herzog has long concentrated on wall systems that save energy while permitting natural ventilation and ample light. The broad east-west facing elevations are clad in insulating translucent glass panels (section below). The thermal resistance is boosted through the use of fiberglass batts within the units (similar to fiberglass-faced Kalwall panels in the U.S.). Skylights in the



EAST - WEST WALL SECTION

sloping “shoulders” of the trestle-tower elements bounce light indirectly down to the production area. The lower roofs are planted (not visible) for additional insulation. Roof-level hatches exhaust heat rising from the production floor. The resulting negative pressure draws cooler, fresh air through the clear, operable strip of windows set at eye level. The south elevation (similar to that shown in the north eleva-

tion, below and bottom photo opposite) is protected by a glass awning that holds an array of photovoltaic cells, which supplement power from the local grid. In other recent projects, Herzog has tried a more advanced glazing system incorporating Aerogel, a silica-based fill that offers thermal resistance on a par with well-designed walls while allowing good light transmittance. (The product isn't yet

marketable.) At a convention Hall in Linz, Austria, Herzog placed a 16mm-thick (5/8-in.), aluminum-coated plastic grid in an insulating unit. The glazing passes indirect light, while reflecting direct sun. (That assembly won the firm a Benedictus Award for use of laminated glass.) Herzog will chair a conference next March, “Solar Energy in Architecture and Urban Planning,” in Berlin . *J.S.R.*

Credits

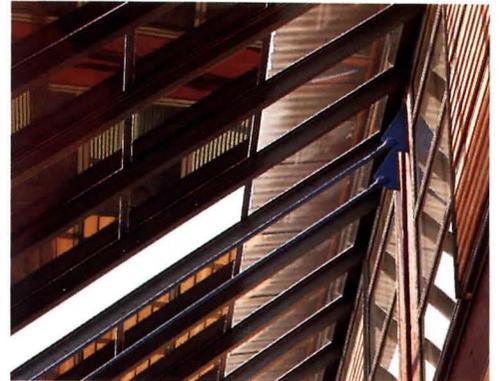
Wilkhahn Factory, Bad Münden, Germany

Architect: *Thomas Herzog with Bernd Steigerwald*

Executive Architect: *Haag, v. Ohlen, Rüffler with Holger Gesterling*

Engineer: *Sailer + Stephan (structural)*

Landscape Architect: *Anneliese and Peter Latz*



Assessing Integrated Design

RECORD's James S. Russell asked three prominent mechanical engineers to evaluate many of the innovative techniques shown in this story. Opposite, we present some recent projects by American architects that explore similar themes.

Which of these techniques is proven?

Norman Kurtz: Much of this is a refinement of techniques pioneered in the 70's. Daylighting and other lighting improvements still offer the best payback to clients.

Norbert Kaiser: We take comfort more seriously in Europe than in the states. We use air only for ventilating, and we use only 100 percent fresh air. Heating and cooling are provided by radiant means using water, which is 3,000 times more efficient than air at conveying heat. In the States, the space above the ceiling may be as high as 1m (39 in.) for mechanical systems. We can reduce it to as little as 20cm (8 in.) through building integration.

Mahadev Raman: External blinds are very sensible but must deal with the rigors of climate. They can add insulating value if set close to the facade and if fully closeable.

What techniques remain to be proven?

Mahadev Raman: The earliest use of vented facades was in Scandinavia. The idea was to raise the glass inner-surface temperature to avoid cold radiation problems. That use has been obviated by the high-efficiency glazings now available that include argon fills, low-E, and suspended mylar films. Any sort of cavity acting as a buffer zone reduces winter heat losses and may arrest or remove summer heat gains. For thermal facades that depend on the stack effect to reduce fan power or ventilated facades that depend on prevailing breezes, you have to remember that the effect is not constant. You have to decide to use backup methods to maintain comfort or your users will have to accept comfort fluctuations.

Norbert Kaiser: In the U.S. and the U.K., thermal facades are used as thermal buffers

and to exhaust air. I don't see it that way. I think the facade we designed for Norman Foster [the Microelectronics Park at Duisburg] could live without the exhaust.

Norman Kurtz: Most effective "green" concepts are easy to do in dry climates without a lot of humidity and with lots of thermal swing.

What techniques are or are not appropriate for the U.S.?

Norman Kurtz: Regulations in Germany mandate much narrower floor plates so workers can be near windows. When you have more perimeter, the wall is much more important. In the U.S., it's not such a problem because deep floors are common and they have much less perimeter: Our big enemy is the internal cooling load, especially where you have a large floor plate. You might run 30 to 50 watts per sq m internal heat gain [from people, lighting, and equipment]. In Europe, where you have fewer occupants and fewer computers, internal gains may be less than 20 watts per sq m.

Mahadev Raman: You don't have the summer humidity in many parts of Europe that is characteristic of much of the American East, Midwest, and South. You have to look at whether radiant cooling will be able to make enough of a temperature differential to work. You have to control humidity or moisture may condense on the cooling panels. This doesn't mean these ideas aren't applicable. You would just decouple fresh air and dehumidification from radiant or convective chilled ceilings.

Does culture affect acceptance?

Mahadev Raman: There's a willingness to accept higher temperatures in Europe because most domestic space is not air-conditioned.

People in Europe are more critical of mechanical solutions because it is comfortable to walk outside for much of the year. In New York City, for example, you have four or five solid months of air-conditioning, so people relate much more to comfort inside than out. That contrast is quite important.

Norman Kurtz: In our experience, using architectural solutions to replace mechanical systems proves extremely expensive. A developer will make it very hard for you because they'll rarely spend more up-front than competitors in their market. The architects in Germany are more tuned into these ideas and they're a more dominant figure in the design/construct process. The engineer is in the background. You don't get CM or value-engineering sharpshooters. On the other hand, an American institution or corporation might look to these techniques to visibly express a commitment to the environment or conservation. The institutional client may take a longer view than the developer; may hold buildings longer; and may have more commitment to the issues.

Where do we need to go from here?

Norbert Kaiser: We need solar-collection technology for cooling. Places that have the most sun coexist with places that need the sun for cooling.

Norman Kurtz: BOMA [Building Owners and Managers Association] says you can get a productivity payback from increasing comfort because employees cost you \$120 to \$150 per sq ft compared to \$1.20 to \$1.50 for energy costs. We can justify higher first costs if research can show productivity gains. These numbers are now very elusive. ■

Norman Kurtz Flack + Kurtz

Kurtz is the president of this New York City-based consulting-engineering firm.

Project: An office/warehouse for Patagonia includes radiant heating and cooling.

Norbert Kaiser Kaiser Bautechnik

Kaiser heads this Duisburg, Germany, engineering firm.

Project: Kaiser is working with Sir Norman Foster on natural ventilation of Berlin's Reichstag.

Mahadev Raman Ove Arup & Partners

Raman is a principal in the consulting engineering firm's New York City office.

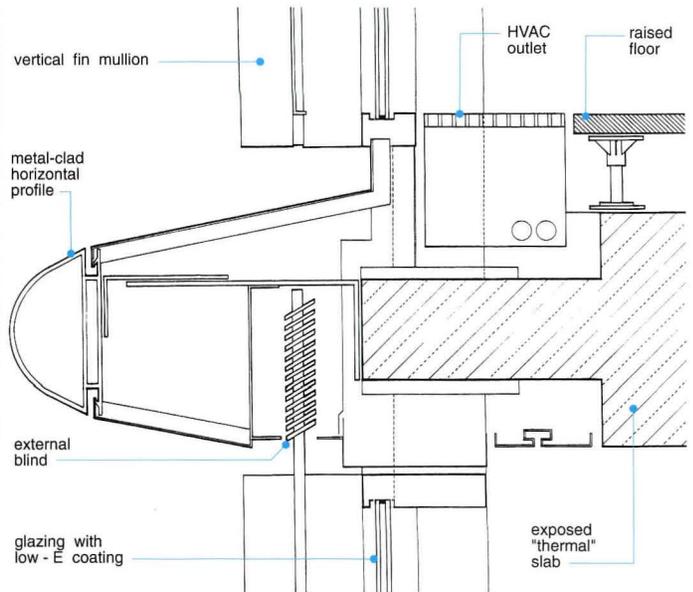
Project: A Phoenix courthouse with Richard Meier uses a naturally ventilated atrium.

Natural Ventilation on Spec

Bismarckstrasse 101, Berlin, Germany
Kohn Pedersen Fox, Architect; Patzchke Klotz + Partner; Consulting Architect
 Engineer Norman Kurtz notes that class A office space can be rented without full air-conditioning in Berlin, and this is one inventive example (designed by KPF's London office). An exaggerated horizontal profile (drawing) emphasizes the five-story building's curving facade. External blinds and operable windows help to insure user comfort. Radiant heat and fresh-air outlets (which can be supplemented with fan-coil cooling) are recessed within the raised access floor. Floor-standing uprights provide diffused, indirect light, enabling the concrete slab ceiling to be exposed. It absorbs excess daytime heat, radiating it at night when needed. ■



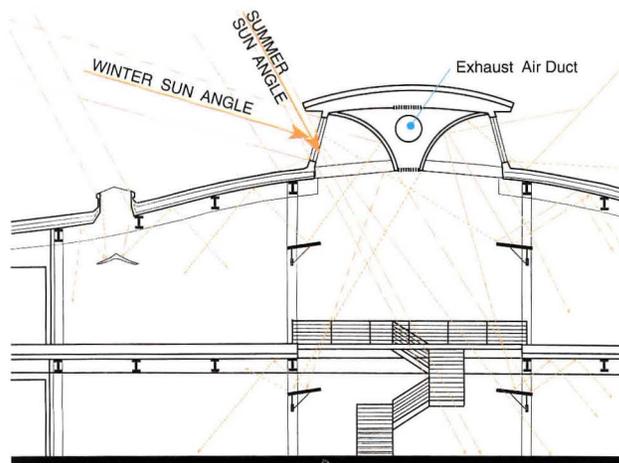
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Light-Catching Offices

Addition to a Corporate Campus
San Bruno, California
William McDonough & Partners, Design Architect; Gensler and Associates, Architect of Record

This two-story office building features vaulted clerestory light scoops and ducting to exhaust accumulated heat. Interior offices are daylighted through skylights and an atrium, diffused by reflectors. External light shelves have been planned for perimeter offices (which have operable windows). They shade the vision glass while bouncing light off the ceilings. An underfloor fresh-air supply exploits the thermal lag of the building's structure to reduce night-time cooling loads. The project team includes the San Francisco office of Ove Arup & Partners. ■

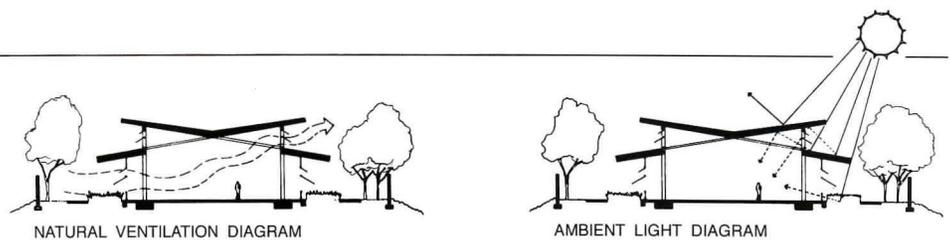


SECTION THROUGH ATRIUM



Breezes for Books

Carmel Mountain Ranch
Community Library
Carmel Mountain Ranch, California
M. W. Steele Group, Inc., Architect
 High- and low-level overhangs provide a balance between admitting daylight, controlling glare, and encouraging breezes (diagrams) in this 13,000-sq-ft project, in the temperate and relatively dry San Diego area. About 50 percent of exterior walls are operable windows or doors—encouraging users to enter a secure garden that surrounds the building. Engineer Ove Arup & Partners proposes an air-conditioning system sized only for "peak trimming"—maintaining comfort levels on very hot days. The building, on completion in mid-1996, should use no more than 50 percent of California's demanding Title 24 energy standard. ■



American Gothic

*By James M. ...
...
...*



Having outgrown its old building, St. James Episcopal Church in Fairhope, Alabama, wanted a new home that would “reflect the unique regional characteristics” of its Gulf Coast locale, while maintaining a “historical continuity with the Anglican tradition” of Gothic architecture. Steeped in Modernism while working for Paul Rudolph early in his career and holding few ties to the communities of Mobile Bay, Errol Barron was the church’s unlikely choice for architect. “We wanted a design that would have a casual Southern elegance, but not be pretentious,” says Gil Green, the church’s pastor and a member of the building committee. “I think Errol achieved that here.”

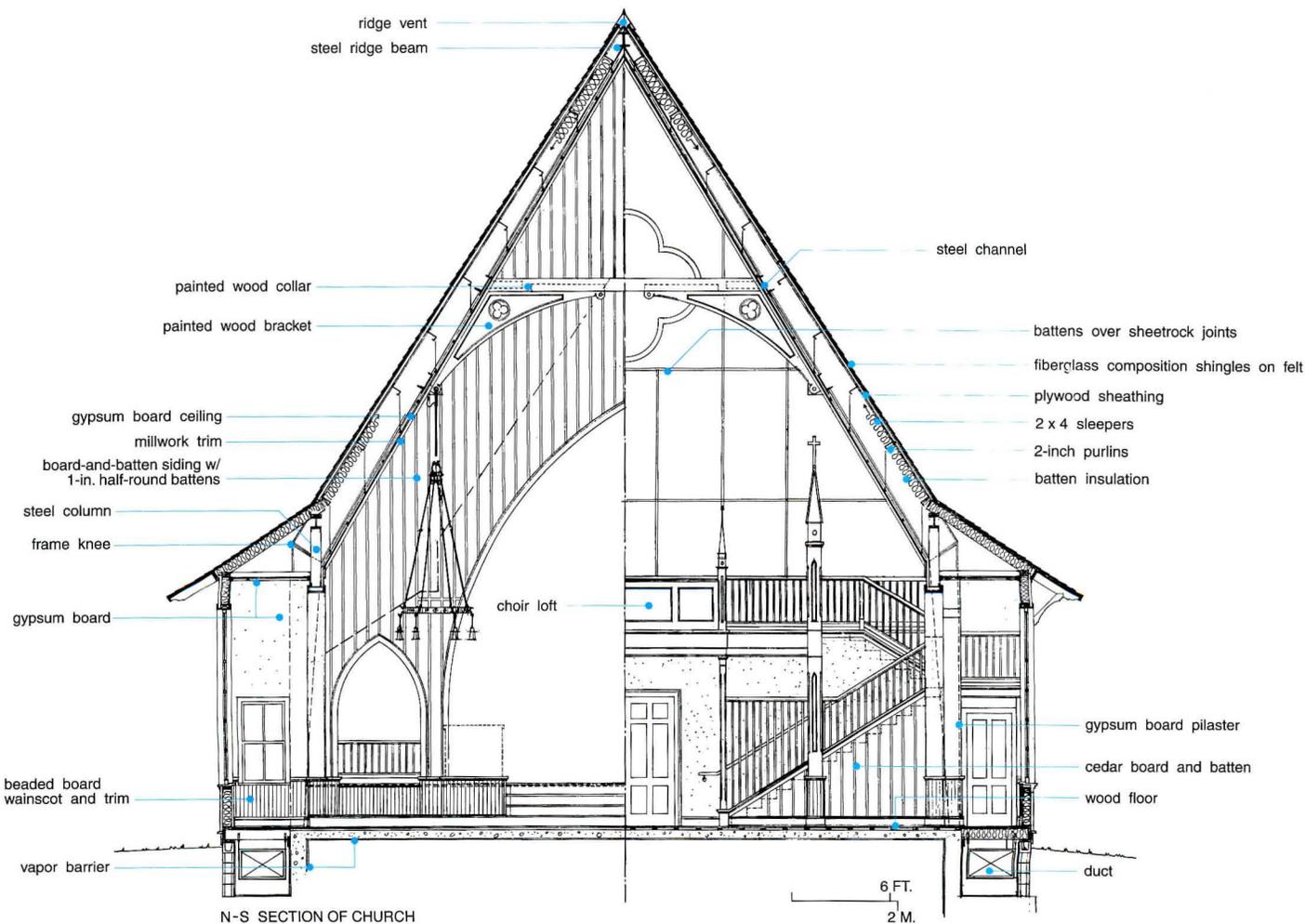
“I was intrigued by the issue of style,” recalls Barron during a three-hour drive from his office in New Orleans to Fairhope. Although he earned a master’s degree from Yale when Charles Moore was the dean and admires the work of Moore and James Stirling, Barron has deep reservations about Postmodernism. “Postmodernism, as a style of quotation, often seems superficial,” he states. So instead of making reference to or quoting from Gothic architecture, Barron decided to “bite the bullet and work within the Gothic style” itself. “I checked out every book on the Gothic Revival and Carpenter Gothic from the Tulane library.” All this homework helped convince the church’s building committee to put Barron on the short list of a dozen architects and then to select him over more local firms.

Sitting on top of a hill, the church and its 80-foot-high steeple have become instant landmarks at the entrance to Fairhope. Rather than let the church and its accompanying chapel, parish hall, offices, and

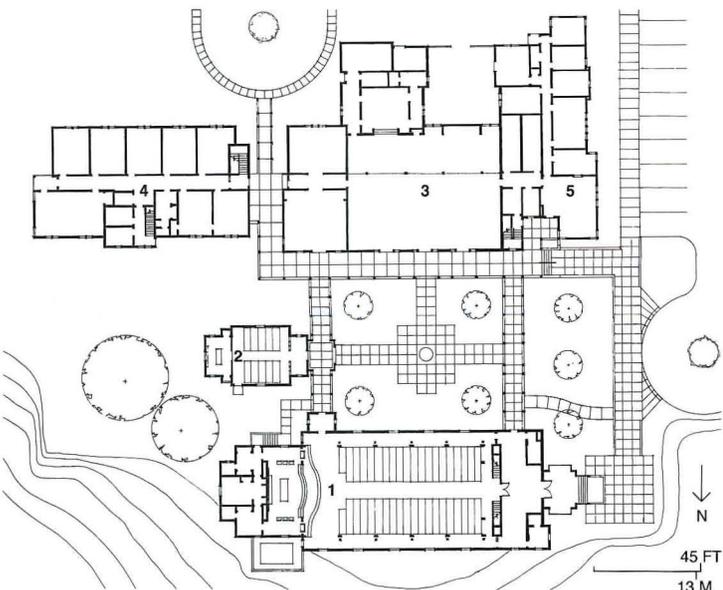
school sprawl over the hill, Barron kept them in a tight cluster, organized around a rectangular lawn or garth, and connected by covered walkways and porches. A tight budget and the congregation’s desire for modesty limited the parish hall, office, and school components to simple gabled forms that lack the turned-up roofs and delicate lines energizing the main church and smaller chapel. But the ensemble holds together well, allowing the church and chapel to take center stage with their graceful proportions and soaring roofs.

“Carpenter-Gothic churches usually seat about 100,” explained Barron, “but this one had to accommodate 500. So getting the scale and proportions right was a struggle. With a church this size, the nave tends to get wider, which gives the building a boxier, less church-like feeling.” The solution Barron developed was to use side aisles, set off by ogive arches, to add width without reducing the height of the nave. Framed like a house attic with rafters, wood collars, and curved brackets and given a tall 18-on-12 pitch, the church’s roof has a timeless quality that seems neither old nor new. Steel columns and beams are mostly hidden, but emerge as crosses set in the circular openings that run the length of the arcades on either side of the nave.

The freestanding chapel, which seats 50, strikes the same chords as the church, but in a minor key. The attic framing, curved brackets, and proportions are the same; only the side aisles are gone and the size reduced. All the buildings are clad in redwood board and batten, while the porches are mahogany. Everything is painted bone white. A sense of grace envelops the buildings. *Clifford A. Pearson*



©Alan Karchmer photos



1. Church
2. Chapel
3. Parish hall
4. School
5. Administration

The chapel (left top and bottom) faces the lawn, which serves as an outdoor room for social gatherings. Reflecting the client's traditional approach to liturgy, both the chapel and the church (below and opposite) are center-aisle spaces in which all pews face one direction. A double staircase (not shown) leads to a choir loft above the entry to the church, accommodating a type of procession preferred by this congregation.

Credits

*St. James Episcopal Church
Fairhope, Alabama*

Architect: Errol Barron/Michael Toups
Architects—Errol Barron, Michael Toups, Steve Olson, Dennis Cowart, design team

Engineers: D.E. Britt and Associates (structural); Sullivan Engineers (mechanical); Guillot-Vogt Associates (electrical); Woolpert and Associates (civil)

General Contractor: J.F. Pate and Associates





A Circle In the Square



*Richard Meier's new civic building in
Ulm, Germany, restores urban cohesion
to the remnants of a Medieval square.*

*Stadthaus
Ulm, Germany
Richard Meier & Partners, Architect*



For over a century, the southern German city of Ulm has been trying to make amends for demolishing the Münsterplatz, a 13th-century monastery that once stood in the city's central square. It was torn down in 1875 in anticipation of a Neo-Gothic extension of the old Gothic church spire. The feeling at the time was that in order to appreciate the spire—at 530 feet, claimed to be the tallest in the world—one had to view it from a proper distance. But by the turn of the century, Ulm's city council was trying to discover a way to restore urban cohesion to these disjointed surroundings as well as to the heart of the city. After World War II, a provisional kiosk was built on the site, and the square was pressed into service as a parking lot.

After a number of false starts, including 17 competitions and dozens of referendums, an invited competition held in 1986 yielded a design by Richard Meier for a "Stadthaus," which was unanimously upheld by the jury. It is not a city hall—that is located in a historic building rebuilt after severe Allied bombing during the War—but a civic exhibition and assembly building. The Stadthaus houses a municipal and tourist information desk, travel agency, theater ticket office, a restaurant and cafe, an auditorium, and exhibition spaces. One exhibit displays archaeological artifacts found on the site during excavation.

Meier's three-story, 10,000-square-foot Stadthaus is located at the end of a major axis through the old city, the pedestrian Hirschstrasse that curves down from the train station through the Münsterplatz and on to city hall. The effect of the rounded building on the flow of pedestrians (6, opposite) is gentle, like a boulder in a stream, rather than confrontational. "It does not direct you, but offers you possibilities," says project architect Bernard Lutz. He has seen the restaurant bring the square back to life in the quiet evening hours. One of the white exterior walls was used as an open-air movie screen during a festival, and twice a week, a market is held on the square, as it has been for centuries.

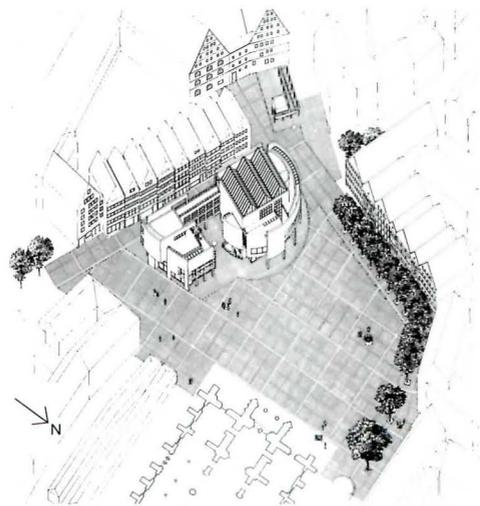
The building consists of two parts connected by a glazed bridge, allowing people to pass below it, thus restoring the original street pattern, and facilitating entry to the square. The larger part is a granite-clad cube, surrounded by an overlapping series of concentric circular walls. From the inside, these walls are cut out to expose various dramatic views of the cathedral and the square, and also admit light into the exhibition and circulation spaces. At ground level, these circular walls open up to become arcades, giving one the sense that although the building is large, it is remarkably light on its toes. In Meier's aestheticized Modernism, form does more than follow function. In order to create a satisfying and consistent image he adds extra touches. On the flat south facade (1), for instance, he extends the wall of the cube to coincide with the circular walls, and finishes off this gesture with a cantilevered band (4), a horizontal echo of the cathedral's flying buttresses.

The building is characterized by the generous use of space, with the cantilevered staircase and sweeping curve of the facade enclosing Meier's hallmark tall, open area. There are many places where a visitor can step outside onto a small balcony, terrace, or the roof (1, 2, 5), making the building feel permeable, and hence, readily accessible. The detailing, as is Meier's wont, is immaculate, with the window mullions, the seams between the granite cladding, and the paving stones all toeing the same fine line. The grid is there, but this time it is felt rather than seen. Meier's white Modernism may be very formal, but the Stadthaus's transparency, texture, and civic character give it the feel of an airy pavilion. In Ulm this works well. *Tracy Metz*

Up Close

Precedent and scale. How far back should one go when building in the historic heart of a European city? Strangely enough the historicists were the ones who, in the Schwabian city of Ulm, wanted to keep the city's main square open, rather than replace the monastery which was the original counterpoint to the Gothic Cathedral—and had a larger footprint than Meier's new Stadthaus.

When Ulm launched yet another competition for a Stadthaus on Münsterplatz in 1986, opponents organized a referendum, but were unable to obtain enough signatures. Meier, for his part, continued to insist that the square was too large and amorphous. In the true legacy of "less is more," the passerby is indeed more aware of this urban space now that there are buildings to give it a sense of scale. Meier's building (below and opposite page) mediates between the narrow gable-topped buildings that hem the square and the towering mass of the Gothic cathedral.

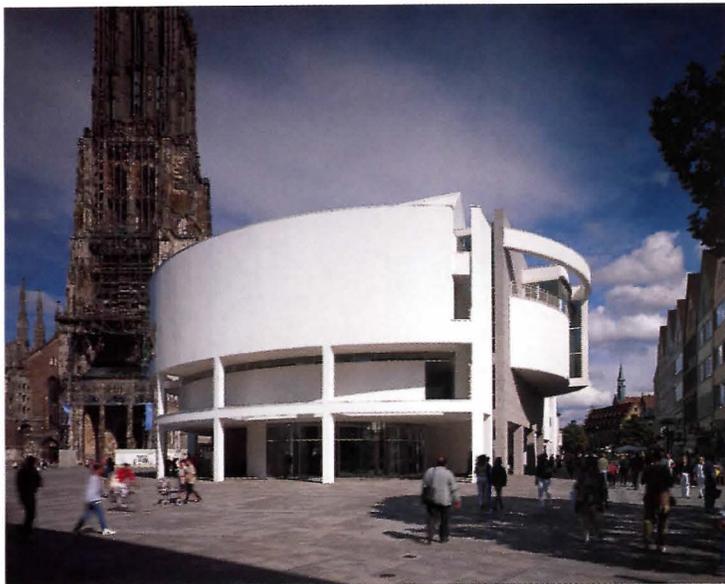




1



2



3



4



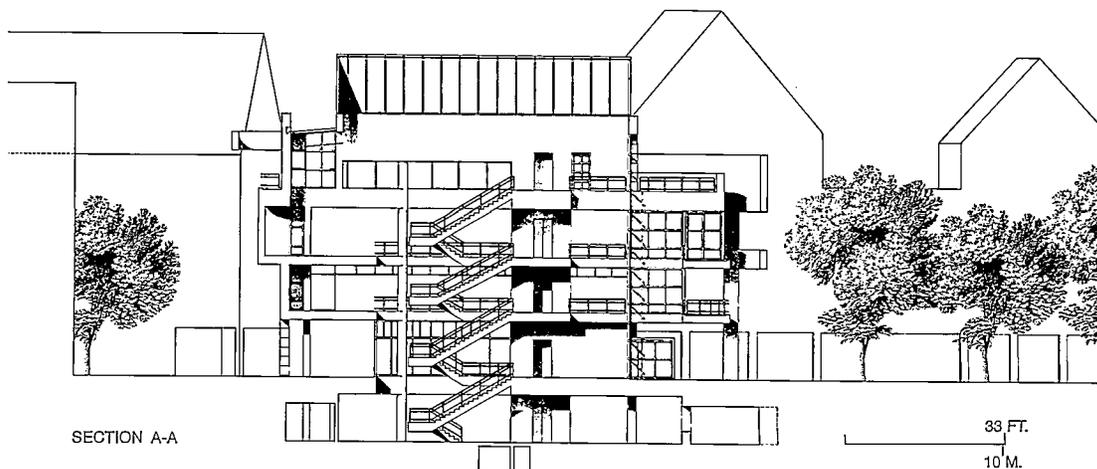
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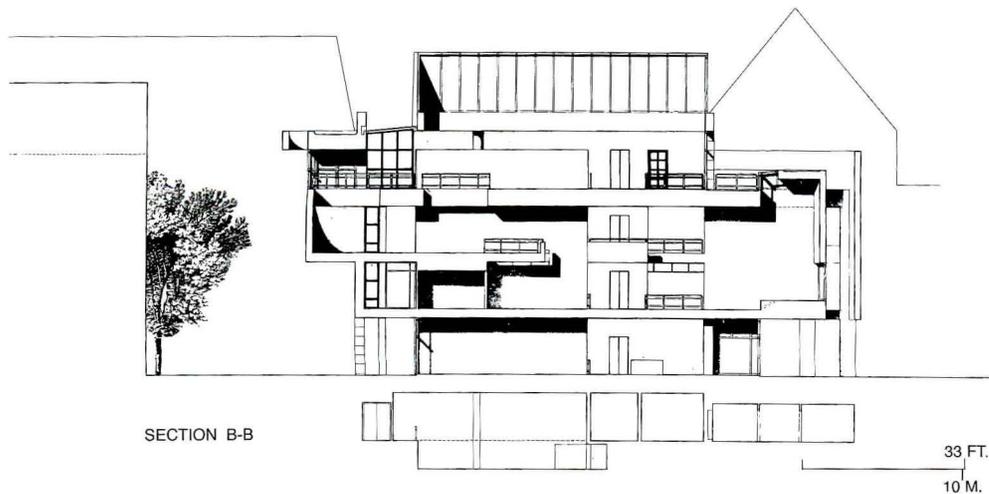
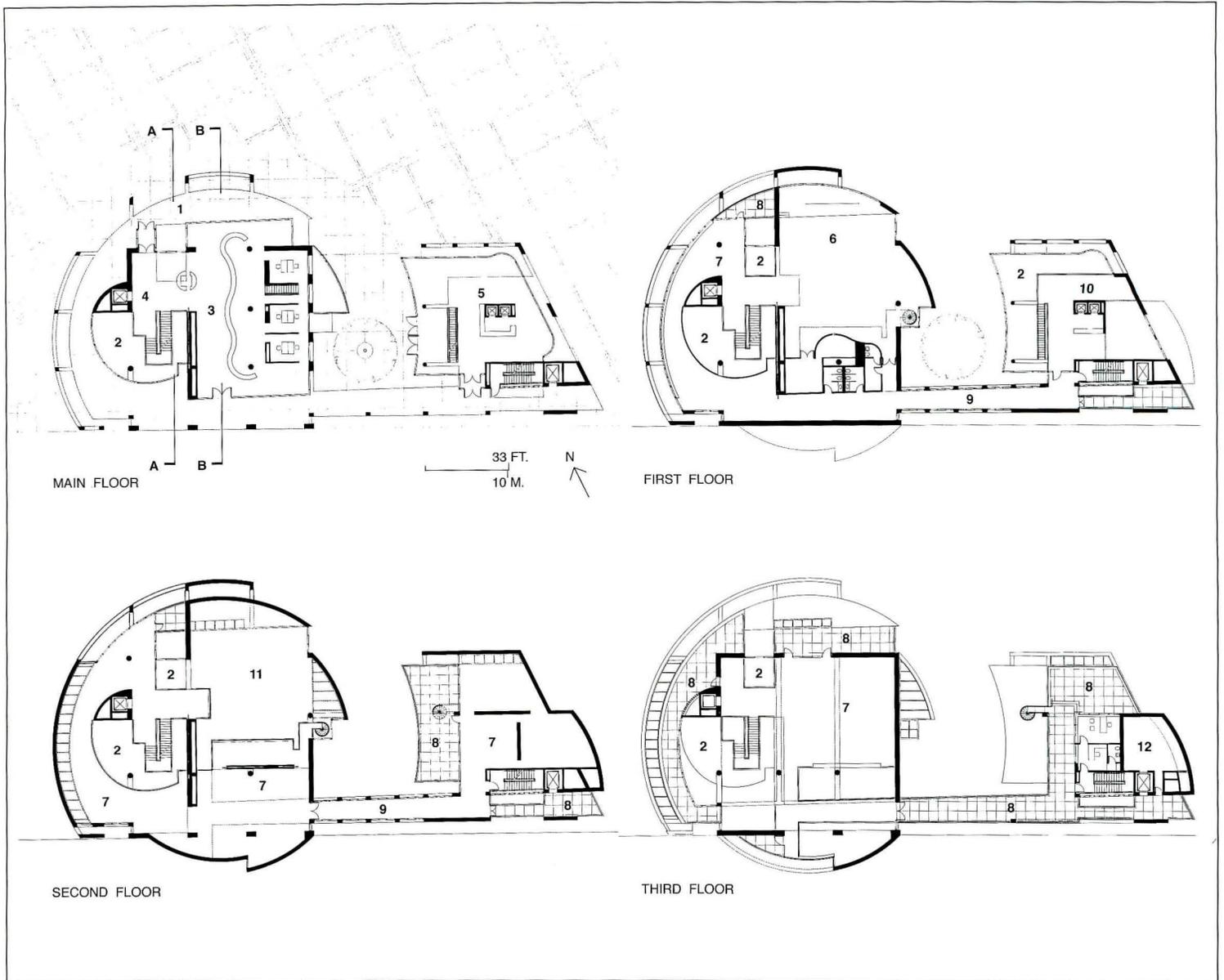


On the main square of Ulm, the Münsterplatz, the 13th-century Gothic cathedral has a new partner in a sparkling-white civic building, designed by Richard Meier in response to Ulm's invited competition for the square. The building exterior is comprised of a series of round facades enclosing a square core. A generous staircase connects spaces for services with the auditorium and two gallery levels.



SECTION A-A

33 FT.
10 M.



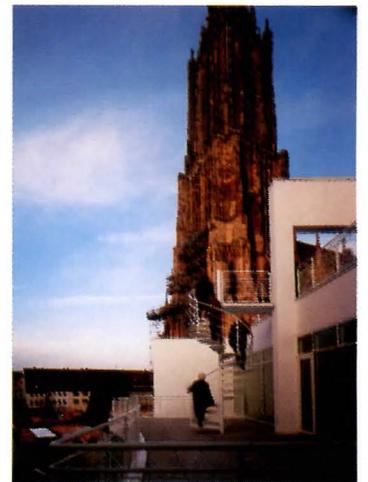
1. Entry
2. Void
3. Travel agency
4. Foyer
5. Restaurant
6. Auditorium
7. Exhibition space
8. Roof terrace
9. Bridge
10. Cafe/gallery
11. Void over auditorium
12. Mechanical room



The view of the Stadthaus's core as seen from one of the exterior terraces (top left) shows an airy space filled with a broad staircase. The granite-paved stairs are so inviting that few people use the elevator. The space is capped by one of three glass gabled roofs that offer fine views of the cathedral.

The central hall (bottom left and opposite) in the main west wing reflects the basic concept of the building: the square shapes of the staircase and its cantilevered landings at the core, surrounded by elliptical walkways. Even the window glass is curved, and gives the building a sense of accessibility. At the basement level, cabinetry was built into the walls of the ellipse so that archeological artifacts discovered on the site during excavation could be permanently displayed.

Sculpture terraces on the roofs of the east wing (below) silhouetted against the mass of the Gothic cathedral help define the relationship of scale between new and old.







The second-floor gallery space (top left and opposite) is flooded with daylight through three glass gabled roofs. When the daylight is too bright, white shades can be pulled across the glass.



The first-floor circulation space (middle left) has views across the Münsterplatz; entry to the auditorium is to the right. The cafe in the eastern wing (bottom left) has a view under the walkway toward a row of reconstructed period buildings that border the south side of the square.

Credits

Stadthaus

Ulm, Germany

Client: City of Ulm

Architect: Richard Meier & Partners—Richard Meier; design; Bernhard Lutz, project architect; Mary Buttrick, Martin Falke, Beat Küttel, Siobhan McInerney, Gunter Standke, Wolfram Wöh; collaborators

Engineers: Raizner und Bauer (structural); Ingenieurgesellschaft Korner; Otto und Speiss (mechanical); A. Zitnik (lighting)

Project Management: City of Ulm Building Department

Construction Management: Becker + Partners, Architekten BDA—Paul Fuchslocher





Fresh Products, Reused Packages

New office-building construction is looking up, but—just as in recent slack years—one sure ongoing market for architects' services will be renovating obsolete buildings to hold up-to-date office facilities. In the past five years, in fact, major renovations and additions to existing facilities have been close to half of all office-construction activity, according to F. W. Dodge. And that does not count the many small projects that miss Dodge's large-scale screen.

© Leonard Campel photo



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1 **One Atlantic Street**

*Stamford, Connecticut
Culpen & Woods, Architects*

2
One Atlantic Street is a successful conversion of a former single-occupant bank headquarters that had failed the test of rental as multiple-tenant offices without a major overhaul. Designed by Benjamin Morris and completed in 1929, the eight-story building was then the tallest in Stamford. Recently, many larger, newer office buildings had crowded this historic predecessor out of an overbuilt market.

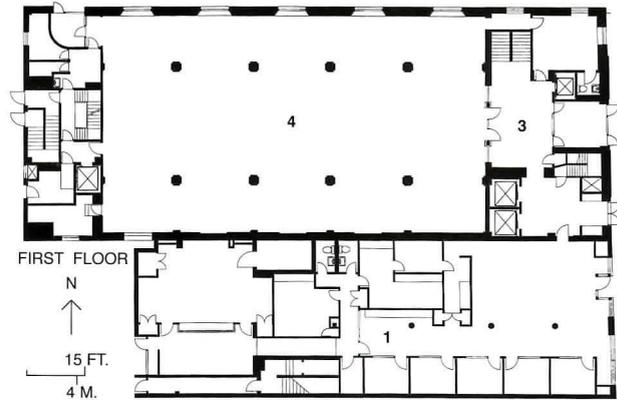
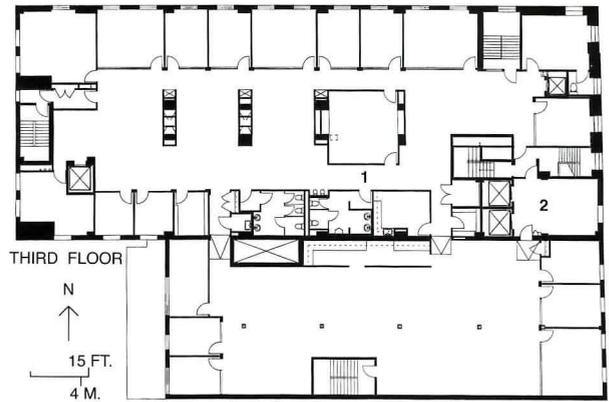
“Our belief is that a well-built classical building with state-of-the-art interiors can be more than competitive with any new property,” says Culpen & Woods’ senior partner Harry Culpen of their \$2.9 million renovation of the 100,000-square-foot dowager. The current full occupancy proves his point—as well as having yielded his firm several design commissions for individual tenants’ offices.

The three projects shown on these pages demonstrate some of the extremes of renovation scenarios that architects currently face. Two of the buildings are landmarks: One Atlantic Street (below) and MK Ferguson Plaza (overleaf). One Atlantic Street was a natural fit for small individual tenants. It had been a single-tenant office building and, aside from correcting its outdated mechanical systems, it needed only a simple rerouting of lobby circulation to be viable. MK Ferguson was a different story

altogether. "An obsolete landmark isn't saved until you find an appropriate new use," says van Dijk, Pace, Westlake partner Paul Westlake, Jr. of his firm's efforts to adapt Cleveland's former central post office to MK Ferguson's needs. Finally, at the Blue Hen Corporate Center, Gensler and Associates tackles the more typical case—a worthwhile conversion of a building that isn't landmark at all. Charles K. Hoyt



3



- 1. Multiple-tenant office spaces
- 2. Reception
- 3. New multiple-tenant lobby
- 4. Original banking floor



4

One Atlantic Street's problems were threefold. First, the imagery was dignified, but tarnished. The architects cleaned and restored the exterior. Inside, they carried through the original period decor in a required reworking of the lobby (1, 2, and 3) that included reusing the bronze elevator and service doors. Sympathetic new elements such as the cherry-wood bank-entrance doors (1) and vestibule screens,

and glass orientation graphics (2) are clearly expressed. Upstairs (4), all was gutted to install new wiring, hvac, lavatories, elevator shafts, fire stairs, sprinklers, wider hallways, and code-compliant finishes. The most serious obstacle to multi-tenant use, however, was perhaps easiest to fix. It was security. All elevators had risen straight from the banking hall, which tenants had to pass through during off hours.

The architects closed off the front section of the hall with new doors (3), added a vestibule (1), and created a lobby shared by all. C. K. H.

Credits

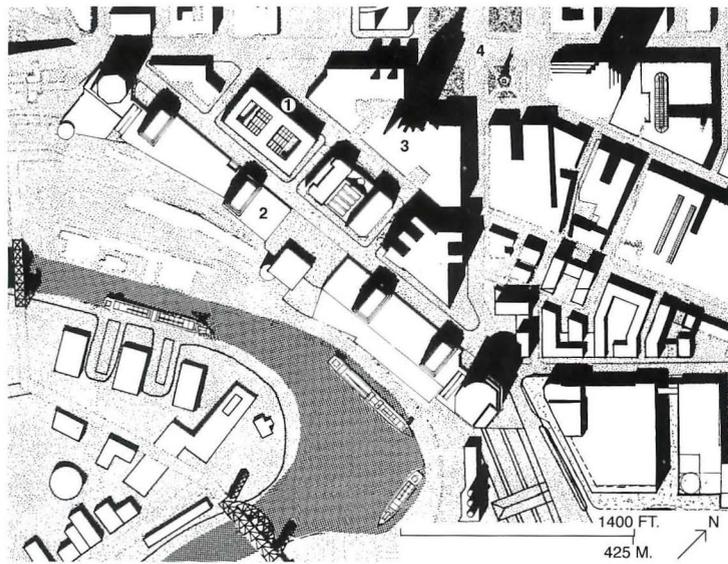
One Atlantic Street
 Stamford, Connecticut
Owner: MONY Real Estate Investment Management
Architect: Culpen & Woods Architects—

Harry Culpen, managing partner; David Woods, design partner; Nigel P. Marsh, project architect; Kathleen Poirier
Engineers: Sanford O. Hess & Associates (MEP); Viggo Bonnesen & Associates (structural)
General Contractor and Asset Manager: The Galbreath Company, Inc.

MK Ferguson Plaza

Cleveland, Ohio
*van Dijk, Pace, Westlake & Partners,
 Architects*

© Jennie Jones photo



1. MK Ferguson Plaza
2. Tower City multiple-use development
3. Union Terminal complex
4. Central plaza

Despite its architectural prominence and strong contribution to the urban fabric, Cleveland's former central post office is a National Register landmark that might well have been destroyed had not an appropriate office reuse emerged for its cavernous loft spaces and elegant public lobby (2, 3). Architects van Dijk, Pace, Westlake & Partners' work to adapt the massive heavy-duty, steel-frame building to new func-

tions demonstrates the complexities of this ultimately successful process. Originally completed in 1934 to plans by Walker and Weeks, the building was the last phase of a far-reaching Union Terminal complex to the west (site plan below, left) that included an elegant office tower and multiple levels of circulation. To the east lies the new 6.5-million-square-foot multi-use Tower City designed by RTKL.



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At first, the post office seemed unsuited to offices. Its five 100,000-square-foot floors are 200 feet across and 19-to-22-feet high. Two impenetrable divisions were formed by banks of freight elevators large enough to carry mail-transport vehicles. The top floor, located behind a solid cornice, was windowless. Early studies included use as a parking garage, medical suppliers' exhibition space, even the Rock and

Roll Hall of Fame—uses which all proved more inappropriate than offices.

When client Tower City Development finally chose office use, the architects' initial design concern was retaining the open-loft character of the floors. Partitioning for multiple tenants would have destroyed this and resulted in spaces ridiculously high in proportion to width. While pressing

for a single tenant, the design team tackled other obstacles to adaptive reuse. First came the impractical wide floors. The architects removed the freight elevators and replaced them with two tall glass-roofed atria to bring daylight to interior spaces. Final dimensions of the atria were determined by a "reductive process," according to partner Paul Westlake, Jr.—measuring the optimum depth for offices

from exterior-light sources and then removing the remaining undesired floor areas. The fifth floor got even more new outside light by glazing former mechanical penthouses as skylights.

Another problem was internal circulation. The building's historic lobby and public entries were at one end of the building—far from a functional central elevator location. Even had the



2



4

The architects kept the original annealed-aluminum windows and fitted new fixed-glass panels inside for energy conservation. The design of the reception area in the east atrium (1,4) eases the transition between the original lobby (2,3) and newer spaces (overleaf). Restoration in the historic space included bringing the original bronze and monel-metal stands out of storage.

lobby been in the center, so many hoist-access doors would have been required as to destroy its historic character. In the end, the architects placed elevators toward the center of the building with access from the east atrium. This meant a substantial new opening into the old lobby, despite National Register preservation requirements to achieve desired tax credits. The architects rotated two panels of the

original wall to resemble open doors (2, previous page) thereby creating the new opening and retaining the room's original fabric. When the MK Ferguson Company signed a lease for the entire building, there was at last an ideal marriage of building and function. The large 1,600-person engineering firm was able to use the large open spaces for drafting rooms. *C. K. H.*

Credits

*MK Ferguson Plaza
Cleveland, Ohio*

Owner: *Forest City Enterprise/Tower City Development—Patrick Lott, client representative*

Architects: *van Dijk, Pace, Westlake & Partners—Peter van Dijk, partner-in-charge of design; Paul Westlake, partner-in-charge and senior designer; F. Cortland Agnew, job captain;*

Ronn Yong, Vincent Leskosky, Nancy Coy, design team

Engineers: *Arjo Engineers (MEP); Bacik, Karpinski Associates (tenant MEP); Barber & Hoffman, Inc. (structural)*

Consultant: *Theo Kondos (lighting)*

General Contractor: *Forest City Construction*



1

The original heavy-duty column-and-beam construction is expressed in the atria (1), where it stands free of enclosing walls. Under the glazed roof, old steel hoist beams painted with zinc-chromate primer recall freight elevators that once filled the space. Existing 19-foot ceilings on upper floors (2) are ideal for large drafting rooms. On the main floor, 22-foot ceilings allow extra offices on mezzanines (3).

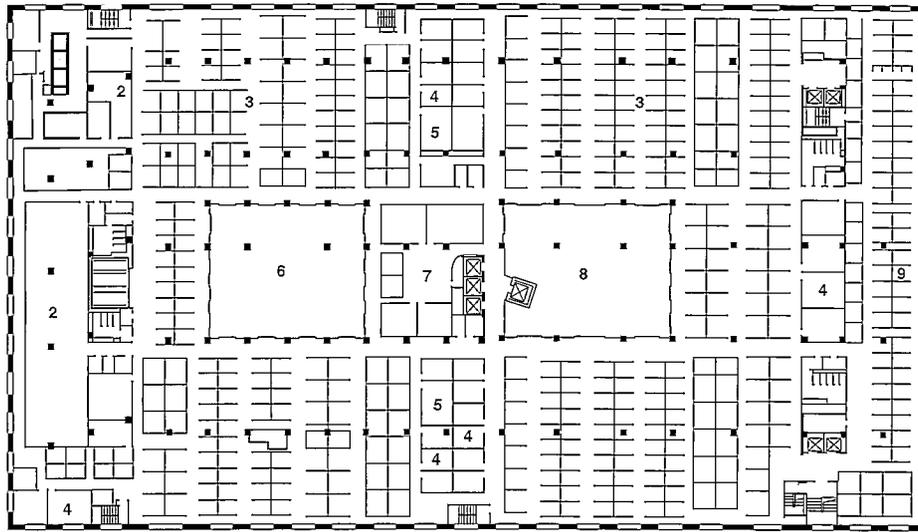


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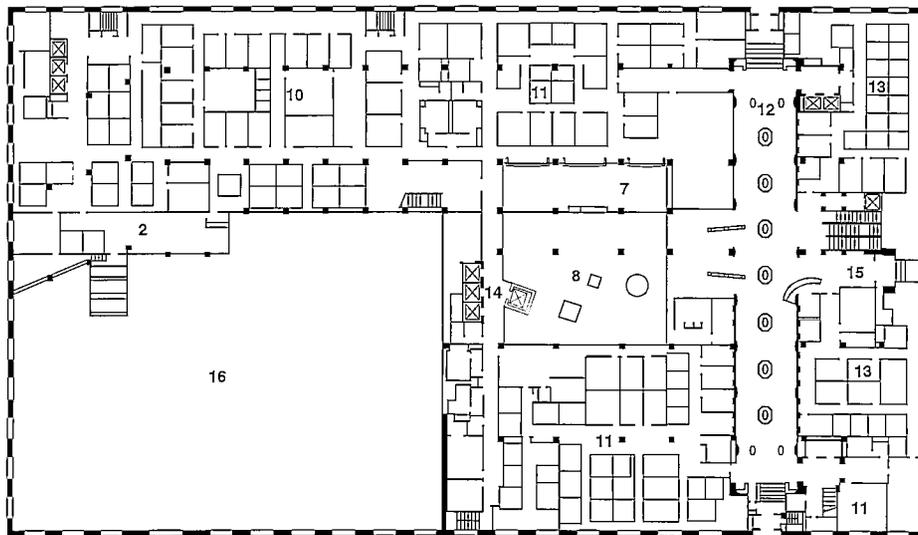
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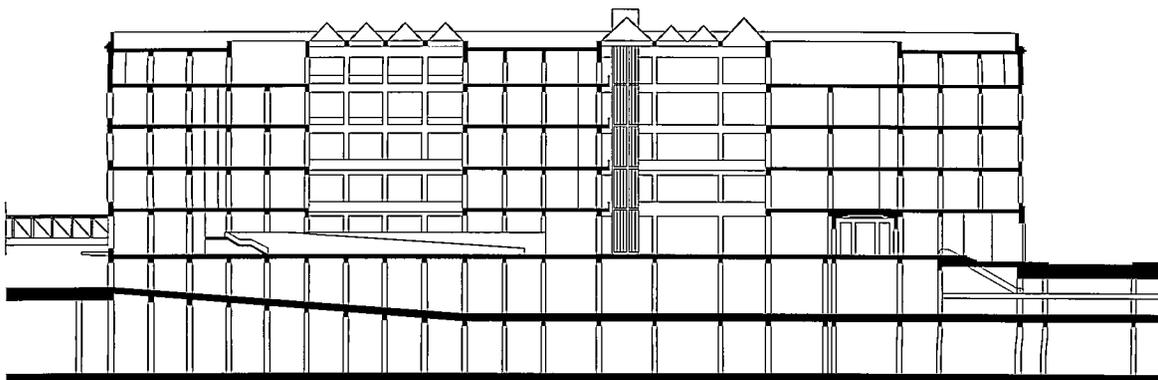


SECOND FLOOR

1. Original passenger elevators and hall
2. Support
3. Drafting room
4. Private offices
5. Conference
6. West atrium
7. Reception
8. East atrium
9. Possible subtenant
10. Construction management
11. Administration
12. Historic lobby
13. Environmental engineering
14. Main passenger elevators
15. New entrance and access to Tower City concourse
16. Central hvac plant



FIRST FLOOR



SECTION LOOKING NORTH

Blue Hen Corporate Center

Dover, Delaware

Gensler and Associates, Architects

Two organizations looking for a speedy move into economical office space turned out to be the key to salvaging not only a dying mall's large retail anchor buildings through conversion, but also to reviving the remaining smaller retail operations. Architects Gensler and Associates' completed work on the first phase of this project, Aetna Health Plan's Claims Department, proves that up-to-date corporate facilities

can be created from the most ordinary structures. This has gained the architects a commission to recycle the other empty anchor building into offices and renovate the remaining stores in between, in which small retailers expect to capitalize on the corporate tenants and the traffic they will generate.

Aetna's current 68,000 square feet for its 400 employees

© Philip Ennis photos



includes a redesign of the site to soften the typical mall's bare parking lots with perimeter trees and landscaping around the building; a 2,400-square-foot curving addition to modulate the original store's high-bay bulk; new tinted-glass curtain walls around the entire building perimeter and a new glass-roofed courtyard to bring outside light into once windowless spaces; and an upgrade of all building amenities, such as

new washrooms, lunchroom, and lounges. Gensler delivered the space in six months, using only two months for design and bids let in four packages. Total cost was \$5.7 million compared to a \$7.1 million estimate for an all-new building.

C. K. H.

Credits

*Blue Hen Corporate Center
Dover, Delaware*

Owner: Blue Reality Corporation

Tenant: Aetna Health Plans—La Salle Partners, agent

Architect: Gensler and Associates—Joseph Brancato, project director; Robert Cataldo, design director; Rolland Grote, project manager; Peter Wang, designer; Sam Lee, specifications; Ric Johnsen, documents; Rocco Gianetti, architect; Joe McMahon, interior

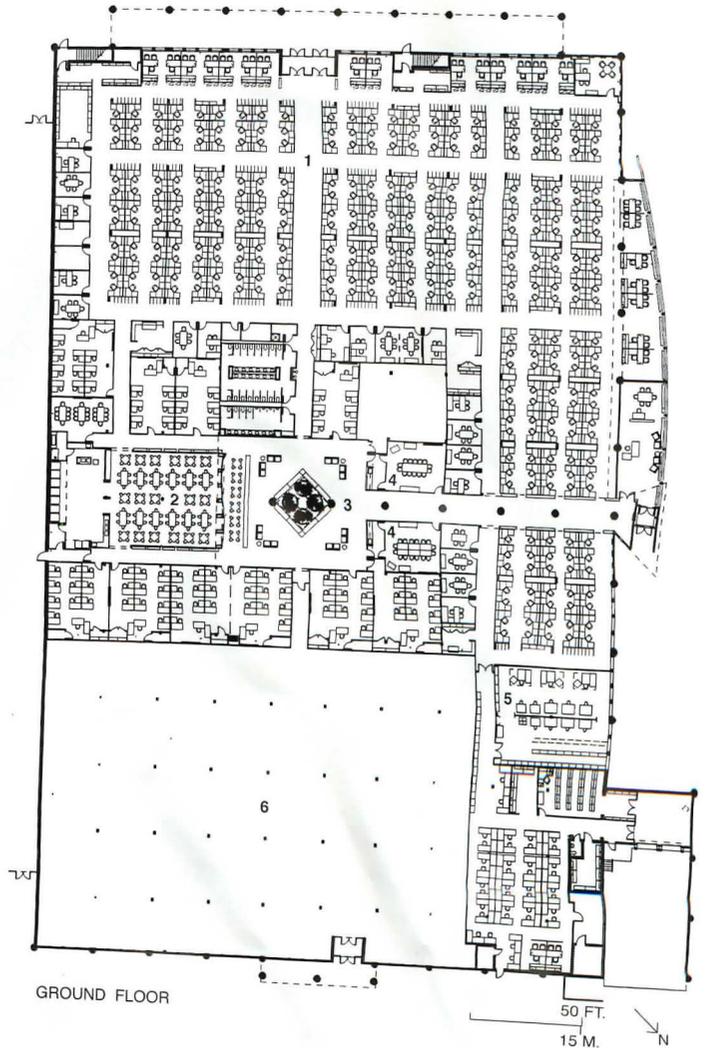
design; Brian Bell, interior-project architect; Maria Gray, interiors architect; Cathryn Abel, furnishings, fittings, and equipment

Engineers: McHugh Engineering (MEP); Scott Engineering, Inc. (civil/landscape); Long, Tann, and Donofrio, Inc. (structural)

General Contractor: The Healy Group/Healy Management Services



While essentially a back-office space, Aetna's health-claims unit was anxious to present an established, forward-looking corporate image to passersby and to those coming in to tend to claims in person. Hence, the reception and lobby spaces (this page), as well as lunchrooms and conference areas next to the new atrium, have a high design and finish standard.



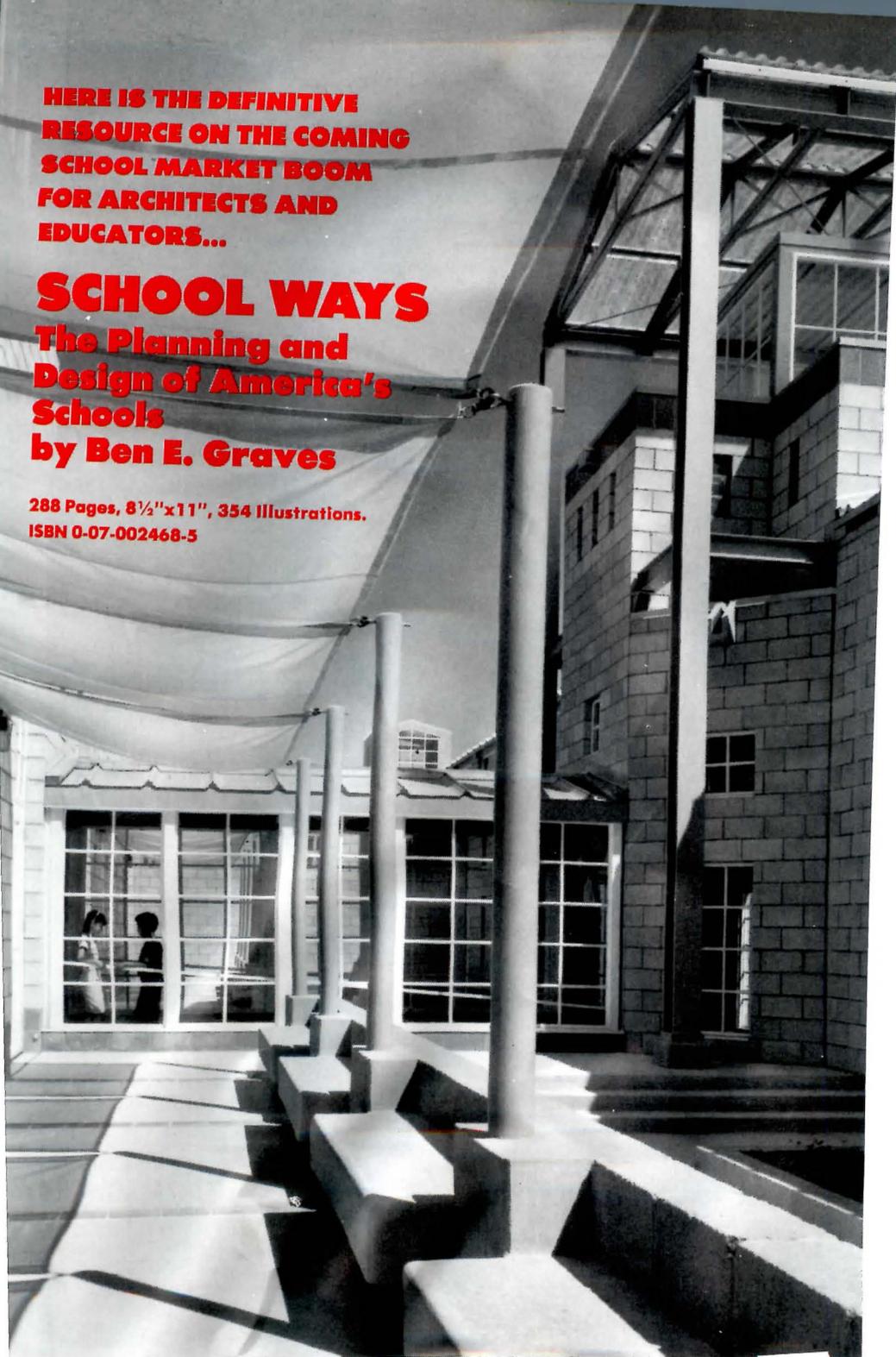
1. Claims processing
2. Lunch room
3. Indoor atrium
4. Conference
5. Computers
6. Subtenant
7. Existing mall

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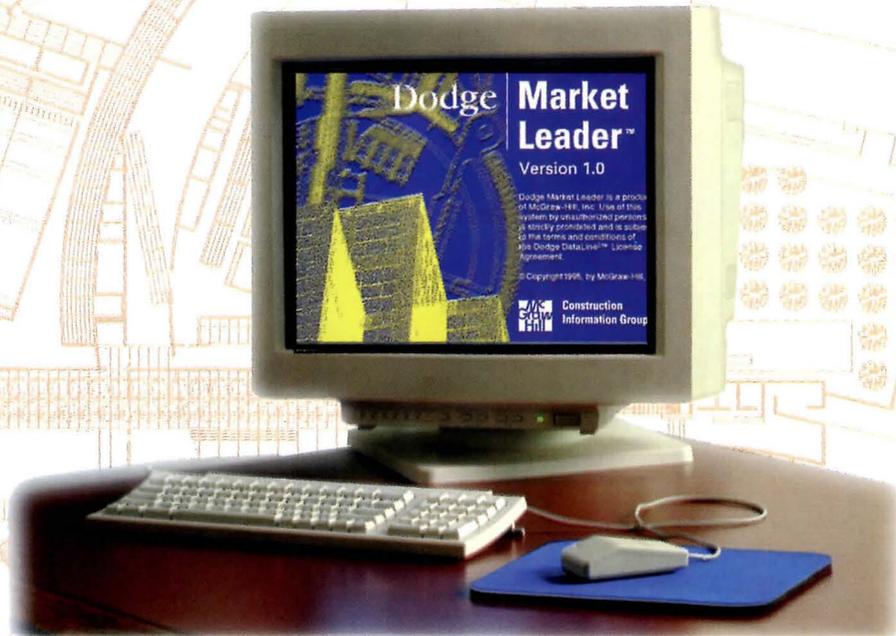
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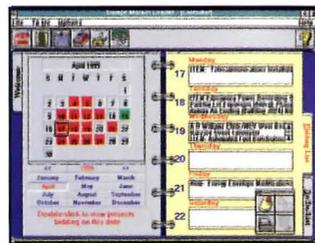


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Fundamentals *Continued from page 47*

hardware must be approved for a specific opening, says Georgia-Pacific fire-door component sales manager Ron Borgschulte. For example, 10-foot-high door pairs have never passed a 90-minute fire test. Neither have wood double doors that open in opposite directions.

•Designers and specifiers are sure to appreciate the esthetically pleasing new products on the market, but they need to pay close attention that these products will meet the evolving requirements for life safety under positive-pressure testing. ■

For Further Information

The National Fire Protection Research Foundation has just issued two reports (documenting furnace tests and room burn tests, respectively) revealing the performance of a variety of fire doors under positive pressure. Available to the industry for \$50 each. Contact NFPRF at Batterymarch Park, Quincy, MA 02269; 617/770-3000.

An Underwriters Laboratories report, *Negative or Positive Pressure Fire-Door Testing*, is available from the Steel Door Institute, 30200 Detroit Road, Cleveland, OH 44145; 216/899-0010.

Design News *continued from page 21*

to solve a biological problem.” He is concerned about the use of inexpensive, rot-prone woods like aspen and pine rather than wood of proven longevity, like cedar. Nor are preservatives added to OSB in manufacture, he says.

Fred Kamke, a forest-products professor at Virginia Tech and at the state university’s Department of Wood Science, also thinks the redesign is a big improvement, but says, “There is still a basic design flaw in the product. Over time the sealant will crack. You just can’t assume it won’t get wet, and covering it could just make it worse by keeping water in. Louisiana-Pacific does not need to do new research, it just needs to make better use of existing knowledge.” He agrees that including a preservative could be one solution, although it is sure to increase the cost of the product.

OSB is widely used for roof and wall sheathing. Might it suffer the same maladies as siding? There’s little cause for concern, according to Kamke, an expert in OSB products. The panels have a long and positive track record, he says, and billions of square feet have performed well in place. As long as

roof panels are installed correctly and kept dry, they’re a good choice. “Architects and specifiers should have confidence in OSB panels. I can’t stress that enough,” Kamke says.

Dost is more skeptical. He points to problems Louisiana-Pacific, which has virtually no competitors for OSB panels, has had in Colorado, where the state alleges that the company skimped on quality to speed up production. If true, “then OSB sheathing could be compromised, with the principal danger from short-term loading from wind and earthquakes,” Dost says.

The APA/Engineered Wood Association, which had certified the structural qualities of the OSB, is studying the siding issue and agrees that moisture is a problem. It says that OSB siding and sheathing continues to meet its current structural standards. A few years ago, OSB was thought to be the weak link that led to roof failures in Florida during Hurricane Andrew. The material was investigated by industry professionals (including the National Roofing Contractors Association), code officials, and university scientists and was exonerated. *Elena Marcheso Moreno*

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Observations *continued from page 31*

hearings revolve around whether one person's remodeling will cast a shadow on the neighbor's hot tub. But there's a reason for the mostly high quality of what's proposed and the taken-for-granted trust in architects to get it right. Berlin has a long planning tradition, and one that has worked. (Though Berliners are also fond of saying that post-war "reconstruction"—on both sides of the wall—completed the task allied bombers began.) It's not just the Neoclassic setpieces of Friedrich Schinkel or the city's vast lakes and parks (a legacy of the Prussian monarchy), it is 20th-century Modernist planning of the type largely discredited in the U. S. You can see it in Bruno Taut's Onkel Tom's Hutte, an unapologetically Modernist composition, much sought after for its gardens, ample greenery, and small but functional apartments. Or in Hansaviertel, a similar housing estate built in the 1950s by a roster of international talent. That project led in turn to IBA, the 1980s "exhibition" that filled some 300 sites with housing designed by dozens of international luminaries.

When the Wall first came down, IBA seemed an instant anachronism—showpiece projects designed to boost neighborhoods once isolat-

ed by the Wall's capricious route. Yet most architects I talked to said that IBA has proved critical to devising solutions that are needed now—even though the problems are vastly larger and different than those IBA's creators sought to solve. Indeed, having successfully done an IBA project, said one architect, made obtaining commissions in united Berlin much easier.

Where are the tenants?

The euphoria accompanying unification led to a speculative gold rush. The question Berliners now ask is, what if we build it and they don't come? Many projects near completion or under construction lack tenants (including those on Friedrichstrasse). One of the huge redevelopment areas, Alexanderplatz, once thought the linchpin for uniting East and West, still sits on the drawing board. (The proposed plan, by Kollhoff, looks remarkably like New York's Battery Park City redevelopment.) Once developers flocked to Berlin because they saw it as the gateway to the Eastern bloc. But Berlin doesn't seem to be playing that role. Now it's hoped that space will fill when the Bonn government completes its long-delayed move.

Nevertheless, redevelopment surrounding the Potsdamer Platz (another once-vital Berlin neighborhood), easily Berlin's largest project, proceeds apace. The unified government made agreements early with Sony, Daimler-Benz, and Asea Brown Boveri for new construction on some two dozen largely empty parcels, each about a city block in size. Renzo Piano's master plan guides this undertaking. It's now a gigantic excavation, festooned with purring cranes.

Partisans of a more adventurous approach to city building fear that unified Berlin will ultimately prove bland and parochial, missing a singular opportunity to devise a genuinely new urban vision, one that's neither point-tower Modernism nor knee-jerk historicism. Great tragedies have provoked profound urban rethinking, but execution often falters. Consider London or Chicago after their great fires, or Amsterdam after World War II. Yes, Berliners must struggle with the contradictions of German identity as well as the massive problems of rebuilding. But the city has also set itself the goal of living up to its great tradition of planning and architecture. It is now arguably the most fascinating major city in the world. *James S. Russell*

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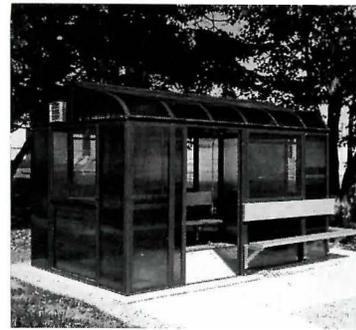
New Products



316. Outward bound

A manufacturer of site furnishings suggests one solution to some of the employee tensions generated by proliferating "no smoking" rules: a corporate courtyard. Envisioned as a pleasant outdoor area—with smoking permitted—located away from the building's entrance, and as a place for associates to meet and eat, these landscaped areas can become an alternative workplace. Landscape Forms has prepared a kit containing guidelines and planning tips for facilities managers, architects, and others interested in creating a corporate courtyard, covering codes and ADA regulations, site location, water- and outdoor-art features, pavings, and furniture selection and placement.

New styles in site amenities include an ash urn designed to keep rain and wind from dispersing cigarette butts (top right) and the Catena table (left), made of powder-coated steel with a wind-resistant cast-iron base. Intended to survive constant exterior use, the table comes in 30-, 36-, and 42-in. diameters, and offers a choice of top styles and materials. SLR/Architects used Carousol table/seating units to furnish an outdoor break area (bottom). 800/521-2546. Landscape Forms, Inc., Kalamazoo, Mich.



317. Sheltering the smoker

Duo-Gard Industries addresses the homeless-smoker problem from another angle: it makes prefabricated enclosures specifically for smoking breaks. Described as a cost-effective solution that suits smokers and non-smokers alike (especially when winter sets in), the Air-Flō structure is made with an extruded-aluminum frame and FR polycarbonate sheet. A typical 10-ft-sq model (pictured) can accommodate 8 to 15 smokers; 70 standard sizes are offered. Options include exhaust fans and air conditioning. A booklet, *Smoking Out Solutions for Today's Workplace*, discusses the legal aspects of providing a smoke-free working environment. 800/872-4404. Duo-Gard Industries, Inc., Westland, Mich. ■

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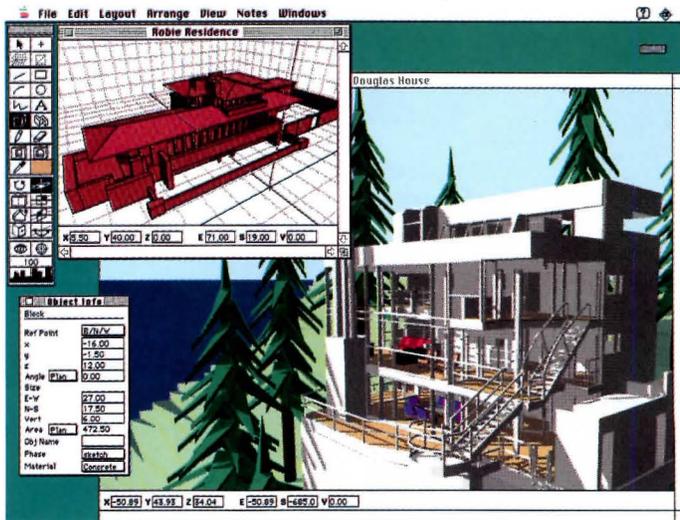
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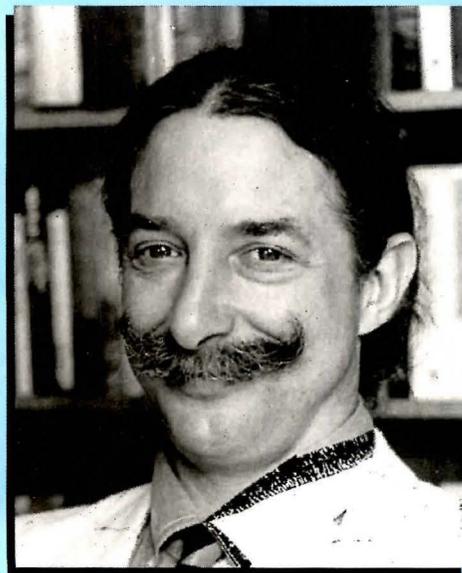
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Manufacturers' Sources

For your convenience in locating building materials and other products shown in this month's feature articles, RECORD has asked the architects to identify the products specified.

Pages 64-69

Deer Valley Rock Art Center
William P. Bruder, Architect
Tile: Endicott (Iron Spot). Low-voltage cable-hung lights: Byrdie System. Plastic-laminate counters: Nevamar.

Pages 70-71

Rheinbe Science Park
Kiessler and Partner, Architect
Curtain wall and glazing: Helmut Fischer GmbH.

Pages 72-73

RWE Tower
Ingenhoven, Overdick, und Partner, Architect
Curtain wall: Josef Gartner & Co.

Pages 74-77

Design Offices, Josef Gartner & Co.
Kurt Ackermann, Architect
Curtain wall: Josef Gartner & Co.
Glazing: Flachglas AG.

Pages 82-83

Wilkahn Production Halls
Herzog + Partner, Architect

Light-diffusing, insulating glazing: Schott Corp. (OkaLux).

Pages 86-89

St. James Episcopal Church
Errol Barron/Michael Toups, Architects
Shingle roofing: GAF (Slate Line). Wood-framed true-divided-light windows: Marvin. Siding: Clearheart redwood. Pews, altars, railings, pulpit, and ambo: Custom by architects, fabricated by Kivets Church Furniture. Re-redos: Custom by architects, fabricated by Wm. Blake Cabinets. Chandeliers: Custom by architects, fabricated by Wm. Norris Designs in Iron. Scones: Rejuvenation Lamp & Fixture Co. Recessed and track lighting: Lightolier, Inc. Carpeting: Patcraft Mills.

Pages 90-99

Stadthaus, Ulm, Germany
Richard Meier & Partners, Architect
Exterior granite: Rosa Dante. Curtain wall: Josef Gartner & Co. Staircase: Stahl & Metallbau, Bacher GmbH. Railings: Georg Flammer GmbH. Restaurant furnishings: Behr Möbel GmbH.

Pages 100-101

One Atlantic Street
Culpen & Woods Architects
Cherry woodwork: Wright Architec-

tural Millwork. Paints: Benjamin Moore & Co. Locksets: Schlage Lock Co. Closers: LCN. Marble flooring: Verona Marble & Granite, Inc. Recessed downlights: Edison Price Lighting. Fluorescent parabolic fixtures: Columbia Lighting. Elevator, renovation: Otis Elevator. Office carpeting: Shaw Industries. Ceilings: Armstrong World Industries.

Pages 102-105

MK Ferguson Plaza
van Dijk, Pace, Westlake & Partners, Architects
Skylights: Naturalite/EPI. Tinted glazing: PPG Industries, Glass Group (Solex). Spandrel glazing: Sterling Plate Glass. Entrances: Kawneer Co., Inc. Mahogany and white-maple doors: Weyerhaeuser. Reception casework: Custom by architects, fabricated by Rowe and Giles. Paints: Sherwin-Williams; Benjamin Moore & Co. Multicolor finishes: Zolatone. Granite flooring: Cold Spring Granite. Window treatments: Springs Window Fashions (Bali). Restoration of original brass and Munz-metal lighting: N-L Corp.

Corrections

•The credits for Hurd Sports Center and Huffington Library at The Madeira School [RECORD July 1995, pages 98 to 103] should have included Jonathan S. Rodvinn and Clifford Resnick, project team; Lisa Adams, interiors; and Progressive Woodworks (caseworks consultant). The photographer of the Huffington Library photos (pages 98, 100-101, and top, page 99) was Maxwell MacKenzie.

•The photographer of the Walter J. Bienenke Student Activities Village at Hamilton College [RECORD August 1995, pages 80 and 81] was Richard Mandelkorn.

•It was not Lane Marshall, Dean of the College of Architecture and Design at Kansas State University who resigned in July saying that his continuation as department head would "constitute collaboration in the degradation of the architectural education programs at KSU," [ARCHITECTURAL RECORD, August 1995, page 13], but rather the head of the College's Department of Architecture, Eugene Kremer. Dean Lane Marshall had already said he would step down as dean in 1996, but in mid-August announced he would not return for the 1995-6 academic year. RECORD regrets the error. ■



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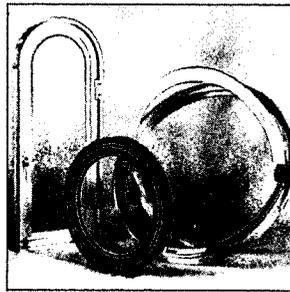
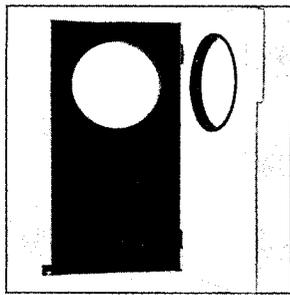
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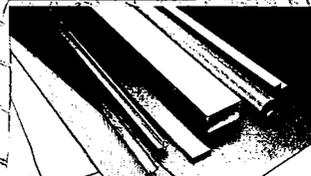
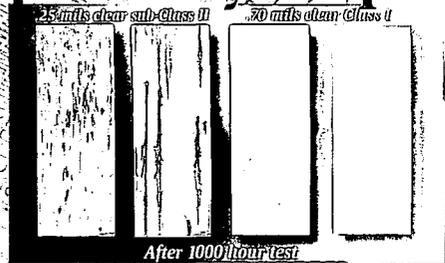
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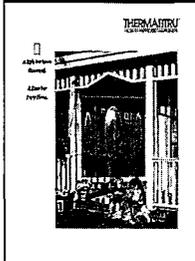


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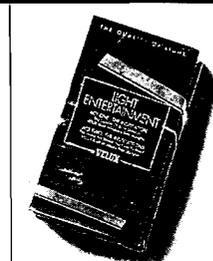
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Product Literature/Windows and Doors



400. Insulated door systems

A 40-page catalog illustrates energy-efficient residential entrances, including Fiber-Classic fiberglass doors and Premium foam-core steel systems. Both constructions come in fire-door, replacement, and new-construction models and offer custom wood-grain or color options. All decorative-light designs shown. 800/537-3827. ThermaTru, Maumee, Ohio.



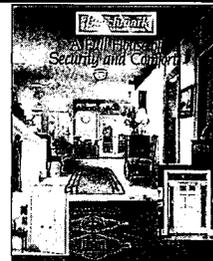
401. Light that loft

A free video demonstrates how installing roof windows in unused attics, above-garage rooms, and loft areas can add livable square footage to a home, and takes viewers step-by-step through an attic remodel. Covers correct window location and installation, and includes a Buyer's Guide to skylight selection. 800/283-2831. Velux-America, Inc., Greenwood, S.C.



402. Wood windows and doors

An informative, well-illustrated brochure walks a homeowner or architect through the five important considerations in choosing windows: esthetics, energy efficiency, options and features, durability, and long-term service. Includes a glossary of fenestration terms. Videos and CAD-format detail drawings also available. 800/847-3552. Pella Corp., Pella, Iowa.



403. Steel door systems

A 20-page color catalog covers Benchmark steel doors and frames for residential use, including entrances with sidelights and transoms; fire-rated doors to meet code; full-light patio units; and passage and closet doors. Stresses the security provided by inserting a steel door in a steel frame. 703/898-5700. General Products Co., Fredericksburg, Va.



404. Many-featured line

A 12-page catalog illustrates unusual windows, such as a box-bay garden window with bent glass and a Corian seat; vinyl-framed casements and double-hungs with natural-wood interiors; bay windows with solid-oak head, seat, and jambs; and Easy-Clean glass that cuts window washing by half. 419/666-5555. Great Lakes Window, Toledo, Ohio.

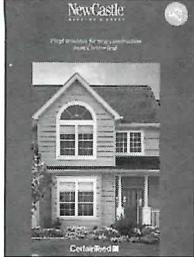
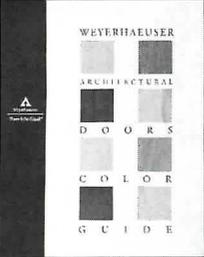


405. Building-product guide

Windows and doors of various materials for residential and light-commercial applications are included in Georgia-Pacific's 189-page 1995 catalog. Also covered: paneling, insulation, dimensional and engineered lumber, connectors, roofing, siding, and millwork. 800/BUILD-GP. Georgia-Pacific Corp., Atlanta.

For more information, circle item numbers on Reader Service Card.

Product Literature/Windows and Doors



406. Factory-finished doors

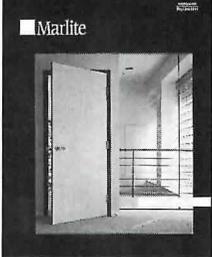
An 18-page catalog illustrates all the new Designer Colors available in this maker's architectural door line. Using water-based stains on hardwood door-face veneers from North American managed forests, factory finishing insures uniform color consistency, with 12 shades for each veneer type. 800/869-3667. Weyerhaeuser Door Division, Marshfield, Wis.

407. Welded vinyl windows

New Castle windows are made with a honeycomb-core, fusion-welded frame and sash; integral glazing; and a beveled exterior edge. A 40-page catalog illustrates some of the standard and unique window shapes offered, and discusses product features, accessories, and performance data. 800/233-8990. CertainTeed Corp., Valley Forge, Pa.



DOORS AND WINDOWS FROM PEACHTREE



408. Residential products

A 1995 catalog highlights wood and metal-framed windows and insulated doors for homes. New products include a one-finger-tilt wood double-hung with a removable sash liner/interior muntin, and a retrofit hardware kit that makes casement windows easier for limited-mobility users to operate. 404/497-2000. Peachtree Doors, Inc., Norcross, Ga.

409. Plastic-laminate doors

An eight-page architectural catalog covers high-pressure laminate doors for high-traffic areas such as offices, hospitals, schools, and apartments. Includes hollow- and flakeboard-core doors, fire-rated and lead-core doors, and adjustable aluminum and steel frames. Stiles and rails are solid hardwood. 216/343-6621. Marlite, Dover, Ohio.



410. European-style casements

Custom wood windows, foldaway window walls, and authentic French doors are illustrated in architectural settings. Tilt/turn hardware and multiple-point locking systems may be specified for many openings; casement units can open in or out. Copper is offered as a custom cladding material. 800/233-0101. Zeluck, Inc., Brooklyn, N.Y.

411. Vinyl-window guides

Luminess residential vinyl windows and patio doors are described in both a *Size and Style Guide*, with specs and test data, and in a homeowner's brochure that illustrates window and door styles installed in room settings. 800/GET PINK. Owens-Corning Fiberglas Corp., Toledo, Ohio.

Continued on page 118

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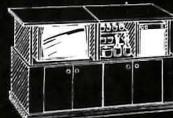


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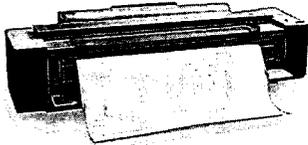
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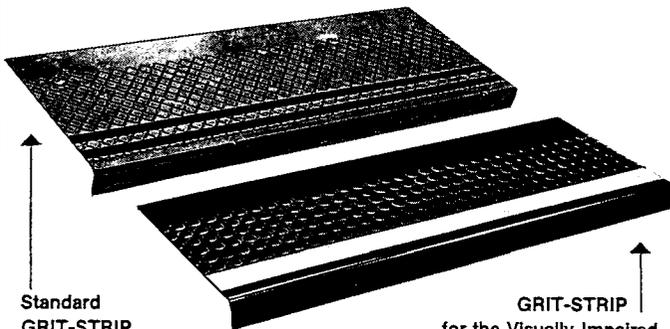
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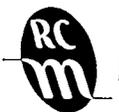
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Product Literature/Windows and Doors



412. Southwestern entrance

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413. Architectural windows

Residential wood windows, French doors, and sliders offer a wide range of custom-design options, from true-divided-light glazing to special-shape direct-set windows. An eight-page booklet highlights the product line, and describes a 900-page *Detail Manual* available free to architects. 800/477-6808, x276. Weather Shield Windows & Doors, Medford, Wis. *



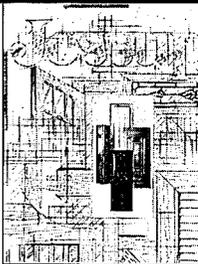
414. Extruded-vinyl windows

An eight-page Rehau catalog illustrates doors and windows for both residential and light-commercial use. Designs include steel-reinforced swinging doors, vinyl-framed curtain-wall systems, and European-style tilt-and-turn window configurations. 800/247-9445. Rehau, Leesburg, Va.



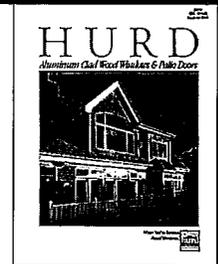
415. Red Cedar windows

Data sheet explains how windows built with frames of solid cedar withstand the gale-force winds and high humidity of the Oregon coast. Built to order, windows and doors can accommodate the expansion and contraction found in log homes; custom jamb widths can be specified in any size window. Cedar Windows by Bergeron, Hammond, Ore.



416. Doors

A 30-page catalog illustrates residential doors including 8-ft-high entrances with decorative beveled glass lights; raised-panel interior doors of pine, oak, and poplar; cafe-type swinging doors; and solid-panel and louvered bi-folds. Primed doors are said to cost only a bit more than hollow-core doors. 616/782-2183. Jessup Door Co., Dowagiac, Mich. * Product Data on CAD disk



417. Energy-efficient glazing

Ponderosa pine-framed windows can be ordered with a clad or natural-wood exterior, and offer a range of glazing options to meet any climate and exposure requirement. A 20-page design catalog gives size, shape, and installation data; CAD software and architectural tracing file provide specification help. 800/2BE-HURD. Hurd Millwork Co., Medford, Wis. *

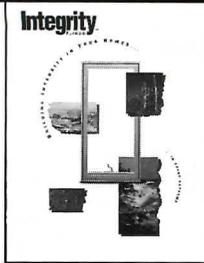
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Product Literature/Windows and Doors



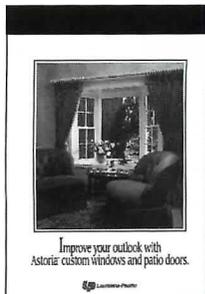
418. Mahogany fenestration

Made in Germany of solid, mortised mahogany, custom windows and doors can be specified to the most stringent performance characteristics, including bullet resistance, in almost any configuration and function desired. A portfolio shows designs by American and European architects. 800/282-9911. Tischler und Sohn (USA) Ltd., Greenwich, Conn.



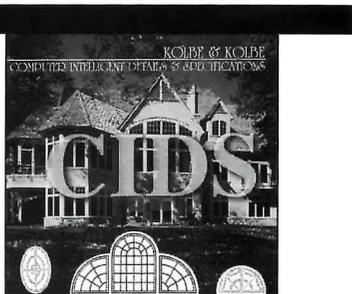
419. Composite-frame windows

A catalog explains how the Integrity window combines the warm esthetic of real wood with the low-maintenance advantages of Ultrax, a pultrusion of fiberglass and polyester resin, on surfaces exposed to weathering. Factory-applied jamb extensions and mulling make installation easier. 800/862-7587. Marvin, Warroad, Minn. *



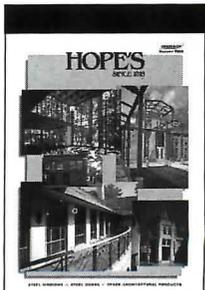
420. Replacement windows

A brochure describes how Astoria windows, made of uPVC (unplasticized) vinyl for long-term UV resistance, are constructed to the exact size of the existing opening. Illustrates casements, awnings, bay and bow windows, single-hungs and sliders, and picture and garden units. 800/428-5358. Louisiana-Pacific Corp., Portland, Ore.



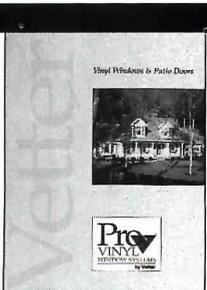
421. Specifications on computer

A new CD-ROM, Computer Intelligent & Detail Specifications, provides unit drawings of windows and doors that can be exported to CAD programs; schedule function lists product attributes and elevations, letting the architect design custom configurations. Free; needs Windows 3.1; 486 processor. 800/955-8177. Kolbe & Kolbe Millwork, Wausau, Wis. *



422. Steel windows

A color portfolio demonstrates how steel-framed windows can accomplish a variety of esthetic and functional fenestration needs. Construction details drawn at 1/4 scale; factory-applied finishes can be specified in custom-matched as well as standard colors. Fire-rated windows are available. 716/665-5124. Hope's Architectural Products, Inc., Jamestown, N.Y. * Product Data on CAD disk



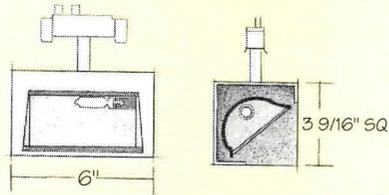
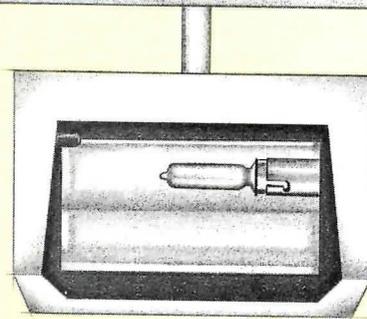
423. Maintenance free

A 22-page catalog explains how Pro-Vinyl extruded-vinyl windows incorporate traditional wood-window details, such as a sloped sill, brick-mold trim, and uniform sight lines from window to window. Units come in white and sandtone, and 18 colors of high-performance paint. 800/VETTER2. Vetter, Wausau, Wis. ■

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TOTAL DOOR® SYSTEMS by OPENINGS®

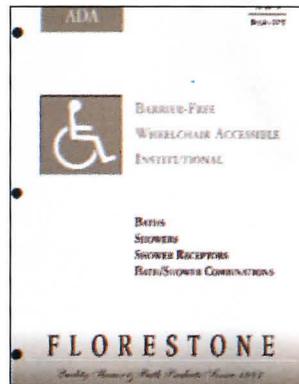


The TOTAL DOOR® SYSTEM is an architect-designed integrated door assembly. It includes prefinished door panels and all hardware. Fire rated pairs do not require coordinators, vertical rods, astragals, flush bolts or floor strikes. Will retrofit to any frame. Meets all codes and ADA. Wood and metal faces available to 3 hours. Lifetime limited warranty on locks and panics. OPENINGS, 40 West Howard, Pontiac, MI 48342, 1-800-852-6660.

OPENINGS.

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Barrier-Free Products Catalog

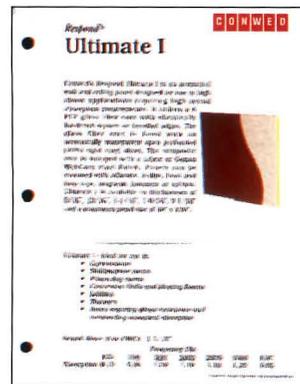


New Florestone brochure describes ADA compliant, barrier-free, wheelchair accessible and institutional showers, shower/bath combinations, and shower receptors. Drawings and listing of Building Codes and Testing Standards, as well as a section on the codes is included. Call (800) 446-8827.

Florestone

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Conwed Respond Ultimate I Panel



Conwed Respond Ultimate I is an acoustical wall and ceiling panel designed for use in high abuse applications requiring high sound absorption capabilities. It utilizes a glass fiber core faced with an acoustically transparent open perforated rigid vinyl sheet and wrapped with fabric or vinyl. Ideal for use in: gymnasiums, theatres, and multi-purpose rooms. Conwed, 1205 Worden Ave., East, Ladysmith, WI 54848, (800) 932-2383 or FAX (800) 833-4798.

Conwed

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Outdoor Smoking Area



- For today's smoke-free workplace
- A complete line of tables, benches and ash urns
- Durable materials deliver years of use

1-800-633-2394, ext 5262

Ultrum by GameTime, Inc.
P.O. Box 121
Fort Payne, AL 35967

GameTime, Inc.

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Pigments of the imagination

It took you months to put the finishing touches on your project. You chose a coating that enhanced your concept so elegantly: Benjamin Moore paints...because there's no substitute for quality to stir your imagination. For a free copy of our new Paint Specifications Guide, call: 1-800-622-0550, Ext: 355



A Stroke Of Brilliance.™

PROJECT: Silver Screen Management, New York, NY • ARCHITECT: Butler Rogers Baskett • PHOTOGRAPHER: Paul Warchol

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ACOUSTONE. BEAUTY THAT ENDURES.

ACOUSTONE™ ceilings—like Glacier™, Frost™, Sandrift™—bring lasting beauty to an even higher level of performance. Their unique cast construction withstands the abuse caused from accessing communications lines, routine maintenance and the ever-changing role of your interior spaces.

ACOUSTONE ceilings also withstand the test of time. A wide range of imaginative textures, white plus 24 integral colors, and industry-leading acoustical properties all support a design that's practically timeless.

Make sense out of a beautiful ceiling's future with ACOUSTONE. Only by USG Interiors. For more information call (800) 950-3839.

CEILINGS THAT MAKE SENSE.

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USG Interiors

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