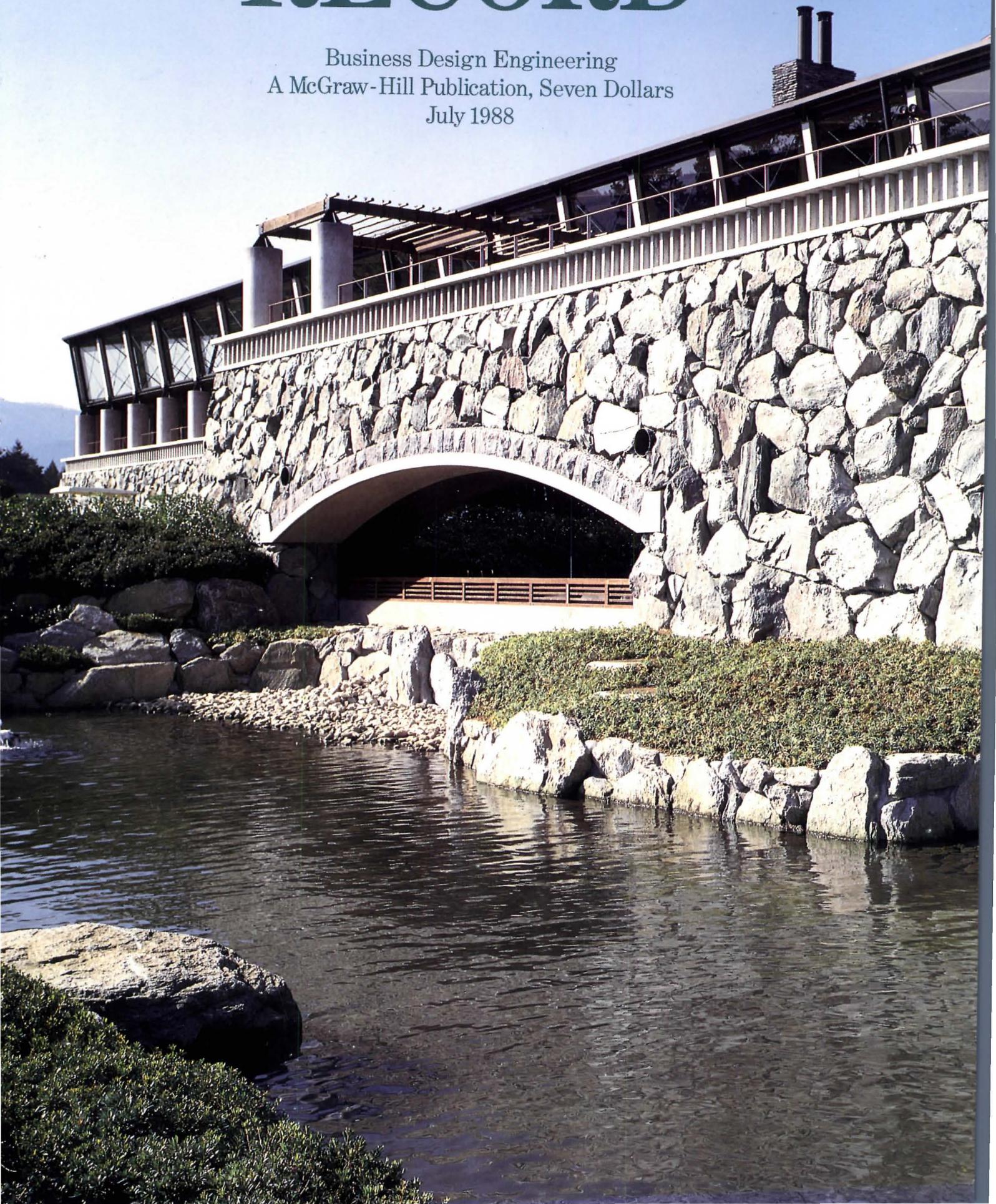


ARCHITECTURAL RECORD

Business Design Engineering
A McGraw-Hill Publication, Seven Dollars
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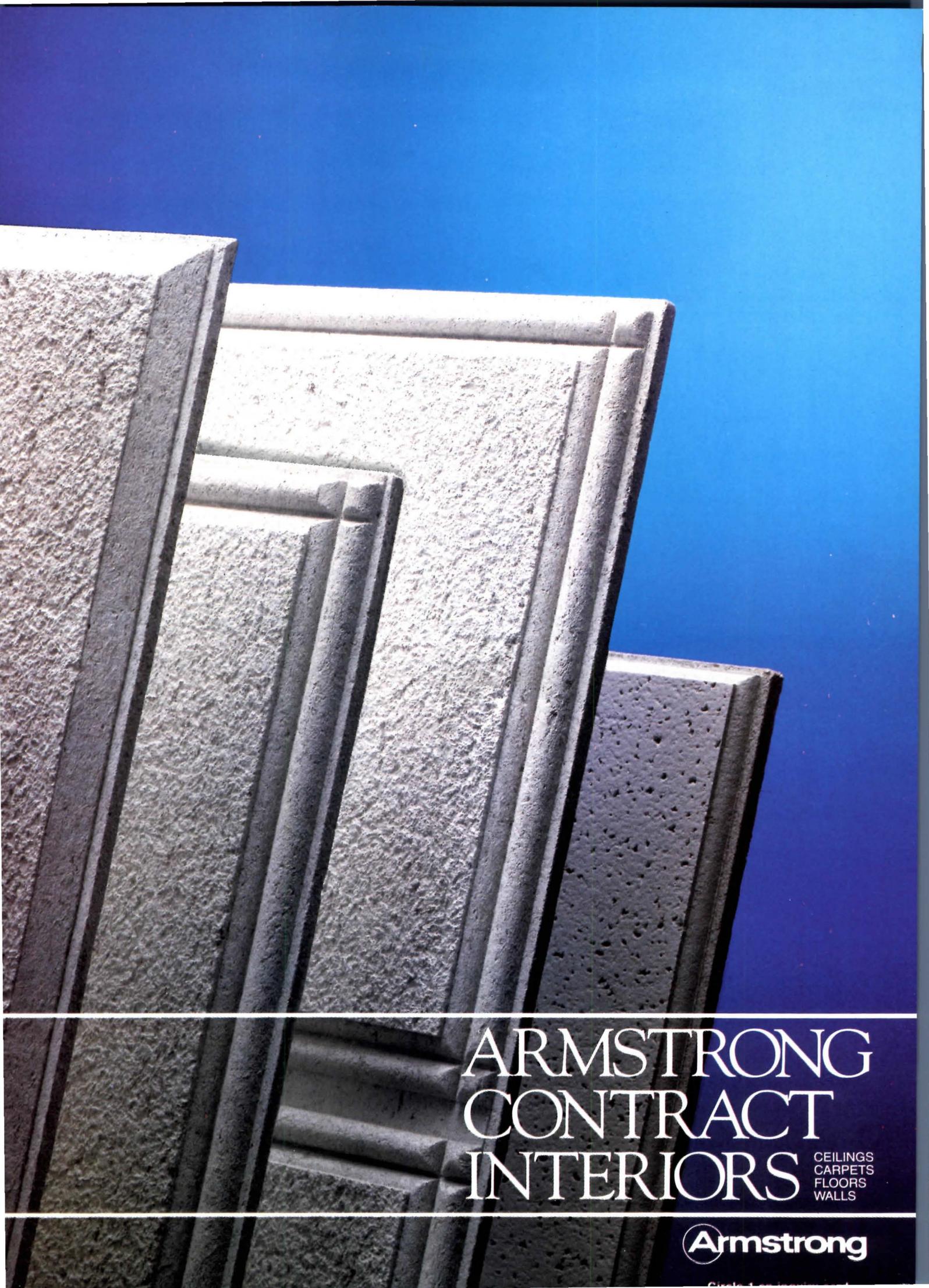


The image shows a close-up of several stacked ceiling tiles. The tiles have a textured, fibrous surface. The top tile is a light color, while the others are a darker, greyish-brown. The edges of the tiles are clearly visible, showing different profiles: a stepped edge, a chamfered edge, a beaded edge, and a bull-nosed edge. The tiles are stacked in a way that shows the depth of the edges.

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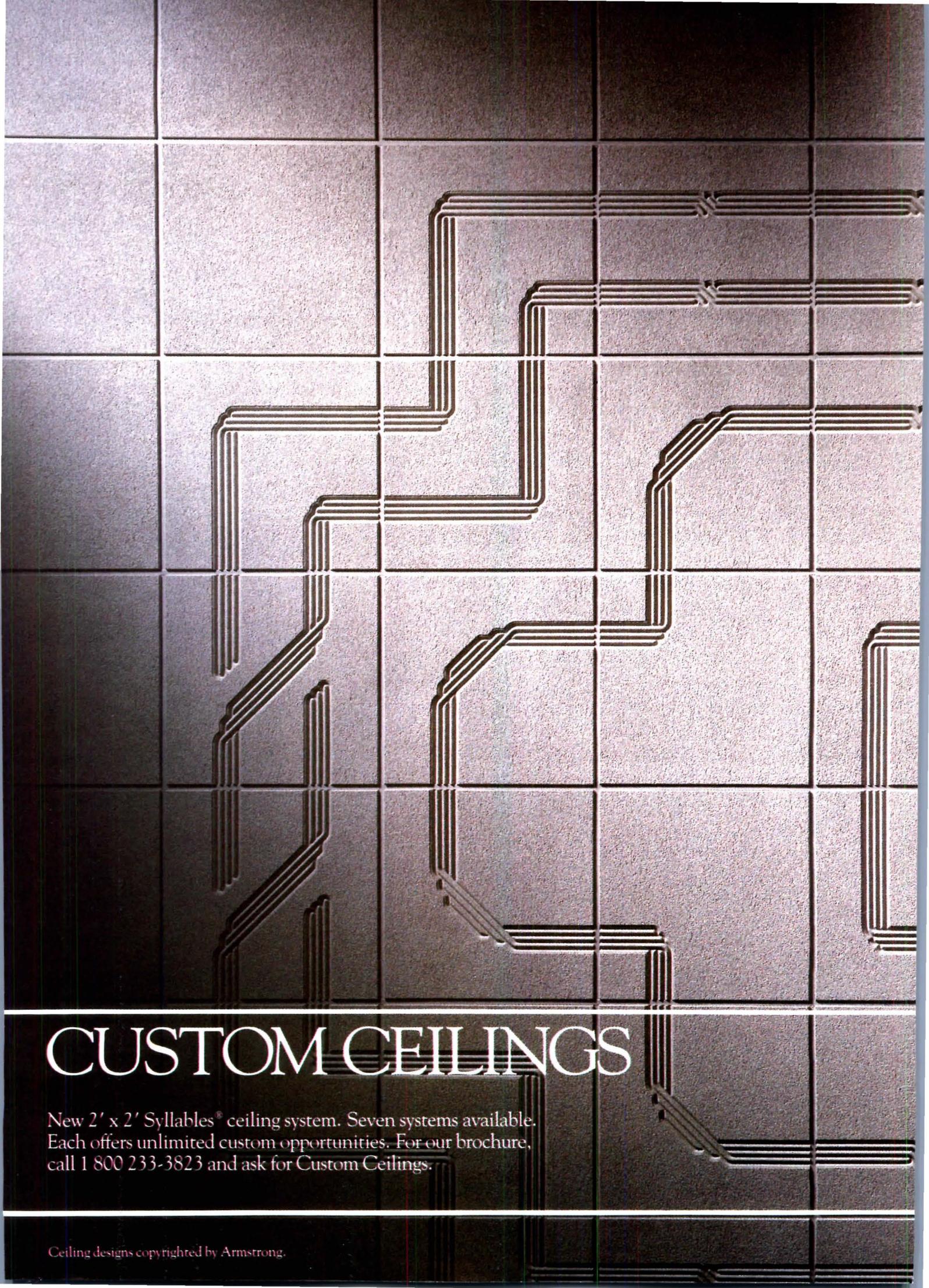


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Should architects reconsider their methods of practice?

One of the advantages of being editor of RECORD is being the first to see the best of the new architectural books sent in for review. Most get passed on promptly to the book review editor, but now and again one turns up that I don't part with so readily, a book that rewards a quick browse with the message that a thorough read is not an option, but a must. *Architectural Practice, a Critical View* by sociologist Robert Gutman, published this year by the Princeton Architectural Press, is such a book. In his introduction, the author promises that his architect readers will be led to question "their values, self-conceptions, and methods of practice." Gutman asserts that the professional experience of architecture is not what it used to be. Architects, he alleges, in disregard of the new realities, present themselves and their practices to colleagues, clients, students, and the public in outmoded or anachronistic ways.

Gutman's principal objective in writing the book was to deal with the fact that "the unreality of the espoused view of the world of practice is perpetuated by the profession itself, by the schools, and to some extent by the architectural press, and these distortions make it more difficult for architects to deal creatively and constructively with the problems which the profession faces." His extensive well-documented research, and the conclusions he draws from it, should help the profession free itself from long-held but inappropriate attitudes and beliefs.

The trends creating a new context for the architectural profession each receive a chapter. They include: (1) the expanding demand for architectural services, (2) changes in the structure of the demand, (3) the oversupply, or potential oversupply, of entrants into the profession, (4) the increased size and complexity of buildings, (5) the consolidation and professionalization of the construction industry, (6) the greater rationality and sophistication of client organizations, (7) the more intense competition between architects and other professionals, (8) the greater competition within the profession, (9) the continuing economic difficulties of practice, and (10) changing expectations of architecture held by the public.

Gutman makes it plain that the profession must substantially remake itself to handle successfully this set of contradictory opportunities and constraints, which have "transformed the system of building production, the methods through which clients choose architects, the roles assigned to architects in the building process, and the standards according to which the merits of buildings are judged and architects and their firms evaluated." He proposes that the profession meet five major challenges: "Challenge I. The need to match the demand for practitioners to the supply of architects, and to adjust the number of architects to the potential demand for their services. Challenge II. The need to develop a philosophy of practice that is consistent but that also corresponds to the expectations, requirements, and demands of the building industry. Challenge III. The need to maintain a secure hold on the market for services, in a period when the competition from other professions is increasing. Challenge IV. The need to find ways to maintain profitability and solvency when the costs of running a design firm are steadily increasing. Challenge V. The need to have a competent organization exhibiting high morale and motivated to produce good work."

The author effectively demonstrates that these challenges cannot be achieved by the profession acting alone. He concludes with a call for joint programs at a scope and scale that would include not only architects but all the other players in the game of architecture and building—clients, users, builders, manufacturers, other design professionals, government officials, and financiers. Only by this means, he argues, can the architectural profession formulate policies that will ensure its independent future. An urgent and timely book. *M. F. S.*

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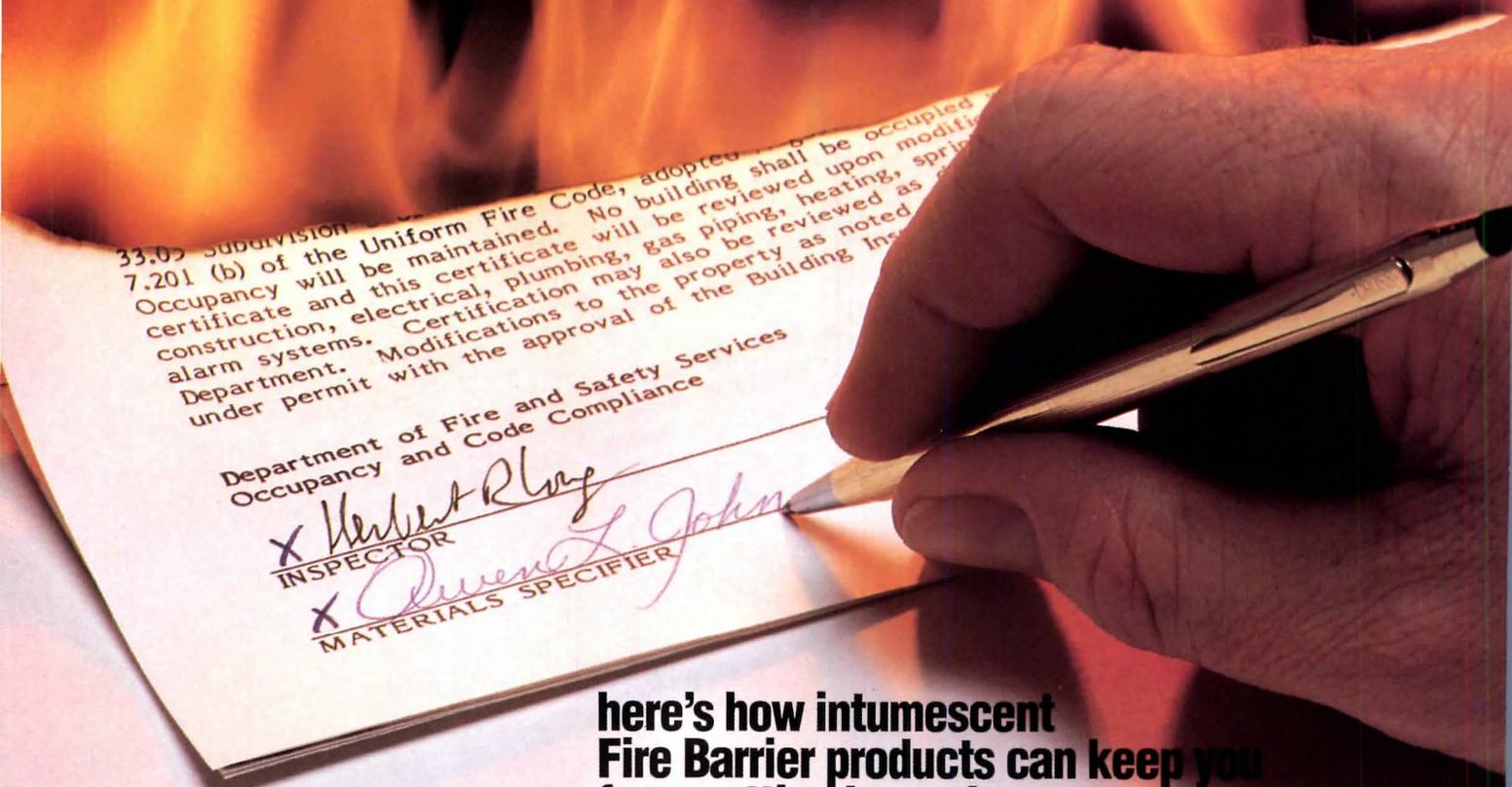
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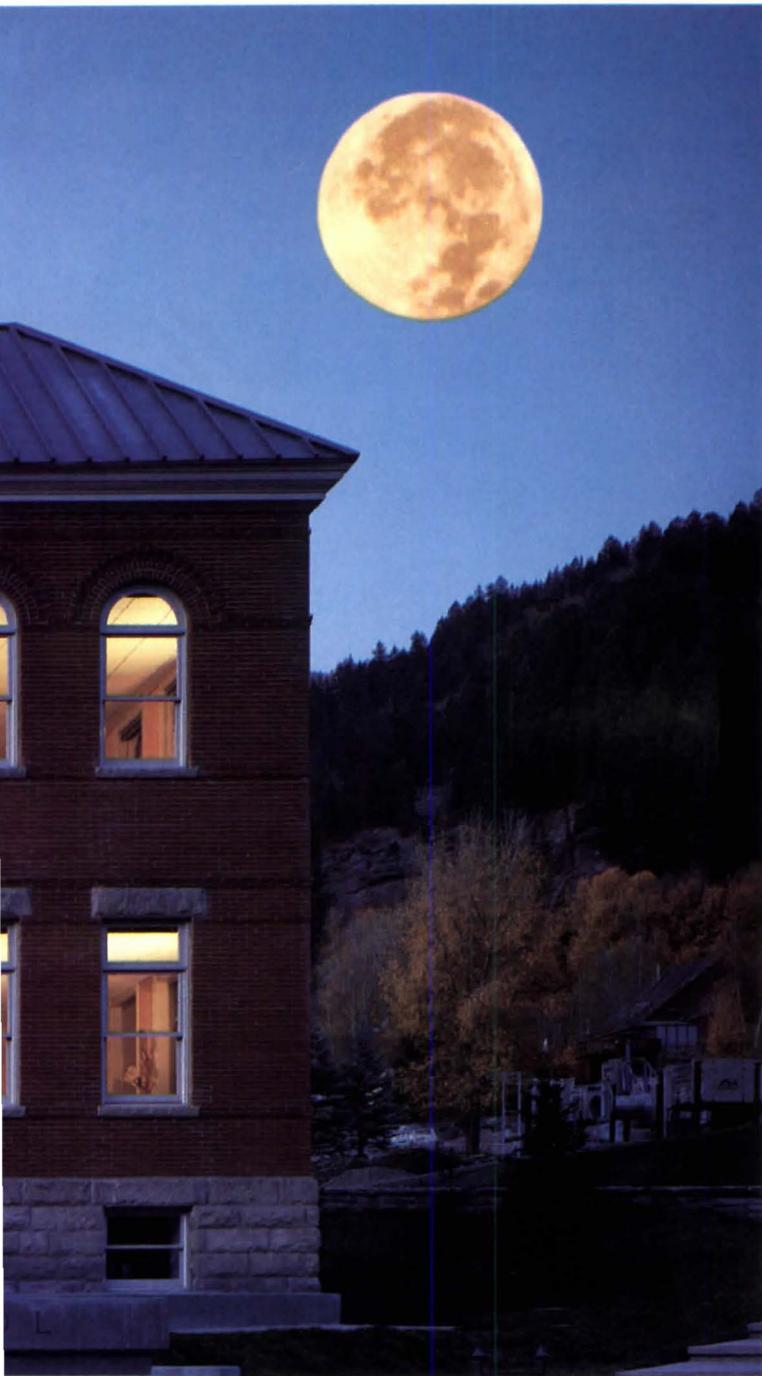
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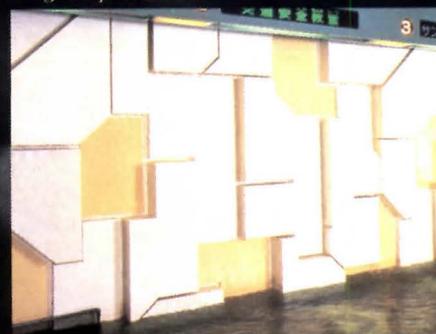
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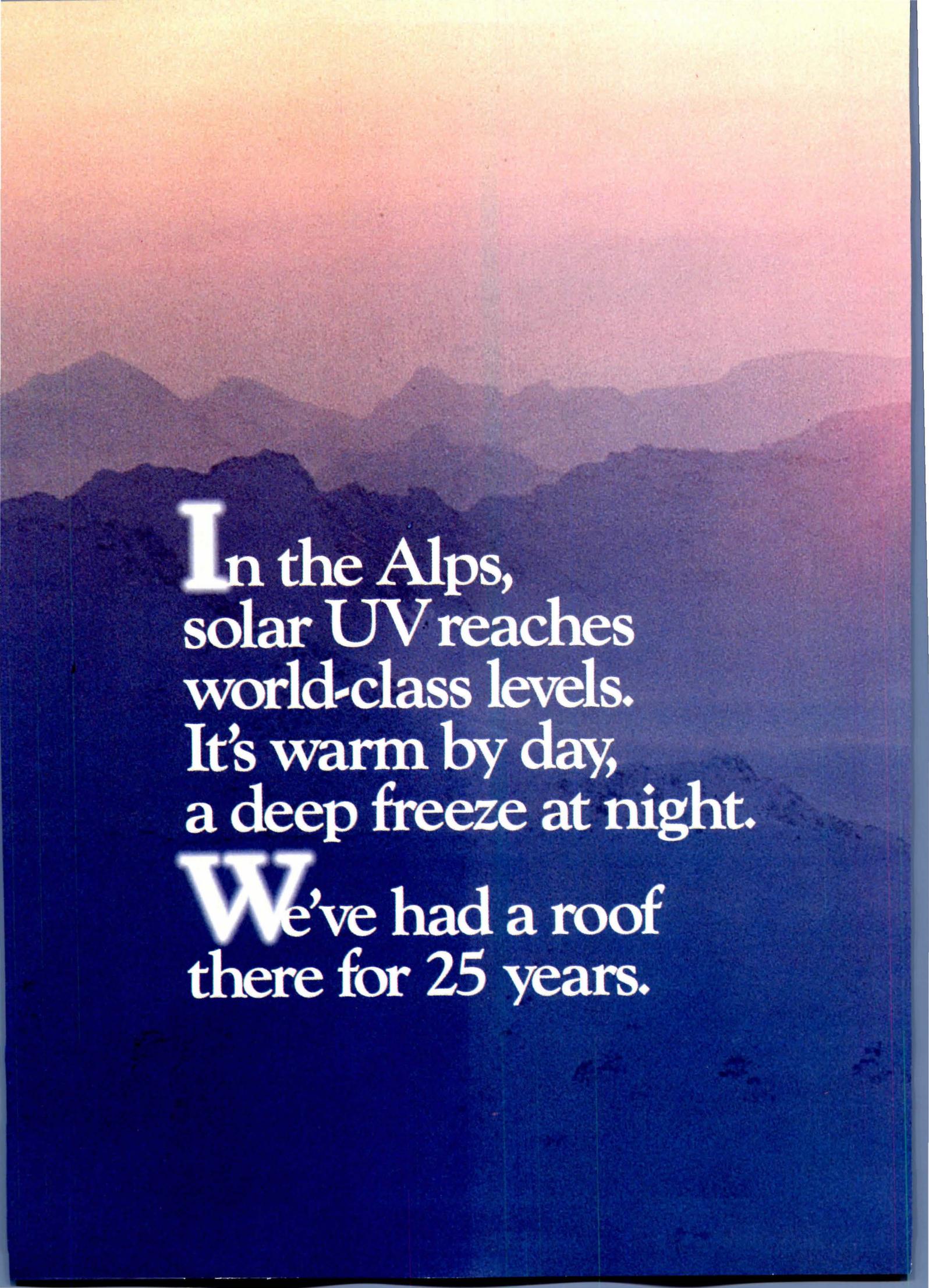
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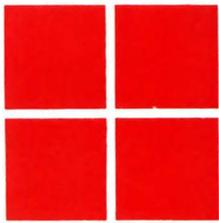
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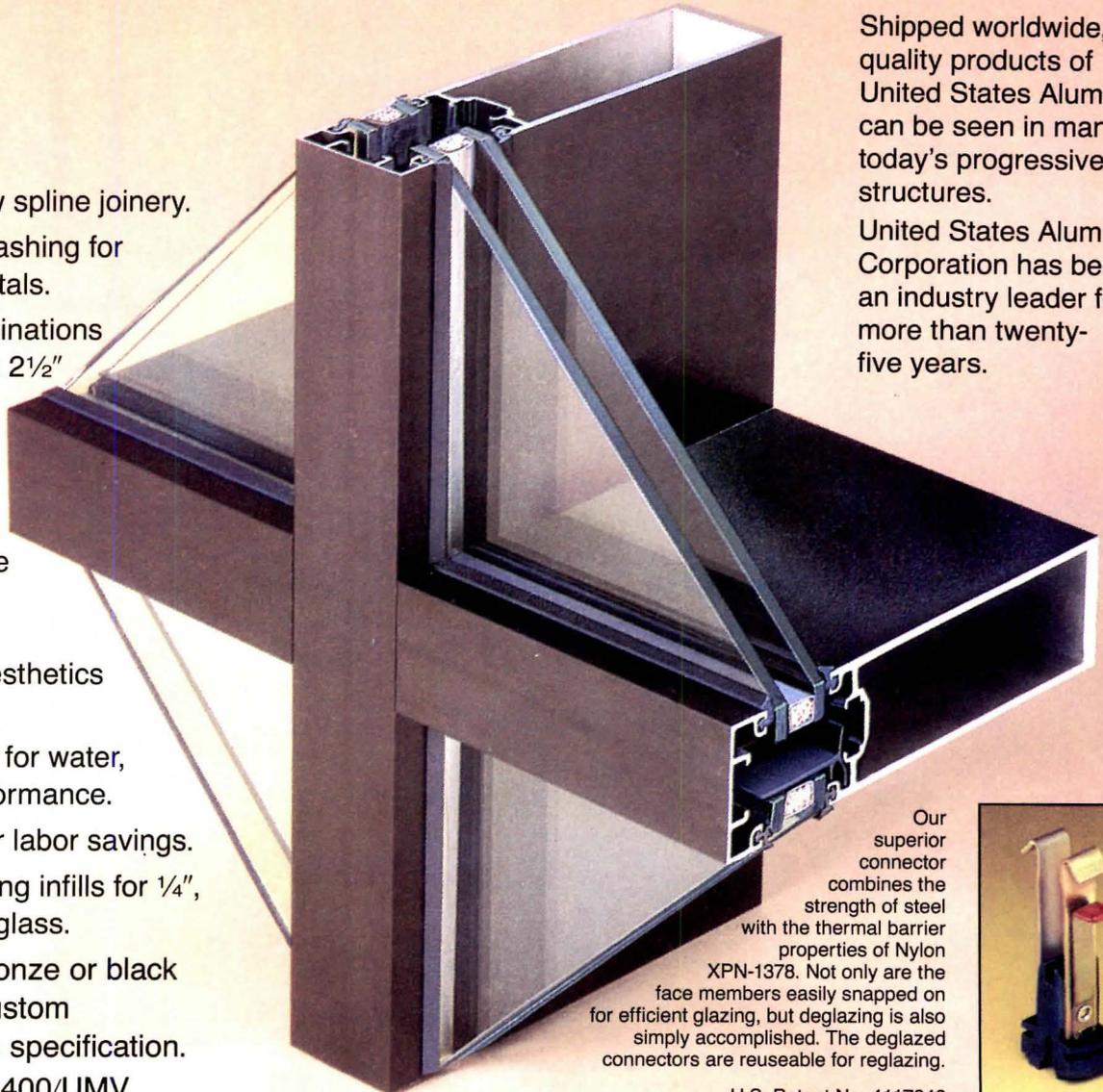
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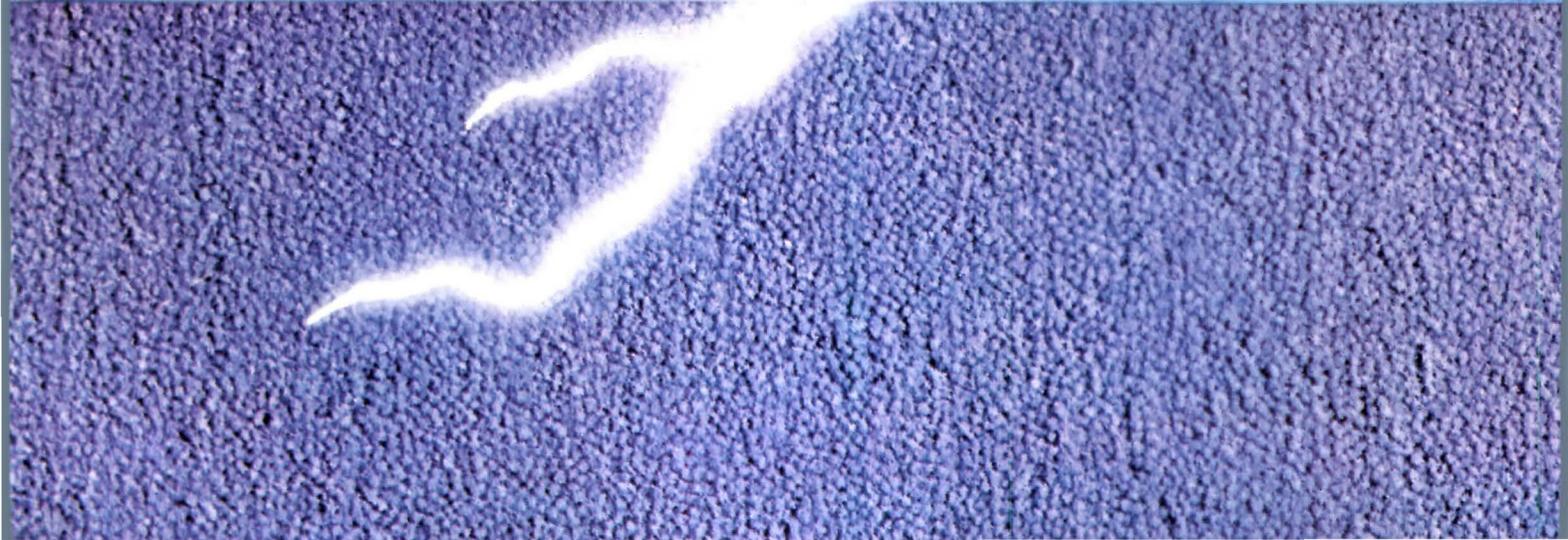
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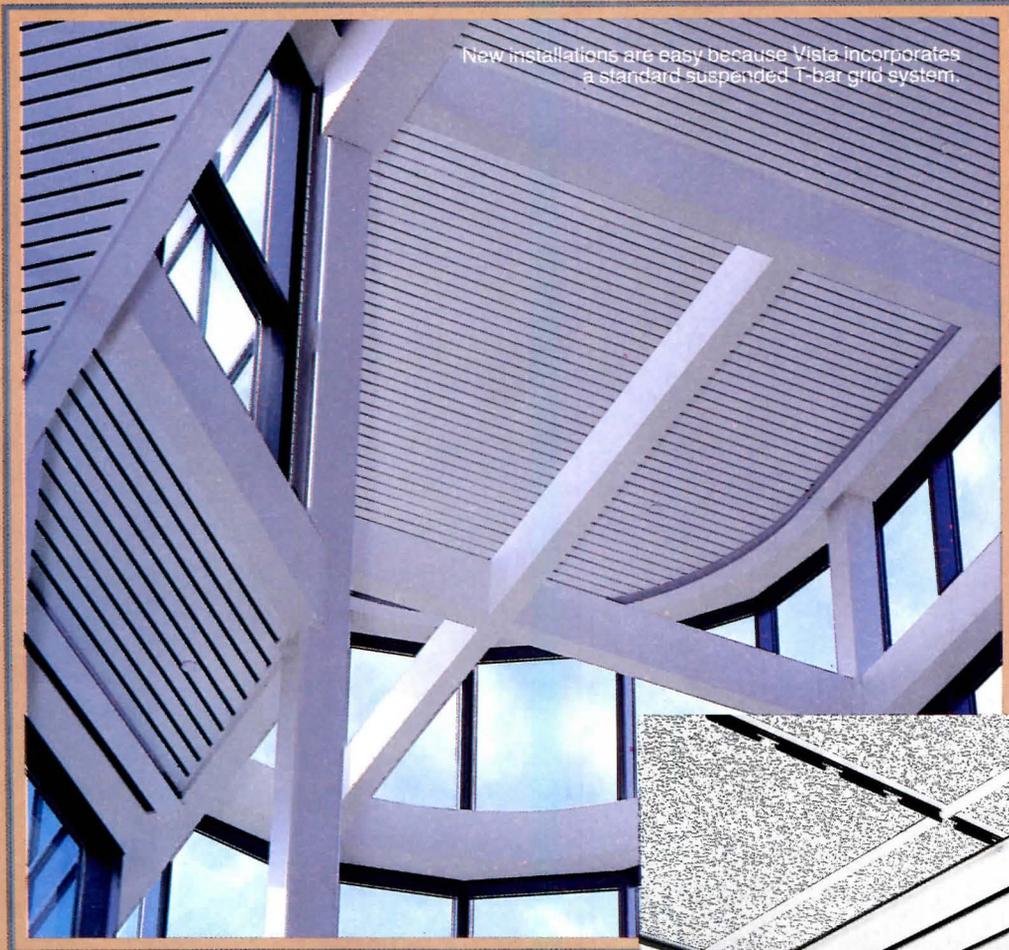
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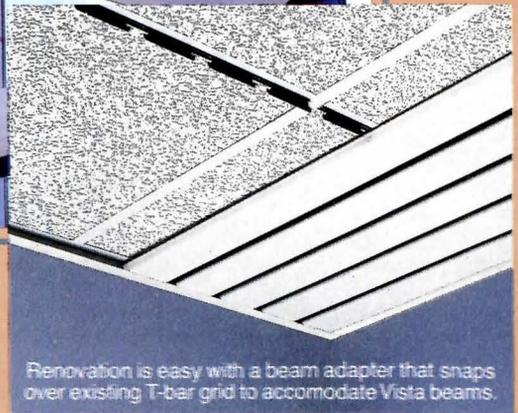
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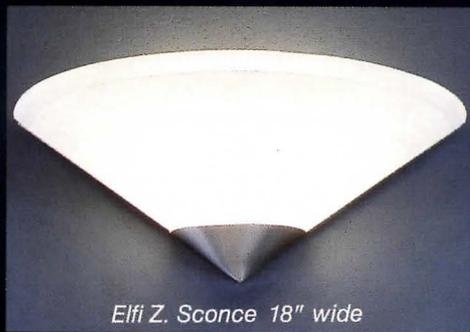
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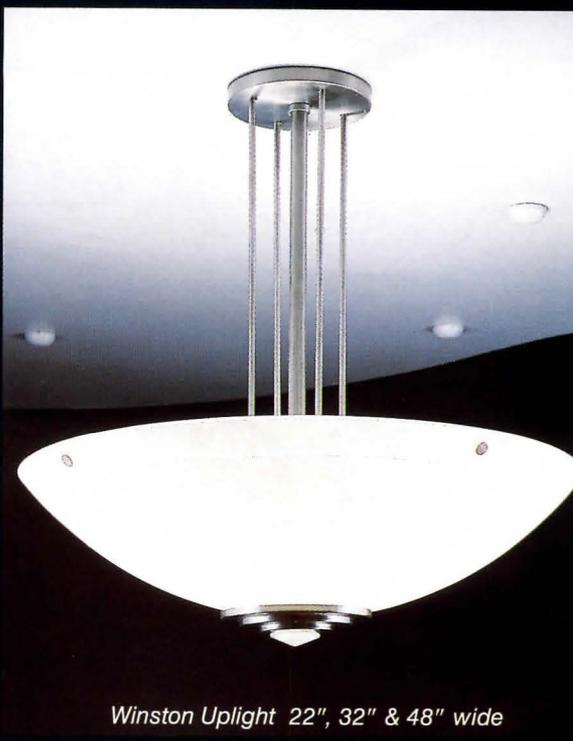
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The 1988 convention: The AIA goes back to its roots

It was the same city on May 15-18, 1988, although the two Richard Upjohns, Leopold Eidlitz, Richard Morris Hunt, and the other nine AIA founders would not have known it. More recognizable to them might be the dilemma which many architects feel they are facing: the need to have greater control over their fate. "We eye the future somewhat cautiously," said president Ted Pappas at the opening session. "We need to maintain and renew the vision and commitment" . . . of 1857.

Keynote speaker Isaac Asimov talked of future habitats underground. More cogent was opinion analyst Louis Harris, who found that what the public expects of architects in the future is more livable cities. He also polled 201 "knowledgeable leaders" to conclude that the major factors influencing the practice will be the urbanization of the suburbs, building rehab, changing demographics, the "information revolution," and competitiveness abroad.

Architects expressed their own concerns, commitments, and visions in resolutions placed before the convention delegates: to push for planned growth and affordable housing, to protect the tropical rain forests, and to commend the U. S. President and the U. S. S. R. General Secretary on their efforts for disarmament.

In all, some 15,000 people showed up for the sessions at the new Jacob K. Javits Convention Center designed by a very visible I. M. Pei (photo, next page) and Partners. And part of the focus was clearly on the city, its artworks and museums as well as its buildings—hence the theme, Art in Architecture.

But beyond that lofty theme were stimulating discussions on design, education, and social issues (text, next page) and sound advice on how architects can keep their business healthy in less-than-certain times.

Emerging markets in an unstable economy

It was a gloomy analogy: "Look at what was built in the '30s," advised architect Stuart Rose of Professional Development Resources, "federal, municipal, and telephone buildings." He recommended use of the *Federal*

has a similar courting procedure in its regional offices—usually to the "director of engineering." Its five-year budget, curtailed in 1988 to get the rate hike, is \$10 billion.

New types of construction on the rise include nursing homes. "Some 200 beds per day are needed in New York State

grow as the Baby Boomers have babies; and small liberal-arts colleges now compete for students with new facilities. No-go's? Churches: attendance is up but contributions are down.

In a seminar, *A Proactive Approach to the Inevitable Turndown*, architect Curtis Fentress said: "There are things that work but you don't want to do them—not insisting on good contracts, cutting discretionary spending, and 'safe' designs, among them." Instead, he and consultant Ellen Flynn-Heapes recommended more marketing.

How the big boys market

A panel moderated by Stuart Rose explored the very different styles of three big design firms. Margo Grant, head of the New York office of M. Arthur Gensler & Associates/Architects, said the firm has no strategic plan and only spends 1 percent of revenues. "All the staff markets—joins client organizations and visits prospects with whom we feel the individual's chemistry will work. Keep materials simple; we tried slick plastic boxes for brochures and then couldn't put them in the mail or a briefcase."

Norman Kurtz of Flack & Kurtz sees engineer presentations to clients (who now demand them along with the architect's) as a new but necessary evil. He has a small marketing department that assists in getting work but has a problem getting his professionals out for the final pitch. "There's a problem with professionalism when you have to keep telling people what a good job you do."

David Dorman of CRSS urged the aggressive approach. The firm spends 7 to 10 percent of revenues on sales, has marketing executives, and steadily expands into new markets (such as Japan) and services (construction).

As Joan Capelin put it at the marketing breakfast: "Marketing has become integrated into the mindset of the profession." *Charles K. Hoyt*



Stan Ries Photographer

The host-chapter party, Gotham Gala, was held in the new World Financial Center

Yellow Book (Monitor Publishing Co., Washington, D. C.) to identify the directors of design in the regional GSA offices who, he said, want to be courted. "Make yourself visible." Identify projects before there is an architect in the *Congressional Justification of Budget*. The U. S. Postal Service

winter garden, part of the complex designed by Cesar Pelli in Battery Park City.

alone." Mortuaries now compete and prisons have new mandates to relieve crowding. Both seem recession-proof. Chemical dependency centers are on the rise because insurance will now pay patients' bills. Despite recent contractions, hospitals keep changing; elementary schools will

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Beyond the lofty AIA convention theme of Art in Architecture, there were good discussions of design, education, and social issues.

A light show on the Manhattan skyline, programmed by Howard Brandston and seen best from the Dodge/Sweet's/RECORD party location in

Queens, marked the convention opening. The Thomas Jefferson Ball (bottom photo) provided still another opportunity for old friends to meet.

Although 15,000 attendees at the 1988 National Convention of the American Institute of Architects are a mere drop in New York City's convention bucket, one would never have known it from the hoopla surrounding their arrival. Participants frequently cited architects' waning influence in the political and cultural arena, while a plethora of exhibitions, news articles, and special events testified that, at least in the minds of New Yorkers, architecture has an ever more important role to play. Five exhibitions were timed to open at the convention, shopkeepers on Fifth Avenue "did" windows with architects (including Bergdorf-Goodman, see pages 96-97), and the street itself was hung with convention banners. Manhattan's famous skyline was first plunged into darkness, then gradually re-lit in a first-ever *son et lumière* celebrating the arrival of the conventioners.

Among architects themselves, however, the status of architecture continued to be questioned. This became evident early in the convention in a panel on architects and the homeless. While the AIA promised leadership in the fight for affordable housing, the solutions discussed barely touched on the architect's role. Brooklyn Congressman Charles Schumer (D-N.Y.) and Richard Ravitch, who has long been involved in New York housing development and government, pointed the way to improved low-income housing consistent with the budget-balancing mood of Congress: more dollars will go to the working poor; community groups will be involved in the production of subsidized housing; federal assistance will become contingent on substantial local commitment. D. Blake Chambliss, former chairman of the AIA housing committee, asked for support of a resolution calling on Congress to "decently



Stan Rics Photographer

house all Americans by the year 2000." Herbert B. Oppenheimer, former president of the New York chapter, noted that architects are not satisfied to worry about the size of a pool in a health club when the homeless are sleeping in rooms for 30 persons with limited windows.

A kind of architectural angst was on view at a panel of critics, "Star Architects and Designer Buildings," which considered whether the media's voracious appetite for "news" reduced architectural ideas to ephemeral fashions. Joan Kron, author of *High Tech*, saw it as inevitable; Joseph Giovannini of *The New York Times* and Michael Sorkin of the *Village Voice* found the process corrosive.

Suburbs, exurbs, strips: participants in the seminar "The Green Apple: Urbanization Beyond the City" didn't necessarily know what to call development in the new outer cities, but they knew they didn't like it. Charles Gwathmey, of Gwathmey Siegel & Associates, presented his firm's departure from the status quo of low-rise office buildings, while Robert A. M. Stern saw the traditional village green as a metaphor for small-scale commercial development. Under an iconic image of a shopping center in the midst of farmland, moderator Robert Geddes exhorted the assembled listeners again to take the lead in defining the newly urbanizing landscape.

James Russell

Women in Architecture: Is the future finally here?

Not altogether, but the signs are hopeful, seemed to be the consensus of five women panelists who addressed the question. "Some clients have more confidence in male architects," said Mary Jane Eastman, AIA, "but, encouragingly, as everyone gets used to us, this could change in the future." Cynthia Fuchs, CUNY professor of sociology, pointed out that women had to



I.M. Pei and Philip Johnson

be much better than men to get into professional schools in the last decade, and Laurie Maurer, FAIA, noted "we're not such a rarity anymore."

AIA statistics seem to reinforce this view. There are now 2,000 women who are full members and 2,000 women associates. Their numbers have been growing by 10 percent a year over the last decade (there were 250 women members in 1975).

When asked by a member of

the audience whether RECORD publishes women architects regularly, editor Mildred Schmertz, FAIA, said, "We publish more women architects in relation to their numbers than men. We do not have a deliberate policy to publish as many women as possible, but we do bring forward new young architects, many of whom are women."

Summing up, Laurie Maurer said "the most important thing is, it isn't doing women any good just to talk to one another. We can't just be a women's caucus."

Pei meets the press

The Art in Architecture theme of the convention was underlined when I. M. Pei told the press that he likes to work closely with artists during the design phase of a building, even if an artist's style is in conflict with Pei's building design. Ultimately, "we [the architects] have to be the arbiters if an artist wants something that can't be done. What kind of a hat [the building should be dressed in] is not the concern," Pei stressed. "How the building should be dressed is."

Should the way an architect is educated be changed?

The third annual Walter Wagner Forum, cosponsored by the AIA and RECORD, prompted some thought-provoking replies to that question. University of Kansas professor Dennis Domer raised eyebrows when he called for a requirement that all who enter professional architectural programs in school come armed with a liberal-arts degree, something "they desperately need to function in our society." Mildred Schmertz, in attendance as editor of RECORD, challenged Domer's proposal by asking "How many schools are going for this?", pointing out that five-year schools serve an important function by training architects who can't spend the time and money on two degrees.

Carolyn De Witt Koenig

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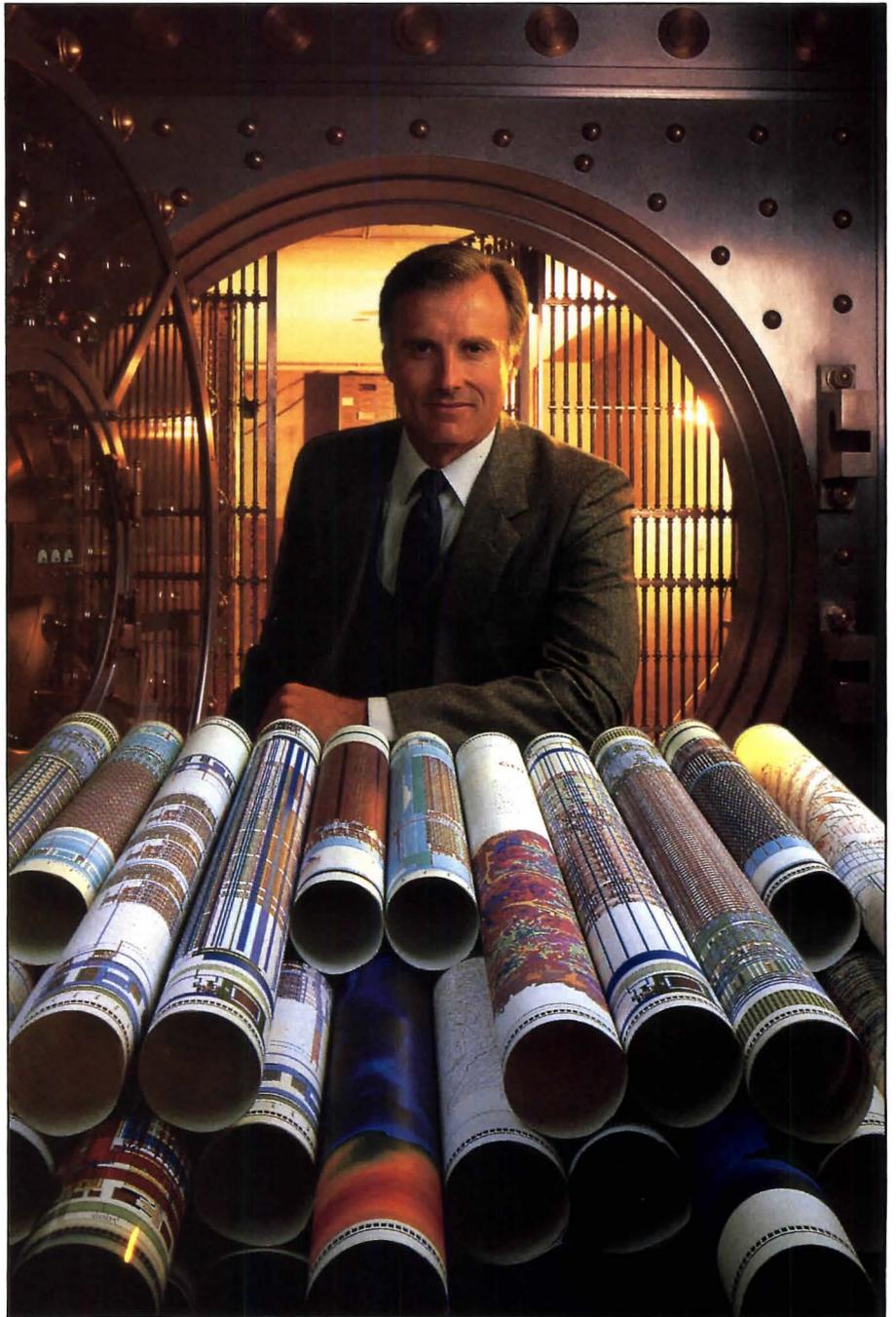
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Computers: Systems show grows and matures with the profession's involvement

Not to let down those who are perennial number-crunchers and census-takers, A/E/C Systems '88 sponsors George Borkovich and Michael Hough announced still another link in the unbroken chain of records for attendance and number of exhibitors at their May McCormick Place show and conference in Chicago. Some 26,700 people in architecture, engineering, and construction showed up to see the latest in automation from 429 exhibitors. Not bad for a show starting in 1980 with 1,000 attendees.

Indeed, the latest in products are held for release at this show—and a lot has happened over the year in the computer industry. (For a run-down, see pages 122-127.)

A growing trend in the show's organization is groupings of products organized according to specialized interests (such as facilities management) in an attempt to meet more specific needs. And this is also done by major suppliers who design virtual shopping malls, gathering round smaller systems meant to augment their own.

Recurrent themes discussed on the exhibit floor and in the tutorials and seminars reflected the current concerns of the profession and the industry: •Getting systems to talk to one another and how to control the result when you do. •The advantages of PCs vs. workstations and the increasingly less discernible distinctions between them. •The UNIX challenge to DOS. •Artificial intelligence, a buzz word of late (with an increasingly indistinct meaning).

Taking a closer look at some of the seminars and tutorials:

Managing your architectural CADD system

To emphasize his point that management is not currently effective, Eric Teicholz, head of Graphic Systems, Inc., ticked off some statistics: According to a

recent McGraw-Hill survey, 50 percent of architectural firms have CADD—spending an average of \$20,000 and a median of \$10,000 per year on hardware alone—but “40 percent of those having CADD use it for less than two hours per day; only 25 percent use it for more than six



A record attendance in Chicago at this, by far, biggest computer show geared to building

hours.” And, most firms use it only for production drawings, but “a system that doesn't integrate alphanumeric functions and modeling is not cost-effective.”

What can be done? First, said Teicholz, organize. “Up to 10 percent of your time can be spent looking for information. Capture your database early and use it as often as you can.” While learning the system, do not use it part-time. “The urge to go back to the pencil will be irresistible.” Basic functionality in drafting can be reached in one week but it may take three to six months to reach one-to-one productivity. If you go too fast, you run the risk of creating an unusable database. “Top management must know the system to make sure it is being used effectively.” Even so, a

Recurrent themes discussed on the exhibit floor and in the seminars and tutorials reflect the current concerns of the profession and the industry.

computer manager is a necessity for more than one workstation because of the amount of time required for maintenance, documentation, and training. The people trained must be willing—usually the younger, the better. But beware. “Inexperienced people can automate bad design

designers led the sponsors to predict an even larger turnout next year in Anaheim.

real fast.” Make them feel important; don't call them “operators.” It is better to train than hire trained people who bring set ways of doing things. “Make sure the first job is a success so you will go on.”

MicroCADD in architectural design: A case study

Eric Van Aukee, an architect with Venturi, Rauch and Scott Brown, traced the firm's increasing depth and growth of sophisticated computer involvement. In a firm more usually thought of for its forceful expression of individualistic design, it might seem surprising to find expert systems that can transfer characteristics from CADD to information and word processing, and the development of office standards.

Intelligent vision: The influence of artificial intelligence on computer graphics

Speaker Bruce Kenneth Forbes, president of the Jung/Brannen Research and Development Corporation, defined artificial intelligence as the ability to capture previous expertise instead of bits of disassociated information. Hence intelligent CADD is that in which each part of an image retains an associated meaning in the database. For instance, a two-by-four, when changed in one place, would reflect that change both graphically and alphanumerically. When the interdependence is really complete, CADD itself can be seen as a database in which words control images. The difference between true artificial intelligence and the expert systems now available?

“Robustness,” said Forbes. “Architects need artificial intelligence if CADD is going to work for design—if they are not going to start out every time to find that half of the basic tools for creating images must themselves be created first.” Some were surprised that “in five years, we won't be doing CADD. The system will do it.” His real meaning? In designing building parts, such as stairs, the system would give the user the choices within the plan and he need only make a selection.

Developing integrated A/E/C information databases

Databases are often regarded as the weak link in the expansion of systems' use by design professionals. David Kent Ballast, principal of Architectural Research Consulting, addressed the problem of coordination of design among architects, engineers, and others. “We can't simply apply new technology to old ways of doing things. The first step is getting a common access to information.”

Continued

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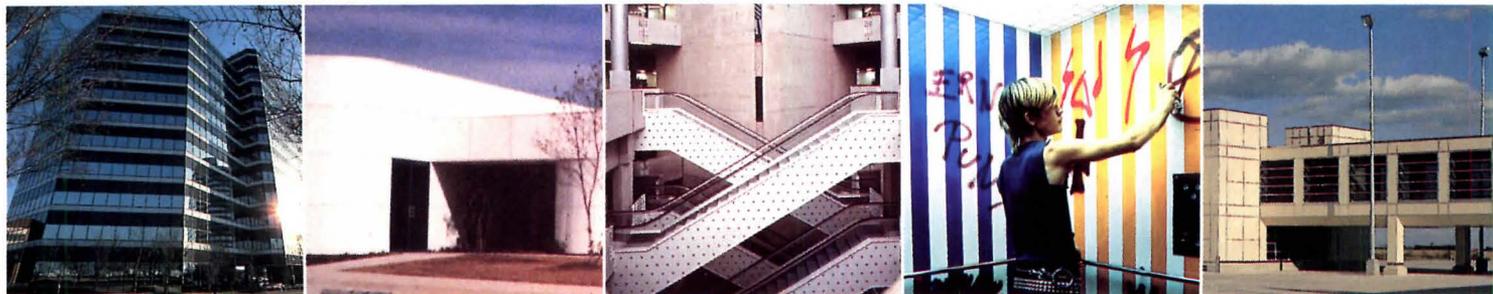
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Most architectural firms use CADD only for production but "a system that does not integrate graphic and alphanumeric functions is not cost-effective."

Information-systems consultant Charles Carroll described early work (going back 20 years) to establish database standards. The result contained standards from CSI, AIA, the military, and the federal government. Now he is working on codes and standards that will work across international lines—for instance, a project built for the Corps of Engineers in Saudi Arabia by Germans.

Hugh Sharp, vice president of planning and development for Sweet's, described current work on Electronic Sweet's which now provides information on product sources and soon will provide information on codes, costs, and construction details and specifications. "Great strides have been made in computer memory power, but the big problem has been that available graphic details were proprietary, not generic, and without interface (showing, for instance, how a window fits into a wall)." Now, with SweetSearch, the building designer can make a generic description of a product and the system will tell him where he can find it in the Sweet's Catalogue Files. This allows him to fit the product to the need instead of vice versa.

Marketing your CADD capability

Having CADD in and of itself does not win jobs but it can help when the client's decision is close," said Mark Thomas, director of marketing for Everitt Brown Company. To make CADD help sell a client on your firm's capabilities, now that many firms have it, you need to know the system and why it is better than others. "But there's danger in letting the marketing of your CADD use overshadow what your firm really does." He cited a survey of what clients found wrong with architectural firms' performance. "The best marketing use of CADD is proving your performance."

Personal computers for design-office principals

"Most packaged systems don't address the administrative tasks that principals really do," said architect Frank Mascia, principal of the Collaborative Design Group. "Yet your time on such unbillable tasks is far more valuable than saving the time of draftsmen and secretaries, which is what most systems tend to do." As to those management systems that do exist: "They can outwork you; you don't need great speed or memory. Develop a simple system. Then look for the dull repetitive tasks and make forms of them, putting in as much constant information as you can as you go along. Architects want to steadily redesign everything; forget that on billing logs and form letters." Counter to conventional wisdom, he recommended buying the hardware first.

Computer use around the world

A panel of systems suppliers from abroad described the state of architects' computer use in their countries. For example, it was generally agreed that systems using metric conversion were not good enough; metric programs must be based on metric dimensioning.

Second, with costs for U. S. systems abroad that can run to 2 1/2 times our own, countries cope differently. In Japan, the few large architectural firms use systems for design development, including zoning analysis and elaborate client presentations, but *not* for production. Computer use in the other much smaller firms is seen as almost prohibitive in cost. But in Australia, where costs have been similar, some 15 percent of offices use computers, and that use is growing by about 70 percent per year. Scandinavia has developed its own systems, many in Norway, and now supplies enough to satisfy about 25 percent of its use.

Workstation wars: The impact on architecture, engineering, and construction

A panel of representatives of suppliers gave clues to what the next developments will be. Conclusions? The major future growth will be in workstations, while PCs remain stable, and host-based systems decline. The panel cited workstations' greater capabilities in crossing between graphic and other functions, sharing information, and more accessible standards. Ron Beck of the Digital Equipment Corporation objected to "wars," preferring to liken competitive development to the space race, with its many beneficial byproducts.

Making money with CADD

Can it be that firms with CADD are less profitable than those without? Yes, said a 1987 survey conducted by the *Professional Services Management Journal*. Publisher Frank Stasiowski said that, of the productive firms, 85 percent do not work through a centralized CADD department but provide terminals for each design professional's use. This increases efficiencies and avoids firms being held hostage by the lone person(s) who know the system. "The average operator stays roughly two years."

At least 95 percent of the productive firms' drawings are done on hardware that is kept busy 60 to 70 hours per week—meaning optimum use. Another finding of the survey is that micros are much more cost-effective than the larger systems because the latter are not being used at even close to full capacity but may cost almost three times as much per user.

One major problem that Stasiowski found for the unprofitable firms was the practice of billing clients on a hourly rate that does not reflect the improved efficiencies (or higher costs) of systems' use. *Charles K. Hoyt*

Multidisciplinary CADD integration



Firms in which architects and engineers work closely have a special problem, said panel chair Steven Ross, contributing consultant to RECORD.

"Computerization can speed the volume of information flowing through an office, vastly increasing the potential for misunderstanding if the professionals aren't careful." Much of the trouble comes from trying to maintain the integrity of drawings and the underlying database that describes what, exactly, is in them. In microcomputer CADD software, the drawing has generally governed the database listing attributes or details of what has been drawn. Whoever creates the drawing does not, however, usually have to list them.

In CADD software using terminals linked to a minicomputer, the database tends to be pre-eminent, and the link between drawing and data is much tighter. Now, Ross said, microcomputer software is becoming more object-based, like minicomputer software.

Engineer panelist James M. Beaty said drawings should be separated by discipline because structural engineers in a big firm may, for instance, need more computing power than the electrical and mechanical engineers and have different acceptable tolerances.

Architect W. Millet Salter agreed that nongraphic data can be more important than drawings. His small firm uses a minicomputer-based CADD system with excellent database capabilities that it shares with an engineering firm.

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Finance: Fannie Mae is 50

By Abner A. Layne



She passed the big five-oh early this year, immensely wealthy but still flexible and vigorous in pursuit of her mission. That mission sustains not only the housing hopes of many American families, but the business of building and developing and the careers of countless architects.

Fannie Mae—corporate name, Federal National Mortgage Association—was not born to wealth

She was legislated into existence in the dark days of the Great Depression. Dark indeed when the women's division of New York City's Architects Emergency Committee commissioned Lenox china tea sets and sold them "for the relief of unemployed architects."

In the bleak gloom of his second inaugural address in 1937, Franklin Delano Roosevelt, the 32nd president, "saw one-third of a nation ill-clad, ill-nourished" and "ill-housed" as well.

A little over a year later, under her maiden name of National Mortgage Association ("Federal" was tacked on within a few months, immediately engendering the enduring sobriquet), she undertook to remedy the sick housing situation. The remedial effort was directed wholly and completely to the furnishing of liquidity in the mortgage market.

"Through five decades," says FNMA board member Eli Broad, president of Kaufman & Broad, Inc., "Fannie Mae has

Mr. Layne is a free-lance writer and former senior editor/finance of Engineering News-Record.

transferred capital from capital-rich to capital-short regions." Her modus operandi was and is to buy only home mortgages (but not exclusively single-family-house mortgages) made by the original lenders to homebuyers and builders. In hard times and good, this assures her 3,500 lender-customers—savings and loan institutions, commercial banks and mortgage bankers—of a market. It turns the traditionally illiquid mortgage into marketable paper.

In the beginning, Fannie Mae bought only Federal Housing Administration-insured mortgages. A few years after World War II, she was also empowered to buy insured Veterans Administration mortgages. But a congressionally ordained bisection in 1968 begat a sister government corporation—Government National Mortgage Association, Ginnie Mae. Less adventuresome, sister Ginnie took over most of the market for insured FHA and VA mortgages. In that year, Fannie Mae became a privately owned tax-paying organization chartered by Congress. Four years later she began to buy conventional uninsured mortgages.

For big sister Fannie, the year 1968 marked a turning point on her way to a new career

She was matching and marketing almost every financing innovation dreamt up by the mortgage-finance community.

She began 50 years ago buying 10,000 home mortgages, \$38 million worth of 30-year fixed-rate mortgages. Last year, she bought 1.1 million mortgage loans, recycling \$77 billion back to lenders. Over the years, she has returned \$400 billion to the lending pool to finance eight million homes for American families of low, moderate, and middle incomes.

Herewith, a look at how the grande dame has endeared herself to the housing industry and how she now continues that relationship.

She grew rich herself on fees and interest as she helped finance one in eight mortgages now outstanding on U. S. homes. Her mission was always to assist the homebuyer with a low to moderate income. And this has always meant legal maximum limits to loan purchases. Right now, for example, the top is \$168,700, and the average is \$70,000. Eli Broad says that her wealth permits her to borrow cheaply and pass the savings on to homeowners. The savings, he calculates, "amounts to some 1 percent less on any given rate—maybe \$80 a month on an average mortgage."

Fannie Mae currently holds \$240 billion in assets, giving her third place among the nation's richest corporations with 35,000 shareholders and 2,400 employees.

In the fluctuating economy of the '70s and '80s, Fannie Mae has to agree to buy new and exotic kinds of loans very different from the original fixed-rate mortgages of her youth. Now her portfolio includes adjustable-rate mortgages, condominium and cooperative housing mortgages, option-type mortgages that convert from adjustable- to fixed-rate, 15-year and other intermediate-term mortgages, and, recently, biweekly mortgages. In all she now buys 40 different types of mortgages.

One type of mortgage investment stands out as the most popular of the decade

In 1981, to expand the volume and sources of capital for housing, Fannie Mae began issuing mortgage-backed securities, MBSs. It was the start of the securitizing trend that led to today's \$140-billion worth of MBSs in the hands of investors. These MBSs earn fees for Fannie Mae in return for a guarantee of principal and timely monthly payments.

In her endless search for capital for American housing, four years ago Fannie Mae took her guaranteed MBSs to foreign markets. It was a successful journey and, a year later, growing in sophistication, she had issued dual-currency bonds such as Eurodollar and Euroyen as well as yen securities at home.

As more overseas investors learn more about MBSs, their appetites seem to grow. On Fannie Mae's request, a research and consulting company recently surveyed foreign investors. The survey concluded that overseas MBS investors will increase by 50 percent in the next year alone.

Reflecting on the interaction of Fannie Mae and his profession, AIA president Ted P. Pappas says: "For half a century it has played an enduring role in assuring the availability of mortgage credit so essential to the sound future of housing and, of course, to the contributions of architects to that future. If Fannie Mae didn't exist, we'd surely have to invent it."

The invention would have to include tradition and a sense of public responsibility that the erstwhile public agency still displays. Defaulting owners in beleaguered parts of the nation have abandoned 8,000 foreclosed homes to her inventory. But Fannie Mae tries everything to keep from selling the house out from under the distressed owner. "If there's any way to keep a mortgage and a house together, we do it," says a spokesman.

One privilege of such a grande dame of finance and construction as Fannie Mae is to decide when to celebrate her birthday. To avoid a conflict with Britain's Queen, who celebrates hers in June (royally disregarding the calendar's facts), Fannie Mae and admirers made merry in May.

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That was essential because the building, which was constructed for Evans Sutherland Computer Corporation, is located within a mile of the Wasatch fault in Salt Lake City. What's more, Evans & Sutherland is a leading designer of special-purpose digital computers, software systems and display devices — products extremely vulnerable to damage from seismic tremors.

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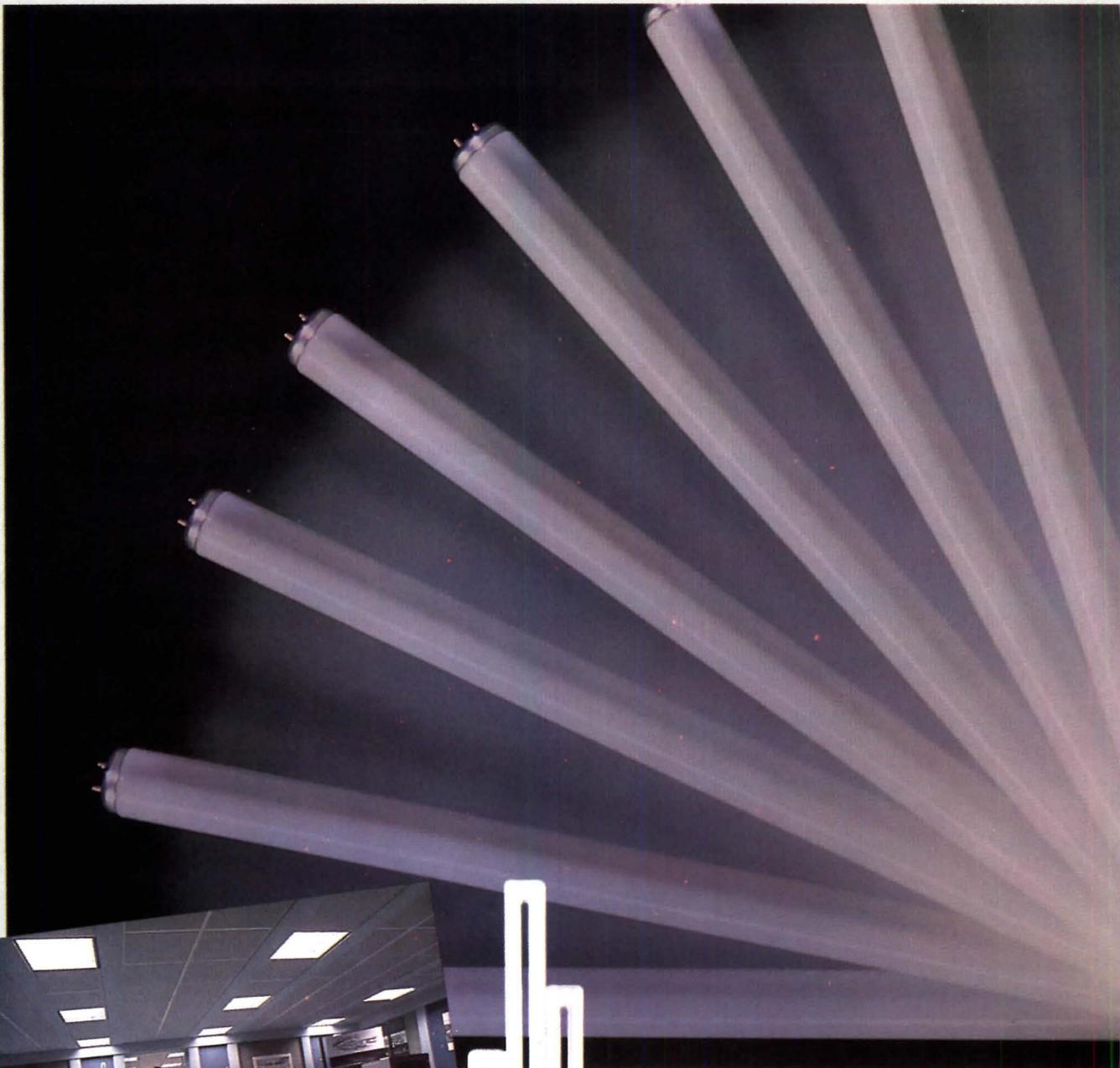
The design team chose a "base isolation" system to accommodate seismic loads. They also specified Vulcraft steel joists and joist girders for the building.

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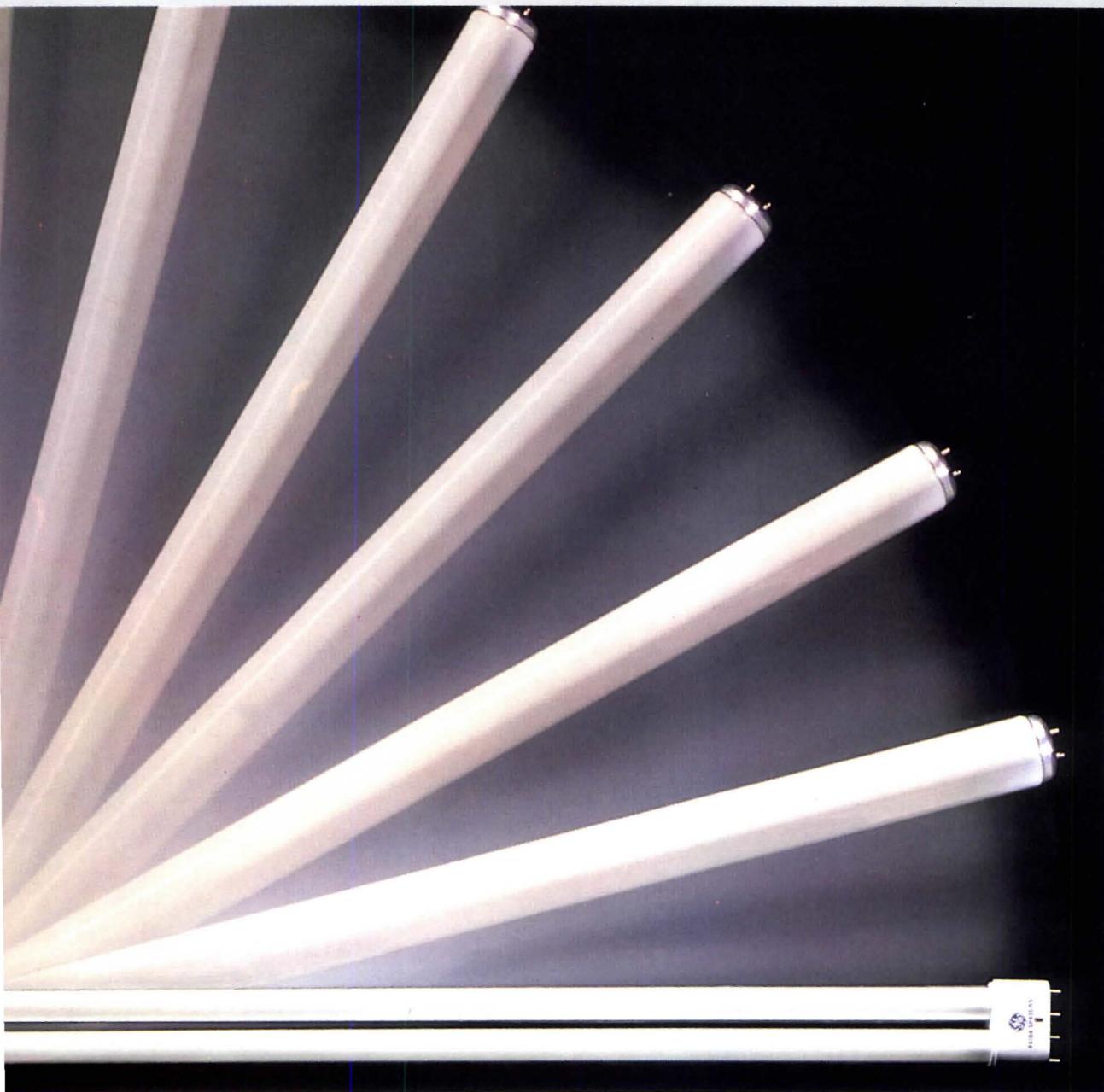


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A letter from Australia: Reassessing the democratic ideal

By Philip Goad

Much to the relief of many Australians, our country's most important 20th-century building is finished after eight years of controversy and criticism. The new Parliament House at Canberra, designed by the Italo-American architect Romaldo Giurgola, of Mitchell/Giurgola & Thorp Architects, was opened on May 9 by Her Majesty, the Queen. Built as the focus of the brilliant 1912 city plan (by the American architect Walter Burley Griffin), and coordinated carefully with the surrounding hills, it is the nation's biggest, most expensive, and most complex building. Yet, in a stroke of genius, it has been reduced to a single image—a mighty Australian flag flying in the air over a grassy mound that is split by two sweeping curves of granite. The four-pronged steel ghost pyramid supporting the 81-meter (263-ft) flagstaff recalls Griffin's original proposal for the site, a stepped ziggurat "capitol" designed to contain the records of the nation's history. Though the primacy of the flag is the most hotly debated part of the Giurgola design, there has been nothing but praise for the clarity of the Beaux-Arts parti underneath. The House and Senate are separated in plan by the curving arms and topped by terra-cotta-tile hipped roofs—a neat symbolic quip recalling Robin Boyd's famous line that "Australia is the small house."

Between the two arms, the building completes the major axis to the Australian War Memorial across Lake Burley Griffin and bisects Griffin's parliamentary triangle. Ivor Indyk, of the University of Sydney, describes this powerful line as a processional route of civilization. The red gravel of the vast ceremonial forecourt represents the crossing

Philip Goad is an architectural historian at the University of Melbourne.

of the desert. Within it is a pool embracing a mosaic-tile work (by the Papunya Aboriginal artist Michael Tjakamara Nelson) that represents the island continent. The Aboriginal motif, Indyk says, declares first occupancy, its siting symbolizing both primacy and exclusion. Next, the

image amidst the flattened scale of garden-city Canberra. The idea of a people being able to walk on top of their parliament appeals to many of the building's egalitarianist supporters. Giurgola sees this metaphor as fanciful, believing that "The notion of democracy comes more



colonnade (top photo) "announces, in unmistakably Hellenic tones, the advent of European civilization," and, inside the foyer—a magnificent hypostyle hall finished in gray-green Cipollino marble—"one is transported to the courtyard of an Italian palace of the Renaissance" (bottom photo). At the center of the scheme, the Members' Hall links the two chambers, and a skylight throws the image of the flag waving above onto a reflective pool, its basin carved from a block of South Australian black granite.

The new Parliament House is an extraordinarily powerful

from the clarity of the building." Many are disturbed, however, by a semientombed parliament where the forces of government are wielded "unseen." The assumption that centrality is connected to democracy is anathema to some Australians who see it as an erosion of their freedom and autonomy; to them democracy is necessarily acentric. Detractors have also criticized the celebratory position of the flag as perpetuating ideas of colonial settlement (implicitly glossing over the implications for the decline of the native Aboriginal race), and importing
Continued on page 57

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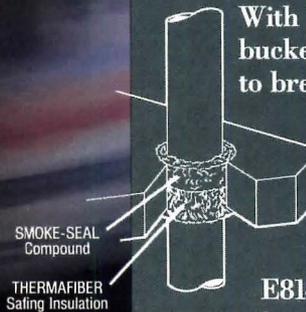
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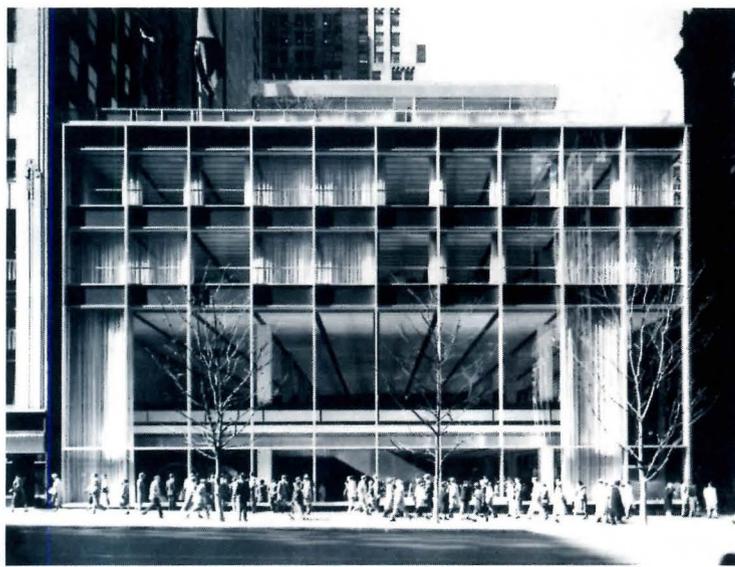
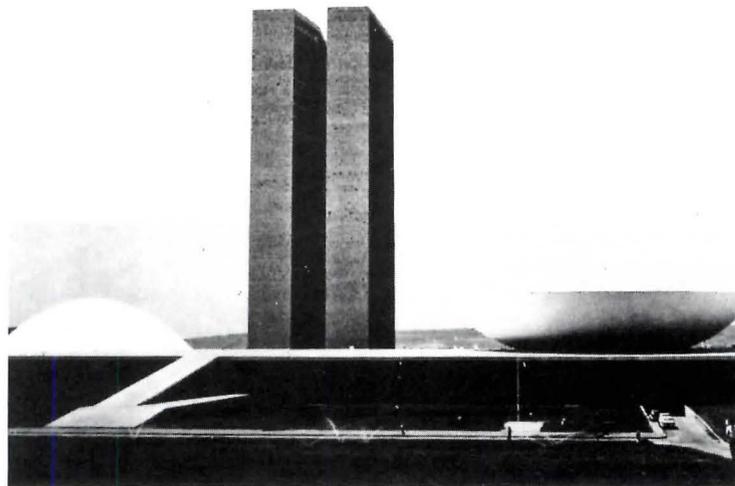
Niemeyer and Bunshaft split 1988 Pritzker Prize

Centerbrook Architects and Planners has prepared a master plan and design controls for **Broadway Commons**, an urban office park in downtown Cincinnati. Intended to attract tenants who might otherwise select a suburban location, the 11 buildings planned will offer 100,000 square feet of retail and entertainment attractions and surround a lush park. Interest in what had previously been regarded as an unbuildable site was stirred by the success of **Kohn Pederson Fox's** headquarters for **Procter & Gamble**, one block away. **James Stewart Polshek and Partners** has been selected to design the first two office structures in what will ultimately be a 3.7-million-square-foot development.

The Walt Disney Concert Hall, a new home for the Los Angeles Philharmonic, is to rise on a 3.5-acre site adjacent to the **Dorothy Chandler Pavilion**. An architect will be selected later this summer after conceptual designs have been presented by finalists **Gottfried Boehm**, **Frank O. Gehry & Associates**, **Hans Hollein**, and **James Stirling**, **Michael Wilford & Associates**.

Yoshitaka Isovaki has won the runner Prize in Architecture from the American Academy and Institute of Arts and Letters. Isovaki was recognized for his contribution to architecture as "an art" by a committee consisting of **Ada Louise Huxtable**, **Romaldo Giurgola**, and **Richard Meier**.

Synthia Zaitzevsky and **Mary Woods** have each garnered a Guggenheim Fellowship. Zaitzevsky will continue her research on the model housing movement in the U.S., and Woods will study the work of **Richard Morris Hunt**, **Charles Follen McKim**, and **Charles Upjohn**. The fellowships are administered by the **Temple Hoyne Buell Center for the Study of American Architecture**, Columbia University.



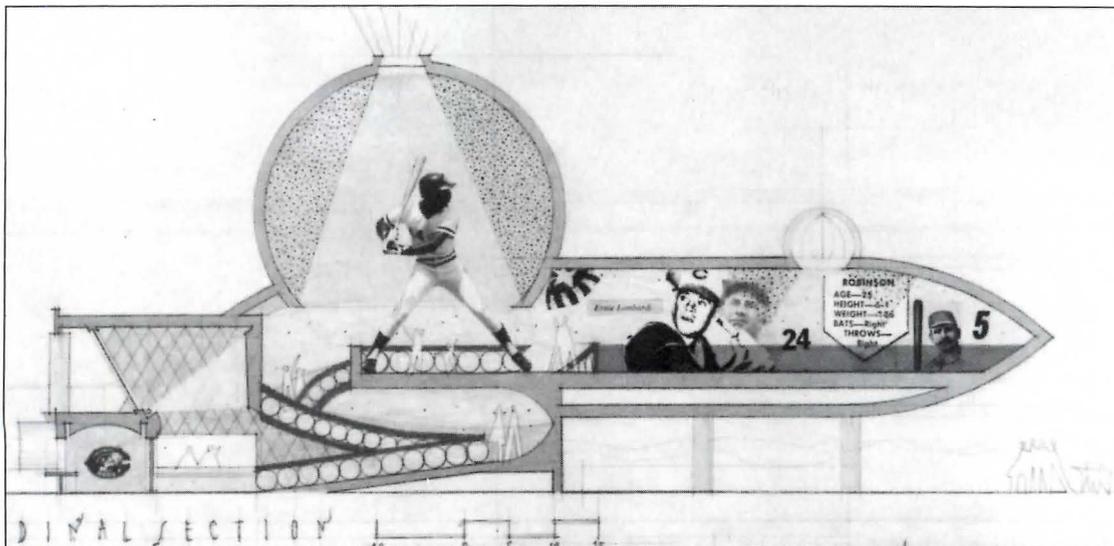
© Ezra Stoller/ESTO

Sharing of the Pritzker Prize was unprecedented in its 10-year history until the latest jury applauded two masters of modern architecture who have "shaped their visions of the built environment in two hemispheres." **Gordon Bunshaft**, 79, is best known as the partner at **Skidmore, Owings & Merrill** responsible for the **Beinecke Rare Book Library** at Yale, the **Manufacturer's Hanover Trust Building** in New York (bottom photo), and **Lever House** (recently proposed for landmark status), also in New York. **Oscar Niemeyer**, 81, was the architect for much of **Brasilia** (**Plaza of the Three Powers**, top photo), and collaborated on the design of the **United Nations building**. His oeuvre also includes the **Mondadori headquarters** in Milan, the **Museum of Modern Art** in Venezuela, and widely admired residences. The \$100,000 prize will be divided by the recipients.

Museum of the Big Red Machine

A circular ramp conveys visitors to exhibits of memorabilia in the Cincinnati **Reds Hall of Fame**, designed by architect **Terry Brown**. Jointly sponsored by the team and the Ohio city's **Contemporary Art Center**, the building is to be erected over an existing parking structure.

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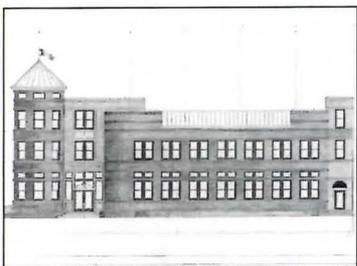
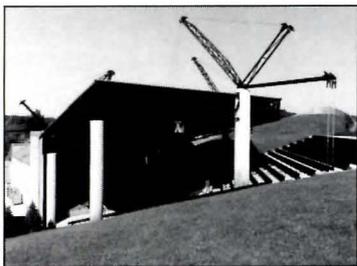
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News briefs



An outdoor amphitheater at Ironworld U. S. A. (1), designed by Damberg, Scott, Peck and Booker, has won the DuPont Hypalon Excellence in Architecture Award. Sited on the edge of a former open-pit mine, tension structures that resemble steel cranes support a space-frame roof over a 3,000-seat open-air performance area.

One Franklin Square (2), a 580,000-square-foot office building in Washington, D. C., strives for verticality despite city height restrictions. The mass of the 12-story structure is set back from the street wall at its upper levels, articulating two towers over vaulted entrances. Designed by Hartman-Cox with Dewberry & Davis, the granite-clad building is to be occupied in late 1990.

The Festival Center (3), also in Washington, will house living quarters, offices, and conference rooms for a church, two schools, and inner-city community groups. Construction is about to begin on the four-story, 30,000-square-foot building, designed by Eric Colbert & Associates. Masonry details, metal roofing, and cast-stone ornamental panels are scaled to neighboring structures.

Quonset Huts on the River Styx (4) chronicles entries in a competition inspired by federal plans for nuclear-emergency operation centers accessible only to public officials (the untitled entry by Jill Lawrence and Michael Reardon is shown). The publication is available from the sponsor, Architects/Planners/Designers for Social Responsibility, at 225 Lafayette Street, New York, N. Y. 10012.

Helmut Jahn of Murphy/Jahn in Chicago is the recipient of this year's R. S. Reynolds Memorial Award. The prize honors the firm's United Airlines Terminal 1 complex at Chicago-O'Hare International Airport (designed with A. Epstein & Sons) and includes a \$25,000 honorarium.

A touch of ivy



A rotunda topped by an observatory acts as a hinge linking a small teaching facility to a much larger research structure at the \$35-million Physics and Astronomy building at Johns Hopkins University in Baltimore. Skewed massing softens the bulk of the 240,000-

square-foot brick- and limestone-clad structure, which faces a historic park. Though the project is remote from the main campus, architect Ayers/Saint/Gross has developed proportions consistent with its predominant Georgian vocabulary. The complex will open in late 1989.

Competition calendar

- Entries are due September 30 for the 1988 Concrete Building Awards Program, which honors concrete structures of all types. Projects completed since September 1986 are eligible; entry forms can be obtained from Glen Simon, Portland Cement Association, 5420 Old Orchard Road, Skokie, Ill. 60077 (312/966-6200).
- Innovative lighting projects, permanently installed by the beginning of 1986, are being solicited for the Lighting Design Awards program sponsored by the International Association of Lighting Designers. The submission deadline is

September 16. Entry forms and guidelines are available from IALD, 18 East 16th Street, New York, N. Y. 10003 (212/206-1281).

- Downtown projects, from civic centers to residential rehabilitation, are eligible for the Sixth Downtown Development Awards Competition. Projects must have been completed before January 1988; entries are due August 30. For details, contact Margaret De Witt, Downtown Research & Development Center, 1133 Broadway, Suite 1407, New York, N. Y. 10010 (212/206-7979).
- The Society of American Registered Architects is inviting members and nonmembers alike to enter its 1988 Professional Design Awards Program, which honors projects in six categories. Submission of a Declaration of Intent is required by July 29. Entry forms can be obtained from SARA, 1245 South Highland Avenue, Lombard, Ill. 60148 (312/932-4622).

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Improprieties of the Deconstructivists: an interview with Mark Wigley

The much-discussed exhibition Deconstructivist Architecture, which presents the work of Coop Himmelblau, Peter Eisenman, Frank Gehry, Zaha Hadid, Rem Koolhaas, Daniel Libeskind, and Bernard Tschumi, is on view through July 30, at the Museum of Modern Art in New York. Mark Wigley, associate curator under the aegis of Philip Johnson, recently talked about the exhibition with RECORD editor James S. Russell. Excerpts from their conversation appear below. We will publish a review of the show in our August issue.

James S. Russell: What do you feel ties these disparate architects together?

Mark Wigley: There isn't a single ideological or formal unity; this work burrows into Modernism and locates certain disturbing qualities—qualities that we don't think of as Modern. . . . [The exhibition] is not meant to be comprehensive or to show masterpieces. And each project was selected to give a slightly different take on the subject.

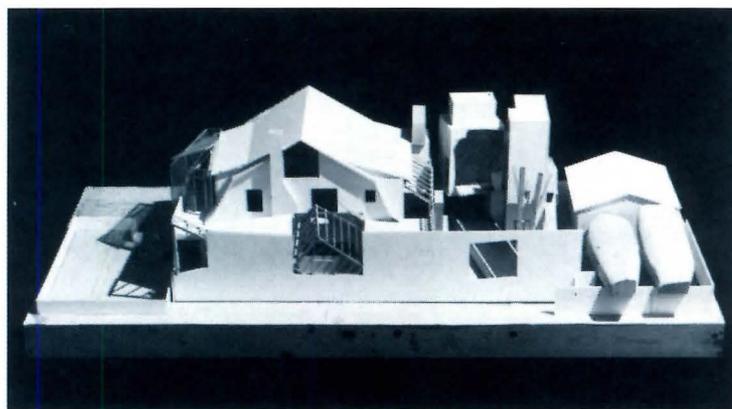
JR: Do the show's title and much of the work exhibited recall the imagery of Russian Constructivism because of its "disturbing" qualities?

MW: While we are not saying that these architects were consciously influenced by Russian Constructivism, some of them obviously are. They destabilize the utopian vision of architecture that is concerned with the production of stable, perfect forms and, in doing so, they find they incur strategies set in place by the Russians. Our culture depends on the idea that stable forms are the basis for a stable society. The architects in the show suggest, however, that conventionally clear abstract geometries have always harbored within them something strange. All of these projects

question ordering structure and suggest that perhaps they are, in a certain sense, twisted and deformed. One can be "twisted" in painting or literature, and it's in the nature of the art. But to twist architecture is somehow regarded as improper.

JR: How is this work ideological?

MW: In a way the architects are just trying to do sophisticated conceptual work. Some would say that use of the Constructivist imagery is an estheticizing of a highly political moment in our cultural history, but I would argue the reverse. After the Revolution, the



"What you have in the Gehry house," says Mark Wigley, "is a very clear base figure—a conventional bungalow—which has been somehow internally

Russians abandoned this geometry for highly stable Social Realism. They never conceived of pre-Revolutionary avant-garde work as an architectural possibility but only as a kind of decoration, something you could do on the street, or in a painting or photograph. On the contrary, it's very important that this new work be built; that is where its social, cultural, and political impact lies.

JR: How do you respond to critics who contend that the imagery of Deconstructivism is less accessible than historicist Postmodernism?

MW: Postmodernists argued that architecture is like a language. If we can sort out what the basic units are, we can speak at once to the public, to the client, and to other architects. It was a wonderful expression because, you might say, it was clear where the corner office was.

Deconstructivism, however, was founded on a logic of "indigestion." The internal structure is deformed and twisted, and it is no longer clear which is the corner office. The hierarchies and ordering systems are all called into question, so this architecture can never

disturbed. What makes us uneasy about this, is that these radically distorted pieces seem to emerge from within the house."

simply reinforce conservative values. . . . It invites itself into the museum like a Trojan horse; it's very attractive to look at, but it is an *infected* modernism.

JR: There is a high level of specificity in the Deconstructivist spaces even though they are not necessarily functionally derived. How dependent is this architecture on the cooperation of the user?

MW: There's nothing that says that the process of deformation [begun by the architects] stops with them; it also becomes available to the user. Function simply doesn't come *first* as in

traditional Modernism. These architects have found that Modernism is much richer than the esthetic of functionalism. The innate architectural "truth" for them lies in the deformation.

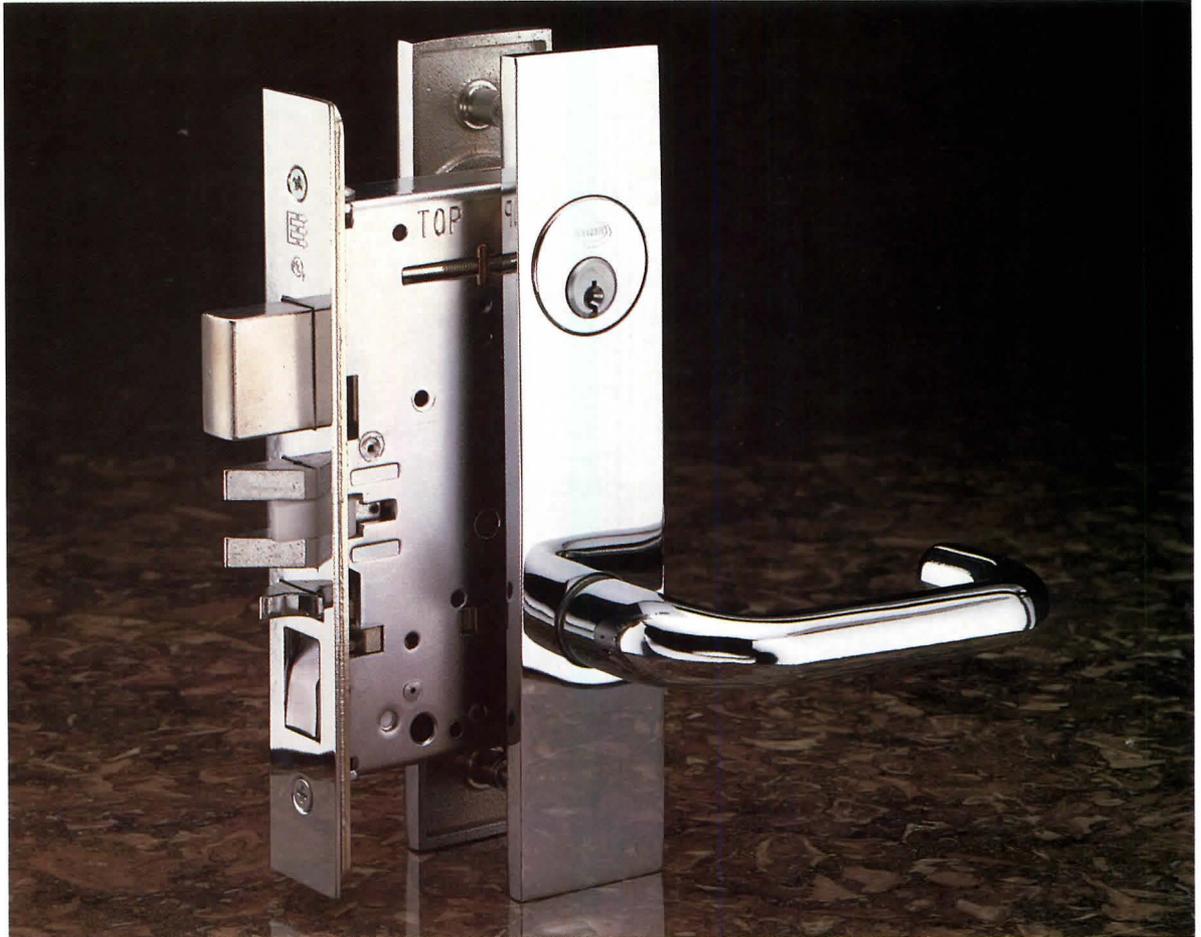
JR: Some have argued that Gehry's work, for example, is a commentary on the kind of discontinuous, fragmentary, Southern California world of video and cars. Is this an apt interpretation? Does it apply to other work in the show?

MW: This work is not about fragmentation. To suggest that it is some kind of reflection of a broader cultural phenomenon is very difficult and dangerous. For a start, it's unclear what our culture is doing. I've *speculated* about what the cultural impact of the work is, but that's different from saying that it is a *reflection* of what's happening in culture. I think the work comes from within architecture itself. The status of the wall that supposedly divides inside from outside is convoluted to confuse what's in and what's out. The ornament bleeds into the structure so that one cannot be separated from the other. That's what makes this work slippery; it causes a displacement of how we *think* of architecture. These disturbing qualities have always inhabited all architecture and are the source of architecture's force, strength, and delight. Architecture never derived its force from the stability of culture, but rather from the expression of those moments when that sense of stability slipped.

This architecture is humane in the way it subverts the conservative forces in our culture denoted by stable, perfect architectural structure; it has a kind of dignity. In the past, ideological architecture was, by definition, unbuilt. This work is dangerous because it aims at being, or is, *built*. The impact will come later, in some kind of cultural detonation.

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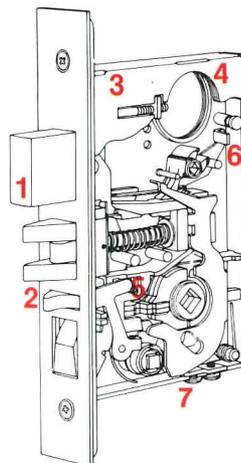


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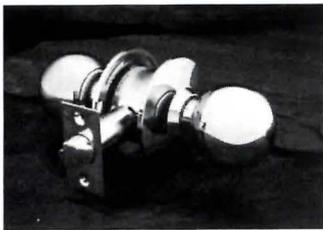
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an essentially American flag-waving nationalism to our shores. The completion of Parliament House has coincided with the bicentennial of the landing of the first fleet of colonial settlers, and this has caused rumblings; such a building ought not have been considered, say the critics, until 2001, the centenary of the federation of Australia as an independent nation.

Built to "last 200 years," with 4,500 rooms, public galleries seating 1,000, and a kitchen capable of producing 8,000 meals per day, this building, more than any other, has aided Australia's reassessment of itself as a nation. Many Australians see it as characterizing the country's maturity; for others, it is an indulgent folly. The money lavished (quite justifiably—it is a showpiece of Australian painting, sculpture, and craft), the standard of finish, and the power of the symbolic image mean that the era of the endearing, relaxed Australian may be drawing to a close. Perhaps growing up means loss of innocence. Yet the building is done, and has received wide public praise. From the architectural profession there has been polite silence; privately, many find its symbolism suspect and foreign. Perhaps its greatest worth will be to warn other democratic nations of the continuing need to reassess critically the democratic ideal and not condone arcane and anachronistic forms and symbols. Instead of a unique form of government—one which the American architect Bernard Maybeck suggested should be embodied by a permanent temporary parliament (for, as one Australian architect has put it, the world's wackiest democracy)—Australia is now graced with a very beautiful, highly crafted, and bold "foreign" building. Time will tell whether we will ever come to own it in the same way that the Sydney Opera House, designed by a Dane, is now indisputably Australian.

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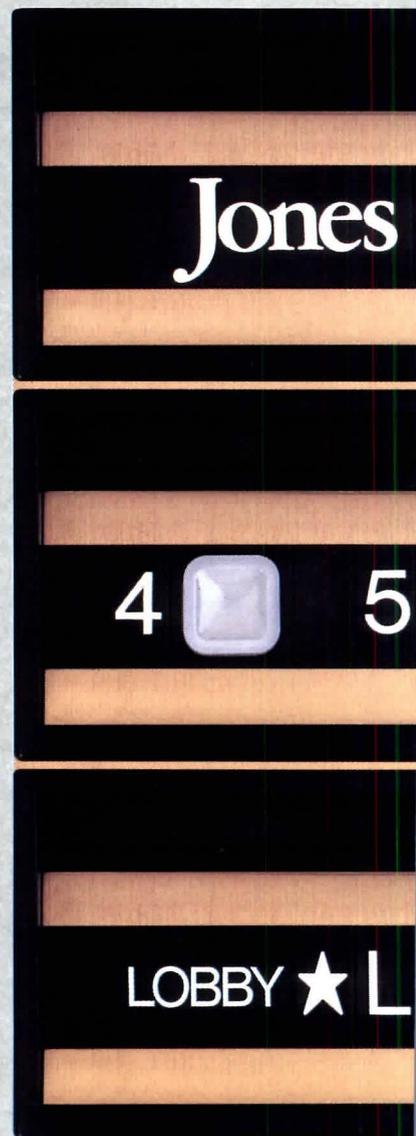
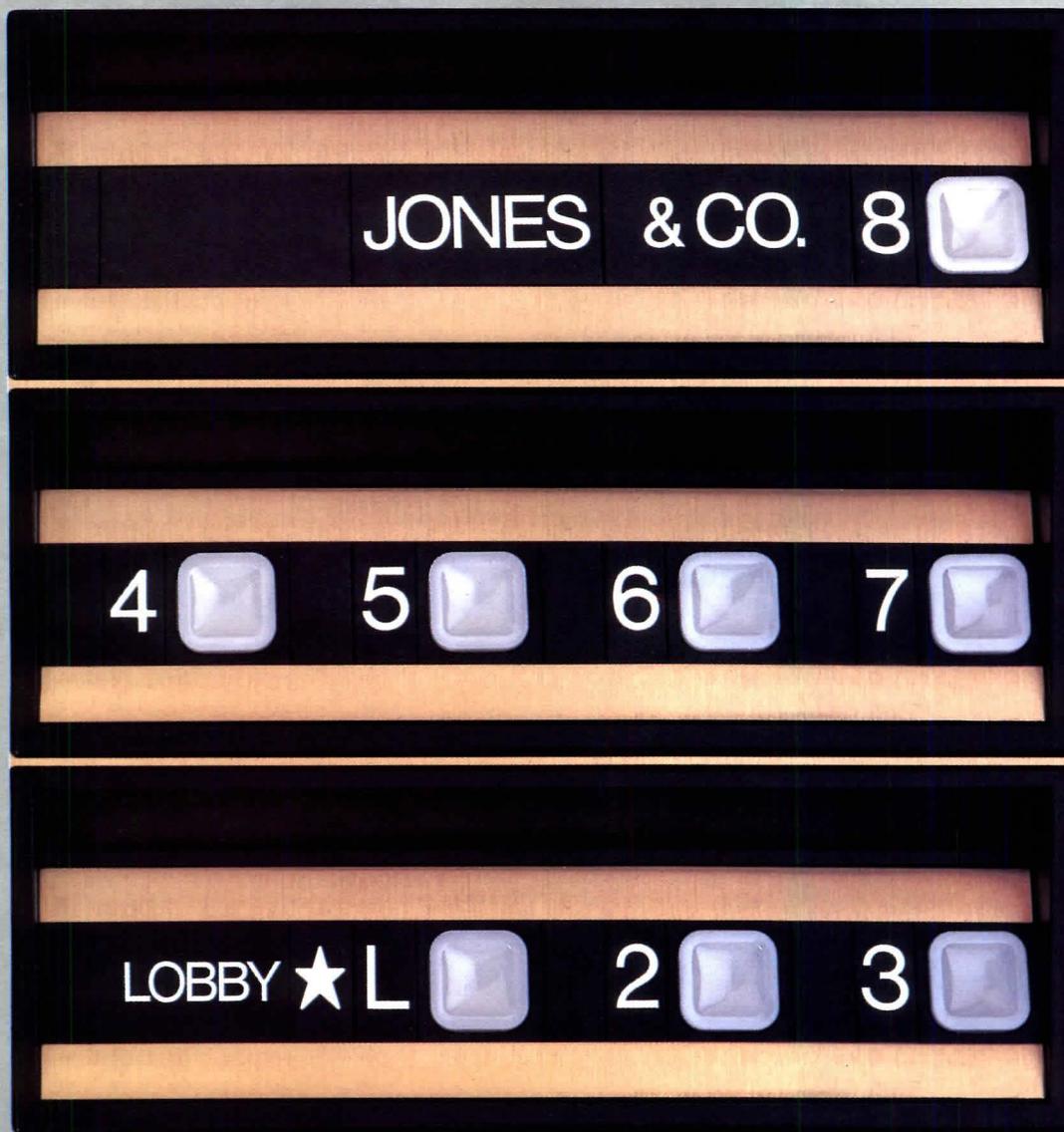
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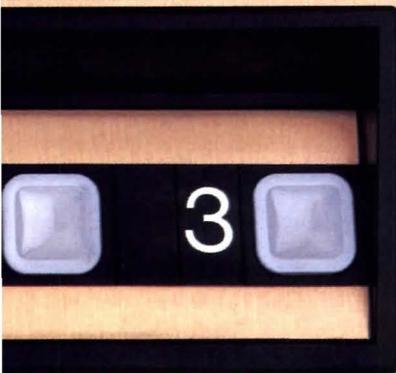
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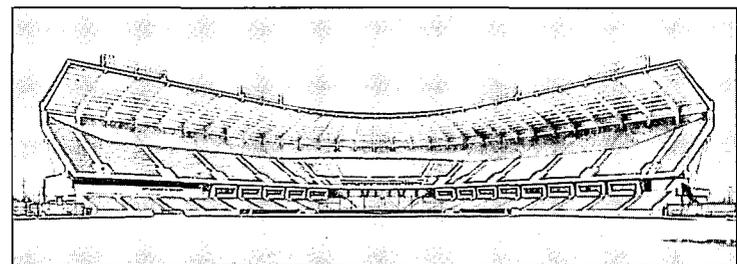
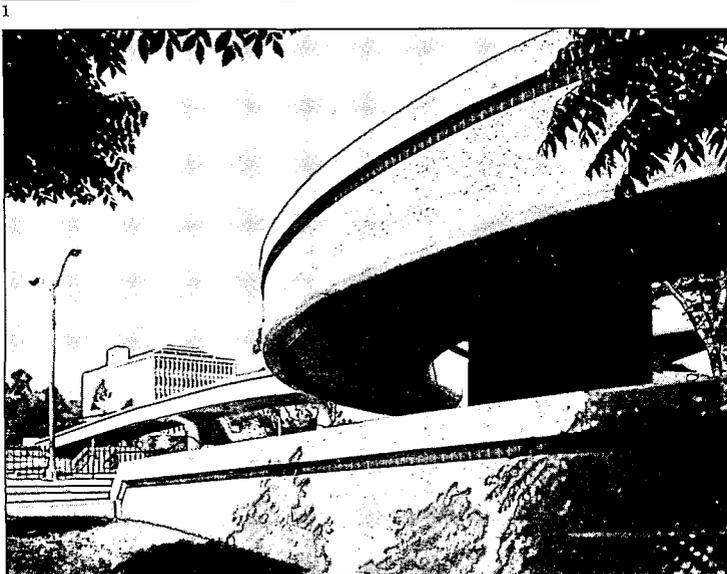
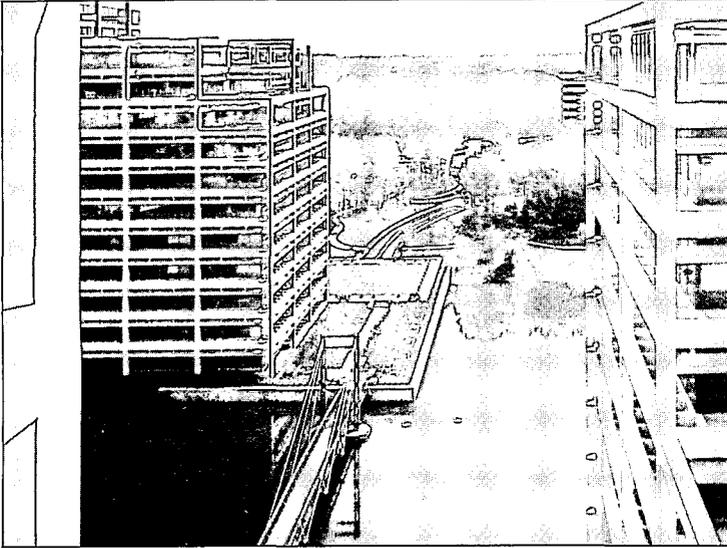
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Design awards/competitions: Concrete Reinforcing Steel Institute 1987 Awards for Excellence in Concrete Structures

The versatility of reinforced concrete was much in evidence among winners in this year's Concrete Reinforcing Steel Institute awards program. The projects shown were selected from among 84 entries by a jury chaired by Leon Bridges, of Sheladia/Bridges, in Baltimore. Other participants in the judging were Donald M. Hisaka, of Hisaka and Associates, in Cambridge, Mass.; Walter P. Moore, Jr., of Walter P. Moore and Associates, in Houston; and Maria F. Murray, of the AIA.

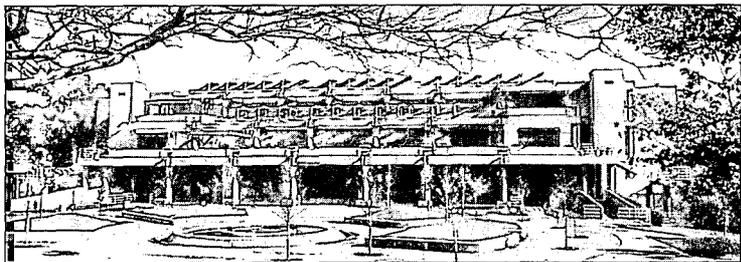


1. The Terraces at Perimeter Center, Atlanta; Skidmore, Owings & Merrill, Architects. The glass curtain wall is progressively set back from the exposed poured-in-place frame at the highest floors of these office buildings, creating the balconies referred to in the project's name. The jury found the project to be "very comfortable for Atlanta," and hailed "the coherence of all the parts . . . and the very fine workmanship."

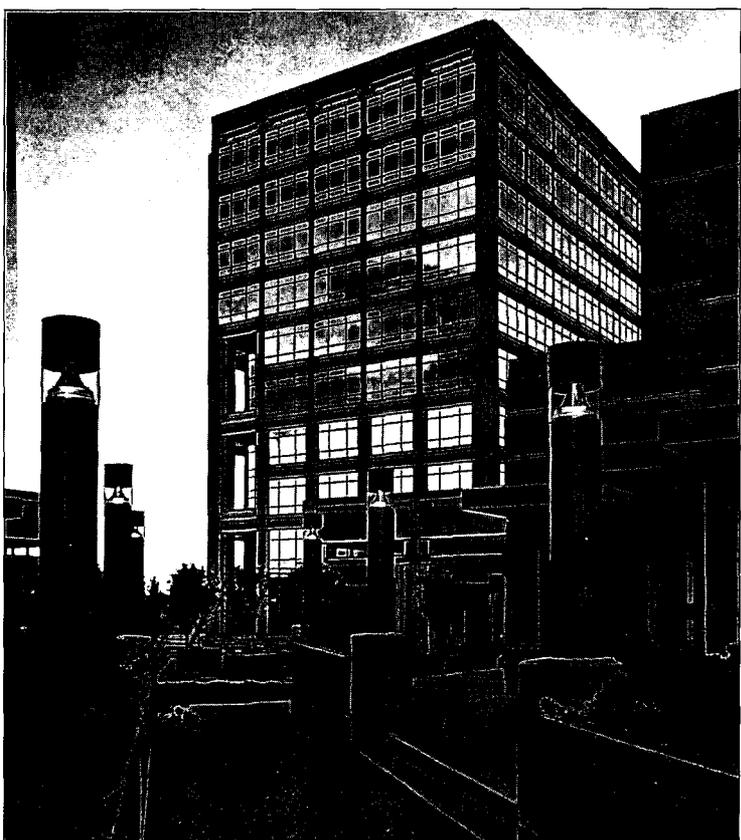
2. Campus Drive Pedestrian Bridge, University of California, Irvine; SGPA Planning and Architecture. This 250-ft-long cantilevered bridge "is a straightforward design that is truly expressive of the kind of freedom one can achieve in a structure designed of reinforced concrete." The bridge crosses a busy thoroughfare linking a college campus to a community business district.

3. 1315 Peachtree, Atlanta; Thompson, Ventulett, Stainback & Associates, Architects. Varying program requirements (a branch library, offices, and a parking structure) were "resolved efficiently without a massive internal structure," according to the jury. Long-span, poured-in-place beams permitted column-free interiors with minimum floor-to-floor heights. The sandblasted-finish post-and-beam structural solution is expressed on the exterior.

4. The Diamond, Richmond, Va.; Baskerville & Son, Architects. "Truly an unusual construction system for a stadium," commented the jury in premiating this 12,000-seat baseball facility built entirely of concrete. V-shaped piers on one-story-high buttresses support the upper stands and roof from the rear. Seating elements and roof ribs were cast using innovative technology to ensure the required close tolerances.



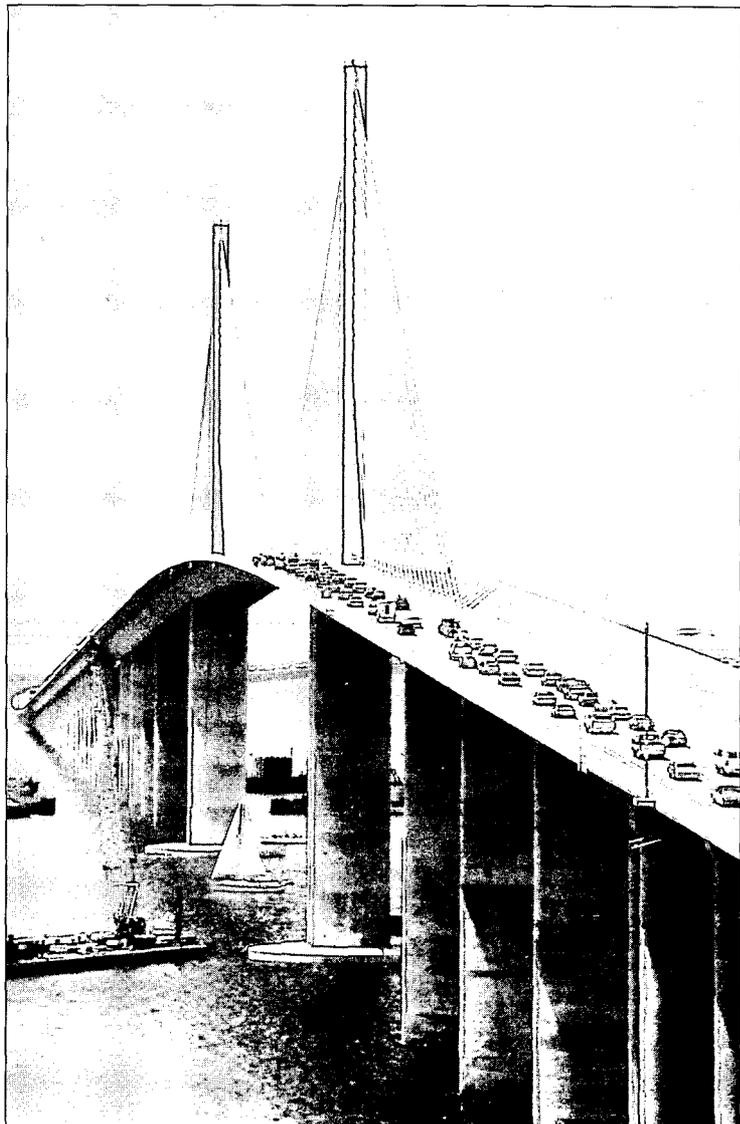
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5. Student Services Building, University of Utah, Salt Lake City; Astle/Ericson & Associates, Architects. Reinforced concrete was initially employed to reduce the floor-to-floor height, permitting connection to an adjacent historic building. The jury was impressed by the articulation of the structural elements, which took advantage of "the strong inherent visual characteristics of reinforced concrete." In addition, the inventive control of light "creates a very warm structure."

6. Ameriwest Financial Center at Park Square, Albuquerque; Skidmore, Owings & Merrill with Holmes & Narver, Architects. The exposed-concrete frame of this 10-story office building has a sandstone finish that relates the structure to the Southwestern style of other buildings in its mixed-use complex. "An excellent expression of reinforced concrete," said the jury. "The entrance is inviting and the concrete detailing, as it progresses upward, expresses the increasing lightness of the loads."



7

7. Sunshine Skyway Bridge, Tampa Bay, Fla.; Figg and Muller Engineers. The 1,200-ft main span is the longest of any concrete cable-stayed bridge in the U. S. Sections of the roadway were precast on site and then placed in their final position. Reinforcing steel was epoxy-covered to retard corrosion in the severe marine environment. The jury exclaimed, "This has to be

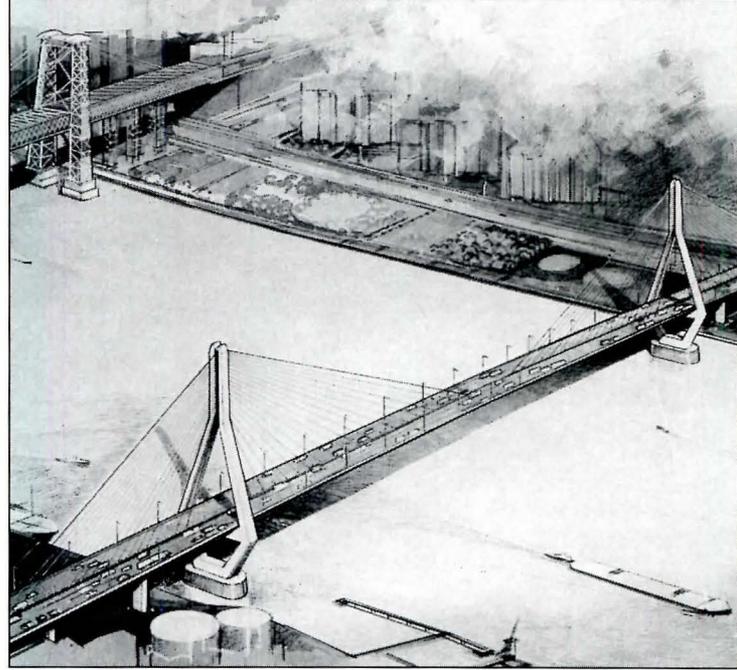
one of the most beautiful bridges in the United States," likening the triangular pattern of cables to yacht sails on Tampa Bay. More than a mile and a half in total length, the structure is both "monumental" and "poetic."

Williamsburg Bridge Replacement Competition

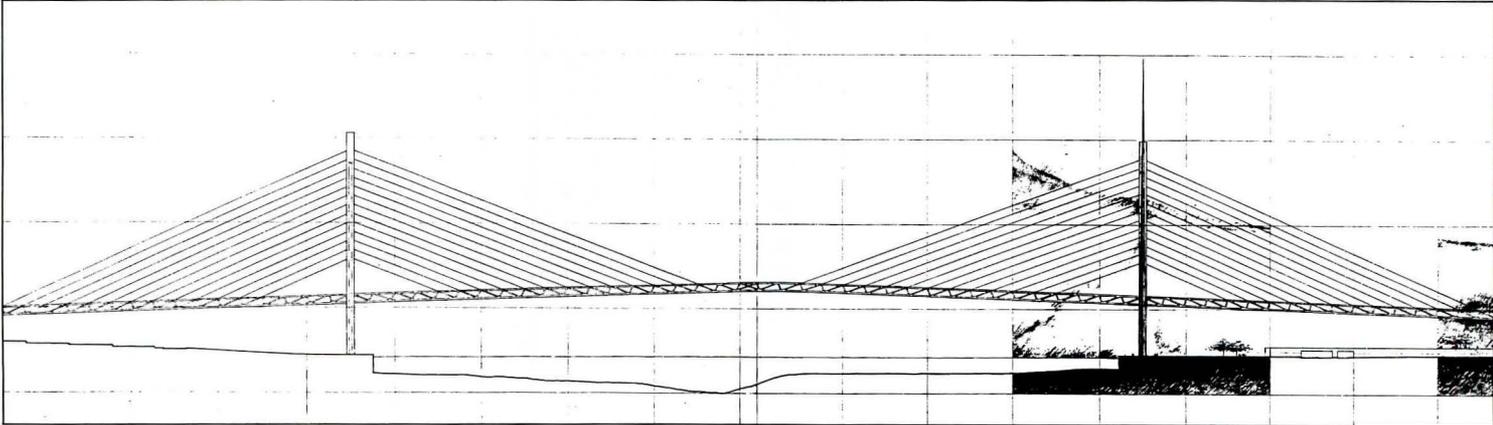
A technical advisory committee to the City and State of New York recently invited engineering teams from all over the world to submit concepts for replacing the 85-year-old Williamsburg Bridge, which spans the East River from lower Manhattan to Brooklyn. The selection of designs shown here (25 were submitted) indicates not only the state of the art of bridge design, but also ways architects can participate in shaping such public structures. After receipt of the entries,



1



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The Williamsburg Bridge, designed by L. L. Buck and opened in 1903, is a suspension bridge with a roadway of stiffening trusses (see section, 4). The ungalvanized wires of its cables have been a source of problems virtually from its opening—raw linseed oil and a mixture of fish oil and mineral spirits have at times been poured into the cable casings to retard corrosion. Rusting of the beams supporting the roadway, however, was responsible for the recent closing.

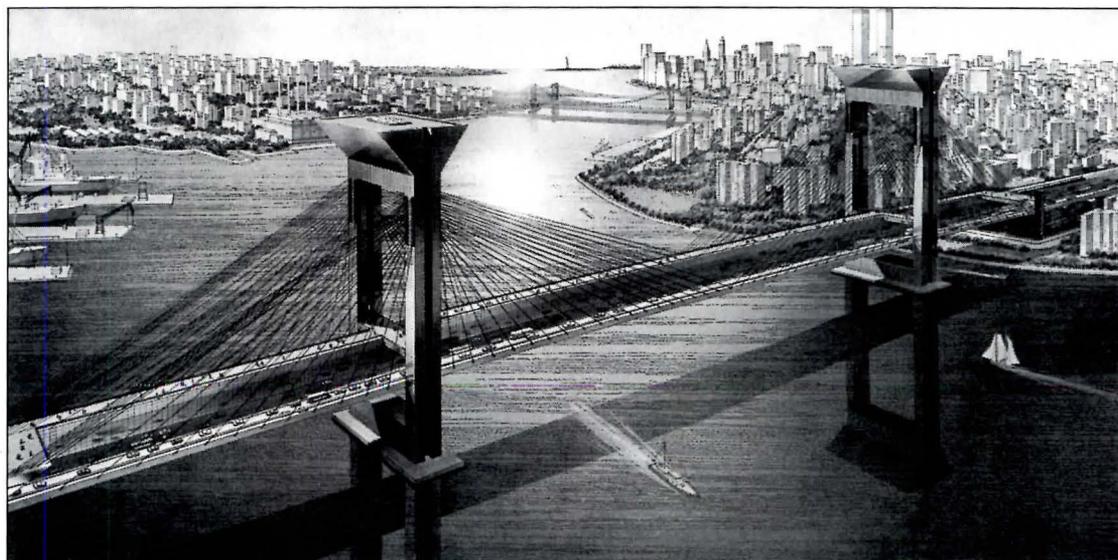
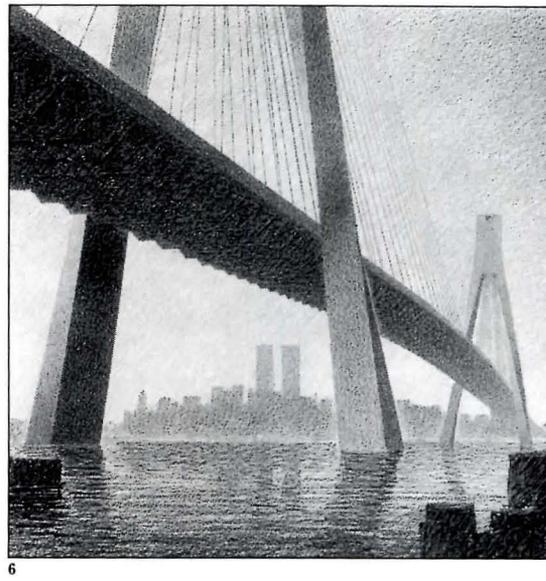
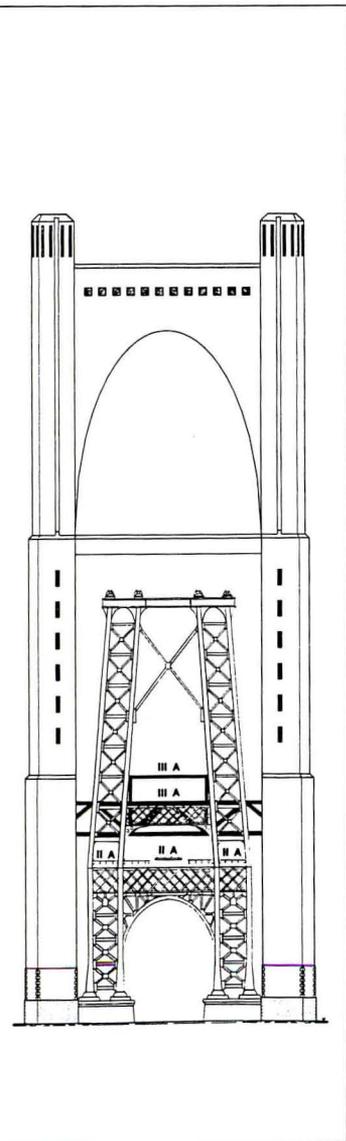
Cable-stayed bridges predominated among the 25 submissions to the recent competition; only three suspension structures were proposed, and one cantilevered-truss scheme. Although the program did not require use of the existing alignment for the replacement span, many entrants recognized that a new location would require large-scale, politically unpalatable demolition. Thus, the proposals included many inventive ways to keep the existing bridge in use while building over or around it.

1. U. Finsterwalder with Thornton-Tomasetti, Engineers, of Munich and New York. This suspension bridge spans 1,600 ft between piers and has a concrete-box superstructure. Subway lines are carried inside, and autos are carried on top of the box and on extensions cantilevered out from its sides. Catenary cables are encased with grout and sheathed in tinned copper for additional strength and to retard corrosion. Side-span main cables are straight, rather than curved, and carry no roadbed suspenders. The structure would be built adjacent to the existing bridge.

2. Acer Freeman Fox with Morrison-Knudsen Engineers, of London and New York. A single plane of cable stays bisects a steel-box roadway in this scheme, located several blocks north of the existing bridge. The present structure would accommodate trains, while auto and truck traffic would use the new bridge. The towers are of reinforced concrete.

3. Ove Arup & Partners, Engineers; Michael Fieldman & Partners with Harry Wolf, Architects, of London and New York. Two parallel cable-stayed bridges are proposed, the cables supporting the outer sides of

It was discovered that deterioration of the bridge was far more advanced than had been previously thought. At press time the structure—which carried 134,000 autos per day, two subway lines, and over nine percent of truck traffic entering Manhattan—was closed to all but limited auto traffic. In June, the advisory committee proposed a rehabilitation program rather than adoption of one of the replacement schemes.



double-decked steel-truss roadways. One bridge will be constructed immediately south of the existing span, the other on the same location as the present bridge, after its demolition. The architects have designed parks, plazas, playgrounds, and other spaces for public use at the approaches. **Skidmore, Owings & Merrill, Architects/Engineers**, of New York. To maintain the existing alignment, reinforced-concrete towers are constructed around the old bridge towers. Cable stays slope in from the towers to support the outside edges of the double-decked steel-truss roadbed,

which runs above the present roadway and is narrow enough to fit between the vertical supports of the extant towers (dark outline in section). The top of the old bridge can be used as a work platform before being demolished. **5. Andrews & Clark, Buckland & Taylor, Fruchtmann Development Services, Ehrenkrantz Group & Eckstut, Jenny Engineering, Engineers and Architects**, of New York, Vancouver, and Springfield, N. J. A single-tower cable-stayed bridge is located upriver of the present span and supports upper and lower decks for auto and

truck traffic. Subway trains are to be routed to a new tunnel adjacent to the existing bridge, which would be demolished. **6. Bruno Thürliman, VSL International, Wenaweser & Wolfensberger, I. M. Pei and Partners, Travers Associates, Engineers and Architects**, of Zurich, Berne, New York, and Clifton, N. J. Reinforced-concrete towers support a single-level roadway by means of cable stays anchored in the outboard side of the roadway. Bicycles and pedestrians travel on a separate deck hung from cables above the main roadway. The structure would be located

adjacent to the present site. **7. DRC Consultants and Parsons Brinckerhoff Quade & Douglas, Engineers, with Der Scutt, Architect**, of New York. A cable-stayed structure comprises steel towers, a single deck, and a center box truss (which encloses subway lines). The stiffening truss and towers are sheathed in bronze-tinted reflective glass. Observation decks reached by exterior glass elevators are proposed atop of the towers.

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Charles Correa, by Hasan-Uddin Khan, with essays by Sherban Cantacuzino and Charles Correa. Singapore/New York: Concept Media/Aperture, 1987, \$30.

Geoffrey Bawa, by Brian Brace Taylor, with essays by Barbara Sansoni and Ulrik Plesner. Singapore/New York: Concept Media/Aperture, 1986, \$30.

Reviewed by Scott Gutterman

These two monographs, part of the "Architects in the Third World" series, are sterling examples of documents useful for fostering genuine cross-cultural understanding in an era of ever-increasing global interdependence. Their subjects, the architects Charles Correa of India and Geoffrey Bawa of Sri Lanka, active figures in their respective countries since the late 1950s, have produced impressive bodies of work. The uninitiated reader may well be stunned by the elusive combination of formal inventiveness and sensitivity to tradition exhibited here.

Although both architects were trained outside their native countries (Correa in America, Bawa in England), each returned early to his native country to practice, expressly determined to employ a newly acquired international Style vocabulary in solving local design problems. For a time, Le Corbusier acted as an unofficial mentor to both men, but his influence gradually diminished and was replaced by an evolving personal sensibility that could accommodate the specific needs of their fellow citizens. (Says Correa, "I used to think India was lucky to get Le Corbusier, but now think Le Corbusier was lucky to get India.") The architects followed quite different paths in succeeding years, and they

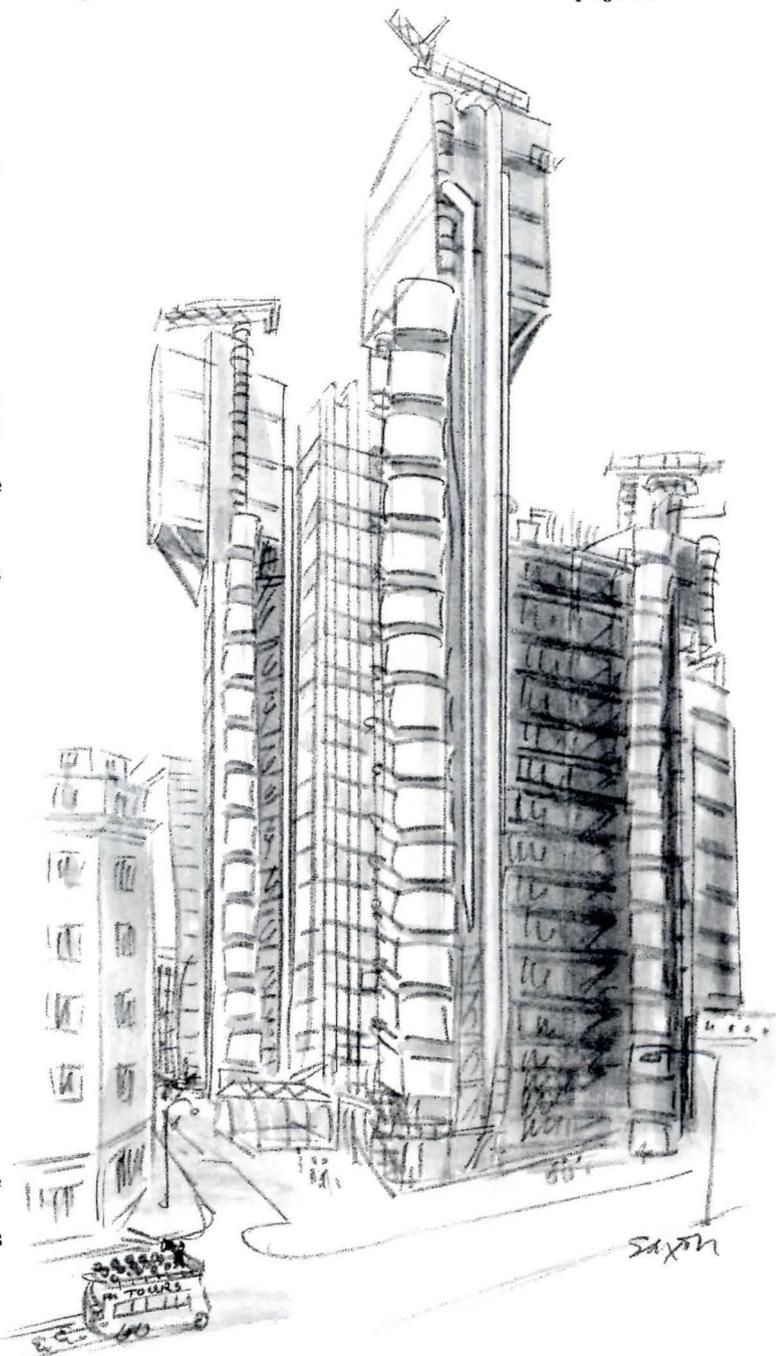
represent but two responses to their respective communities. Correa appears positively mercurial in the diversity of his interests, from a concern for the difficult issues of town planning to a fascination with ancient forms. Bawa emerges as a distinctive commentator on the relationship between natural and built form.

The informative essay by Sherban Cantacuzino that introduces Correa's work traces the architect's development from his early interest in the "great sculptural decisions" of Le Corbusier to his growing appreciation of the indigenous architecture of India. Open-to-sky spaces, such as the traditional *chatri*, are used to great effect in his first important commission, a memorial museum and study center devoted to the work of Mahatma Gandhi. At the root of Correa's work is a deeply considered response to climate and social function. The architect shuns the building of air-conditioned office towers as inappropriate to his country's needs, preferring to draw on traditional solutions for the circulation of air and maintenance of temperature, such as ringed walls and inner pools. In this way, Correa intends to pay homage to his former mentor by creating "a true machine for living." All of the architect's work is shaped by what he terms the three forces of architecture: technology and economics, culture and history, and the aspirations of people. While the first two principles motivated the design of the Gandhi memorial, Correa is true to the third in his response to the drastic need for worker housing. By establishing design guidelines (rather than an inevitably rigid scheme), Correa helps solve several problems at once: workers are involved in the construction of their communities (the settlements are built by their inhabitants), the

local architectural vernacular is maintained (workers build what is familiar), and costs are lowered. He admits a preference for what he calls "disaggregated" forms. The greatest flexibility is allowed within a loose pattern, yet his designs frame an inevitable

direction for development. Correa finds both functional and symbolic value in the form of the mandala, and uses it as the basis for his State Assembly Building in Bhopal. By correctly viewing the project site as merely a piece of the urban totality, Correa

Continued on page 71

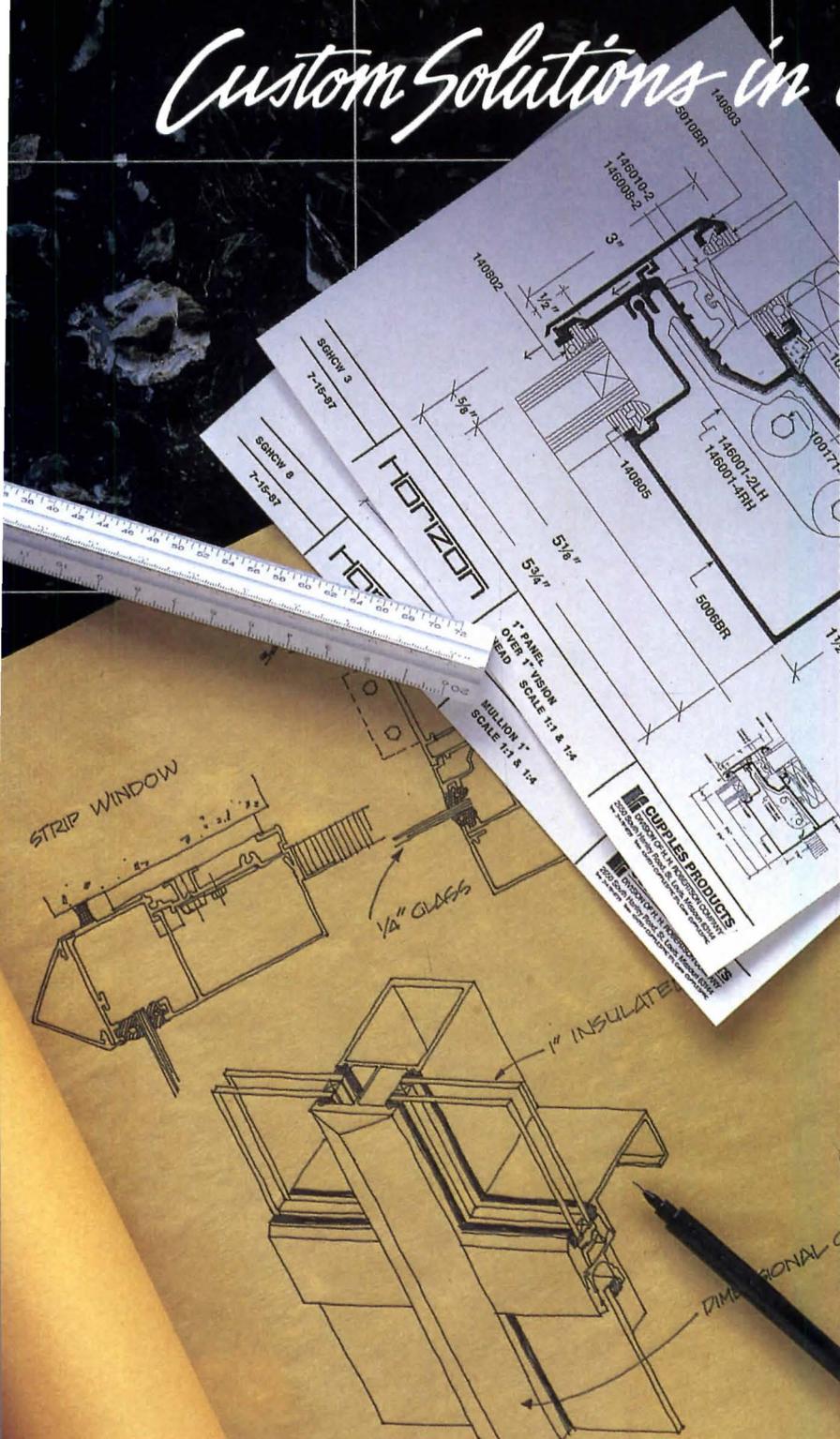


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Scott Gutterman is a free-lance writer in New York City.

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Collecting Frank Lloyd Wright: Vandalism or public service?

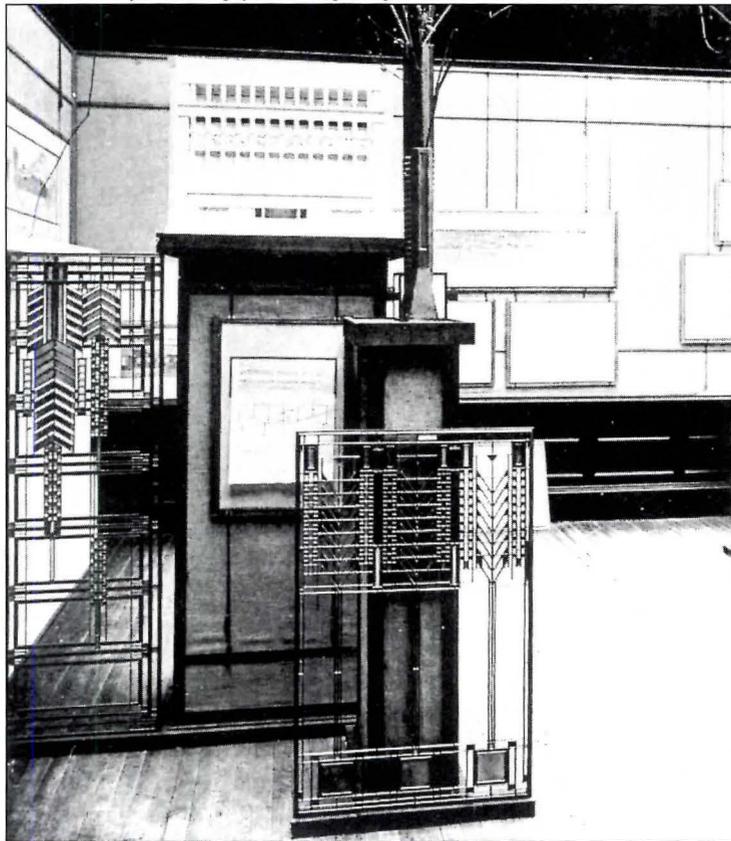
By David A. Hanks

In an English preface to the German version of the Wasmuth portfolios of 1910, Frank Lloyd Wright wrote: "In Organic Architecture, then, it is quite impossible to consider the building as one thing, its furnishings another, and its setting and environment still another. The Spirit in which these buildings are conceived sees all these together at work as one thing . . . The very chairs and tables, cabinets and even musical instruments, where practicable, are of the building itself, never fixtures upon it . . ." Maintaining the "organic" unity of Wright's interiors as completely as possible would therefore appear to be critical to the preservation of his architecture. But the recent rapidly increasing popularity of his interiors and decorative designs has unfortunately encouraged dismantlement and dispersal, as collectors and museums—normally a means of preserving significant works of art—scramble for the limited items available. The very individuality of each of Wright's designs has also, paradoxically, contributed to their dilution: can we expect present-day owners to look upon the private Wright house as a museum, or can it be adapted for contemporary living? Can furniture designed by Wright early in this century (some of it beautiful, but nearly dysfunctional) be made to work for present-day occupants?

Removal of interiors and other architectural elements is not unique to the work of Frank Lloyd Wright. Many of the great works of art and decorative art seen in museums were originally made for specific settings. While it is unquestionably preferable to see Wright's work installed as he designed it, it may be an overreaction to be alarmed

David A. Hanks is president of his own decorative-arts consulting firm in New York.

National Center for the Study of Frank Lloyd Wright



Works by Wright installed under his supervision at the Art Institute of Chicago, 1907.

whenever his designs are taken out of their original context. It is known that Wright's esthetic evolved over time and that he sometimes dramatically "modernized" earlier interiors. (The best example of this is his own Oak Park home and studio, in which restorers have had to decide which era to preserve.) The architect's own philosophy would have precluded the "museumization" of his houses and interiors; Wright believed his work should be lived in.

In 1908, Francis W. Little sold the Peoria, Illinois, house Wright designed for him six years earlier but kept some of the furnishings and decorative objects for installation in a new Wright-designed Minnesota house, which was built in 1912—perhaps the earliest alteration of a Wright interior. There were many disagreements between Wright and Little over the later

The decorative art objects of Frank Lloyd Wright are commanding previously unthinkable prices in the art market. David A. Hanks, the current advisor to the National Center for the Study of Frank Lloyd Wright, at Domino's Farms, Michigan, discusses ways to prevent the corrosive effect of piecemeal acquisition on the integrity of the architect's early houses. Mr. Hanks's catalog of the works in the National Center (from which this article is derived) will be published in 1989.

the high regard that now prevails. Wright furnishings were sometimes discarded or relegated to storage as recently as the early 1970s. A later owner of the 1908 Meyer May house, in Grand Rapids, Michigan, went so far as to chop up the magnificent dining table and lamps and incorporate some of the pieces into a firewood storage box. The dining table of the William G. Fricke house (1901, Oak Park, Illinois), now in the Victoria & Albert Museum, was once used as a basement work table.

A number of successful sales of Wright's work at auction in the early 1980s confirmed the renewed interest in Wrightiana evident in the late 1970s. Items commanded prices previously unheard of for American furnishings, equaling even important 18th-century examples. Owners of Wright houses were faced with an unpleasant dilemma: in addition to being burdened with rising costs for restoration and maintenance, they had to insure windows, furniture, and other surviving artifacts at escalating valuations. Because of the lure of rising prices, Wright's decorative designs were no longer casually destroyed; on the other hand, a growing number of Wright house owners consigned windows and furnishings to auctioneers or dealers.

house, and we can infer that Wright objected more to the addition of the earlier furniture to the new design than to the fact that the earlier house had been "compromised." The 1912 living room can be seen with both 1902 and 1912 furnishings at the Metropolitan Museum of Art in New York. In fact, most of the furnishings that Wright designed to be integral to his Prairie houses were removed or updated either by the original owners or by later ones, thereby altering the unified entities that Wright had intended. By the 1960s, Prairie houses retaining any of their original furnishings were exceptional, and seldom was an appreciation and understanding of Wright's principles of organicism inherited by succeeding owners.

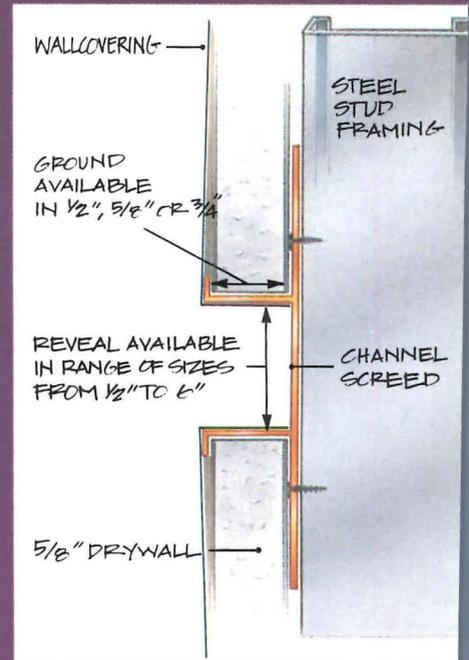
During his career, Wright's decorative designs and interiors were not held in anything like

The Metropolitan Museum of Art has assumed a leading role in collecting Wright's designs. The Metropolitan's extensive collection includes a triptych of windows from the Avery Coonley Playhouse of 1912 and the aforementioned Francis Little living room. The acquisition of metal furniture from the 1904 Larkin Company Administration Building can be considered a preservation effort, since furnishings are the only artifacts to survive the destruction of the building in 1950. The purchase of the interiors from the Little house

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Throughout much of this century, Wright's decorative designs and interiors were not held in anything like the high regard that now prevails. As recently as the early 1970s, Wright furnishings were sometimes discarded or relegated to storage. A later owner of the 1908 Meyer May house went so far as to chop up the magnificent dining table and lamps and incorporate some of the pieces into a firewood storage box.

National Center for the Study of Frank Lloyd Wright



The living room of the 1912 Francis W. Little house, which includes some Wright-designed pieces from Little's 1902 house.

might have been thought an act of vandalism were it not for the fact that this important structure was about to be demolished. The Little interiors are now divided among several collections: the library is installed in the Allentown (Pennsylvania) Art Museum and the bedroom wing is now in the Domino's Pizza Collection, which is part of the National Center for the Study of Frank Lloyd Wright in Ann Arbor, Michigan.

Wright saw museums as an appropriate setting for his work, and he encouraged the exhibition of his designs apart from the architectural settings to which they were once integral. He was involved in installing exhibitions of his early work at the Art Institute of Chicago in 1902, 1907, and 1914; in 1947 he gave two chairs to New York's Museum of Modern Art (one from the Larkin Building, a second designed for his own Spring Green residence). Perhaps he believed his designs would be compared favorably to those of his contemporaries if seen in a museum context. Wright's attitudes toward museums and museum exhibition were ambivalent, if not contradictory. But it is clear that he felt many of the objects now collected could have an esthetic life independent of the interiors for which they had been designed.

In 1974, a number of museums purchased (from a prominent New York dealer) windows that had been removed from the Darwin D. Martin house in Buffalo. By that time, the house had been bought by the State University of New York (it is currently used by the School of Architecture and Environmental Design). The removed objects are now far too valuable to be re-acquired. In this case, it is reasonable to ask whether these institutions were not, even indirectly, encouraging destruction of the essence of Wright's work.

The National Center, by the comprehensiveness of its collection, has stimulated intense interest, but it has also caused an outcry because of the phenomenal prices Thomas Monaghan, president of Domino's Pizza, paid to assemble it. Although the collection is part of a larger program to preserve Wright's architectural heritage, there is no question that Monaghan's purchase of individual objects at record-breaking prices encourages their removal from the original architectural settings. To counteract this trend, Domino's Pizza has developed and adopted collecting guidelines that, if followed by museums, dealers, and auction houses, would help preserve Wright work intact. The National Center will not purchase items from Wright homeowners, or items recently removed; the provenance of items offered by dealers is thoroughly checked; house museums are given first right of refusal when an object originally came from that house.

Still, the role of museums in preserving Wright's decorative designs has yet to be resolved. On the one hand, removing any of the original furnishings and fittings from Wright structures obviously compromises their

architectural integrity, yet the realities of private ownership make the preservation of interiors as originally planned essentially an unobtainable ideal. Acquiring significant works of art and architecture from any period in order to preserve them has long been considered a responsible function of museums. The presence, therefore, of furniture, windows, and other examples of Wright's decorative work in museums may be preferable to their dispersment to private hands through auction sales and dealers.

Efforts to preserve Wright's architecture in place have grown along with interest in his decorative designs. Public awareness can sometimes blunt the competitive dynamic that develops over items of rapidly escalating value. Ironically, though, Wright's buildings often have more value in fragmentary form than in their complete state. The Ward Willits residence (1901), for example, was on the Illinois state preservation register when it was offered for sale in 1983 at \$450,000. Had the windows alone been removed and sold separately, they might have commanded \$1 million or more in total. Unquestionably, the integrity of the architecture

would have been severely compromised without the patterned screen of art glass which helped define the interior space. Ostensibly because of their deteriorated condition, the original windows have been replaced with reproductions (the exactness of which has been questioned); the original windows have now been donated to the Chicago Historical Society.

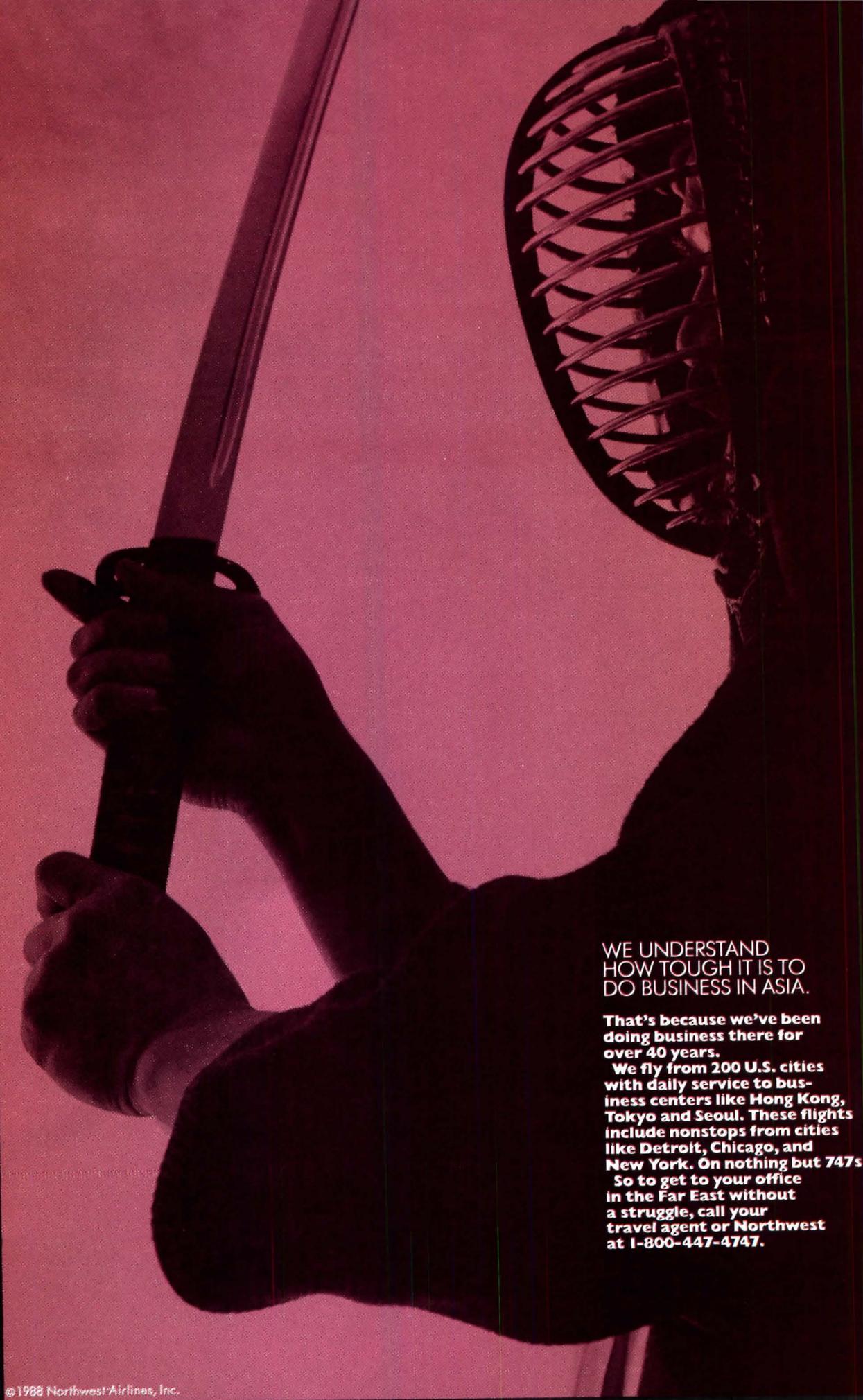
High auction prices may account for the removal of art-glass windows and furniture, but Wright's architectural coherence was no less diminished by later structural additions, unsympathetic color schemes, and alterations for different ways of life. Some owners justify the sale of decorative items by plowing the proceeds into restoration of the building, but this approach will inevitably remain controversial.

Publicly maintained Wright structures pose special problems. The Frederick Robie house (1908), which represented the culmination of Wright's Prairie period, was almost demolished in 1957. At that time, its very preservation was considered a victory. When it was renovated in 1969 by the University of Chicago for use as the Adlai E. Stevenson Institute of International Affairs, Skidmore, Owings & Merrill adapted this important interior for conference center/office use. This remodeling would not now be considered sensitive, but Wright's all-encompassing yet highly detailed approach makes any change of use extremely difficult. (Many feel the Robie interiors should be restored so that the house will convey Wright's original unified vision. This task is possible since both the house and the items removed from it belong to the university.)

Fortunately, through public and private efforts, a number of Wright's best houses are being preserved as museums. The state

Continued on page 71

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takes architecture that is truly responsive. And by understanding constraints rather than avoiding them, Correa manages to function as a vital agent of change in a glorious but troubled country.

The architecture of Geoffrey Bawa is more personal meditation than social response. Bawa came to the profession at the age of 40, after having practiced for some years as a lawyer. His earliest work—indeed his prime motivation to become an architect—centers on the development of a property in unuganga that later became his home. Bawa was fascinated by the process of shaping this domain; he formed a lush, tropical garden and intertwined its form with that of the house. Brian Trace Taylor's introduction to the volume on Bawa's work traces his development in "the creation of places for vistas onto Nature." The architect's idiosyncratic approach transcends landscaping by engaging natural forms in a dialogue with manmade ones, and by juxtaposing elements in an unfamiliar yet cohesive manner. Taylor compares Bawa's feeling for the land—his sense of history and place, of growth and decay—with Carlo Scarpa's approach to building in Venice. The cumulative effect of the garden at unuganga is also likened to a 16th-century Italian garden, in that it works "as a series of rooms seen in succession or as a whole."

Bawa's later works are similarly tied to Sri Lanka's rich terrain. His house for Ena da Silva beautifully incorporates the owner's substantial collection of artifacts into a plan that artfully integrates both the clay-tile roofs that are indigenous cultural expressions and a large mango tree that dominated the grounds. Lately, the scope of Bawa's work has grown considerably, most notably in the impressive new parliamentary complex at Kotte. The buildings are located on an island in a manmade lake; large copper roofs set on timber pillars form the basic ordering structures. The grouping is both functional and extraordinarily elegant, and it points toward a greater public role for Bawa's engaging style of architecture.

of Illinois maintains an important 1903 building, the Susan Lawrence Dana house in Springfield. For a Wright Prairie house to survive until 1981 with its original furnishings intact was most unusual, but such was the case when the Dana residence was put up for sale. As with the Willits house, its windows and furniture were more valuable if removed from the house. Through intervention by the governor of Illinois, however, the state was able to preserve the house and its furnishings together. Another highly successful effort was undertaken in 1986 by Steelcase Inc., in the restoration of Wright's Meyer May house in Grand Rapids (Steelcase's home city). Domino's Pizza is restoring the "Snowflake House" in Plymouth, Michigan, originally designed by Wright in 1941 for Carlton David Wall.

Reconstruction at the Domino Farms site is also underway on Wright's house-as-museum, the 1,700-square-foot, two-bedroom Usonian Exhibition House and Pavilion, first erected in 1953 on the site of the Guggenheim Museum in New York, as part of the exhibition "60 Years of Living Architecture." (For 30 years the structure was thought to have been destroyed, but it had been dismantled and stored by a former Wright apprentice.) Preservation grants, such as those awarded by Domino's Pizza, can also assist preservation of Wright buildings already open to the public but in need of restoration.

Renewed interest in many kinds of American architecture calls for an awareness of the complexities and ethical difficulties that are presented by the collecting of architecture and decorative arts. It should be possible to undertake a rational plan of preservation in which museums, collectors, dealers, and owners—not just of Wright's houses, but of any works of collector interest—join in a united effort to secure the work in a context appropriate to it.

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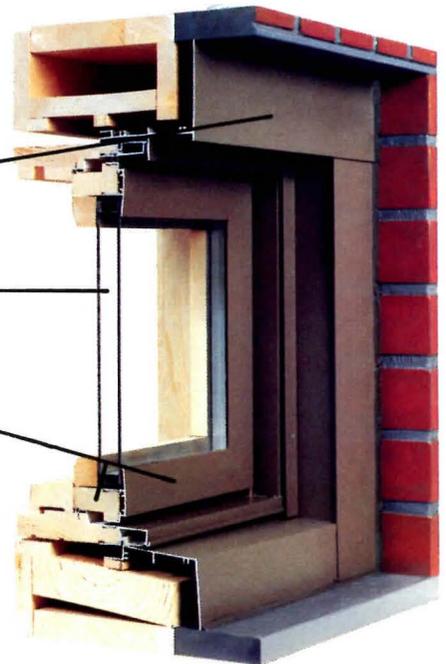
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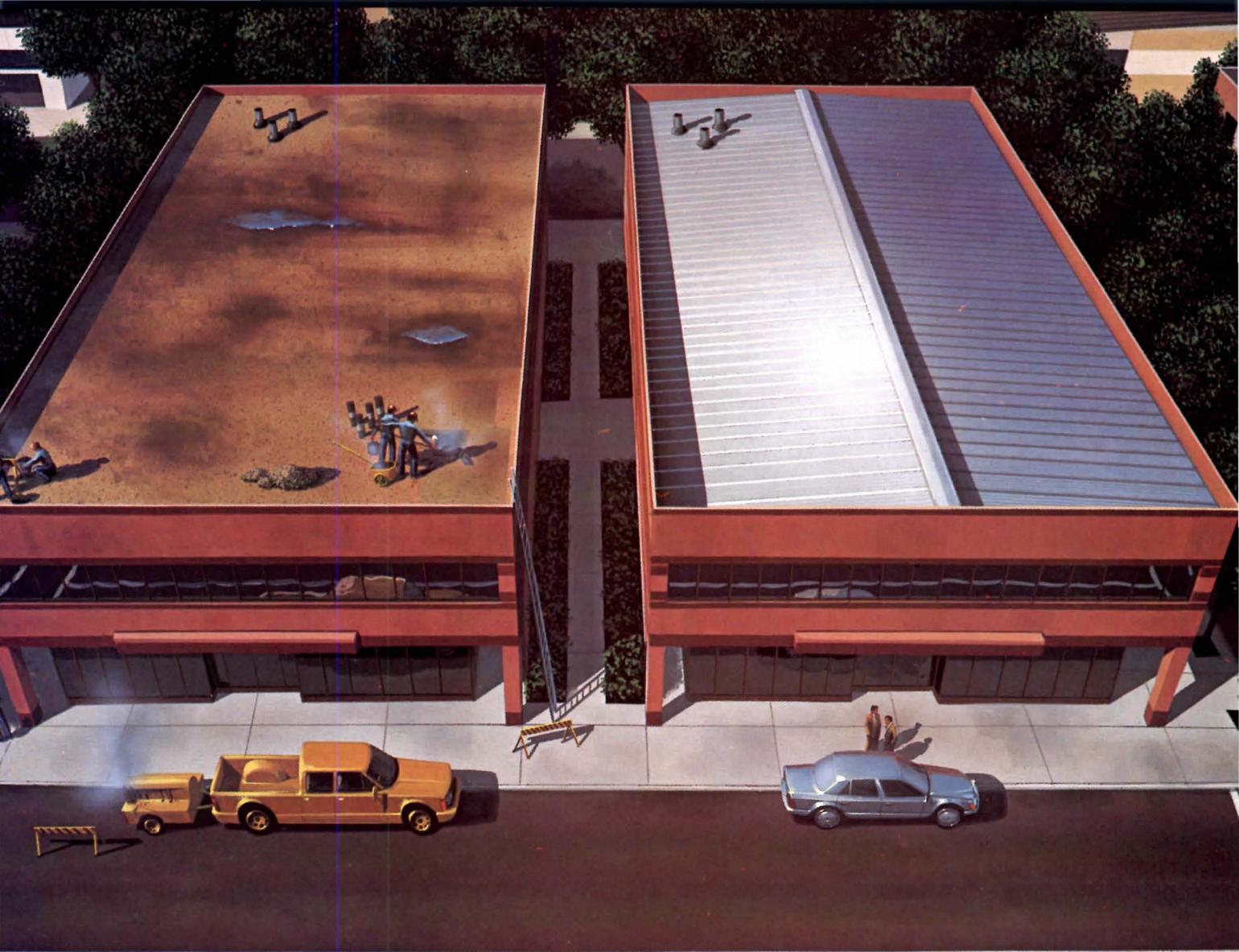
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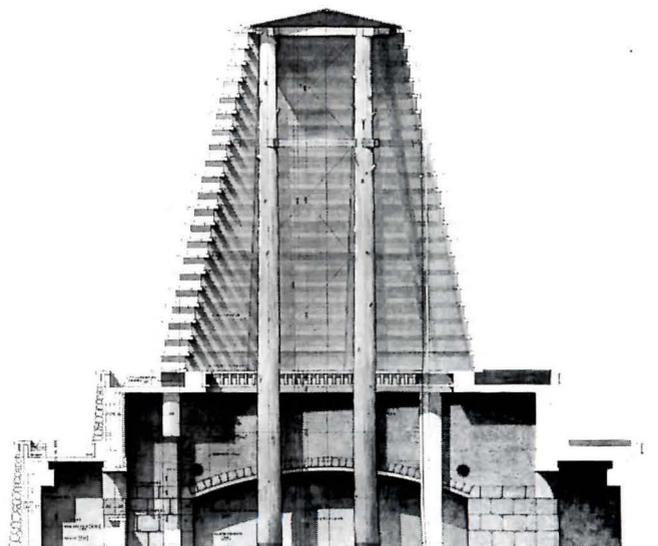
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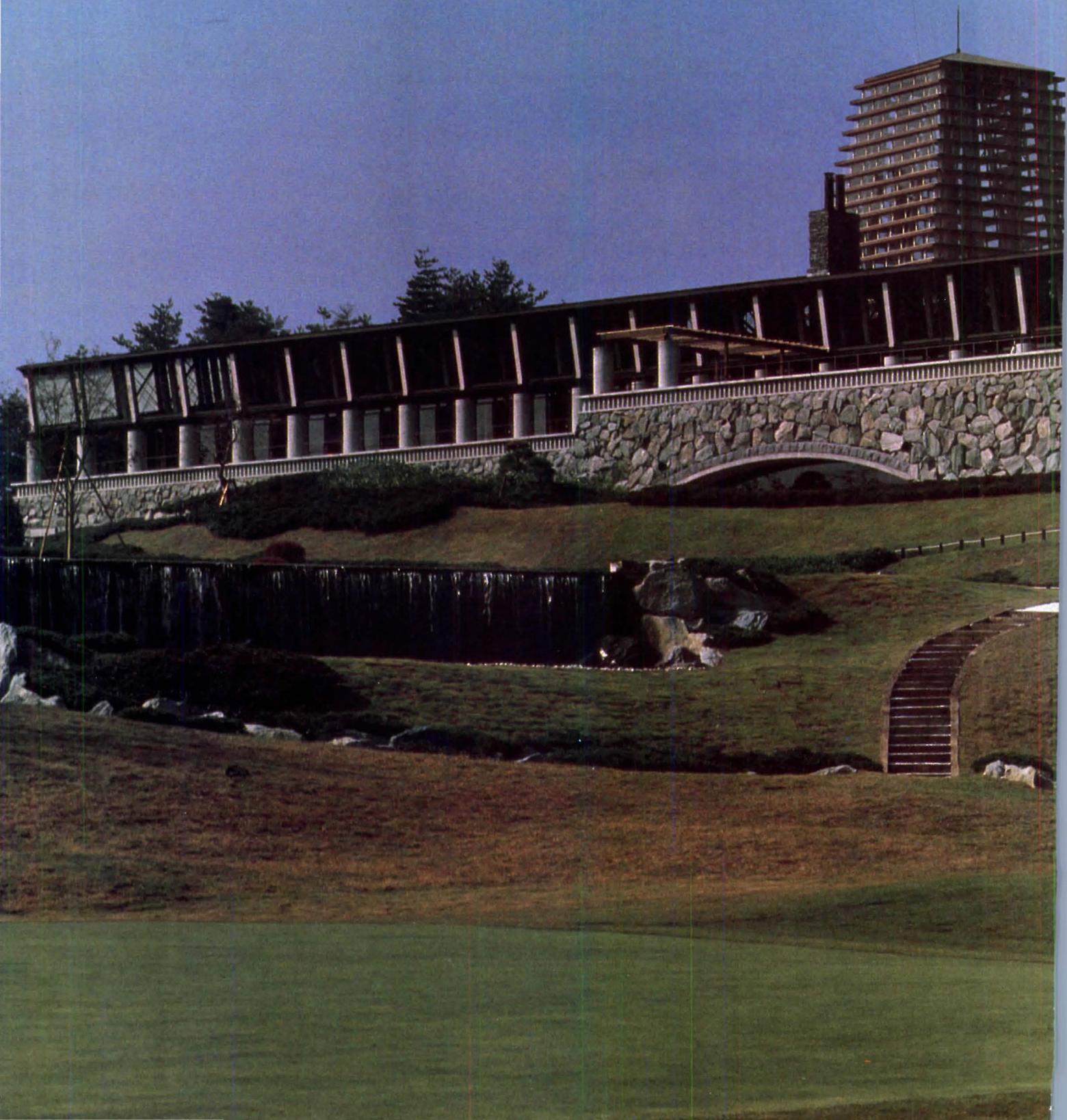
The Japanese architect Arata Isozaki is known for the breadth of his frame of reference, so it is not surprising that he should invoke the Latin phrase "genius loci" in a discussion of his design for a country club on the outskirts of Tokyo (cover, drawing below, and pages 80-89). Literally translated as "the spirit of a place," the classical term encapsulates a sought-after kinship—physical and symbolic—between the elegantly rustic clubhouse and its natural setting. Similar respect for site and tradition, addressed in an altogether different cultural setting, helped shape the New England school library by Architectural Resources Cambridge that is the subject of our second article (pages 90-95). ARC's modest, yet hardly self-effacing, building adroitly meets the challenge of making itself at home among idiosyncratic neighbors.

The rural excursion ends there, though the influence of local character is just as pronounced in the stories that follow. On pages 96-97 we indulge in a little window shopping along New York's Fifth Avenue, to compare various architects' site-specific ventures into the world of high fashion, and their close encounters with the current "geniuses" of couture. Our focus on the changing look of the urban environment widens considerably to take in the topic of this month's Building Types Study, the effect of speculative office development on the growth and spirit of three American cities: Hartford, Connecticut; Charlotte, North Carolina; and Bellevue, Washington (pages 98-111). Though not ranked among the nation's metropolitan giants, this diverse trio faces problems confronting both the private and public sectors of many communities favored with the mixed blessings of prosperity. These case studies are cautionary tales: a quick infusion of "contextual" design is not enough to keep the spirit of a place alive.

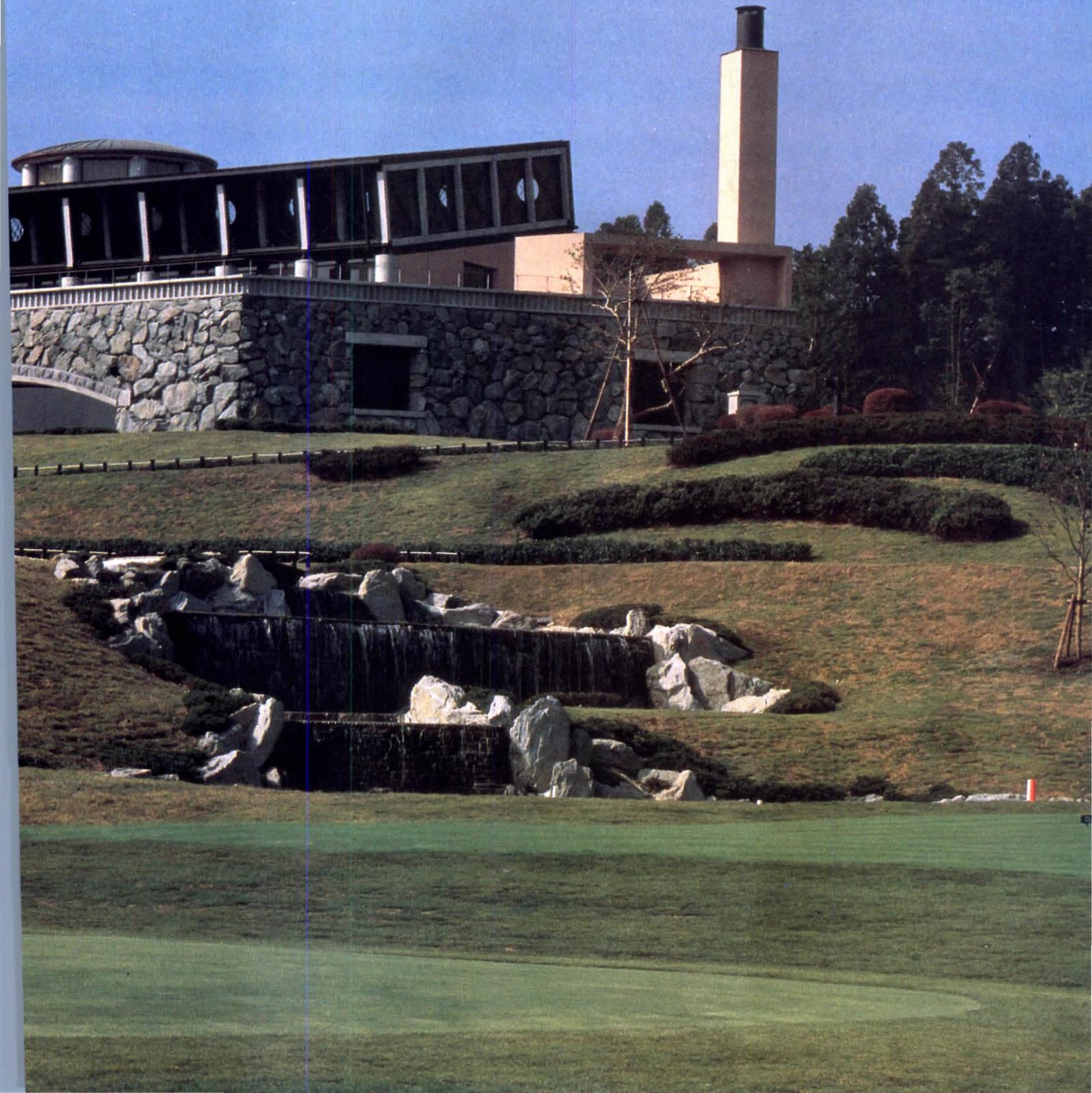


Musashi-kyuryo Country Clubhouse
Arata Isozaki & Associates, Architects

Isozaki in the rough



Musashi-kyuryo
Country Clubhouse
Saitama Prefecture, Japan
Arata Isozaki & Associates,
Architects



Rendered in rustic stone and timber, the picturesque composition of Arata Isozaki's most recently completed building contrasts with the urbane geometries of his internationally recognized museum commissions. In an interview with RECORD editors Paul Sachner

RECORD: The Musashi-kyuryo Country Club returns to a building type with which you were involved over a decade ago, at the Fujimi Country Clubhouse (1972-4). But while your question-mark-shaped plan for Fujimi was a witty comment on the relevance of golf to Japanese culture, your latest design—with its references to indigenous architectural models—strikes a different, less ironic note.

Arata Isozaki: The new building *is* quite a big change from Fujimi. In the 1970s, Japanese city and country life were not so different as they are now. In fact, I designed the Fujimi Clubhouse to have a smooth urban character. Ten years later, though, some kind of escape from the modern city seemed more necessary, and I thought the best way to provide it was to create a more rustic clubhouse that related to the natural beauty of the landscape. Originally, the site of the Musashi-kyuryo golf club [located on the edge of Okumusashi Hill National Park in the Saitama Prefecture, two hours northwest of Tokyo] was a forest planted with huge cedar and cypress trees. I felt sad that these trees were going to be destroyed. Then, during excavation of the site, a beautiful green schist was also discovered. So I decided to incorporate the trees and stone into the design as significant symbols for the new clubhouse, memories of the forest.

RECORD: In the United States, country clubs are often designed in a conservative mode that reflects their members' way of life. Your country clubs, on the other hand, are startlingly original. Why are the Japanese apparently more willing to accept unconventional architecture?

Isozaki: Actually, most country clubs in Japan are also conservative, with traditional pitched roofs. The owners of Musashi-kyuryo had a special interest in design, however. They wanted to create something extraordinary in order to compete with other country clubs that already surround the area.

RECORD: Golf has become quite a mania in Japan. In Tokyo, for example, where land is certainly scarce, there are driving ranges tucked into precious real estate all over the city. Given the cult status of golf in Japan, can the program for a clubhouse in your country actually be the same as it would be in the U. S.?

Isozaki: Although I have never visited a country club in America, I think they are quite similar. The main functions are locker rooms, dining rooms, and sitting areas. I don't think there is anything really that special about a Japanese clubhouse.

RECORD: How did the site determine the form of the clubhouse?

Isozaki: Since the golf links are located on a flat area below the clubhouse, a low-rise building would have been invisible from a distance. I felt that the building needed a tall element to orient the players, so I included a tower.

RECORD: Another obelisklike tower also appears in your winning scheme for the Brooklyn Museum addition competition. Does the obelisk form have any special significance for you?

Isozaki: Actually, Musashi-kyuryo was designed two years before the Brooklyn Museum, and I conceived the clubhouse tower as a conical form, much lower than the obelisk of the final design and without any timber columns. But the intent was the same: I wanted to create a strong symbolic element in the middle of the building. The obelisk doesn't refer to a historical model, but was conceived as a metaphor for the forest that once stood on the site. Daylight is diffused through the wooden louvers as sunshine is filtered through tree leaves [opposite top]. The columns are symbolic, not structural. At first, I also wanted to construct the

roof in wood but, due to fire codes, it had to be made of precast concrete sized to timber dimensions. Its form expresses the idea of a Vierendeel truss or a ladder [opposite bottom]. Wood is also used as the primary finishing material in the interior. The floors are covered in wood bricks and are durable enough so that golfers can walk around with their spiked shoes on.

It was the client who first suggested that I incorporate timber from the site. I accepted that idea and expanded it to include native stone. For the Japanese, stone and timber are elements expressive of the spirit of a place, its *genius loci*. However, when the clients compared the available timber on the site to the thick columns in my drawings of the building, they decided we needed a sturdier type of tree to create the proper scale. We ended up transporting 60-foot-high trees from a forest 20 miles away. Everyone became so excited about them! I've used huge steel members before, but no one ever got excited about *them* because they thought of steel as a rational, manmade frame. People immediately felt something spiritual about the tree columns. There is, in fact, an important Japanese Shinto shrine with tree columns on a similar scale. During construction, we held a big festival to celebrate the installation of the tree columns.

RECORD: The public spaces of the clubhouse—the "obelisk" and the templelike cylinder, especially—do approach the religious quality associated with old shrines. Your references to historical models at Musashi-kyuryo, however, are executed in a far less literal manner than was employed in your Tsukuba Civic Center [RECORD, October 1983, pages 124-137], and their sources are much closer to home than the Western inspiration of Tsukuba.

Isozaki: Yes, there are obvious references to the stone bases of Japanese temples and castles. Using craftsmen trained in traditional techniques, I found that, unconsciously, automatically they created familiar Japanese forms. For example, the workmen began canting the stone walls in a classic Japanese way before I insisted that they be straighter.

RECORD: There seem to be traces of the Beaux-Arts in your drawings of the building, with their exquisite wash shadows. Is this an intentional resemblance?

Isozaki: The drawings were created for a GA gallery exhibition. Since I didn't have any really fine presentation drawings, I photocopied the production drawings of the clubhouse and rendered them in watercolors. These images may *look* Classical but I don't feel the design as a whole is particularly influenced by the Beaux-Arts. The composition, of course, is asymmetrical. Although you enter on axis into a great hall, the circulation from that point becomes multidirectional.

RECORD: You are best known internationally for your museum designs. Beyond the obvious programmatic differences, is there a basic relationship between those projects and this country club?

Isozaki: The breakdown of elements and the dialogue between the parts of the country club are similar to my designs for the Museum of Contemporary Art in Los Angeles [RECORD, January 1988, pages 102-111] and the Okanoyama Graphic Art Museum [RECORD, May 1986, pages 106-115]. But the rusticity of the country club is certainly different. My latest museum design—addition to the Hara Museum in Tokyo, which opened in May—also reflects this attitude. It too is finished in wood, though instead of an obelisk, it has a pyramid.

RECORD: History again, but memories of a different forest?

Isozaki: Perhaps.

and Deborah Dietsch, the eclectic Japanese architect explains how his design for a clubhouse on an 18-hole golf course intentionally blends his formal order with symbolism inspired by nature.

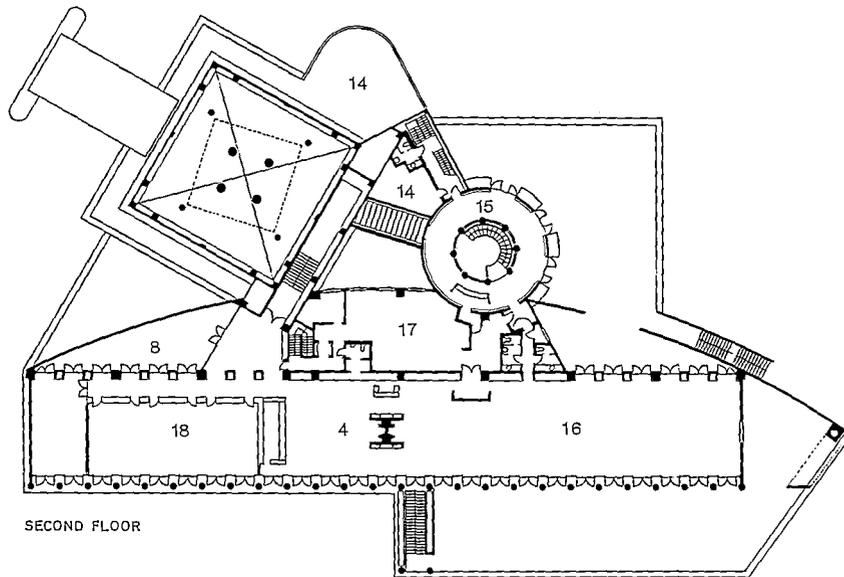


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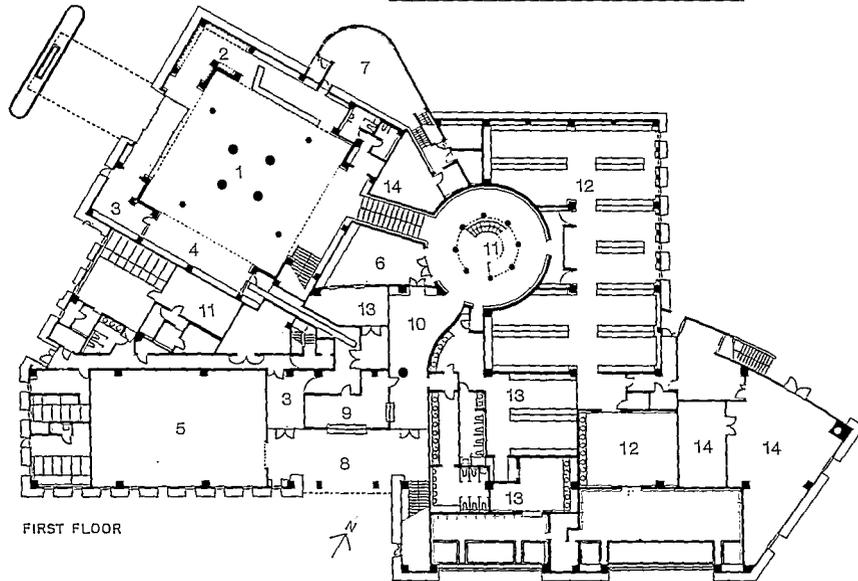
The square entrance hall, circular coffee lounge, and oblong restaurant/conference wing of Arata Isozaki's Musashi-Kyuryo Country Clubhouse (top plan) rest on a masonry base containing locker rooms, golf cart storage, and other support areas (bottom plan). Golfers

enter the clubhouse through walls finished in green schist excavated from the site (overleaf), the same stone that clads the exterior. After descending through a low passageway, members and guests emerge into a daylit hall within the cylindrical pavilion.

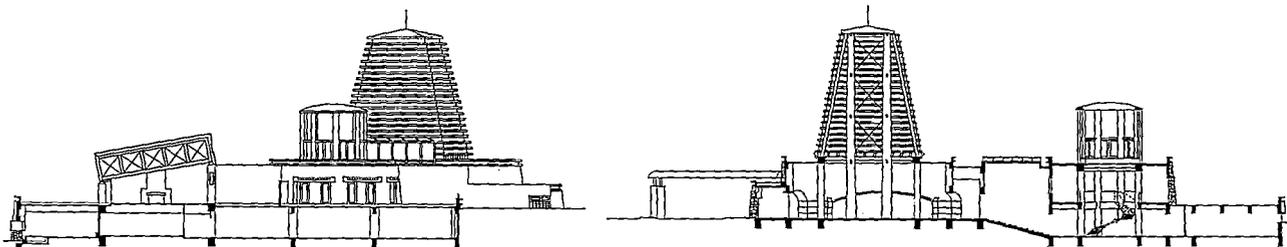
1. Entrance hall
2. Shop
3. Bag storage
4. Lounge
5. Caddie cart parking area
6. Courtyard
7. Office
8. Terrace
9. Caddie master's room
10. Starting hall
11. Locker hall
12. Men's locker room
13. Women's locker room
14. Mechanical
15. Coffee lounge
16. Dining hall
17. Kitchen
18. Competition room



SECOND FLOOR



FIRST FLOOR



The obelisk-shaped tower that crowns the center of the entrance hall is supported by the trunks of four 300-year-old cryptomeria trees stripped of their branches and bark (opposite). The 60-foot-high timber columns define the corners of a square set at an

oblique angle to the orthogonal hall, but on axis with an arched opening leading to a staircase and locker rooms. Within the obelisk, the tapered columns brace a slanted framework of wooden louvers that filter sunlight into the masonry-clad hall (opposite).







On the third story of the templelike cylindrical pavilion, a shallow-domed room for special occasions (top right) affords a spectacular panorama of the Musashi-kyuryo hills surrounding the country club. The main restaurant, in the south wing of the clubhouse (bottom right), commands views of distant Tokyo skyscrapers, visible through french doors and full-height windows. Angled clerestories enhance natural illumination throughout the dining room. Though fire regulations prevented Isozaki from realizing a design for public spaces constructed in wood, he nevertheless detailed the restaurant's exposed precast-concrete trusses as though they were timber (bottom right and opposite). A massive fireplace, constructed of indigenous stone, divides the main dining room from a cocktail lounge (opposite).



Musashi-kyuryo Country Clubhouse
Saitama Prefecture, Japan

Architect:

Arata Isozaki & Associates—
Arata Isozaki, principal-in-charge; Hiroshi Aoki, Kenji Sato, design team

Engineers:

Kawaguchi and Engineers (structural); Kankyo Engineering Inc. (mechanical/electrical/hydraulic)

General contractor:

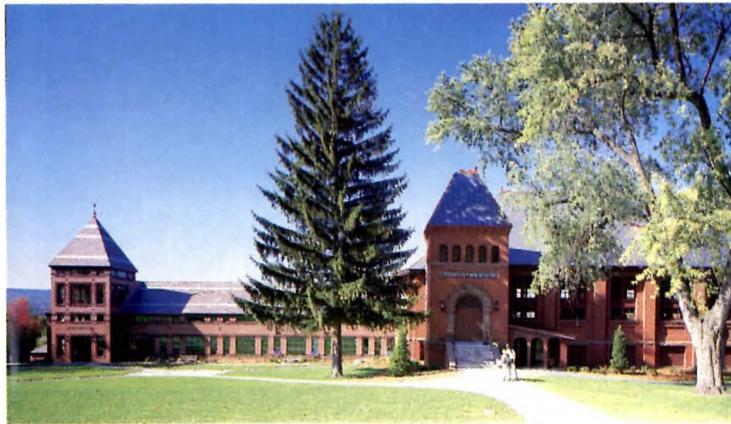
Taisei Corporation





Dolben Library
 Northfield Mount Hermon School
 Northfield, Massachusetts
 Architectural Resources Cambridge,
 Architects

A scholarly addendum



Among the Northfield School's casually scattered buildings (partial campus plan opposite), the new Dolben Library gains prominence—and stylistic precedent—from its linkage with a turn-of-the-century gymnasium recently converted to a student center (above).

Until 1879, when the Bible-thumping evangelist Dwight Lymer Moody founded the Northfield School, its site was a religious retreat where denizens of the region convened to revive body and spirit. Today, the parklike setting, rolling from the Connecticut River valley toward the just-visible Berkshires, retains the unstudied repose of a rural haven, though Moody's summer Bible classes have given way to a preparatory-school curriculum, and the great assembly hall he raised for revival meetings now houses school gatherings. Seemingly innocent of planning, the campus is entwined with meandering roads among which its buildings dispose themselves as casually as guests at a picnic. Yet the groups and pairs and singletons engage in a common discourse spiced by the individuality—not to say idiosyncrasy—they assert within a matrix of High Victoriana.

Atypically in this ensemble of soloists, the new Dolben Library was from the first conceived as an addition rather than an independent structure. The original proposal called for expanding the century-old Talcott Library and an equally outdated '50s add-on to double their capacity and accommodate new information technologies. When the school opted instead for a wholly new library on a new site downslope from Talcott, which will become an arts center, a freestanding building was again forgone in favor of close coupling with a venerable gymnasium lately metamorphosed into the school's student center. Strategically placed at a major hub of campus comings and goings, the Dolben Library also joins with Talcott and a nearby music building to lightly sketch an embryonic extra-academic cluster, reinforced by a landscaped forecourt at the elbow between library and student center. In addition, the linkage enabled the architects to confiscate from the former gym "free" space in a one-time swimming hall to house an up-to-date media center, including a 250-seat movie theater that replaces a makeshift screening room atop the long-decked-over pool.

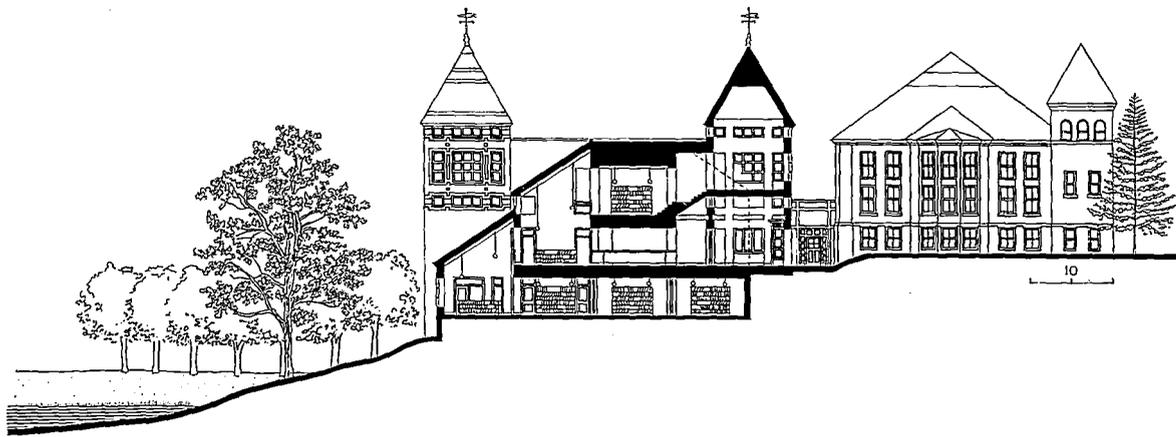
Dolben brings to a motley campus dominated by three- and four-story edifices a low profile and horizontal sweep more reminiscent of the Prairie School than of eastern eclecticism. But it also bows to the commanding presence of its elderly Victorian sibling, whose four-square entry tower it reprises in cater-cornered, peak-roofed towers that form emphatic endpieces halting the flow of its north and south faces. Though its detailing is softened and simplified in keeping with its modest demeanor, the library also echoes the older building in its rich variegated brick cladding and ornament, and the rhythm, framing, and generosity of its fenestration. The deference, though, is more apparent than real. Actually larger than the student center, Dolben contrives to visually diminish its three stories and 26,500 square feet with a deft descent of the site's steep decline.

The slope is further exploited by an interior conceived, says ARC design principal Joseph Maybeck, as "lofts within a barn. From a second-level entry, upper and lower stack floors dotted with reading rooms and study corners stairstep in long terraces made intimate by contrast with the openness of their surround—a light-filled expanse defined by a layered pitched ceiling and an outer wall from which windows and clerestories, set deep in an engaged "colonnade," overlook twin ponds below. Continuing the theme of refined rusticity, accouterments are predominantly light oak against a muted background. Barn-red and gray-blue trim and the incidental color contributed by books and readers, brighten a milieu at once spirited and serene. *Margaret Gaska*

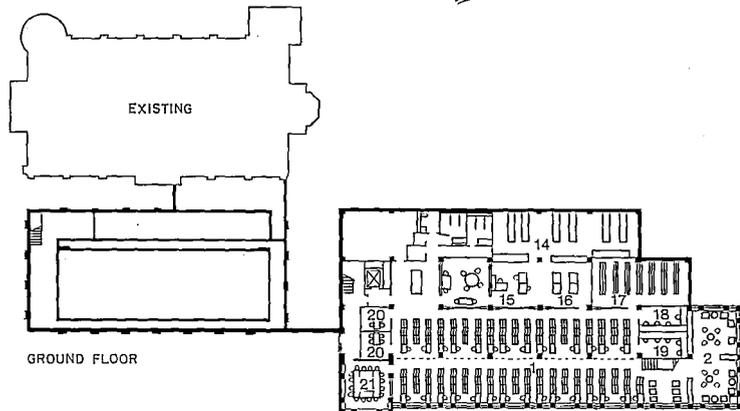
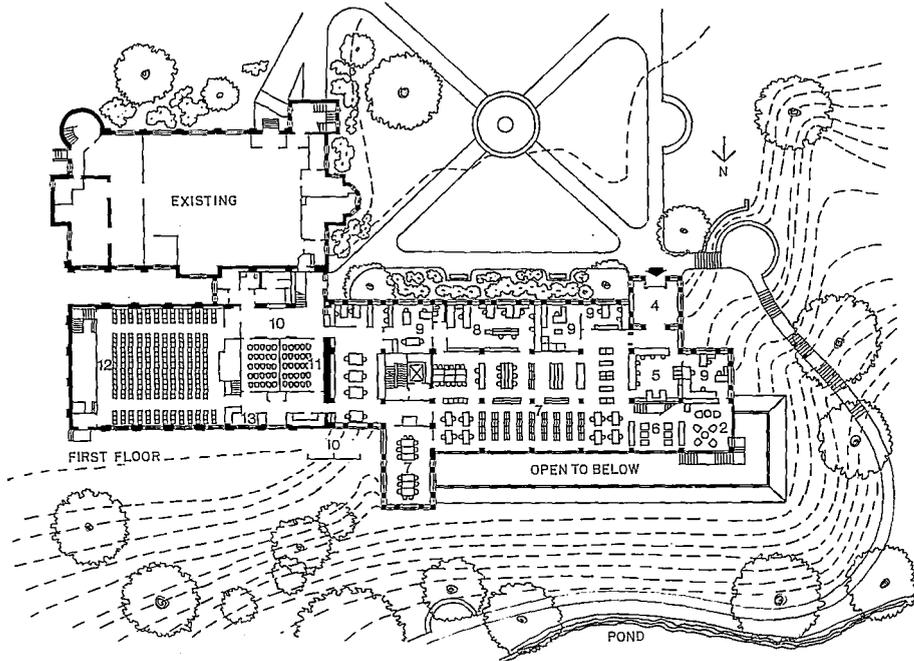
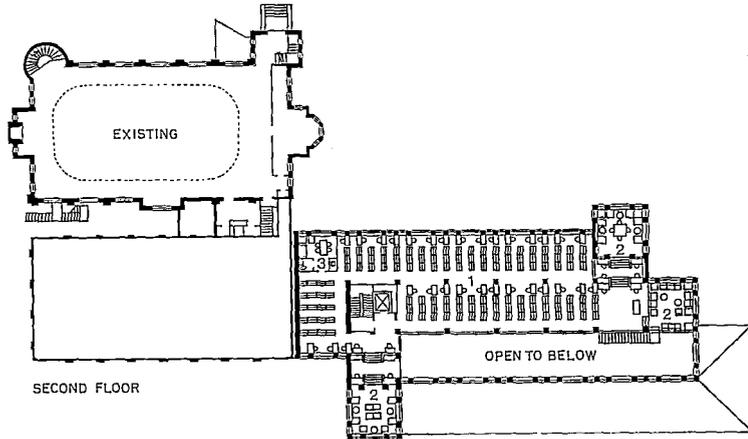
A library merges gracefully with a difficult site and eccentric High Victorian neighbors on a New England campus.



Set tight against its hillside, the library's mass visually diminishes to a decorously low profile that complements the verticality of its neighbor, whose "borrowed" entry tower provides full-stop endpieces for the new building's front and rear (opposite top) facades.



1. Stacks
2. Reading room
3. Staff lounge
4. Vestibule
5. Circulation desk
6. Periodicals
7. Reference
8. Cataloging
9. Office
10. Lobby
11. Audio-visual
12. Theater
13. Darkroom
14. Archives
15. Work area
16. Maps
17. Periodicals storage
18. Records/tapes
19. Computer
20. Group study
21. Seminar



Turning the site's declivity to advantage, the library's stairstep profile reflects a layered plan that combines efficiency with expansiveness. The entry is at the second level, the building's largest, which houses the main reference room as well as administrative

and work areas, and adjoins the converted audio-visual wing. At ground level, stacks ringed by study and seminar spaces adjoin work and storage areas (including the school archives) tucked into the hillside. The remaining stacks are on the upper level.



Without resort to the often-exuberant applied ornament characteristic of Northfield's original buildings, the Dolben Library achieves surface richness through the restrained patterning of contrasting brown-brick insets and surrounds that point up ample

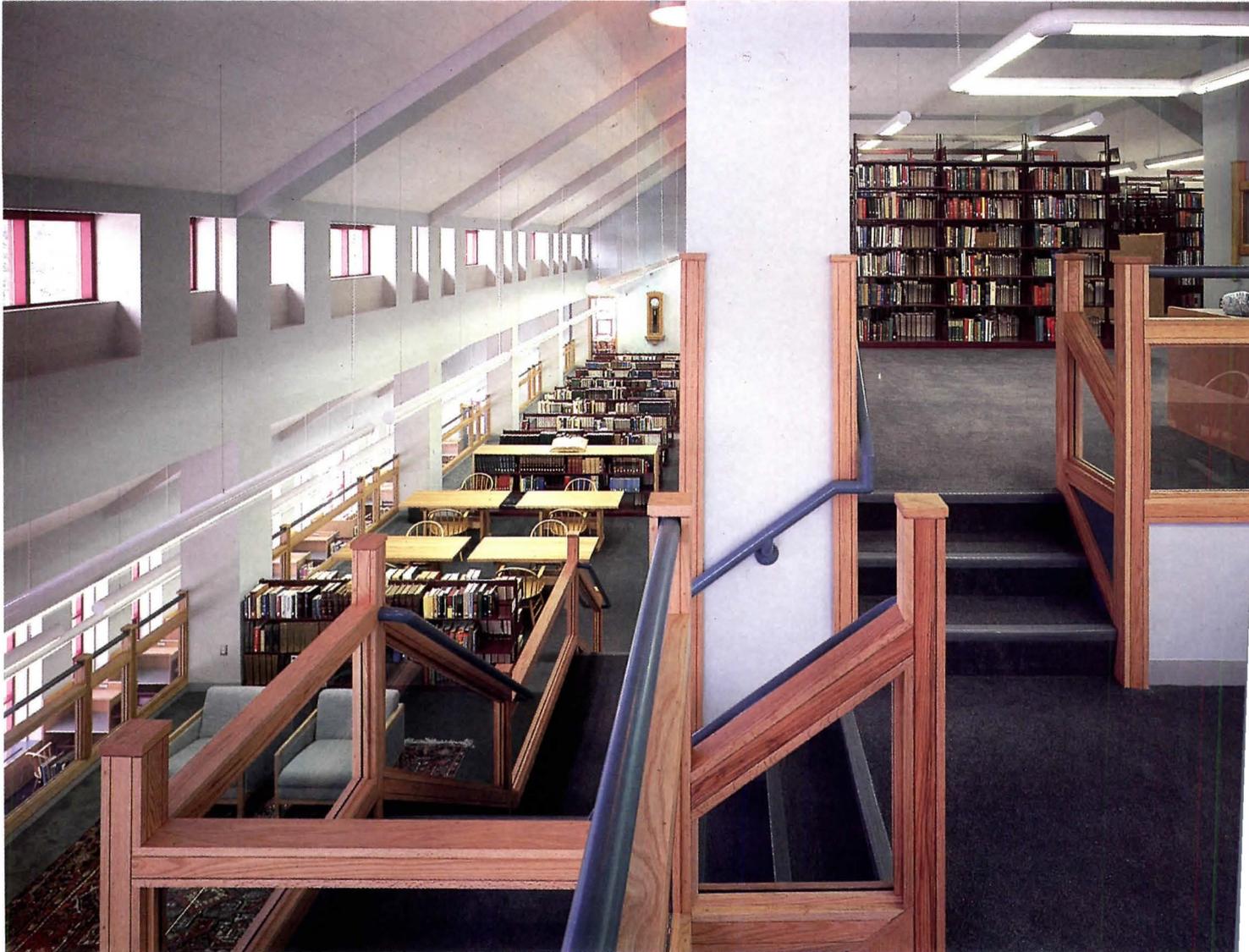
arrays of handsomely proportioned and detailed wood-framed windows. Installed to shield books from sun exposure, green-tinted ultraviolet-inhibiting glass also adds subtle color echoed by muted green bands in the mauve-gray slate roof.

Inside as well as out, the library's potentially forbidding size is domesticated by the terraced configuration that opens stack "lofts" to the airy expanse beneath the double-shed roof. The 16-foot-square structural module is emphasized by hefty columns

and by accent bands on carpets and balcony fascias. To further define the structure, light-facing north-south surfaces are painted in cool white, and east-west surfaces in a warmer tone. The blue and red trim used throughout the building underscores the lush colors of

oriental rugs donated by a parent, while the natural wood is picked up by an antique Victorian clock (center in photo below) donated by school employees who unearthed it in the woodshop. Among the library's popular "special" spaces are eyrie-like reading

lounges tucked into the corner towers (opposite bottom) and the rebuilt theater (opposite), which is used for Saturday night movies as well as instructional films.



olben Library
Northfield Mount Hermon
School

Northfield, Massachusetts

Architect:

Architectural Resources

Cambridge, Inc. — Henry

Reeder, Jr., principal-in-

charge; Joseph Maybank, design

principal; James F. Davies,
planning principal; Philip
Laird, Christel M. Jorgenson,
project architects; Been Zen
Wang, design associate; Robert
Zverina, Aric Gitomer,
Rukhsana Saeed, Andrew
Smith, Olive Holmes, Kim
Johnson, project team

Engineers:

Zaldastani Associates
(structural); Panitsas
Associates, Inc. (mechanical/
plumbing); Lottero & Mason
(electrical)

Landscape architect:

Carol R. Johnson & Associates

Consultants:

James Gui (specifications);
Robinson Roth & Associates
(lighting); Harold Cutler (fire
protection); L. G. Copley
Associates (acoustics); Bonita
Graphics (signage); Bunyard
Studio (granite signs)

Contractor:

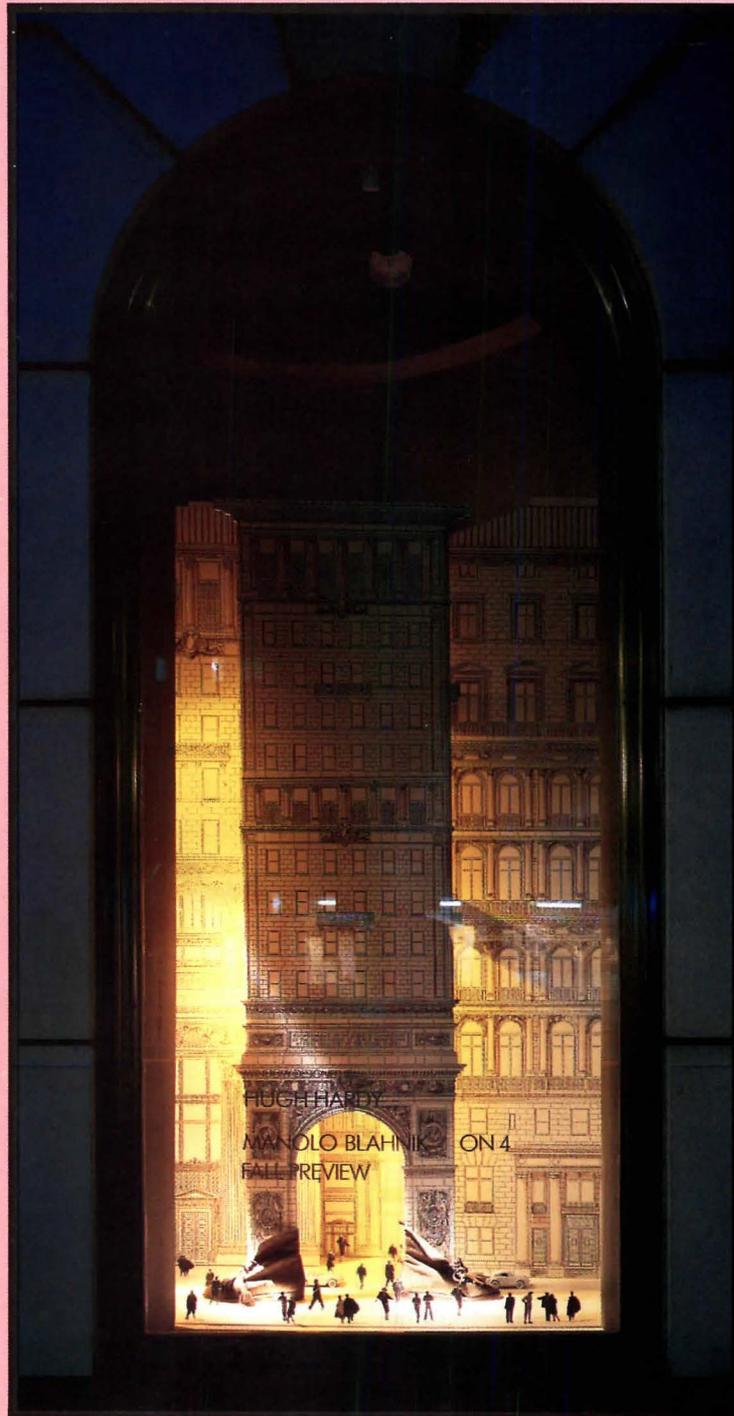
Baybutt Construction Co.



Bergdorf Goodman
Fifth Avenue Windows
New York City

Dressed for success

To furnish a public showcase for architects during the AIA National Convention in Manhattan last May (pages 33, 35), the Institute's New York Chapter encouraged Fifth Avenue retailers to mount related displays in their windows. The most ambitious response came from Bergdorf Goodman, which invited 10 of the AIA's more celebrated members to design individual window displays (we show a sample here). Asked to include outfits or accessories by selected fashion designers in their projects, the architects otherwise had esthetic carte blanche within their assigned frames. Several tableaux incorporated home furnishings the architects had previously created for Swid Powell (which are all available at Bergdorf's). Robert Venturi's elaborate backdrop for a Christian Lacroix costume, for example, was woven entirely out of the architect's *Notebook* and *Grandmother* plates (figure 3), and also included a chair his firm designed for Knoll International. Other contributors, such as Robert A. M. Stern, whose version of the Erechtheum's caryatid porch contains a figure clad in a Geoffrey Beene original (4), made playful comments on the styles of clothing and of their own architecture. Meanwhile, at the convention itself, participants in a panel discussion on "Star Architects and Designer Buildings" questioned whether the mirror of fashion necessarily flatters master builders. Michael Sorkin, architecture critic of *The Village Voice* observed: "Architecture has adopted a



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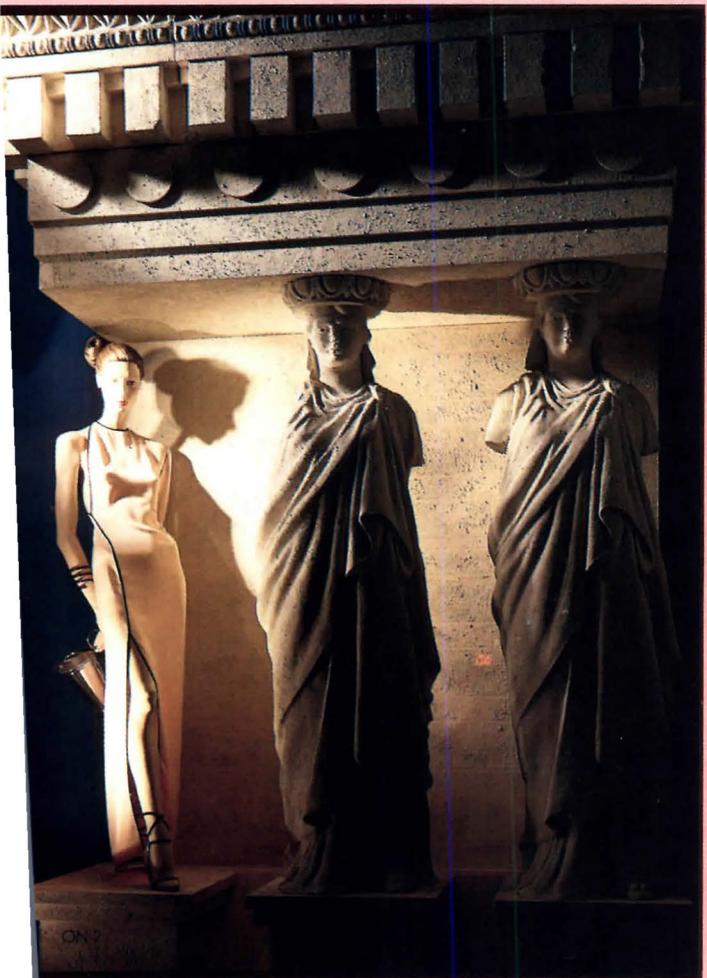
sartorial mentality in which 'codes' lie in the details (the 'stitching'). Architects tailor essentially comparable goods for reasons of signature and stature." Joseph Giovannini, of *The New York Times*, wondered whether the marketing of architects' involvement in the design of decorative accessories may not imply that "architecture, like consumer objects, is disposable." With reference to buildings based on the concept that architecture consists of styles that are either "in" or "out," Giovannini noted that "the appearance of the work is dissociated from any ideas it may embody, because fashion is perpetually on a wave of change." On the other hand, he allowed, "Sometimes fashion beautifully captures something about the time." K. D. S.

Five of the mixed matches of architects and couturiers framed within the rusticated Bergdorf Goodman facade designed by Allan Greenberg:

1. Architect Hugh Hardy's arc supports are footings by shoe designer Manolo Blahnik.
2. A Lilliputian mannequin clad à la Jean-Paul Gaultier poses amid Roger Ferri's urban towers.
3. Venturi, Rauch and Scott Brown's fashion plates and chair complement Christian Lacroix.
4. Robert A. M. Stern and Geoffrey Beene bring a class up to date.
5. Michael Graves built and painted a surrealist figure to confront a mannequin garb by Giorgio Armani.



3



5

Three cities, on spec

Building Types Study 655:
Speculative office buildings

"The chief business of the American people is business," said Calvin Coolidge, in a 1925 speech to a gathering of newspaper editors. And although American capitalism was shaken to its very foundations just four years later with the onset of the Great Depression, the United States remains a nation firmly committed to a belief in the virtues of free enterprise.

What *has* changed in the 60 years since Coolidge occupied the White House is the arena of American commerce. Work, to a large degree, has shifted from red-brick factories and family-owned farms to steel-and-glass office buildings; company towns are evolving into corporate centers, as communities everywhere, from aging industrial villages in New England to the brave new metropolises of the Sunbelt, struggle to compete for business in a postindustrial society; and developers are responding to the call for white-collar space with speculative projects that in 1987 represented about 25 percent of all nonresidential construction in the United States (according to statistics compiled by the F. W. Dodge division of McGraw-Hill Information Systems).

The value of commercial-building contracts initiated in 1987 was \$21.8 billion, and even though that figure is expected to decline in 1988 to \$19.1 billion (a reflection less of economic uncertainty following last year's stock-market collapse than of speculative overbuilding earlier in the decade, mainly in Houston, Denver, and other cities whose economies are fueled by the energy industry), spec-office construction will continue to represent a growing percentage of architects' work in an increasingly service-oriented society. Then, too, as indicated in a recent survey by Landauer Associates, a national real-estate consulting firm, Wall Street's current woes could actually have a positive impact on commercial building, as nervous institutional investors turn away from the stock market and put their money into office-development projects. In the long run, Landauer's report concludes metaphorically, "real estate may be the diligent tortoise to Wall Street's prodigal hare."

Given the enormous volume of office construction in this country, it is unfortunate that architects and developers over the past 40 years have frequently settled for the lowest common denominator when planning spec projects. In fact, if one had to single out the building type most responsible for the visual homogenization of American cities and their suburbs, it might be the sterile downtown towers and nondescript roadside boxes that have virtually redefined American urbanism since the end of World War II. By contrast, architects and developers working before the war produced some of the most distinctive civic monuments in American architectural history, from Louis Sullivan's seminal Chicago skyscrapers to the most celebrated spec-office tower of all, the Empire State Building.

In recent years RECORD has covered a handful of exceptional office buildings whose design successfully marries their clients' profit motive with the art of architecture. For our present study of the commercial genre, however, we decided to move away from the usual microscopic scrutiny of individual projects and instead look at the bigger picture via a macrocosmic examination of commercial architecture in three representative American cities. During the selection process, we deliberately eschewed some fairly obvious choices—Pittsburgh, say, or San Francisco—already well documented in the architectural and general press. But even after narrowing our search to small- and medium-sized metropolises, we still faced something of an embarrassment of

riches. The 1980s have witnessed an explosion of commercial building, not only in such established cities as Indianapolis, San Diego, and Boston, but also in once-quiet resort and college town like Fort Lauderdale, Austin, and Lexington, Kentucky, all of which now boast skylines of metropolitan stature.

The cities we ultimately selected represent three very different geographical regions and three distinctive urban typologies: Hartford, the land-poor corporation-rich Connecticut state capital that finds itself in the midst of the biggest potential downtown building boom in its 350-year history; Charlotte, the unabashedly promotional Southeastern banking center and air-travel hub that enjoys touting its new National Basketball Association franchise as a literal symbol of its emergence into the urban big-leagues; and Bellevue, the erstwhile Seattle bedroom that is now perhaps the nation's most striking example of an "urban village"—the suburb that begins to challenge the commercial supremacy of its parent city.

Far more illuminating than their differences, however, are some telling similarities. During the 1960s and '70s all three cities underwent significant, and in many ways wrenching, physical changes—Hartford and Charlotte by way of the typical urban-renewal route, Bellevue through uncontrolled suburban-style commercial development. Local merchants, seeking greater public accessibility, encouraged federal road planners to run interstates right through the center of town, ignoring the fact that these arteries can draw business out of, as well as into, the urban core. Planning fell victim to the ad-hoc construction of unrelated, usually uninspired, individual structures, some of which are all too visible in the skylines shown on the facing page.

Then, almost as if on cue, all three cities passed ordinances specifically intended to reverse the mistakes of the postwar years: Hartford's Downtown Development Plan (1984) and Urban Design Guidelines (1986), Charlotte's Uptown Mixed-Use Ordinance and Urban Design Guidelines (1984, amended in 1987), and Bellevue's Central Business District Sub-Area Plan (1980) and Pedestrian Corridor and Major Public Open-Space Design Guidelines (1981) are unrelated but essentially like-minded documents that move beyond conventional zoning by strongly urging or even requiring developers to incorporate certain urban amenities into their downtown commercial projects. It is still too early to evaluate long-term effects of these ordinances, variations of which have been enacted in other cities. And yet, the projects illustrated on the following pages do suggest that under the new mandates, spec building as we have known it has been replaced by a mixed-use structure that often includes some combination of ground-floor shops, programmed public open space, enclosed parking, and, in its most desirable form, housing. Even without legislative coercion, many private developers have finally come to recognize that a building's architectural distinction helps sell space. According to Daniel Friedman, a young developer involved in the 180 Allyn Street office project in downtown Hartford, designed by Skidmore, Owings & Merrill, "tenants look to the credibility of the building's architect, and its design, as an extension of their own credibility." In other words, Friedman and other enlightened office developers are beginning to realize what city-builders of the 19th and early 20th centuries knew all along: that the fiscal exigencies of the bottom line by no means preclude the time-honored architectural principles of firmness, commodity, and delight. *Paul M. Sachner*

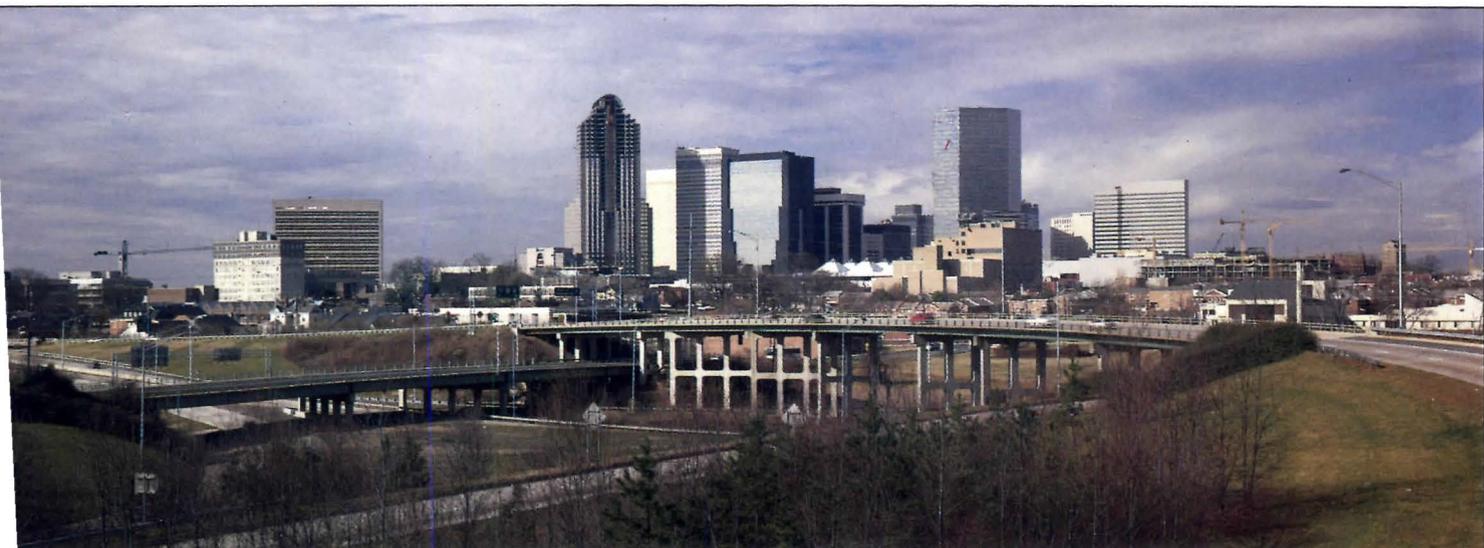
This month's Building Types Study departs from the usual practice of examining individual structures to investigate three cities that are being radically altered in different ways by speculative office development. Although Hartford, Connecticut; Charlotte, North

Carolina; and Bellevue, Washington, may seem minor quantities on the balance sheet of American urbanism, each offers significant lessons on the pluses and minuses of metropolitan growth.



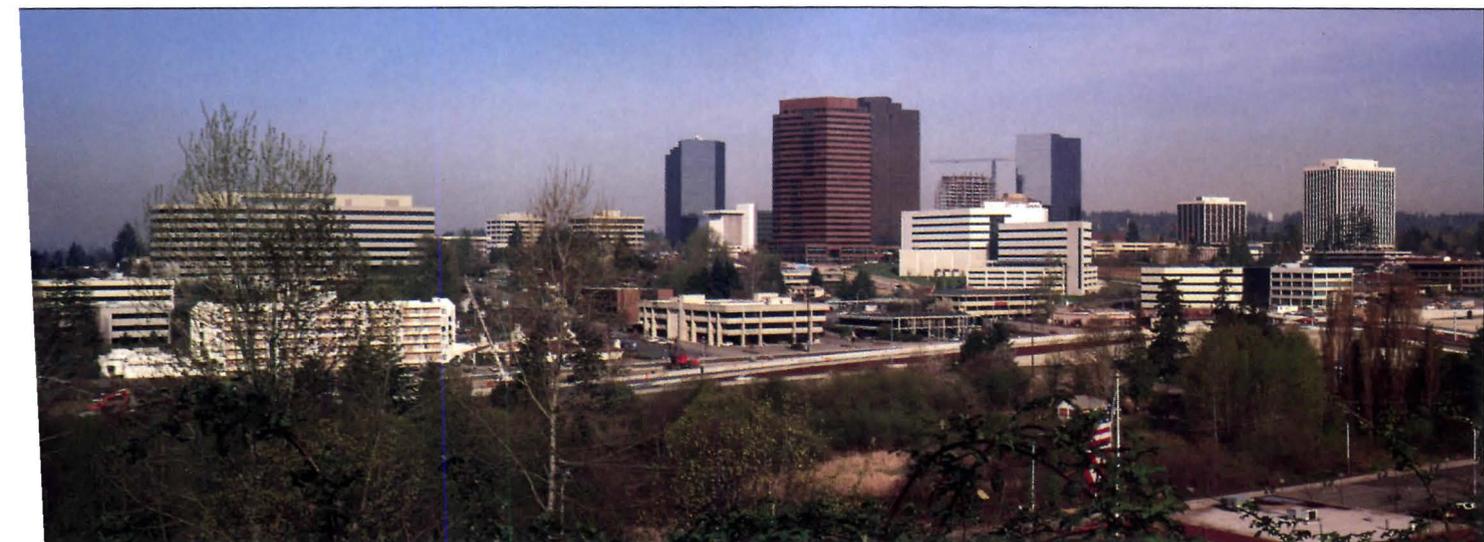
Hartford, Connecticut

©Steve Rosenthal



Charlotte, North Carolina

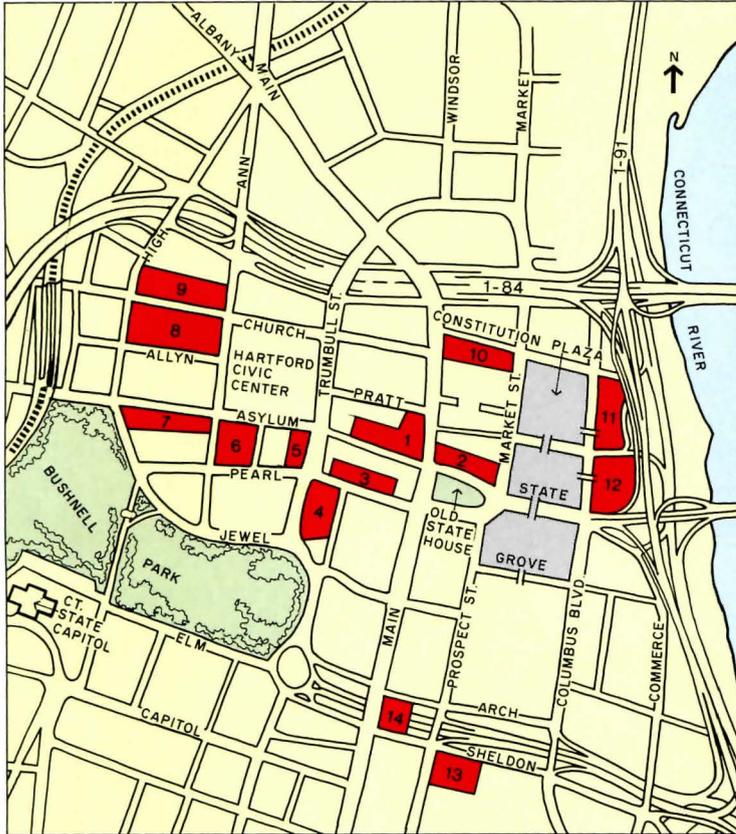
©Gordon H. Schenck, Jr.



Bellevue, Washington

©Robert Pisano

Hartford's not-so-steady habits



Proposed and recently completed spec-office projects in downtown Hartford, noted in red on the map above, include:

1. Society Center
2. State House Square
3. 100 Pearl Street
4. Cutter Financial Center
5. City Place II
6. Goodwin Square
7. World Trade Center
8. 180 Allyn Street
9. Metro Center and Metro II
10. G. Fox office conversion
11. Connecticut River Plaza
12. One State Street
13. Renaissance Place
14. City Hall addition

Facing page: Four of the projects changing the face of Hartford's central business district most dramatically are (clockwise from upper left) Metro Center II, a proposed 1.2-million-square-foot office tower and parking garage that would adjoin an existing office complex (Russell Gibson von Dohlen, architects); Cutter Financial Center, a 59-story mixed-use tower with 1 million square feet of commercial space, 100 condominiums, 22,000 square feet of retail space, and parking for 1,200 cars (Russell Gibson von Dohlen); the World Trade Center, a 27-story tower with 500,000 square feet of office space and an 850-car garage (Russell Gibson von Dohlen); and Goodwin Square, a 30-story office, hotel, and parking tower (Skidmore, Owings & Merrill).

Although Connecticut is one of the most densely populated states in the country, it is not, ironically, a place of memorable urbanism. Overshadowed in the Northeast by Boston and New York, Connecticut's big cities tend to be one-dimensional and specialized: New Haven an outsized college town, Stamford a corporate headquarters, Bridgeport and Waterbury gritty New England industrial centers. Only Hartford, characterized by a more complex blend of home-grown manufacturing, commerce, and culture developed over three and one-half centuries, can lay any real claim to civic grandeur—though even here greatness is relative, and limited by the city's modest population (136,000, down from a peak of 177,000 in 1950) and physical size (at just 18 square miles, the second smallest major American city after Paterson, New Jersey), as well as by an underlying New England conservatism that long ago gave rise to Connecticut's unofficial nickname, "The Land of Steady Habits."

Property-poor and ringed by well-to-do suburbs resistant to any notion of regional government, Hartford in recent years has turned to commercial development in its compact central business district as a way of strengthening its local tax base, which became shaky following World War II with the precipitous decline of the city's residential neighborhoods. The history of modern office development in the Connecticut capital actually began during the mid-1950s when the Hartford Redevelopment Agency, encouraged financially by the city's mighty insurance and banking forces, targeted a working-class, mainly Italian neighborhood between downtown and the Connecticut River for urban renewal. The construction of Constitution Plaza between 1959 and 1964 on this 12-acre site gave Hartford a real source of pride—a shiny new skyline befitting a metropolis many times its size—but it also sapped downtown's residential vitality, sealing the city's future as a bland office center populated by an uneasy mix of affluent suburban executives and the urban poor. With the notable exceptions of I. M. Pei's Bushnell Tower, a luxury apartment building erected in 1969, and Venturi, Rauch and Scott Brown's whimsical Hartford Stage Company (1977), construction in the CBD over the past three decades has been limited largely to commercial ventures, ranging in architectural distinction from Harrison and Abramovitz's suave biconvex headquarters for the Phoenix Mutual Insurance Company (1963) to Skidmore, Owings & Merrill's banal City Place (1980), a mansard-roofed spec tower that currently reigns as the city's tallest building.

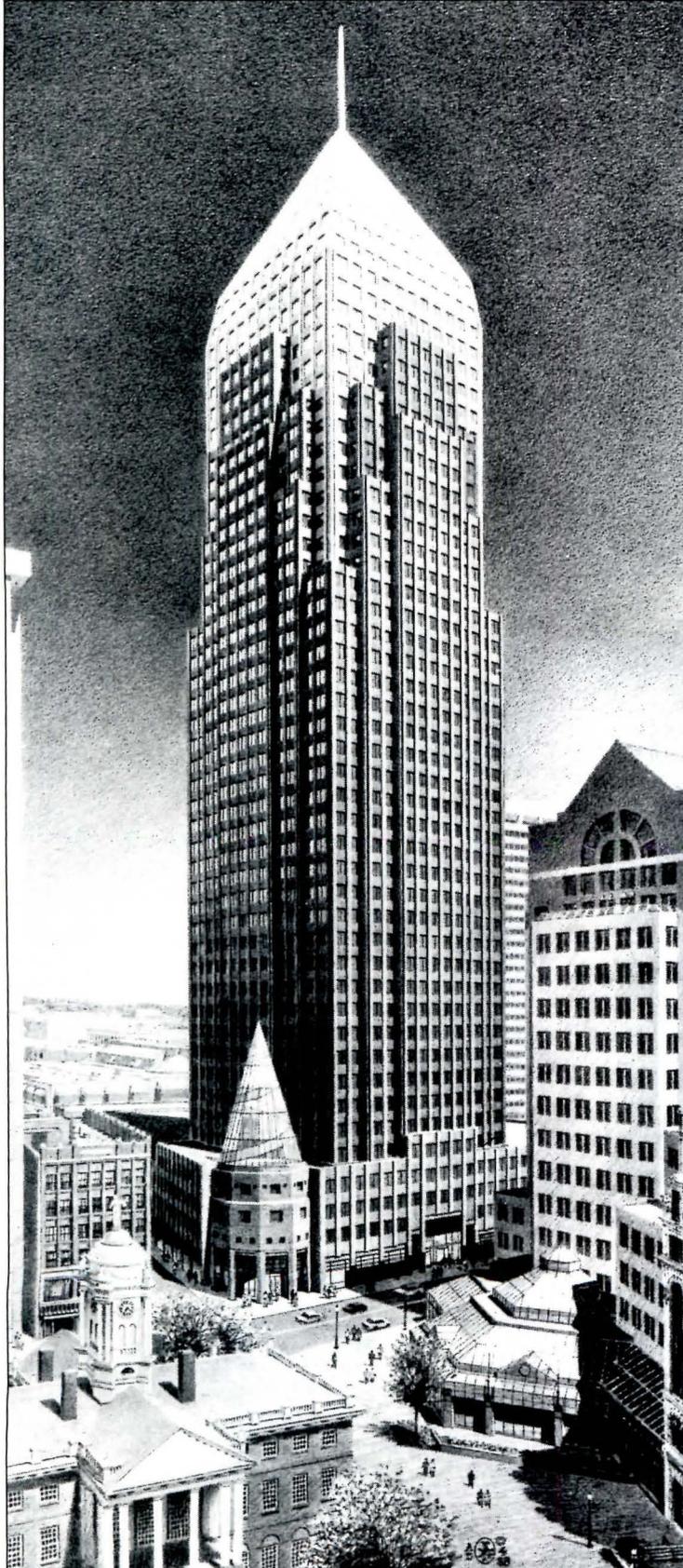
Recognizing that office development was filling the city's coffers but at the cost of urban diversity, the Hartford City Planning Department in 1984 prepared a downtown development plan that seeks, among other things, "to minimize the potential adverse impact of new high-rise developments on the traditional downtown environment." More significantly, perhaps, in 1986 the city established a five-member design review board to monitor new and renovated construction downtown and set up a series of specific guidelines whose overall goal is "to encourage design excellence expressing human scale, richness, and variety within the urban environment."

Today, the biggest building boom in Hartford since the day Constitution Plaza is putting the review board through its paces, *Real Estate Forum* magazine has termed Hartford "one of the hottest office markets in the country." The city's 7.9-percent office-vacancy rate is the nation's lowest, and current proposals call for six million square feet of new space—a figure that will



Society Center (below), by Cesar Pelli & Associates, would place a 45-story tower at Hartford's most prominent intersection, the corner of Main and Asylum streets. On downtown's western edge, near Union Station, 180 Allyn Street (opposite top) is a proposed 42-story spec-office

tower designed by Skidmore, Owings & Merrill. Recently completed spec buildings in the core of the CBD include 100 Pearl Street, by Jeter Cook & Jepson (opposite, bottom left), and State House Square, by Russell Gibson von Dohlen (opposite, bottom right).



double downtown's office inventory over the next five years. (The suburban market, moreover, with a vacancy rate of 12.4 percent, is also strong, especially along the I-84 corridor in Farmington and across the Connecticut River in East Hartford, where several developers are eyeing prime riverfront property.) The chief reason that most local observers cite for all this activity is the insurance industry's seemingly insatiable appetite for space, together with a robust regional economy that has pushed Connecticut to number one among all states in per-capita income.

The main question, of course, is how will the current wave of office development affect the quality of life in a city whose fragile central core comprises small blocks and twisting streets dating back to Colonial times. The images of new projects on these pages clearly reveal that the current crop of downtown proposals includes buildings both bulkier and taller than anything this city has previously seen. Three towers—Cutter Financial Center, by Russell Gibson von Dohlen (page 101, top right); 180 Allyn Street, by Skidmore, Owings & Merrill (opposite, top); and Society Center, by Cesar Pelli & Associates (left)—would all easily overtop City Place, and Cutter, at 878 feet, would be the loftiest building in New England, soaring nearly 100 feet past Boston's John Hancock Tower.

As Michael Kerski, executive director of the Greater Hartford Architecture Conservancy, noted in a recent interview, "Big buildings are not necessarily bad if they relieve development pressure on nearby historic structures." And, in fact, some of the current construction is taking place on underused or architecturally insignificant sites. Society Center, however, would require the demolition of the Hartford-Aetna Building, a 12-story structure erected in 1912 that is generally considered Hartford's first skyscraper. Architects Jeter Cook & Jepson made a stab at incorporating the 1924 facade of the Mechanics Savings Bank into the financial institution's new 17-story headquarters (opposite, bottom left), though the combination of Doric columns, blue-glass curtain wall, and granite panels seems at best unresolved. The most controversial of the lot currently under construction is Goodwin Square, a 30-story spec-office and hotel tower by SOM that will reduce a vigorous 1881 row of red-brick and terra-cotta buildings to a paper-thin shell (page 101, bottom left). A clumsy parody of Hartford's landmark Travelers Tower, Goodwin Square was approved by the Common Council in a 5-4 vote, against the design review board's recommendations.

There's the rub. Although Hartford has wisely adopted measures awarding bonuses to developers who include such amenities as street-level retail space, through-block arcades, enclosed parking, and housing in their downtown office projects the ultimate decision on all development proposals remains in the hands of a sometimes capricious Common Council. The good news is that participants in the next wave of downtown development are, finally, including market-rate housing in their plans. A 29-story condominium tower, the first phase of a larger mixed-use scheme adjacent to Bushnell Park, will begin construction early next year, while a second proposal, dubbed Renaissance Place, will include housing on its upper floors. In the end, Hartford's future as a company town, a government center, a place to eat and live has never seemed more secure; the dilemma the city's powers-that-be must now address is whether the insurance cap can reconcile its burgeoning corporate vitality with its traditional role as a 24-hour-a-day city of homes. *P. M. S.*

the dilemma Hartford's powers-that-be must address is whether the insurance capital can reconcile corporate vitality with its traditional role as a 24-hour-a-day city of homes.



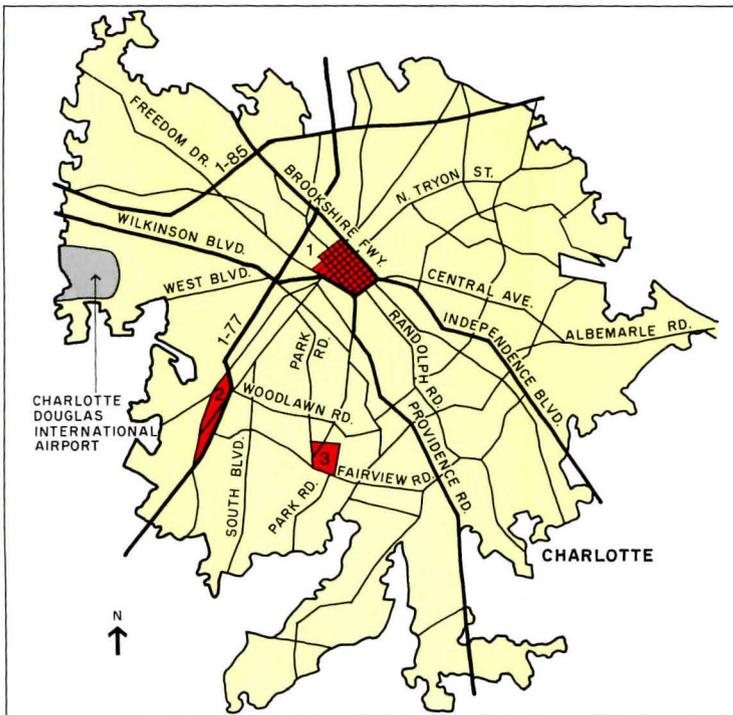
75



Bill Murphy

Charlotte ups the ante

By Richard Maschal



Charlotte, the largest metropolis in the nation's 10th most populous state, is generally considered in business circles to be the southeast's "second city," after Atlanta. The three most important areas of spec-office development in Charlotte, highlighted in red on the map above, are downtown (1), the rapidly growing I-77 suburban corridor (2), and the area

centering on the SouthPark shopping mall (3). Perhaps the most prominent symbol of the city's commercial rise is the proposed Interstate Tower, a 32-story, 400,000-square-foot downtown office building designed by Kohn Pedersen Fox Associates (opposite).

When Robert A. M. Stern visited Charlotte in 1986, he took little pride in the place. "This is still the ugliest collection of third-rate buildings in America," Stern sniffed. "Charlotte has defined a type unto itself—a town that has grown very fast in a very mediocre way." Now, Stern is no General Sherman and Charlotte is no Atlanta, but the New York architect's snippy remarks left this distribution and banking center of 375,000 burning. More New South than Sun Belt, Charlotte has always thrilled to increased square footage—and design be damned. But after a development boom in the 1960s and '70s filled downtown with sterile office towers and parking decks, some began to question the benefits of growth without quality. The winds were already shifting when Stern suggested that Charlotte needed to "up the ante" on what it expected from developers and architects.

That has happened, though not because of Stern. Instead, developers of spec-office buildings in Charlotte have discovered that good design is a marketable commodity among corporations seeking prestige. "What really upped the ante was corporate expectations," said Gerard "Joddy" Peer of Jenkins-Peer Architects. "If you have a major corporation investing a lot of money, a developer feels comfortable hiring an architect of more repute and asking for more design character in the building."

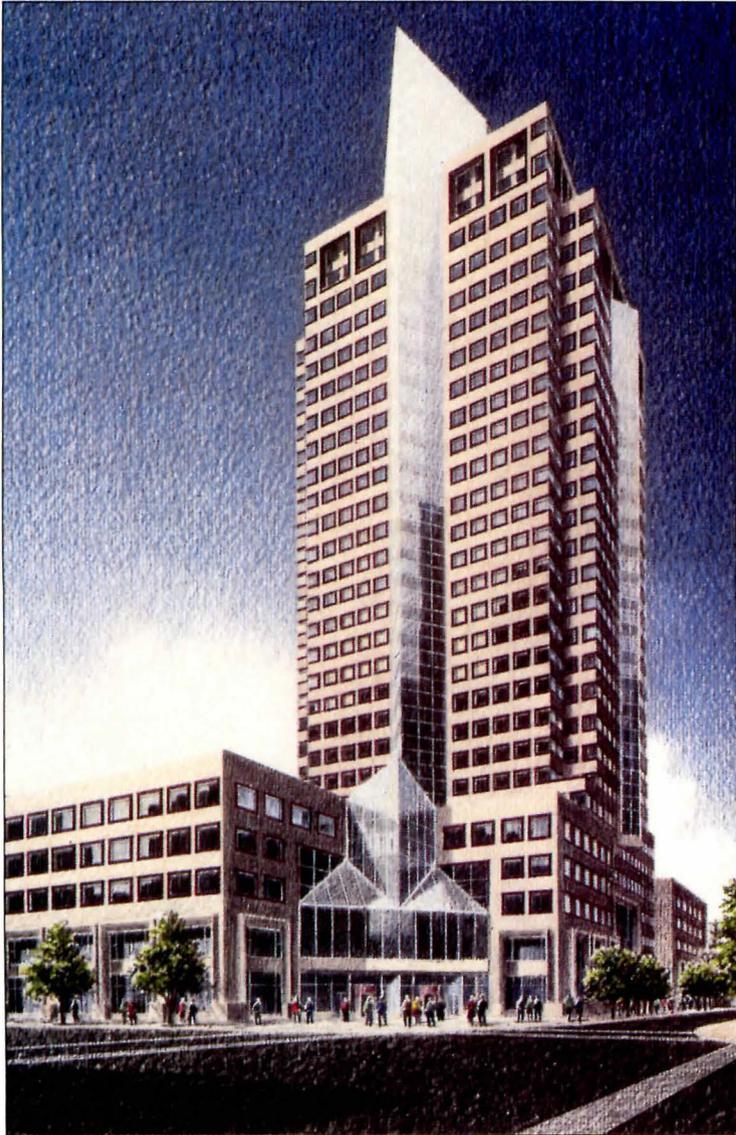
In Charlotte, the trend plays out in a strong downtown market and booming suburbs. Downtown has 6.4 million square feet of office space, almost twice the 3.8 million square feet in the two largest suburban areas. Four announced towers will add another 2.4 million square feet downtown by 1991. Design is moving away from the provincial Modernism scorned by Stern to Postmodernism, encouraged by a new downtown zoning ordinance that calls for detailing such as cornices and recessed entrances.

For banks, utilities, and large law firms, downtown remains the place to be. Two regional financial institutions that rank among the 20 largest banks in the country—First Union Corp. and NCNB Corp.—are having an especially significant impact on the CBD. At the southern end of downtown is the nearly completed One First Union Center, a 42-story Trammell Crow project that has the bank as anchor tenant (bottom left, page 107). Designed by JJP Architects of Dallas, it is the city's first Postmodern office tower and the first in decades to be clad in stone. Better than the glass-and-steel boxes of the 1960s and '70s, it nonetheless has a generic look. The barrel vault atop the building is more timid than dramatic, and the building's stone cladding and windows are treated almost as a curtain wall, without the mullions or inset windows that would have given the shaft detail and character.

Just west of First Union is Barclays American Center, developed jointly by Urbco, Inc., and Lat Purser & Associates. Designed by The Stubbins Associates, the 34-story tower will set back from the street atop a six-story retail and office base (page 106). Several blocks north of this activity is Independence Square, at the intersection of Trade and Tryon streets, two former Indian trading paths that have marked the city's heart since Colonial times. Here, Faison Associates of Charlotte plans a building that confirms the trend toward better design. The developers saw their Interstate Tower (named for its anchor tenant, Interstate Securities) as a chance to push the market. "Looking around, we said 'Gee, there really isn't anything that distinctive,'" recalled Robert Patterson, partner and vice

Richard Maschal is the architecture critic of The Charlotte Obs





Commercial developers in Charlotte have begun to commission out-of-town architects for their downtown high-rise projects. Urbco, Inc., for example, turned to The Stubbins Associates, of Cambridge, Massachusetts, for the design of Barclays American Center, a 34-story tower planned for the corner of Third and Tryon streets (above), while Trammell Crow utilized the services of JPJ Architects, of Dallas, for One First Union Center (opposite, bottom left), a 42-

story tower nearing completion downtown. In the suburbs, however, local firms still get most of the work. Jenkins-Peer Architects of Charlotte designed the Merrill Lynch Realty headquarters (opposite, top), a neo-Palladian palazzo meant to harmonize with an adjoining residential area, and Regency I (opposite, bottom right), the first building in a planned 36-acre office park off Interstate 77.

president for Faison. Faison hired Kohn Pedersen Fox Associates and obtained a handsome 32-story tower that recalls the romantic skyscrapers of the 1920s, complete with granite and marble detailing at the base, and a shaft articulated by punched windows soaring to a conical top (page 105). Held up by a lawsuit over zoning, the building nonetheless is 60-percent leased. "If this had been just another glass tower, there would have been no deal," commented J. Craighill Redwine, Interstate's president.

No sooner had Faison and KPF raised the stakes than NCNB heaped its chips on the pile. A bank-led partnership hired Cesar Pelli & Associates to design a \$300-million project at The Square. Plans include an office tower at least 55 stories high, a hotel, retail space, and a \$35-million performing-arts center built in partnership with the city. Early design schemes reveal that Pelli and his colleagues want this project to knit together a downtown fractured by isolated large buildings and an overhead walkway system thoughtlessly imported from Minneapolis. Such projects, observers say, mean Charlotte's downtown will continue to prosper. "We've secured a critical mass [downtown], not just in terms of office space, but in infrastructure, residential development, and cultural facilities," said Al Stuart, a geographer at the University of North Carolina at Charlotte.

By the end of the century, however, suburban office space will very likely surpass downtown. Over the past 20 years, former pastures and cotton fields have sprouted offices, shopping centers, and hotels. The fastest-growing suburban areas are the I-77 corridor southwest of downtown, with 2.3 million square feet of office space, and the area around SouthPark, a shopping mall in the wealthy southeast suburbs, with 1.5 million square feet and another 500,000 about to open. Suburban spec buildings tend to attract smaller companies, many involved in sales, that need to be near the interstates or Charlotte/Douglas International Airport, currently the 24th busiest in the country.

The "up-the-ante" formula of building design downtown has also been at work in the suburbs. Boxy low-rise buildings with ribbon windows have given way to curved stone- or precast-clad structures articulated by punched windows. The largest suburban building, the 13-story 6100 Fairview Road by Clark Tribble Harris and Li, is slick, with a curved wall of alternating bands of glass and stone. More convincing is the same firm's Rotunda, now under construction nearby. Here, the architects employed a classically inspired central rotunda flanked by two pavilions. If the four-story building has something of a neo-Palladian feel, so does the Merrill Lynch Realty Building, a tasteful essay in Postmodernism designed by Jenkins-Peer on the other side of SouthPark (opposite, top).

Pizzagalli Investment Company felt that the I-77 market was ready for something a bit more substantial when it hired Jenkins Peer to design Regency I (opposite, lower right). A gracious building, it breaks the box. The curve of the silver and green glass wall facing the highway mimics the sweep of traffic on the interstate, while the entrance facing away from the parking lot is a surprise—a precast frame with punched windows and the feel of early-20th-century Chicago architecture. The frame grasps the curve at one end and extends beyond it at the other, a neat bit of asymmetry that unites the building into a whole.

Charlotte hasn't reached the millennium, but a trend toward better design is firmly established. Come back in five years, Mr. Stern. You may be surprised.

Developers of speculative office buildings in Charlotte have discovered that good design is a marketable commodity among corporations seeking prestige.

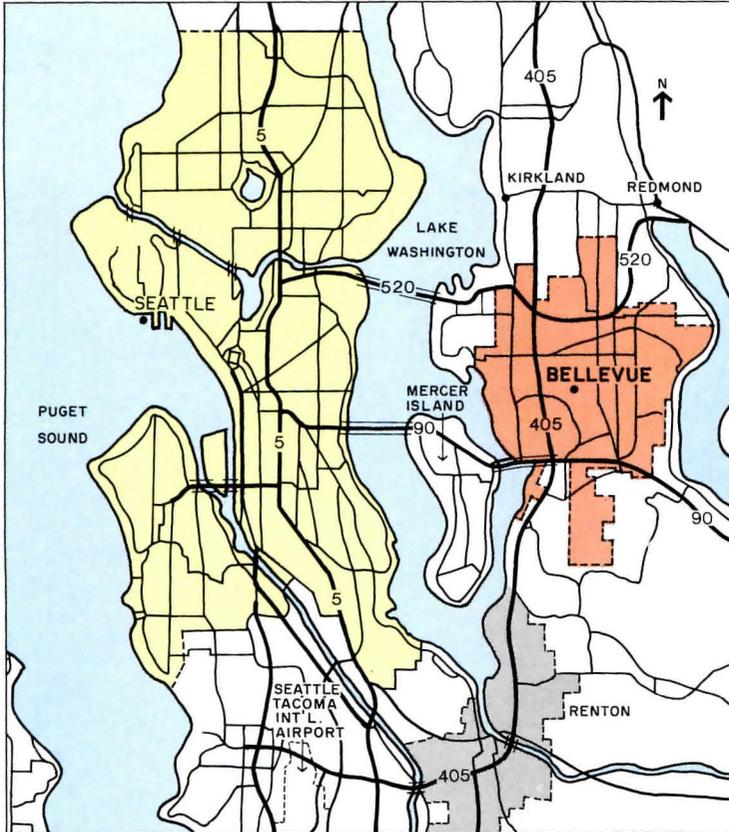
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Bringing up Bellevue

By Douglas Gantenbein



Although Bellevue served as a bedroom community for Seattle throughout much of its early history, the smaller city has lately emerged as the heart of a fast-growing suburban ring with more than 330,000 residents. Surrounded by booming high-tech industries and populated by growing service, legal, and financial communities downtown, Bellevue's work force has risen from 13,000 to 20,000 in the past six years. One of the challenges

facing architects and planners is Bellevue's limited architectural heritage. The Old Main district (opposite top), a small low-rise retail area, passes as the city's historic quarter. A successful attempt to create a context is Bellevue's new downtown park (opposite bottom), which injects an urban sensibility into the city's core.

On a warm September day, with the sun slanting through a faint haze and the hill foliage turning burnt orange, it is easy to mistake Bellevue for Los Angeles. The ingredients are there—the strip development, the anonymous faceted-glass buildings, and, above all else, the traffic. Bellevue, it seems, was created to serve the automobile. Laid out in the 1950s with whopping 600-foot superblocks, Bellevue deliberately fostered a car culture that still runs deep. Now this city of 80,000 is attempting to wean itself from vehicular dependency. An ambitious 1981 downtown plan is aimed at focusing development, creating an urban scale in a suburban bedroom community, and getting people out of their cars and onto the streets. No mean feat, but planners think they can do it. Their bait: appealing to perceived universal human needs like sunlit open spaces, a variety of retail establishments at ground level, and a downtown scale that does not intimidate.

Bellevue is a paradigm of the “urban village” concept popularized by California development consultant Christopher Leiberger. Executives living in the suburbs, weary of apocalyptic traffic jams into Seattle, 10 miles to the west, have leased office space closer to home; a number of Seattle banks, law offices, and accounting firms have opened branches in Bellevue; and the city has become the center of a \$1-billion-plus high-tech industry that includes such giants as Microsoft.

Although development pressures from these trends first appeared 20 years ago, they merely threatened to atomize further the low-rise Bellevue of 1968. A shopping center proposed for a site three miles from town (since canceled) would have created a new focus at a time when development in the CBD was stagnant. Faced with a decline in property values, Bellevue's major landowners bankrolled a 1974 study of the downtown area that ultimately led, in 1981, to a new city plan and rezoning. That plan was almost a total reversal of previous policy. It strictly redefined “downtown” as a 90-acre block. Development outside this area was limited to an FAR of .5, while inside the line it could go as high as 10.1. Setback regulations were changed to bring facades to the sidewalk line; ground-floor shops and public spaces in commercial buildings were encouraged.

Since the downtown plan went into effect, Bellevue has shot skyward, giving surprised Seattleites something else to look at besides the Cascade Mountains when they gaze across the broad sweep of Lake Washington separating the two cities. Twenty-story-plus towers now run north and south along 108th Street, dubbed Bellevue's “Wall Street.” Although overbuilding during the early 1980s gave Bellevue one of the country's highest office vacancy rates, rapid growth is fast eating into the surplus. The 1.7-million-square-foot Bellevue Place will open this fall 50-percent leased, and many Bellevue buildings now command higher rent than their Seattle counterparts.

Architecturally, however, Bellevue works better as an ensemble than as a collection of soloists. Its first wave of recent construction, mostly mirror-glass towers, is as homogeneous in appearance as in name (labels like One Bellevue Center, Koll Center Bellevue, and Rainier Plaza are repeatedly mangled by confused visitors). Not that Bellevue is an easy city in which to design a building: it is utterly without urban context, having grown from forest to apple orchard to parking lot in the short arc of history. The juxtapositions resulting from current development

Douglas Gantenbein is a free-lance writer. He lives in Bellevue.

Robert Pisano photos except as noted





Bellevue Place (above), scheduled for completion this fall, is a 1.7-million-square-foot mixed-use project comprising retail and office space, a hotel, and a winter garden. The architect is Kober/Sclater Associates. Koll Center Bellevue, by The Callison Partnership (1987, opposite top left), and One Bellevue Center, by McKinley/Gerron Architects (1982, opposite top right), were designed to reflect the city's high-tech industries. The buildings' faceted-glass profiles were meant to reduce apparent mass at a time when Bellevue residents were first growing

accustomed to tall office towers. To help humanize the new structures, the city's 1981 downtown plan required developers to incorporate public spaces into their projects. The fruits of that plan include landscaped esplanades at One Bellevue Center (opposite, bottom left) and Rainier Plaza (opposite, bottom right).

are often bizarre—the arched roof of a circa-1950 bowling alley sits smack against a reflective blue-glass curtain wall, while the granite-trimmed arcade of Koll Center Bellevue, flush with the sidewalk, is across the street from a 1960s-era building that hides behind a barrier of trees and surface parking.

Still, bits of city planners' vision are beginning to emerge. All of the new buildings have arcades, landscaped plazas, fountains, or broad outdoor staircases that act as balconies for noon-hour concerts. Rainier Plaza, completed in 1986 with the benefit of fine-tuning in code provisions, has a splendid courtyard with large shade trees and elaborate floral plantings. Two new projects in particular epitomize the shift in architectural and urban sensibilities. Bellevue Place, a mixed-use development with a Hyatt Regency Hotel, 21- and 6-story office towers, retail space, and a glass-domed winter garden, will have a masonry facade of buff brick decorated with brown-brick stringcourses and granite medallions. It should create more of a visual anchor for downtown than the earlier, almost evanescent, glass towers. In the works, too, is a 35-story tower designed by Kohn Pedersen Fox Associates in the New York firm's signature historicist vocabulary. As the first large building to abut a projected east-west pedestrian corridor—the centerpiece of the 1981 code—the KPF project will be a crucial test of the downtown plan's validity.

Perhaps the city's most successful project to date is its new downtown park. Designed by Beckley/Myers of Milwaukee, the 7.5-acre greensward combines distinctly urban elements, like a formal promenade and canal, with a wide expanse of grass. Although now largely cut off from the rest of Bellevue by a thin row of fast-food joints and strip shopping centers that the city plans to raze for a 10-acre second phase, the park already is becoming the focus of development on nearby sites.

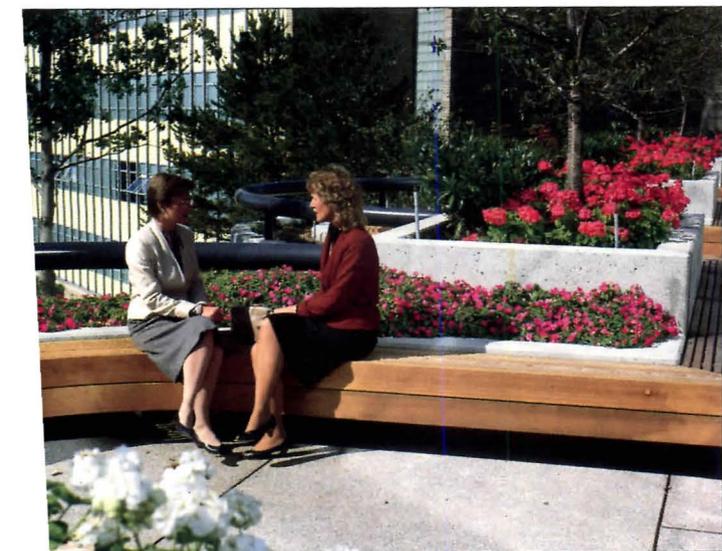
Bellevue is not a miracle, however. The city's superblocks (equal to nine blocks in Portland, Oregon) will likely resist fine-grain urban detailing, and they are especially hard on traffic patterns, forcing the use of awkward two-way streets that exacerbate the traffic congestion. Serious studies are just now underway to develop a traffic scheme for the 1990s and beyond.

Less open to solution is Bellevue's one-dimensional context. Bellevue, a short strip of prosaic one- and two-story shops built during the 1940s, is treated like a rare hothouse plant by the city. There just isn't anything else that can be remotely characterized as Bellevue's "history." And the high lease rates and uniform services in new office development work against the quirky spaces and corners that give urban living its appeal. Moreover, while the city has an enviable retail base, almost all of it is enclosed in the hermetically sealed bulk of Bellevue Square, a 200-store enclosed mall on downtown's western edge that such any of the city's potential pedestrian traffic. Many retailers are reluctant to compete with the mall, and kiosks in the new downtown towers are largely filled with delicatessens, quick-food shops, and dry cleaners that cater solely to office workers.

Whatever its shortcomings, though, Bellevue represents a singular opportunity. It has everything an urban planner could hope for—economic vitality, a strong sense of community, consistent political leadership—and its citizens seem genuinely proud of their city. (Architect Gerald Gerron, who had a hand in designing three of the recent towers, is regularly sent snaps of his buildings by Bellevue residents.) If calculated urbanization can't make it here, it can't make it anywhere.

Bellevue represents a singular opportunity. It has everything an urban planner could hope for—economic vitality, a strong sense of community, consistent political leadership—and its citizens seem genuinely proud of their city.

© Gary Vannest



© Gary Vannest



Brushing up on history

With simple materials—paint, metal leaf, and varnishes—and traditional techniques, new life can be brought to old interiors. The following pages show one interpretive redesign and one historic restoration.

The two historic interiors illustrated on the following pages owe much of their magnificence to the craftsmanship of Fine Art Decorating, Inc. This New York City-based firm is rapidly gaining acclaim for its skill in exacting historic restoration techniques, and for the more conceptually inventive work it does when decorating existing interiors. Comprised of more than 40 artisans—some originally trained in the fine arts, others trained through apprenticeship to the group's own mastercraftsmen—the firm works with paint, metal leaf, and varnishes. With these simple materials and traditional techniques the workmen bring (or restore) luster and rich color to articulate the constructed elements of an interior. The heightened sense of order and emotional resonance they achieve is readily experienced, particularly if one has stood in one of these rooms before the artisans arrived, and then again, after the decorating is complete. I have done just that, watching talented men and women busy at their craft: climbing up and down scaffolding, wrapping, sanding, mixing, brushing, often literally sparkling from head to toe with the flecks of gold leaf that shake loose during the gilding process. It is a spectacle that recalls the kind of creative activity that princely commissions once engendered.

By the measure of inventiveness, the most intriguing projects completed by Fine Art Decorating involve interpretive decoration. The Renaissance Room of the New York Masonic Lodge (shown at left and on pages 114-115) exemplifies this approach. The ornamental features of the room were fully constructed in the early part of this century; however, the gilding budget was spent before the final layer of decorative paint and metal leaf could be applied. As a result, the room was simply painted white. In considering an appropriate decorative program, Felix Chavez, a partner and the artistic director of Fine Art Decorating, studied the palette and composition of original Italian Renaissance interiors. Using books, photographs, paintings in museums, and recollections from travel, Chavez conceived a design possessing the strong tone and color of Classical decor. Though most of the skills used in the redecoration are traditional—glazing, graining, marbling, antiquing—the combinations are often new. For example, Chavez developed a process in which sheets of aluminum leaf, as thin as tissue paper, are applied to ornamental bands and rounded details in high relief (page 115, upper left photo). Slightly tinted varnish was applied in multiple coats over the leaf. The effect of light passing through the glaze, striking the aluminum leaf below and reflecting back through the glaze to the viewer, presents an excellent surface of subtle beauty. Though the technique is not Renaissance, it is in the spirit of the style. Fine Art Decorating is one of several such companies currently operating in the United States. Whether the number of similar companies and groups will increase over the coming years, or whether the current demand will keep the number of practicing craftsmen at the current level, remains to be seen. Presumably, if there is no globalization, it will mean that the craft role will continue to be that of restoring and embellishing pre-Modern buildings. In a scenario would be a loss to the cause of architecture. As architects struggle to redefine and reinvent architectural ornament, collaboration with living artisans could propel the profession into achieving more richly enhanced buildings.

Rastorfer



©Harry Wilks photos



Decorative enhancement

The New York Masonic Lodge, designed by H. P. Knowles, was completed in 1912—except for the final interior finishes. When construction budgets ran short, decoration work was scaled back. Even though the constructed ornamental elements of the lodge's 13 period rooms were completed, the Classical moldings, floral banding, cartouches, and other trim, that elaborate these rooms were not decoratively painted as intended. For 75 years the rooms remained white with the exception of selectively gilded bands and several figurative murals.

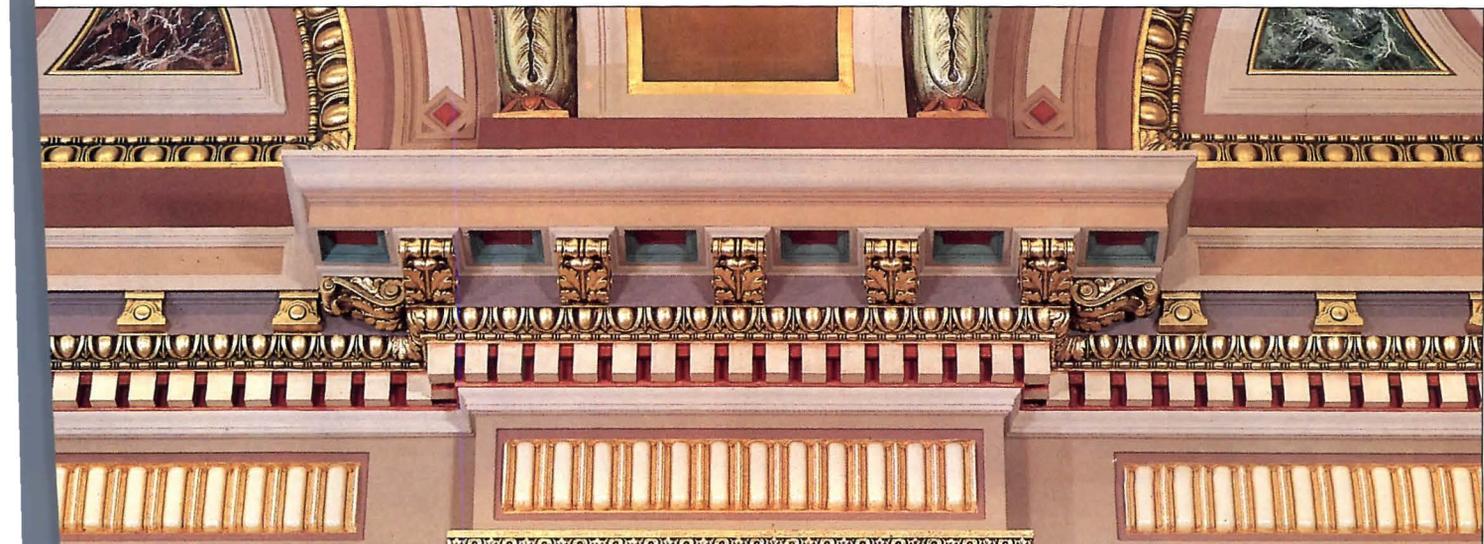
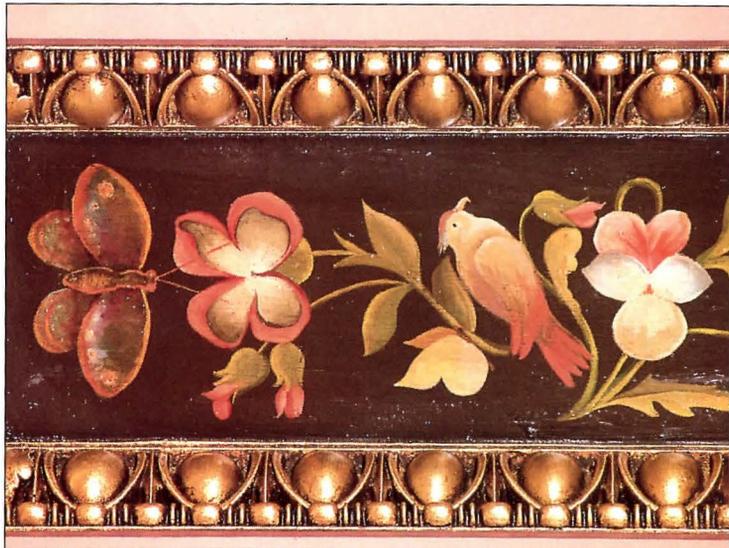
When the Masons contacted Fine Art Decorating in 1986, a simple coat of fresh, white paint for the rooms was all they had in mind. After researching the rooms and visiting other grand lodges, including the renowned lodge in Philadelphia, the firm proposed that a decorative paint program, more in keeping with Knowles's original intention and those traditional to Masonic lodges, be undertaken. They then demonstrated the visual impact of their proposal by interpretively redecorating one bay of one room. The clients were delighted; they have since had nine rooms redecorated.

The Renaissance Room, shown at right, on the facing page and on page 112, had more original decorative painting than the other rooms, boasting figurative murals in pendentive-like forms (top photo, this page). These were restored. Other figurative painting such as the clouds, flowers, fruit, and putti in the ceiling panels (page 112) are original works by Fine Art Decorating. The color palette here (as with those developed for the Doric, Corinthian, Egyptian, Gothic, and Grand Hall) is typical of the original rooms on which the interior was based; however, many of Fine Art Decorating's materials and techniques are unique to our time.



©Peter Aaron/ESTO photos above and opposite page

Before decorative layers are applied, lengthy, often technically complex, surface preparations must be completed (Fine Art Decorating notes that often 60 to 70 percent of the time spent on a job entails repairing, cleaning, smoothing, and priming the underlying surface). Then the fun begins. The Renaissance Room can serve as a textbook of some of Fine Art Decorating's most effective techniques. Marbleizing (faux marbre) of wall panels with paint that alternates from green to red can be seen in the lower photo, left. They are surmounted with marbled rondels (top photo, left). Copper, silver, and gold leaf bring luster to the composition. The process of leafing is illustrated on page 113, where, in the Doric Room of the Masonic Temple, craftsmen first apply a liquid adhesive. The metal leaf—in this case Dutch leaf, which contains gold but is not pure gold leaf—must be quickly pressed against the adhesive. Leaves other than those of pure gold will tarnish if not sealed. Much of the leaf in the Renaissance Room is covered with a glaze comprising varnish tinted with Japan color. The innovative glazing of multiple tints over silver leaf produced some of the room's most beautiful surfaces, such as the found on the cabochons framed by scrolls (top left photo, opposite page). Another glazing technique, this one chosen for its antique effect, uses sienna tints over semigloss white enamel paint. This process is selectively used for brackets scrolls (middle band of photo opposite page) and for column flutes. The ceiling murals (detail page 112) are painted plaster (a secco) as are the rectangles and triangles filled with representations of fruit, flowers, and winged creatures, birds, butterflies, and putti.



A landmark restoration

McGraw-Hill Rotunda
New York City Public Library
Fine Art Decorating, Inc.,
Artisans

The New York Public Library, designed by Carrère and Hastings, is among this country's finest Classical buildings. Completed in 1911, the library's interiors comprise splendid halls, magnificent galleries, and richly decorated rooms. The third floor landing hall, now known as the McGraw-Hill Rotunda (right and opposite page), underwent at least two phases of embellishment with decorative paint. The divisions articulating the stucco barrel vault were ornamentally painted during the library's initial construction; so were the six rectilinear panels (three on each side) containing trompe l'oeil strapwork and portraits. The vault's central panel, along with a series of wall panels, were left blank at the time of the building's construction. Then, in the 1930s, the Works Progress Administration (WPA) made money available to the library to fill the panels with murals. Between 1938 and 1942, Edward Laning executed the painting in the vault depicting the myth of Prometheus, and a cycle on the walls telling the story of the recorded word. Laning's murals were restored in the late 1960s.

During the 1980s, the library has undergone an ambitious renovations program, including the restoration of the McGraw-Hill Rotunda's vault. In 1985, Fine Art Decorating was called in to assess the vault and restore the decorative bands and six painted panels. (The condition of the vault at the onset of the job can be seen in the top right photograph, facing page.)

Initially, grave concern was expressed by the New York City Landmarks Commission over the proposal to remove the brown paint that concealed the original decoration (the date and purpose of this paint was unclear). Fortunately, the top coat was removed, and the extraordinary decorative banding and panels were again brought to light.



©Scott McKierman

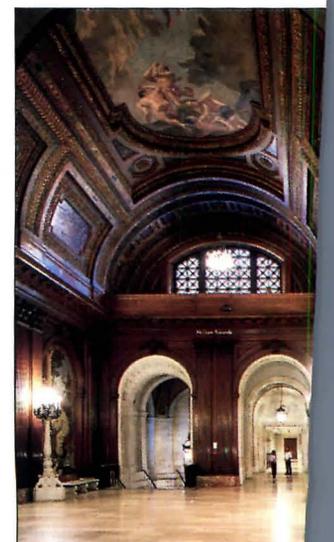


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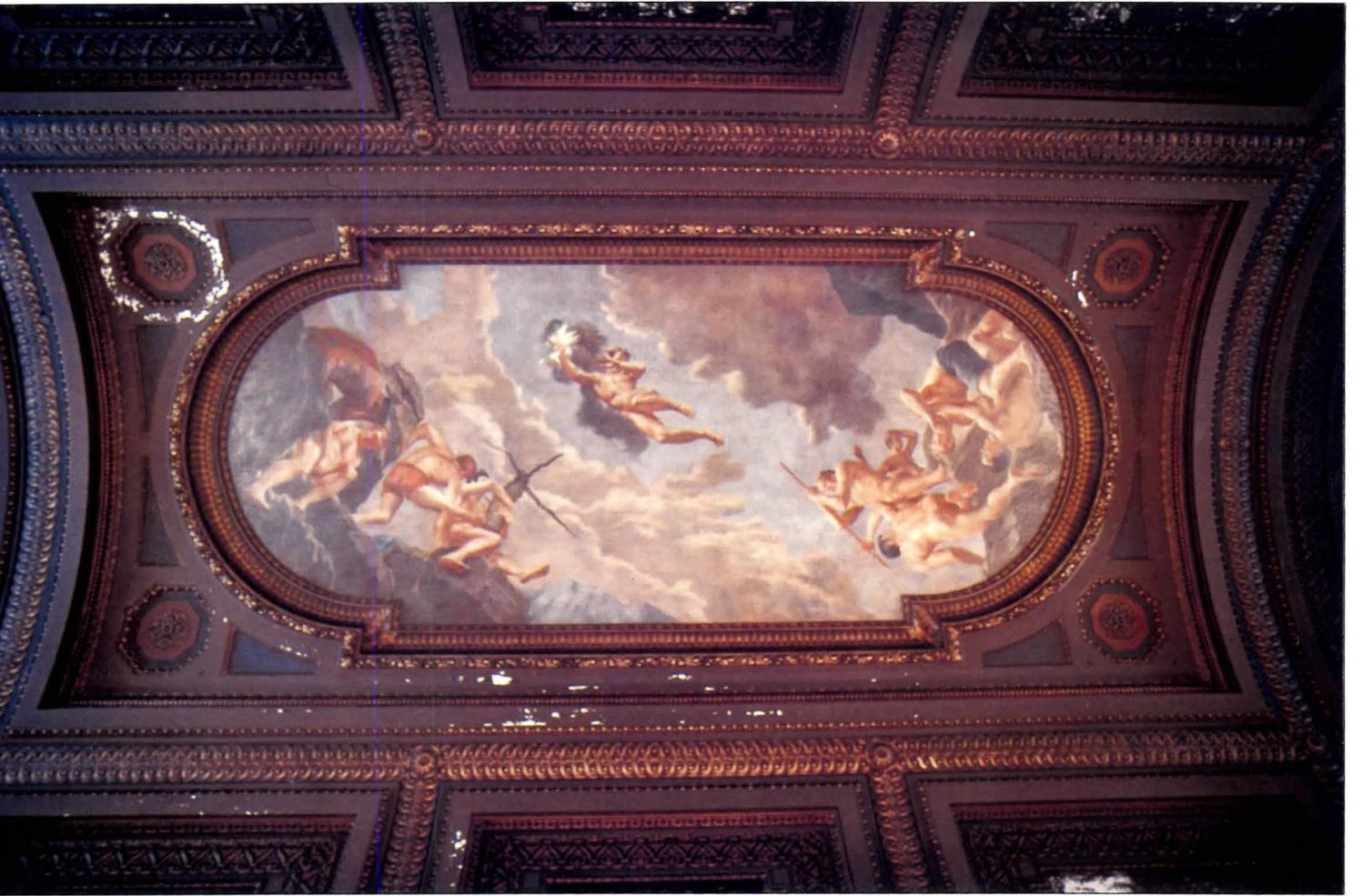


©Scott McKierman

After an assessment of the existing conditions (opposite page, top photo), Fine Art Decorating restored the decorative bands and six painted panels of the rotunda vault. At the outset, the decorative bands were covered with brown paint. Inspection under a raking light revealed the presence of an underlying design. The design was confirmed by paint analysis and tests by a chemist. Tests further revealed that the design was protected by a coat of shellac. A solvent was identified and used that dissolved the brown paint while leaving the shellac intact. A coat of reversible varnish (a varnish removable with a solvent that will not remove the paint underneath) was then applied. Infill painting was executed as necessary with custom paints. A final coat of reversible varnish was then applied. The six painted panels (detail of existing condition, top left) were cleaned and consolidated where possible. A coat of reversible varnish was then applied. Infill painting (middle photo, left) was executed with paint custom-mixed to match the original. A final layer of protective reversible varnish was then applied.



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Scott McKierman



Photographics Inc.

Details underfoot



Courtesy Florida Tile Division, Sikes Corp., Jeff Blanton Photography

This lobby floor, designed by William Henry Architects Diversified for a Holiday Inn in Tampa, displays several characteristics of current, successful commercial tile installations. The vitreous tile itself, glazed in two shades of pearl gray, has an abrasion

resistance that qualifies it for high-traffic commercial mall areas. The large-scale, 12-in. squares are set with 1/4-in. joints, filled with a light-colored, coordinating grout.

The Malling of America has been accompanied by a dramatic increase in the installation of ceramic, quarry, and paver tile. The Tile Council of America, Inc., calculates that over 900 million sq ft of all types of tile were used in 1986, 70 percent more than in 1976, with most of the increase coming within the past five years. Council surveys have revealed, however, that more tile can also mean more maintenance difficulties with the installed floor, owing mainly to the tendency of grouts to stain, to resist cleaning, and to crack or heave (see page 121 for a worst-case scenario). In fact, the cleaning of grout lines in mall floors is now viewed as an owner's number-one maintenance headache, ranking ahead of cleaning grease traps inside the hoods of commercial stoves, a major nuisance. Ceramic tile is nevertheless a wonderful material: durable, clean, and adaptable to numerous attractive design options. But it has to be installed with skill, and designed with attention to specific architectural details: the right tile for the occupancy requirements, set with grout and mortars suitable for that tile in that application, and with the correct number, placement, and installation of stress-relieving joints.

New tile products have also affected flooring design and performance. For example, light-colored pressed-porcelain tiles, many in sizes of 8 in. square and larger, are now widely applied in heavy-use commercial and retail areas. Mall owners like the airy and spacious appearance of the abrasion-resistant tile, and it has replaced quarry tile in many applications. At the same time, lighter, larger tiles can present another set of specification cautions. Pale tile colorations often call for matching grout, and these lighter grout lines may not conceal the unavoidable dirt and stains of highly trafficked,

multiuse areas as well as darker colors do. The cushioned edge of most porcelain tile prevents grouting absolutely flush with the tile face, and flush grouting is generally considered ideal for preventing cleaning problems. (Quarry tiles are extruded, with a square edge that permits a continuous-surface plane from tile to tile.) Larger sizes are less tolerant of substrate irregularities and need an absolutely level floor in order to avoid lipping, the protrusion of tile edges above the plane of the floor. And true porcelain tiles, with an absorption rate of less than 1/2 percent, require the use of bond-promoting additives in portland-cement mortars and grouts.

Installation

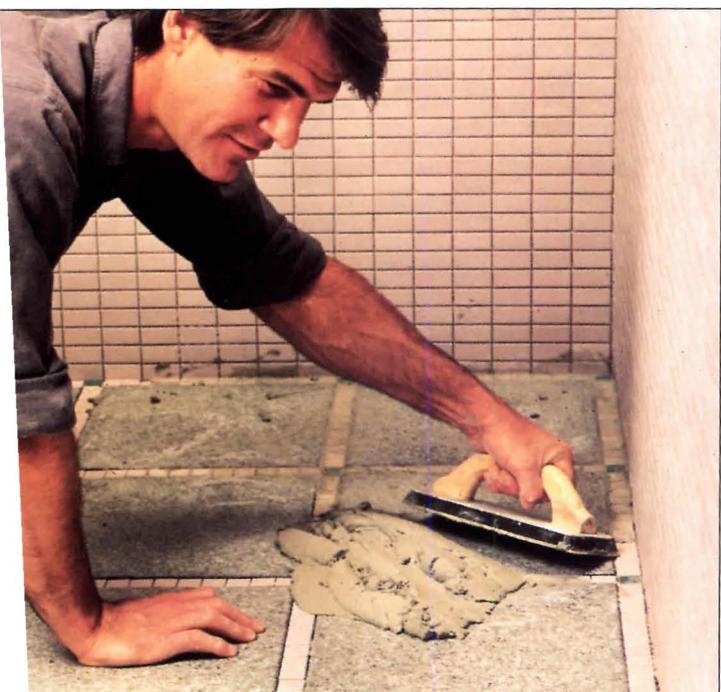
Guidelines for the correct design specification, and installation of durable, low-maintenance tile floors for commercial areas are published by the Tile Council of America, the Materials & Methods Standards Association, and the American National Standards Institute. Introduced in the 1960s, the thin-set installation method, whereby the tile floor is bonded directly to the substrate, is now widely used for its reduced setting and curing time, thinner profile, and lower labor cost. Four vital installation steps are illustrated at right.

Robert Kleinhans, executive director of the Tile Council, recommends that installation procedures be tightly specified citing the exact ANSI installation numbers, not just stating "follow TCA guideline Details 3 and 4 (page 120) show two such recommendations. In a thick-bed installation for structural floors subject to deflection (3), the portland-cement mortar bed is placed over a cleavage membrane. To construct a waterproof interior floor under thin-set tile, a sheet or liquid membrane is used over a bond coat (4).

Greatly increased use of ceramic flooring products, especially in commercial spaces, underscores the importance of doing the job right the first time to prevent future problems.



2



4

Courtesy Tile Council of America, Inc., F. Charles Photography 1988

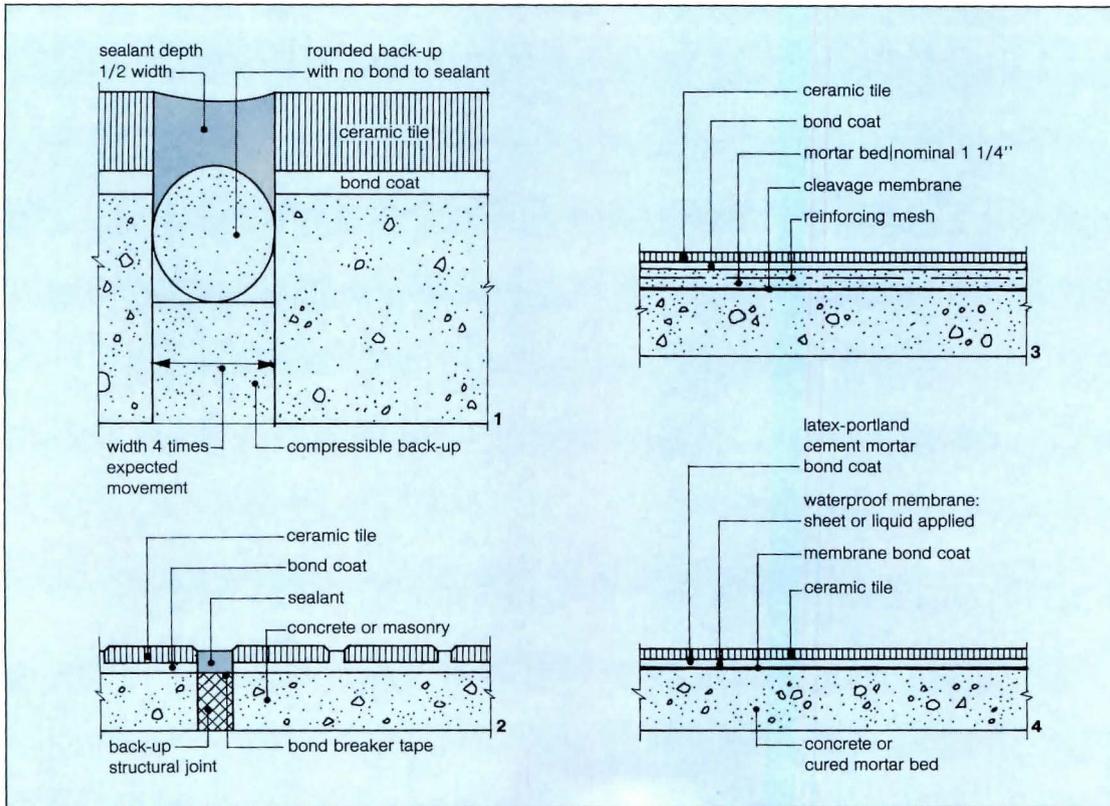
notched trowel of the proper depth must be used to create the thickness of the mortar, combing it into ridges in a circular pattern. (2) After the tile is set in place with a tapping motion to align it with the adjacent tiles, it is beaten into the mortar, which compresses the

ridges of mortar and completely fills the void between tile back and adhesive. If a setting rack is used, the beating block should be long enough to span more than one tile. (3) After the mortar has cured, grout is spread diagonally across the joints,

using a rubber float held at a 90-degree angle to the surface of the tile. The flexible squeegee forces the grout into the joints (which should be at least 2/3 as deep as the tile is thick) and cleans off most of the excess. When cleaning any residual grout film from the tile face (4),

one should take care not to roughen or depress the joints. A damp terry-cloth towel, dragged diagonally across the tile, is another suggested method to remove excess grout.

Tile installation procedures should be tightly specified, with particular attention to setting materials and stress-relieving joints.



Expansion joints

Applications on structural slabs above grade can present a problem, as the live loads of an occupied floor and the thermal cycling of the hvac system can induce flex, creep, and compressive shrink in the concrete slab. These stresses can shear tiles right off the setting bed. A thick-bed installation should be specified to allow for deflection of over 1/360 of the span; if a thin-set method is desired, select a mortar with superior flex and bond characteristics.

Jess McIlvain, AIA, an independent consultant on ceramic tile installation, stresses that control, construction, seismic, and other expansion joints in slabs must be continued through the tilework. These joints in the tile should never be narrower than the structural joint. In addition, joints are required where tiles meet any restraining surfaces such as walls, curbs, or columns (1 and 2). Joints must also be formed within the tile field, every 12 to 16 ft in each direction for exterior floors and for interiors exposed to direct sunlight. These are to be kept clean of mortar and grout when the tiles are set and not created by saw-cutting after the floor is in place. Joint sealant must extend completely through the setting bed down to the substrate.

Joint sealants should meet ASTM C920 for the particular movement and traffic requirements of the floor. Expansion joint material comes in a limited range of colors, when compared to the wide variety of colored grouts.

Grouts and mortars

Tile setting products must do more than merely keep moisture from reaching the substrate. The shear, compressive, and flexural requirements of heavy-duty commercial flooring, especially

Cross-reference chart for latex-portland cement and modified epoxy mortars and grouts

Type of liquid latex admixture	Type of mortar or grout				
	Portland cement mortar (Mud)	Dry-set mortar	One part portland with 1-2 parts sand	Dry-set grout	Commercial portioned cement grout or sanded portland cement grout
Latex with water retention agents	No	No*	Yes**	No	No
Latex without water retention agents	Yes	Yes	No	Yes	Yes

* Latex additives containing water retention may be used with dry-set mortars to extend working time and adjustability in hot, dry climatic conditions. Set time will also be extended.
 ** Latex additives containing water retention agents require factory-blended portland cement and sand in order to comply with ANSI A118.4. In effect, the amount of WRA is doubled. Also the use of latex additives with WRA to EVA type mortars may or may not create a problem. Check with the manufacturer involved as to their recommendations and warranty.

Types of latex additive	Uses	Bond strengths			Physical properties		
		Tiles	Interior dry areas only	Interior wet area	Exterior	Flexural strength	Color retention
No additives		Fair	Poor ✓✓✓	Poor ✓✓✓	Poor	Poor	Poor
PVA polyvinyl acetate		Good	Good	Poor	Poor	Fair	Poor
SBR styrene butadiene rubber		Good	Good	Good	Good	Fair	Poor
Acrylic resin		Good	Good	Good	Good	Good	Poor
EVA ethylene vinyl acetate		Good	Good	Good	Good	Good	Poor
Modified epoxy emulsion mortar & grout		Good ✓	Good	Good	Good	Fair	Poor

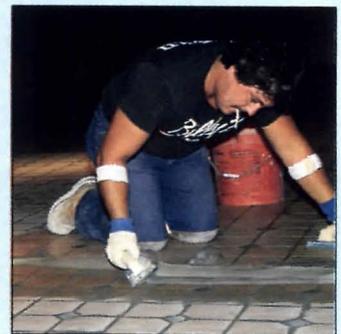
✓ — Modified epoxies may stain some marbles.
 ✓✓ — Latex modified products containing portland cement are not designed for chemical resistance. Latex reduces water penetration, which minimizes frost damage during freeze-thaw cycles; plus increasing bond and flexural strengths.
 ✓✓✓ — Except for nonvitreous tiles—Fair.

This document completed by ATTMCA Technical Committee: Published by Association of Tile, Terrazzo, Marble Contractors & Affiliates, Inc.

Tile installation is labor-intensive. Correcting a failed job is even more so.

on structural slabs, demand a high-performance setting product. The Materials & Methods Standards Association recommends that a latex-modified portland-cement mortar be used for all quarry, vitrified, or paver tiles installed over concrete or similar substrate, and for all floors exposed to shock action, weather, and extremes of temperature, such as those found in skylit atriums. The chart (left), included in the Association of Tile, Terrazzo, Marble Contractors & Affiliates 1988 Reference Manual, highlights characteristics of various additives now offered to improve the adhesion, frost resistance, and color retention, and flexural strength of portland-cement grouts and mortars. The term latex here applies to all types of performance-improving additives). The dense texture of these products creates a stain-resistant, easy-to-maintain grout, with a smooth surface that will be less likely to hold dirt. For areas requiring a very high degree of chemical resistance, such as commercial kitchens, a furan resin or pure epoxy grout should be used. Grouts and mortars may be applied in a ready-to-use, pre-empted form, or packaged as a concentrate, to be mixed with water at the job site for the most economical application. The installer must follow the manufacturer's directions carefully, and not water down the product to stretch it or extend its working time. Latex-modified grouts must be cleaned from the tile surface promptly, as shown on page 119. It is axiomatic that setting materials, though accounting for 10 percent of the cost of a tile installation, are responsible for 90 percent of any problems. The source of these difficulties, however, is usually not in the materials, but in their proper specification and workmanlike installation. *Joan F. Blatterman*

The developer of the Town Center Mall in Cobb, Ga., found that the tile floor covering the two-level project was defective even before the center opened. According to Jess McIlvain, who was called in to diagnose problems and prescribe remedies, everything that could go wrong did. The tile contractor did not belong to a certifying trade group, such as the Tile Contractors Association of America or the Association of Tile, Terrazzo, Marble Contractors & Affiliates. The low-bid tile itself was irregular in thickness and shape, and therefore unsuitable for the traffic requirements of a shopping mall. Unevenly mixed portland cement without additives was applied as mortar and light-green-colored grout. The too-wide grout lines—roughly finished with nicks and holes in the surface and too low to be reached by cleaning machines— attracted and tenaciously held construction dirt as well as residue from cleaning compounds (1). Because the mortar was spread using trowels with notches too small (or too worn down, a common occurrence), the bond was incomplete on many tiles, which came loose or broke under impact (2). Lack of expansion joints ensured that additional tiles cracked or sheared off along stress lines in both the on-grade and structural concrete slabs. The cure: grind out all substandard grout by hand, using small grout saws (3). This time-consuming work had to be done between 10 P.M. and 6 A.M., to minimize disruption in the by-now-opened mall. A special acrylic was painted into each sawn-out grout line (4). And finally, a grout topping that could be feathered out to zero produced a clean and attractive appearance (5). A properly installed tile floor in the second phase of the mall has none of these problems.



New products: A/E/C/ Systems

By Steven S. Ross

Apple's Macintosh II computer has begun to establish itself as a permanent player in the fight for space in architects' offices. At the annual A/E/C Systems show in Chicago last May, existing providers of software for the IBM PC/AT compatible market, such as Autodesk, Inc., announced new products for the Macintosh. They were joined by numerous new suppliers and hardware manufacturers as well.

Apple's own booth was home to almost two dozen companies offering CAD, project management, and marketing software for the Macintosh. Nearby, VersaCAD—which had announced its Macintosh version in January—was also singing the Mac's praises, and Hewlett-Packard was offering many plotters and printers with interfaces tailored to Apple systems.

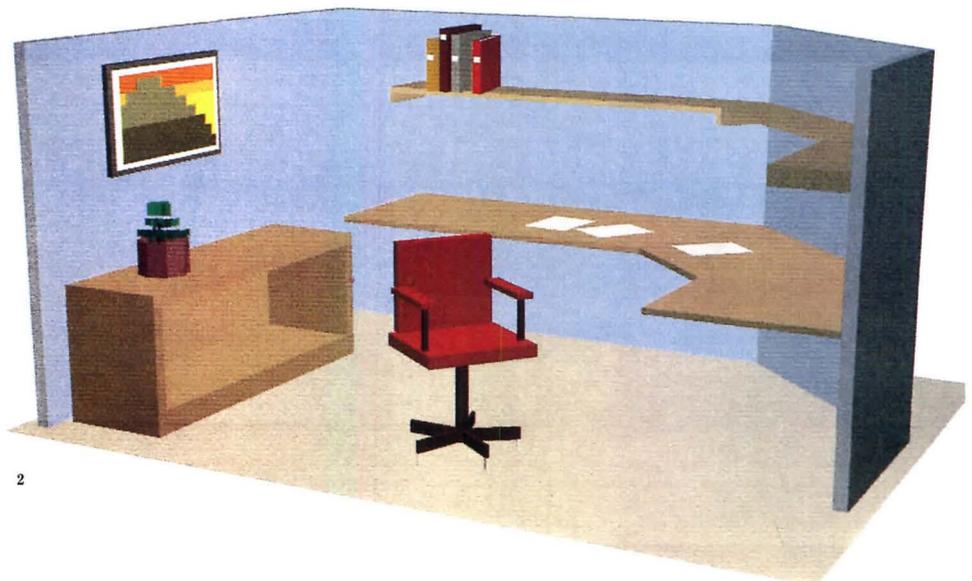
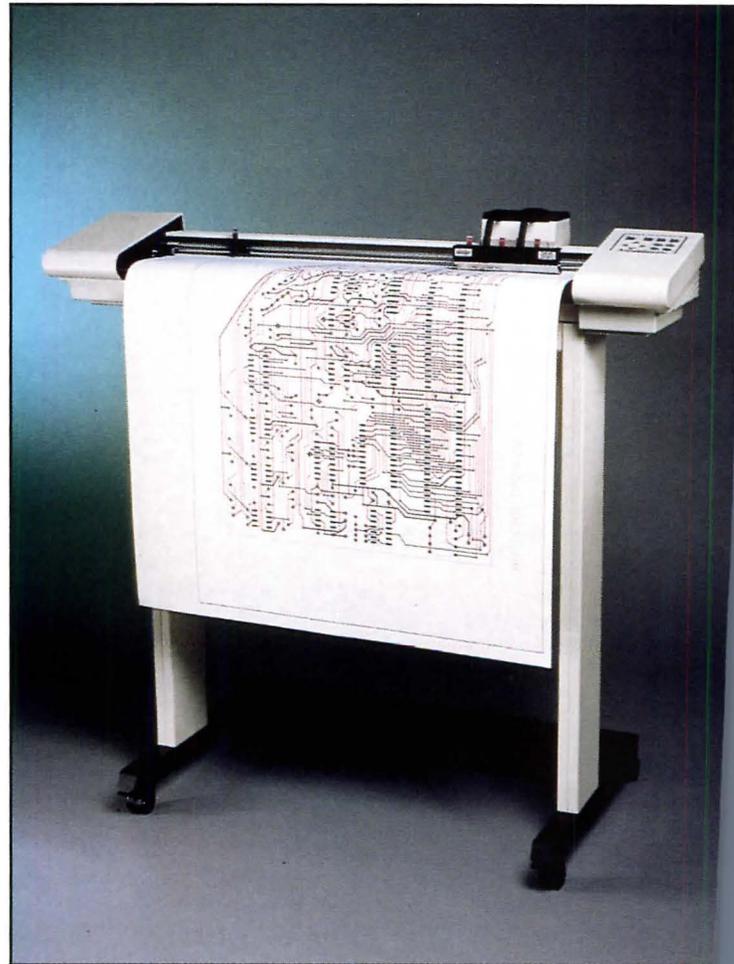
Products for the IBM-compatible market, and for minicomputer systems such as those offered by Sun, Apollo, Prime, and Digital Equipment Corporation, still dominated the show, though. There, the watchwords were: Faster! Cheaper! More colorful!

Introduced were new graphics boards that allow quick redrawing and review of CAD images on computer screens, new low prices on existing products (especially on plotters), relatively inexpensive full-color printers using thermal-transfer systems, and super-capable digitizers.

Sorting through all the babble it is clear that smaller architectural firms, in particular,

are beginning to be well served by an astonishing variety of vendors offering excellent performance at attractive prices. The task will be more one of sorting through all the options than one of finding the capital to make the jump into architectural-office automation. Suppliers are beginning to help, though, with new-found compatibility. CAD files can now be moved from Apple to Sun to IBM, for instance, almost painlessly. That's because different versions of software packages now produce drawing and database files that have the same or almost the same structure, no matter which type of computer the files were created on.

Intergraph alone announced 13 new products at the show, forming the base for what it says is a strategy to use the UNIX operating system. The new products are, however, compatible with the company's existing VAX-based software, which the company says already accounts for 40 percent of the A/E/C market by dollar volume. The VAX can run UNIX, but runs much faster with the VMS-



1. *Houston Instrument DMP-62 drafting plotter*
2. *Schlumberger Graphics thermal-transfer printer*
3. *QMS print of AutoShade plot*
4. *Bruning Computer Graphics, Zetadraf 900*

operating system existing Intergraph products use. The new packages are built around the MicroStation 32 workstation. They include project management software, fast raster graphics, structural design, and 3-D modeling software.

Circle 300 on reader service card

Intergraph is also pushing third-party developers for the MS-DOS package developed by Bentley Systems [RECORD, April 1988, page 125]. Drawing and database files are compatible with the UNIX and VMS versions, although drawing databases transferred from the largest systems to the smallest may lose some "structure" as the information they contain is translated into a form personal-computer software can use.

UNIX was the big news at the Sun Microsystems booth as well. Sun had announced a financial alliance with AT&T the previous month, and AT&T hinted it would use the next version of UNIX to run especially well on Sun systems. Sun also displayed the ninth-old Sun 386i workstations, which come in two versions and run both UNIX and IBM-compatible MS-DOS software.

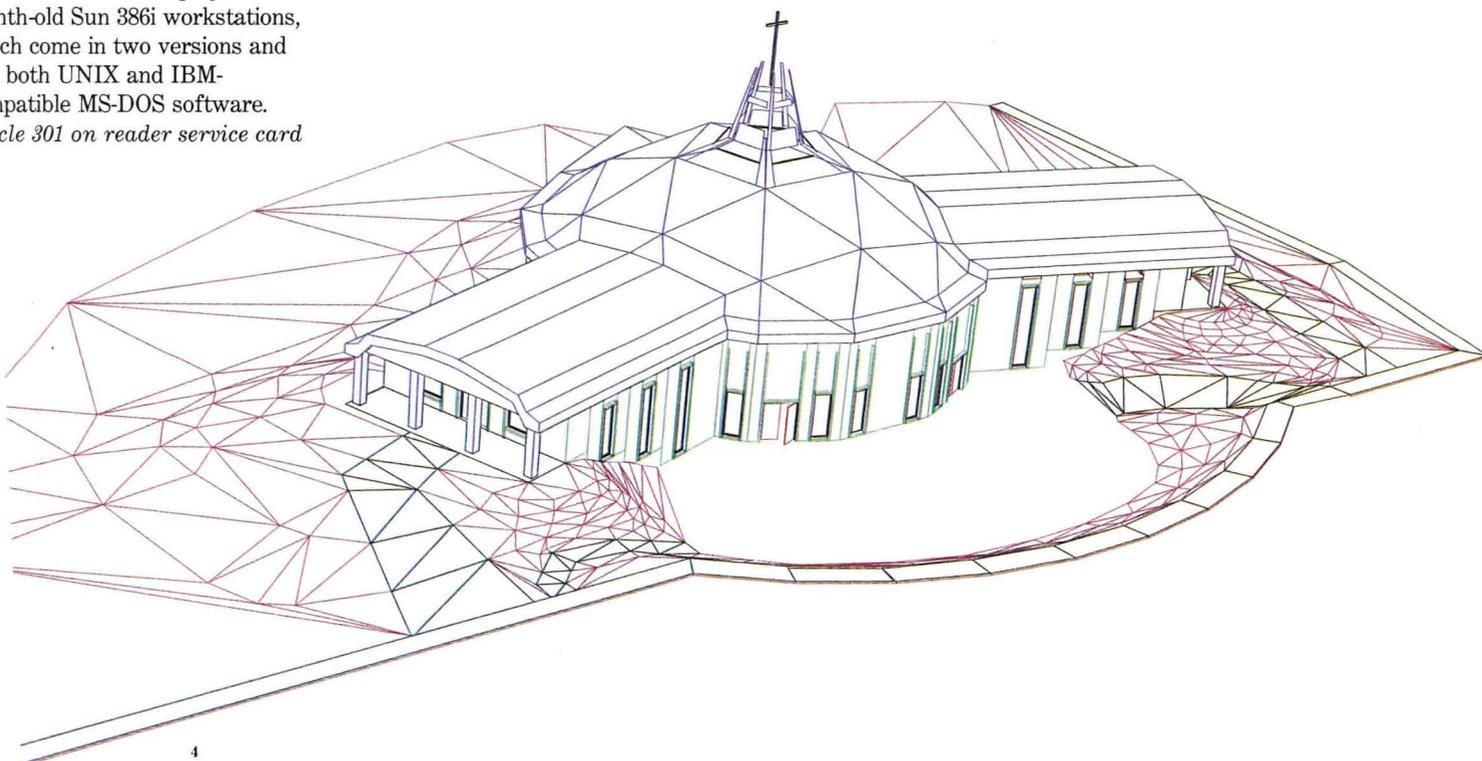
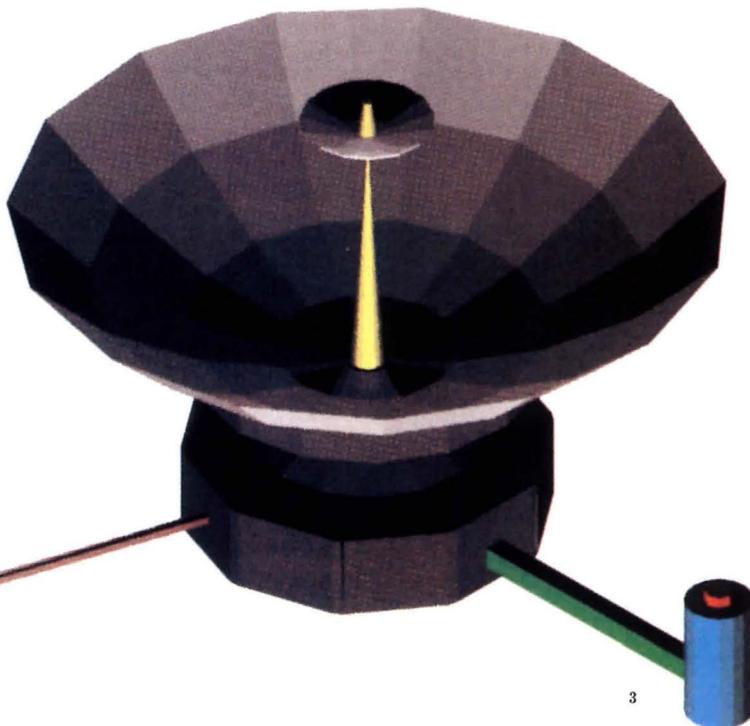
Circle 301 on reader service card

Autodesk announced AutoCAD Release 10, with vastly improved capabilities for handling three-dimensional images. The new release is available for the IBM family of computers and compatibles, Sun-3 and Sun-4, the Sun 386i using UNIX, Apollo DN3000 and DN4000 using Apollo's 5 AEGIS operating system, and the DEC VAX station II/RC/GPX and 2000 using the VMS-operating system.

For the Mac

The Macintosh version of AutoCAD will ship in the third quarter, Autodesk says, for \$3,000. Release 10 for the Macintosh II will not require the

use of an IBM emulator board. It works with the new Macintosh-MultiFinder multitasking operating system, and supports the standard Macintosh interface





and peripherals such as printers and plotters. Autodesk says the program will support existing add-on products such as AutoShade. In addition, there are new "hooks" in AutoCAD files to facilitate development of third-party add-ons.

Circle 302 on reader service card

Versacad Corporation announced version 1.1 of its VersaCAD/Macintosh edition, a "2.5-D" (that is, near three dimensional) CAD program for the Plus or SE models with one megabyte of memory, coprocessor and hard disk, or for the Macintosh II with two megabytes. The new version adds bill-of-materials processing to the earlier version; all current owners get a free upgrade.

Versacad has chosen to meld its software very tightly to the Macintosh system. The main program follows the standard Macintosh interface extremely closely. The bill-of-materials processor (standard in IBM-compatible versions) is actually a HyperCard "stack," or program. HyperCard, given away by Apple with all Macintosh computers now, has an easy-to-learn

programming language. Version 1.1 also includes HyperCard stacks for door and window schedules and text processing. Versacad hopes third-party developers will use HyperCard to write other add-ons.

Versacad also demonstrated true 3-D graphics using the HOOPS graphic programming tools from Ithaca Software. HOOPS, already used for UNIX and VMS workstations, will be incorporated into future Macintosh releases of VersaCAD, the company says.

Circle 303 on reader service card

Innovative Data Design, Inc., which has been selling MacDraft, the simple and very popular \$269 2-D drafting program for the Macintosh, demonstrated DREAMS, a more advanced 2-D product. The \$500 basic DREAMS package comes with a library of architectural symbols and printer and plotter utilities. IDD promises modules for 3-D, database manipulations, color effects, etc. The software runs on the Macintosh Plus, SE, and II with one megabyte; a hard drive is recommended.

Circle 304 on reader service card

A Macintosh-oriented redesign of Generic CADD Level 1 for \$99.50 was announced by Generic Software, Inc. In the company's "level" system, Level 1 is a basic, entry-level package; Level 3 (not yet available for the Macintosh) is a full-featured one. There are add-ons available for 3-D and other functions.

Circle 305 on reader service card

Visual Information, Inc. announced an alliance with Versacad: the VII translator program, which allows users to transfer files between Dimensions 3-D and VersaCAD/Macintosh edition, is free to registered users of both



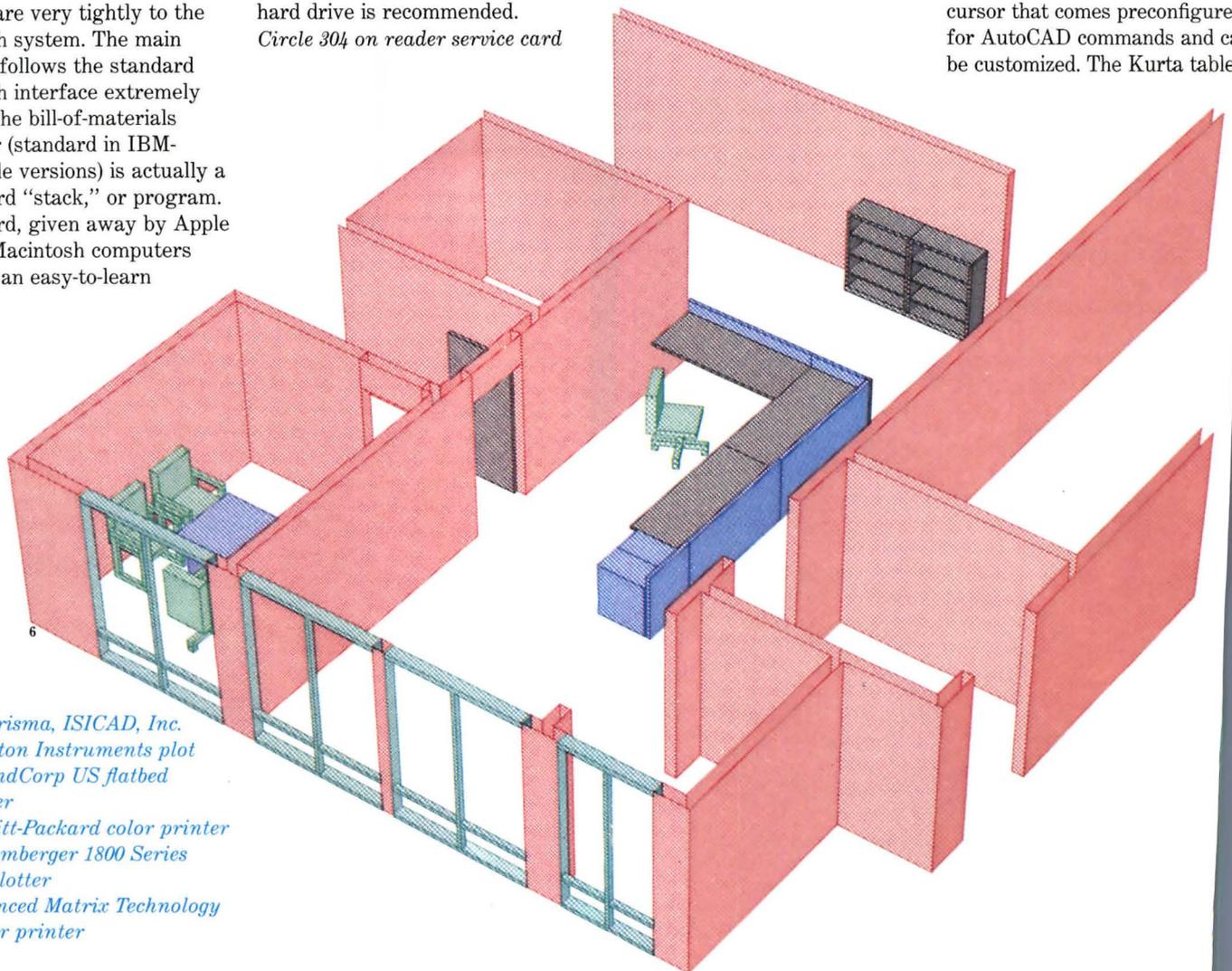
programs until the end of August. VII claims true 3-D for its \$1,595 Dimensions CAD software; the solids-modeling add-on costs \$895, and a program to translate to and from standard DXF files is \$495. The package can run on Macintosh computers as small as the old 512, the company says.

Circle 306 on reader service card

Kurta announced the IS/ADB, the first digitizing tablet to support the Macintosh SE and II Apple-Desktop-Bus (ADB) port. It can also be plugged into the keyboard port, which leaves the serial port free for other devices, such as plotters. The IS/ADB, \$395, has an 8.5- by 11-in. digitizing surface, and comes with a corded pen stylus. A cordless pen and corded or cordless cursors are also available.

Circle 307 on reader service card

Kurta's larger tablets don't support ADB yet. They can, however, be ordered with either a Macintosh- or an IBM-compatible serial interface, and a 12-button cursor that comes preconfigured for AutoCAD commands and can be customized. The Kurta tablets



5. PC-Prisma, ISICAD, Inc.
6. Houston Instruments plot
7. RolandCorp US flatbed plotter
8. Hewlett-Packard color printer
9. Schlumberger 1800 Series pen plotter
10. Advanced Matrix Technology 7-color printer



switch back and forth between mouse and digitizer mode, and allow users to keep the entire surface active for drawing, even when using a template that would normally restrict the drawing window.

Third parties have long been reluctant to develop for the ADB port, in part because Apple has been reluctant to freeze the port's specifications. Kurta's criticisms suggest Apple is finally serious about issuing standards with some permanence. This, in turn, should stimulate more third-party interest.

Compunearing, Inc., introduced LOGO MAC, a \$145 land-surveying and coordinate-geometry program for the Macintosh SE and II. The firm already sells FRAME MAC, for D frame, truss, and beam analysis.

Circle 308 on reader service card

near-photographic picture quality available for the Macintosh II with the new ColorBoard 104 in RasterOps. It displays up to 4,320 simultaneous colors—on a palette of 16.7 million—on a 19-in. monitor with 1,024 by 68 pixels. The board takes up one Mac II-NuBus slot, and uses the power equivalent to two slots.

Circle 309 on reader service card

color thermal-transfer outputs from the Macintosh II are possible with the new Canon TEK 4693D Option 44, which comes with 4 megabytes of local memory. The printer uses a NuBus-compatible card to hold the parallel interface.

Circle 310 on reader service card

printers and plotters

As the biggest hardware news of the year was the proliferation of color thermal-transfer printers for Macintosh computers, the industry has seen a new wave of standardized color rolls, which pass by each color in a sequence such that each color of the wax-ink is melted onto the print,

a roller presses the ink firmly. The resulting print can withstand fairly rough treatment. Although the underlying "engine" is usually from Mitsubishi, and handles sizes up to 11 by 17 in., the individual products being offered have many different features.

QMS displayed what it says is the first color printer that can handle the PostScript graphics and typesetting language; the price is \$24,995. The ColorScript 100 has RS-232, Centronics-parallel, and RS-422/AppleTalk interfaces.

Circle 311 on reader service card

CalComp's ColorView B-size 200-dot-per-in. thermal printers, include the Model 5612 printer and 5912 plotter/printer. The 5912 emulates the 5800 Series electrostatic plotters, the 1040GT Series, and Artisan pen plotters, as well as the GSS Virtual Device Interface that many presentation graphics packages use. The 5912 costs \$9,995, or \$13,995 with a color video controller that allows fast-screen prints and some networking capability. The 5612 is \$7,995; the controller alone is \$8,995.

Circle 312 on reader service card

Schlumberger Graphics said it would start shipping its Model

5232 B-size 3-color thermal-transfer 300-dot-per-in. plotter in July. The interface is simple, via Centronics parallel cable and AutoCAD ADI, and the price is low: \$8,950. The company says it reproduces the entire AutoShade color palette.

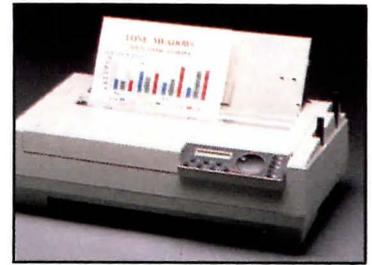
Circle 313 on reader service card

Advanced Matrix Technology's new Accel-500 graphics printer with four-color ribbon and 24-pin printhead is only \$1,185 and handles paper up to 17 inches wide.

Circle 314 on reader service card

Queen of the show was the new 8836 from Versatec, (a Xerox subsidiary), the first E-size (36-inches-wide) monochrome laser plotter. Paper comes out of the machine at an inch-per-second and with a resolution of 400 points-per-inch. To save paper, the plotter can rotate a D-size drawing (22 by 34 in.). For twice the output speed, there is a "draft" mode at 200 points-per-inch. Finished prints, up to 15 feet long, are automatically rolled, taped, and labeled. The cost: \$28,000; \$37,900 with an embedded controller that accepts data in the Xerox/Versatec 906/907 format.

Circle 315 on reader service card



10

Houston Instrument showed several new peripherals for its DMP-61 and DMP-62 plotters. SCAD-CAD Model 128A, \$2,995, turns either plotter into an optical scanner. The MP-60 pen changer upgrades the plotters to multipen operation for \$750. The one megabyte buffer board sells for \$995.

Circle 316 on reader service card

Roland DG announced two new low-priced flatbed plotters, the GRX-300 (up to size D) and the E-size GRX-400.

Circle 317 on reader service card

The Numonics 7191 8-pen E-size plotter, announced in March and displayed at the show, comes with 500 kilobytes of buffer memory.

Circle 318 on reader service card

Price cuts, or more features for the same price, were common. Bruning reduced the price of two 8-pen plotters, the Zeta 824CS, a D-size unit (from \$8,800 to \$5,950), and the 836CS (E-size, from \$10,900 to \$9,900). The Bruning units support all four major plotter languages: GML, HPGL, Calcomp 960, and Tektronix Plot-10.

Circle 319 on reader service card

Hewlett-Packard cut the price of its D-size DraftPro 8-pen plotter to \$3,995.

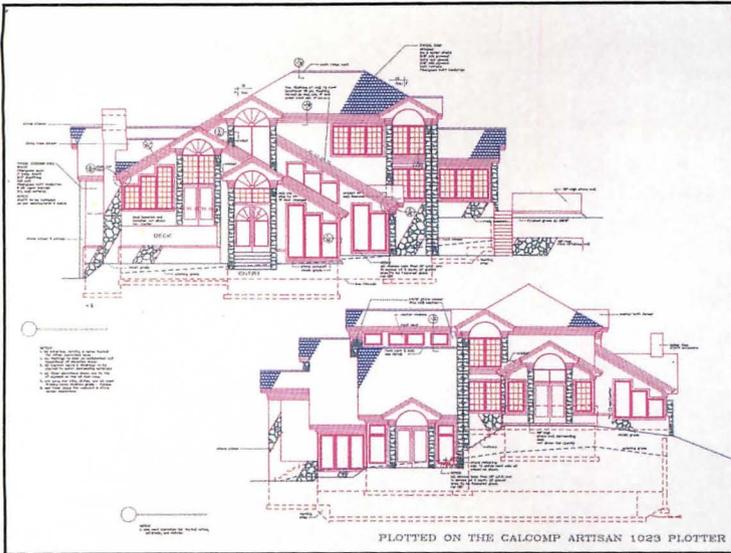
Circle 320 on reader service card

Enter Computer's ENCAD SP1800 D-size 8-pen plotter, announced in January at \$4,695, now comes with a 2-year or 1,000-hour guarantee.

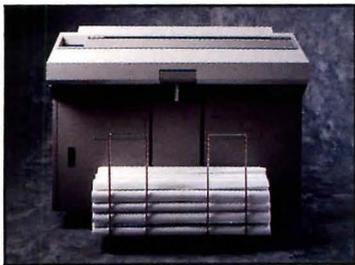
Circle 321 on reader service card



9



11



12

JDL announced several enhancements to its 850 GL+ C-size plotter/printer. It can now rotate a drawing so the long axis aligns with the media roll, and it communicates with the host computer via parallel interface, for plots 20- to 25-percent speedier than using the serial port would allow. Automatic configuration controls are now built in instead of being on optional cards; users specify the software being used to plot the image and the 850 GL+ adjusts. The optional wide-text feature (for printing a 160-character-line) is now standard. The price is \$3,845.

Circle 322 on reader service card

United Innovations announced its MURAL 9000 E-size flatbed plotter with HPGL compatibility for \$3,900. The older, D-size unit is \$2,495.

Circle 323 on reader service card

Optical Computer, Inc., now includes a one-megabyte input buffer (instead of the 7 kilobytes), and 36-in.-per-second plotting speed, instead of 24, with its E-size pen plotters; the 8-pen model is \$6,995; the 1-pen version is \$5,995.

Circle 324 on reader service card

Graphics boards

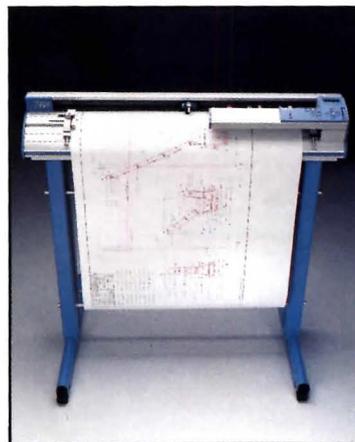
Pixelworks, Inc., announced that its CLIPPER graphics boards for IBM computers and compatibles can now support several new CAD packages, including DataCAD, MicroStation by Intergraph, SmartCAM, and the Xenix operating system.

Circle 325 on reader service card

AutoCAD release 9's new interface with pull-down menus is now supported by GTCO's CADcontroller graphics card, a particularly inexpensive card priced at \$995.

Circle 326 on reader service card

GTX announced several new enhancements for its high-end



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3D-graphics systems. The GTX 4000 "intelligent" scanner "cleans up" drawings and aperture cards it scans, smoothing edges and removing speckles. D-FILE helps keep track of drawings and computer files on which they are based. D-VIEW is a PC-based raster view station; it allows users to scan drawings from raw files in one second or less. The GTX 5000 drawing processor "peels" the outer pixel layers of complex shapes to enhance drawing quality; the process used to take hours, now it takes minutes.

Circle 327 on reader service card

Control Systems introduced the Artist 10 MC for the IBM PS/2 Model 50 and higher. It is up to 25 times faster than IBM's own 8514A graphics card, and can be ordered with software to run any of a number of applications and software is

available for AutoCAD and AutoSHADE. The price is \$3,595. Circle 328 on reader service card

Databases

Codeworks Corporation announced CodeANALYST, a two-part package that allows architects to test project design ideas against applicable code requirements on a personal computer, and then produce a design report by querying a database of building codes from many metropolitan areas in the East via computer modem and phone line.

Circle 329 on reader service card

The National Institute of Building Sciences demonstrated the new Navy/Army Corps of Engineers Construction Criteria Base, a fully indexed CD-ROM containing more than 150,000 pages of federal construction



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and criteria information. An annual subscription is \$970, which includes an updated CD-ROM disk once every three months. Users also need a PlotterWriter 3, a word processing program, if they wish to edit specifications from the database.

Circle 330 on reader service card

Eachtree became the fourth window/door manufacturer to offer a database of its own products for use with AutoCAD—and the first to charge users (\$150). The Eachtree database is also the first that can be run from a digitizing-tablet template. In fact, the template can be used to run AutoCAD as well.

Databases for Marvin, Andersen, and Pella were described in RECORD, September 1987, page 137.]

Circle 331 on reader service card

Other software and systems

Several software providers announced PC-based CAD systems that have many of the data-handling features of minicomputer systems. In general, such systems are "object based," that is, the underlying data control the drawing, and not the other way around, as is typical of "layer based" systems common on personal computers. Construction Data Control, a Verhaeuser affiliate,



¹⁵ introduced ProfitCAD for IBM-compatible personal computers. Once plans are drawn with it, ProfitCAD goes beyond creating a bill-of-materials to add complete estimates, take-off quantities, and total costs. It does this by assigning packages of associated items to each graphic element as it is added to a drawing.

Circle 332 on reader service card

ISICAD showed its PC-PRISMA software for the first time, and also introduced enhancements to its existing PC product, CADvance. The latter now includes tight file integration with dBase III Plus, and tools for third-party developers to add information management applications.

Circle 333 on reader service card

Micro Planning International, whose graphically oriented Micro Planner project planning software has been available for the Macintosh for some time, announced a version for IBM-compatible computers as well.

Circle 334 on reader service card

DocuGraphix-MiCAD and Apollo announced a version of MiCAD's facility management package to run on Apollo's engineering workstations. Previously, the software only worked with IBM-compatible personal computers.

Circle 335 on reader service card

Sigma Design says its ARRIS CAD software will soon be available on Sun 386i workstations. The company also announced two new software packages, one for site design and the other for furniture, fixtures and equipment, and said it was expanding its program for third-party developers.

Circle 336 on reader service card

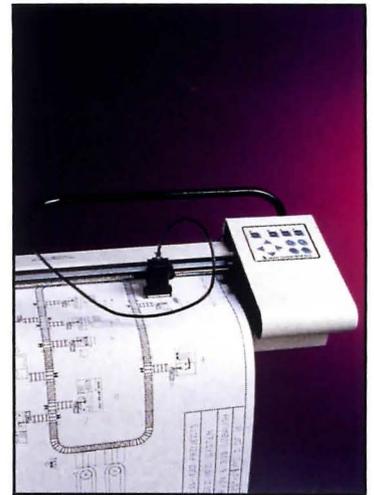
Skok displayed its new Drawbase version 105, which now includes 3-D shading (as a separate \$495 add-on), an integrated text editor, enhanced ability to import and export industry-standard DXF files, and an improved integral programming language.

Circle 337 on reader service card

Other hardware

IBM released details of its RT-based architectural design system, being developed in cooperation with Skidmore, Owings & Merrill and scheduled for December 1988 release. Packages of software and hardware range in price from \$20,710 to \$28,610.

Circle 338 on reader service card



¹⁷ Sel-Net, a high-end addition to Western Automation's printer and plotter network systems, was announced at the show. An 8-port system with 4.5 megabytes of buffer memory is \$4,295; a 4-port network with only one-half megabyte is \$1,425. There are 10 configurations in all.

Circle 339 on reader service card

GammaLink said that its PC-to-FAX transmission speed has been more than doubled, to 30-45 seconds for an A-size drawing. The company also released a unit compatible with the IBM PS/2 microchannel standard, for PS/2 models higher than the Model 30.

Circle 340 on reader service card



11. CalComp Artisan pen plot, ISICAD display
12. Versatec 8836 laser plotter
13. Numonics 7191 8-pen plotter
14. JDL plot
15. Ioline 8-pen controls
16. Sigma Design ARRIS display
17. Houston Instruments DMP-60, with scanner



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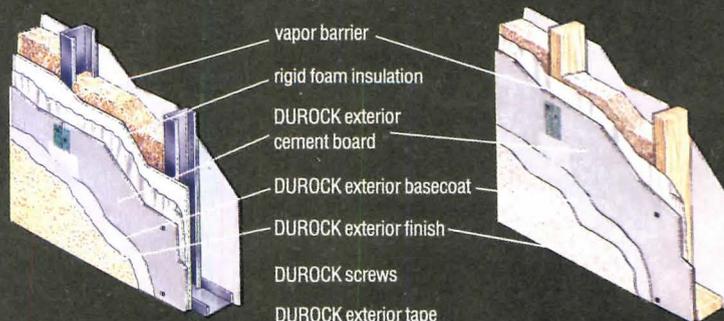
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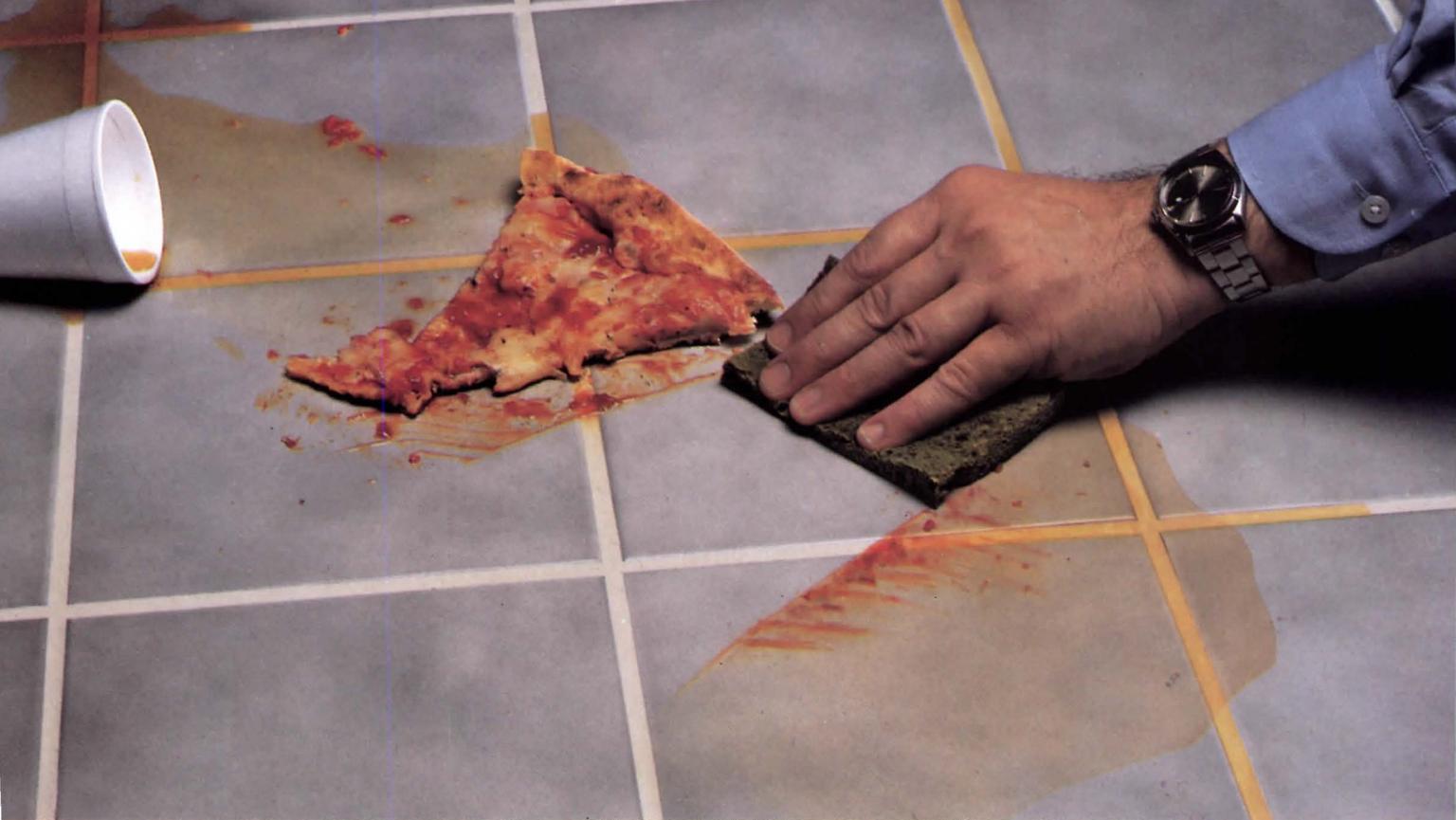


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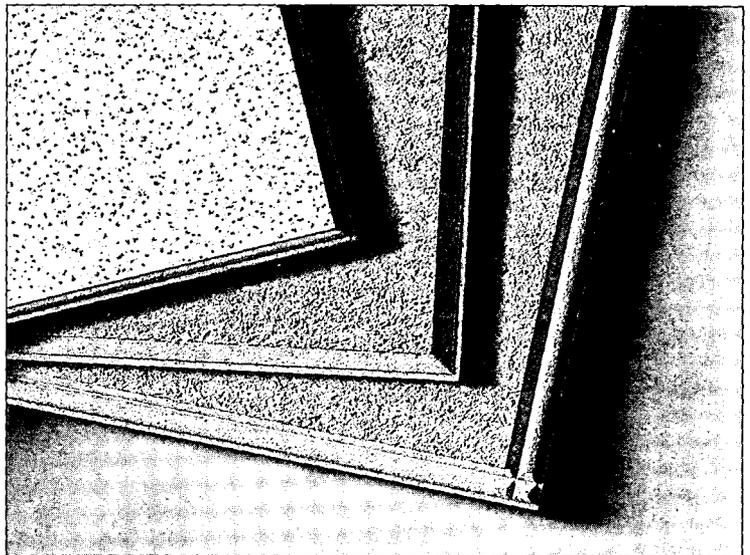
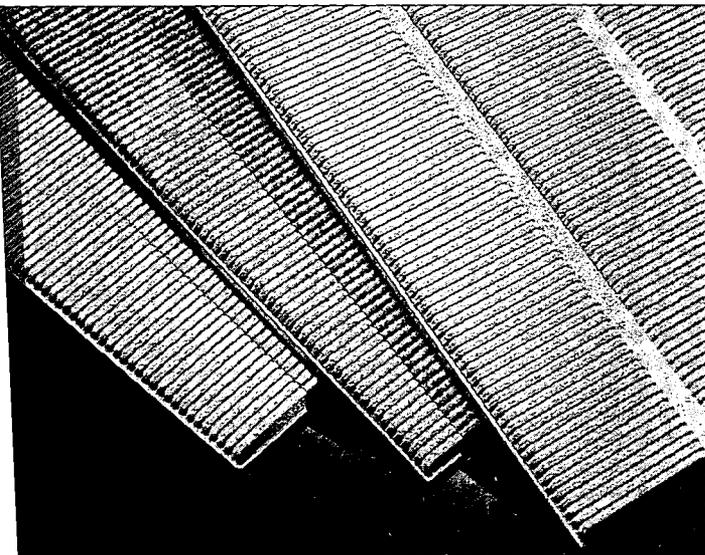
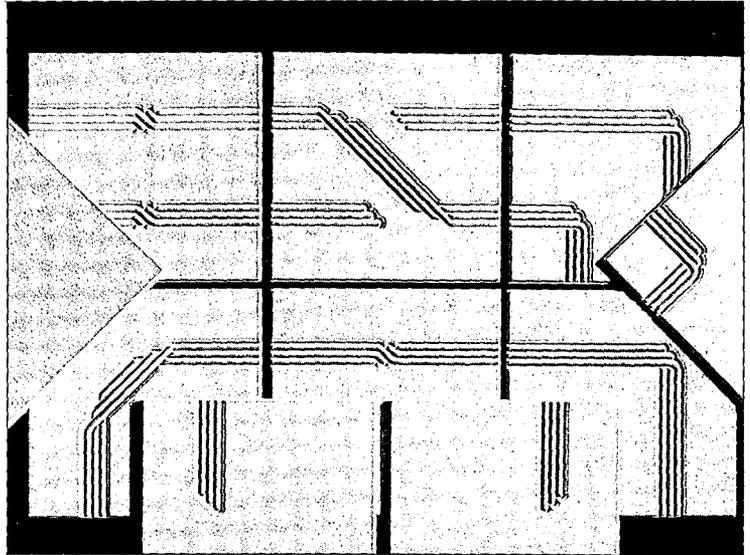
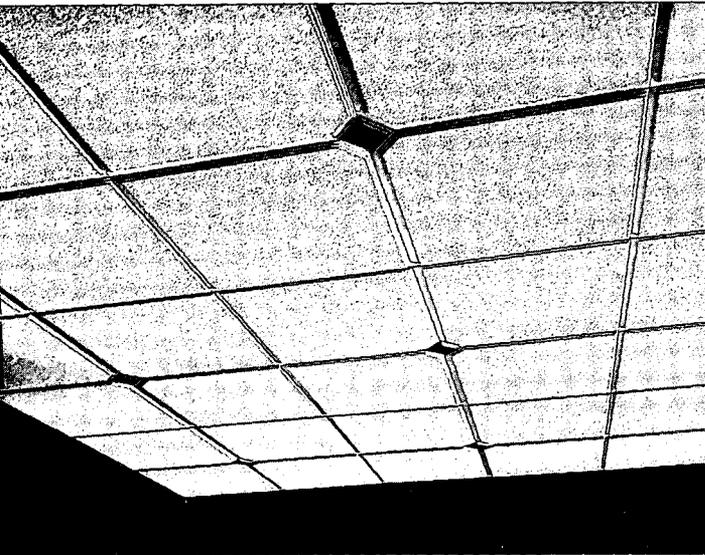


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re it all
ceiling business is definitely
ng up. At a recent
ennial national convention
mstrong contractors and
butors, the large
facturer announced some
umbers: over 400 new
g and wall products, a
ing of total sales in six
and, in the building
cts division alone, a 38
it sales increase over 1986.
ng the new products were
cent details, designed to
r the hollow square
l by the intersection of
ner panels (1). Intended to
ht the linear pattern of

the ceiling, the trim snaps
directly onto 9/16-in. suspended
grid. Offered in two sizes, for
use either 4- or 2-ft on center, the
accent squares have stepped or
beveled edges that reflect the
profile of the ceiling panel. The
trim piece comes in white,
platinum, haze, or the onyx in
photo.

The alphabetical progression
of the *Syllables* series continued
with new *System M* (2). The 10
coordinated panel designs have a
twisted and overlapping triple-
bead detail, which may be
continued from panel to panel to
achieve an almost custom
pattern in the overall ceiling.

The humidity-resistant, vinyl-
wrapped *Artran* ceiling now has
a more scuff-resistant surface
coating, a stronger, less-damage-
prone edge, and a corduroy-
fabric look. Sculptured *Cross
Linear* (3) works with current
wrapped panels, and may be
installed in a parquet pattern. A
new variegated paint finish, in
white, platinum, and haze, is now
offered on short-lead special
order for all *Artran* patterns.

Several detail options were
added to the *Cirrus Travertone*
panel line (4). The chamfered
edge of the center tile is said to
cause the grid to recede by
overpowering it visually; other

profiles include a bullnose (left)
and a furniture-like beaded edge.

Armstrong has entered the
ceiling grid manufacturing field
via several recent acquisitions,
and intends to offer both grid
and panels as a color-coordinated
package. Armstrong World
Industries, Inc., Lancaster, Pa.
Circle 341 on reader service card
More products on page 143

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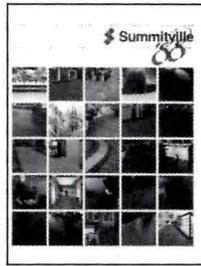
For more information,
circle item numbers on
Reader Service Card



Tile setting products

Thin-set mortars, latex additives, adhesives, colored grouts, and self-leveling sound-control underlayments are illustrated in a 12-page technical catalog.

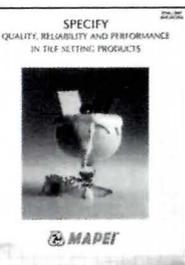
Jamo, Inc., Miami.
Circle 400 on reader service card



Tiles and grouts

Custom-designed murals and sculptured tile are shown in a full-line ceramic catalog. Setting, grouting, and sealant products are included.

Summitville Tiles, Inc., Summitville, Ohio.
Circle 406 on reader service card



Grouts and mortars

An 8-page catalog covers a full line of setting products, and explains six architectural specification aids offered by the manufacturer.

Mapei Corp., Elk Grove Village, Ill.
Circle 401 on reader service card



Installation methods

The 1988 Handbook for Ceramic Tile Installation contains 36 pages on setting techniques, shown in detail with recommended applications and limitations.

Tile Council of America, Inc., Princeton, N. J.
Circle 407 on reader service card



Shrink-resistant concrete

Technical brochure describes how the *Fibermesh* secondary reinforcement system uses synthetic fibers to avoid plastic-shrinkage crack formation in concrete.

Fibermesh Co., Chattanooga, Tenn.
Circle 402 on reader service card



Isolation membrane

A 4-page architectural folder on mastics and modified mortars and grouts describes the *NobleSeal TS* anti-fracture/waterproofing membrane for all types of thin-set tile installations.

H. B. Fuller Co., Palatine, Ill.
Circle 408 on reader service card



Ceramic tile products

A full-line color catalog contains 60 pages on all types of tiles, as well as proprietary setting products and installation tools, such as the *Groutmaster* trowel.

American Olean Tile Co., Lansdale, Pa.
Circle 403 on reader service card



Adhesives and grouts

Unsanded and dense grouts, tile and stone adhesives, and several types of modified mortars are discussed in an 8-page color catalog.

W. R. Bonsal Co., Charlotte, N. C.
Circle 409 on reader service card



Ceramic veneer systems

Interior and exterior tile installation systems, and samples of Classic and Designer colored grouts, are included in a 12-page brochure on the *Laticrete* system.

Laticrete International, Inc., Bethany, Conn.
Circle 404 on reader service card



Installation systems

Hydroment grouting, caulking, waterproofing, and installation systems for tile, brick, and stone are described in a 12-page architectural brochure.

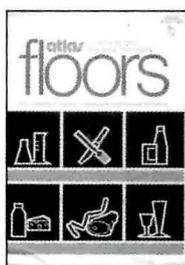
Bostik Construction Products, Huntingdon Valley, Pa.
Circle 410 on reader service card



Grout/mortar additives

Epoxy, acrylic, and latex-modified grouts and mortars are compared in an 8-page catalog. ANSI and other references are given for each product.

Southern Grouts & Mortars, Inc., Pompano Beach, Fla.
Circle 405 on reader service card



Chemical-resistant grouts

Grouts, mortars, and setting beds designed for severe chemical and corrosive exposures are explained in an 8-page specification catalog.

Atlas Minerals & Chemicals, Inc., Mertztown, Pa.
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Resilient flooring

A 186-page book explains *Custom-Look* vinyl tile, said to vary in color and shading from tile to tile. All Tarkett sheet and tile flooring designs are illustrated in color. Tarkett, Inc., Parsippany, N. J.

Circle 412 on reader service card



Ceramic tile

Product data sheets illustrate specific applications of ceramic tile, such as unglazed mosaic tile used extensively in a spa facility. Technical and size information is included. United States Ceramic Tile Co., East Sparta, Ohio.

Circle 418 on reader service card



Storage systems

Specification manuals present technical and design information on *Fullspace* high-density mobile files, and fixed storage units such as shelving, display fixtures, bookcases, and lockers. Lundia, Jacksonville, Ill.

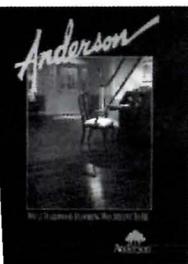
Circle 413 on reader service card



Wall and floor tile

New products, such as *Enduro* high-gloss tile for heavy-traffic commercial floors, are included in a full-line, 28-page architectural catalog on ceramic tile. American Marazzi Tile, Sunnyvale, Tex.

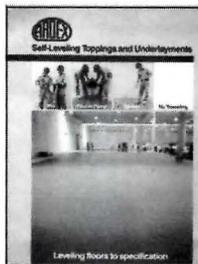
Circle 419 on reader service card



Laminated hardwood floors

Anderson plank and parquet products are covered in a 16-page color booklet; all stain options are illustrated, and maintenance products and instructions are included. Anderson Hardwood Floors, Clinton, S. C.

Circle 414 on reader service card



Cementitious underlayment

New literature from Ardex includes an overview of self-leveling cements, and technical information on *Arla* flexible underlayment for installing resilient-over-resilient flooring. Ardex, Inc., Corapopolis, Pa.

Circle 420 on reader service card



Concrete reinforcement

Polypropylene reinforcing fibers, said to reduce plastic shrinkage cracking in concrete by over 80 percent, are introduced in a technical folder. W. R. Grace & Co., Construction Products Div., Cambridge, Mass.

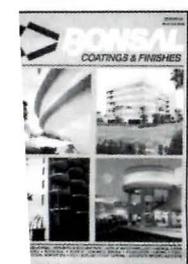
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Italian tile

A recently revised 64-page color booklet, "The Designer's Guide to Italian Ceramic Tiles & Their Installation," explains how to choose the correct tile product for specific applications. Italian Tile Center, New York City.

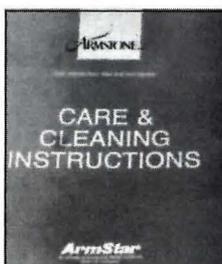
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Coatings and finishes

A technical folder provides data on pre-packaged exterior and interior masonry coatings, acrylic water repellents, mortar mixes, self-leveling floor toppings, and other products. W. R. Bonsal Co., Charlotte, N. C.

Circle 416 on reader service card



Marble aggregate tiles

A brochure explains the different care requirements of polished and honed-finish *Armstone* composite floor and wall products, which are also applicable to other marble tiles. ArmStar, Lenoir City, Tenn.

Circle 422 on reader service card



Mortar and grouts

A full line of tile-setting materials, including new multipurpose *Flex-Bond* polymer-fortified mortar, is covered in a 12-page design catalog. Custom Building Products, Bell, Calif.

Circle 417 on reader service card



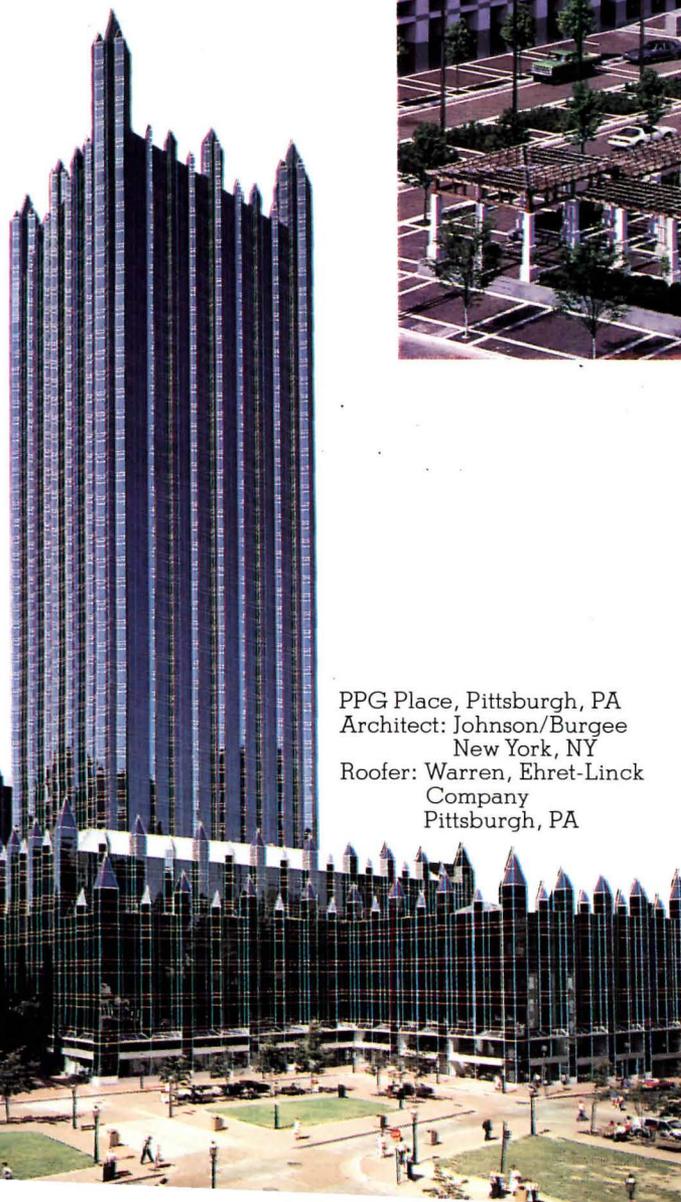
Flooring adhesive

Gyp-Crete adhesives suitable for the installation of laminated wood flooring, carpet, resilient floor coverings, and ceramic tile are presented in a 4-page application brochure. Gyp-Crete Corp., Hamel, Minn.

Circle 423 on reader service card

TCS and the Corporate Ediface

Procter & Gamble General Office
Cincinnati, Ohio
Architect: Kohn—Pedersen—
Fox Associates
New York, NY
Roofer: Imbus Roofing Company,
Cold Spring, KY



PPG Place, Pittsburgh, PA
Architect: Johnson/Burgee
New York, NY
Roofer: Warren, Ehret-Linck
Company
Pittsburgh, PA

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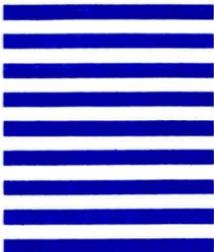
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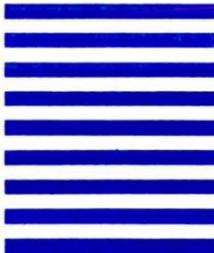
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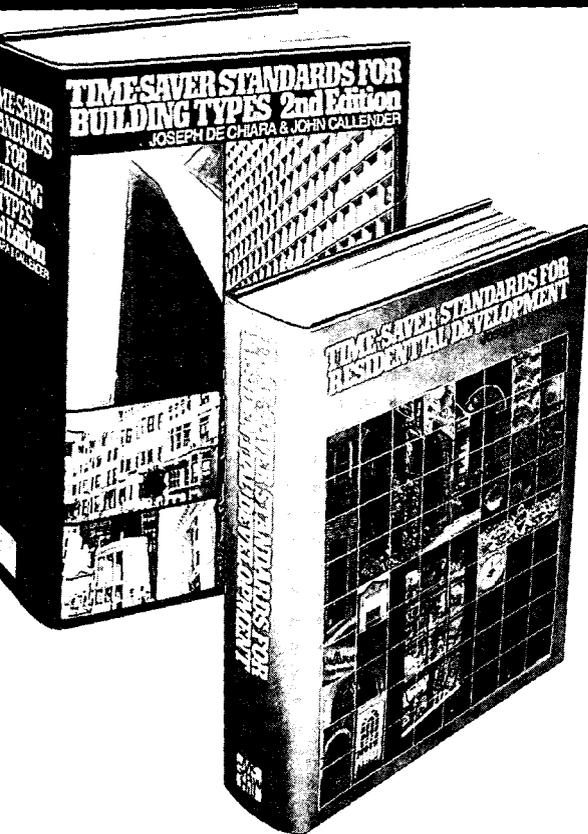
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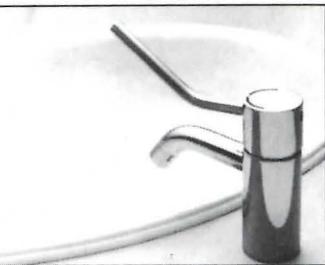
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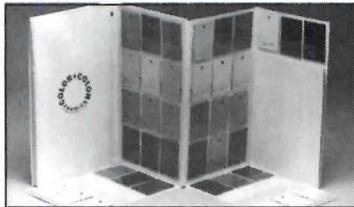
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Continued from page 133



Handicap faucet handle

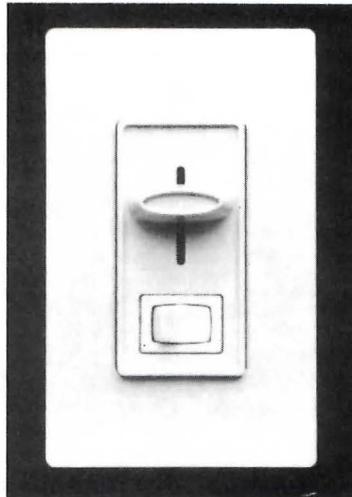
A single-control mixing faucet with temperature adjustment is offered as part of Kroin's *Sanitary Fittings* system designed by Arne Jacobsen. The special handle and valves need only a minor movement to operate flow, turning from hottest to coldest temperature within 120 degrees. The angled spout directs water flow into the center of the basin. Kroin is a subsidiary of Lutron Electronics Co., Inc., Coopersburg, Pa. Circle 342 on reader service card



Plastic laminates

Tibor Kalman designed this Color Selector to provide the specifier with samples of all Formica laminates in the *Color + Color* specification series. The colors have the brightest shades on top, with light to dark colors arranged below. Formica Corp., Piscataway, N. J.

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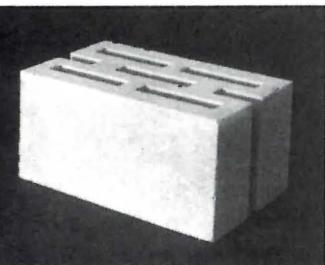


Dimmer-control wallplate

A new trim design offered for Lutron's *Skylark* dimmer-control device is said to enhance its appearance by concealing all mounting screws. Matching the control, the wallplate comes in white, ivory, gray, brown, and black. Lutron Electronics Co., Inc., Coopersburg, Pa.

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Continued on page 145



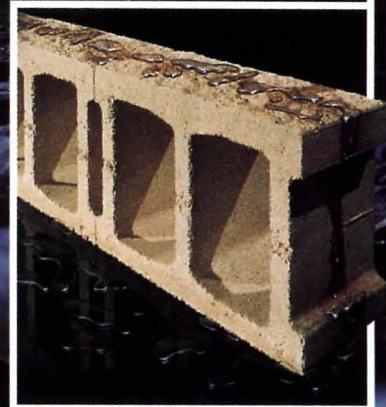
Insulating concrete block

Developed and tested in Canada, Sparfil cellular block is made with polystyrene beads replacing coarse aggregate in concrete mix, and is now produced in a number of sizes and shapes manufactured in Florida and Pennsylvania. The blocks are designed top and bottom to facilitate even stacking. Dried without mortar, the blocks are then coated on both sides with fiberglass-reinforced face bonding cement. The construction is said to have over 10 times the flexural strength of conventional block and mortar, resulting in a fully finished, fire-resistant, and waterproof wall with an R value of 24 (with optional rigid EPS board insulation). Sparfil International, Cobourg, Ont.

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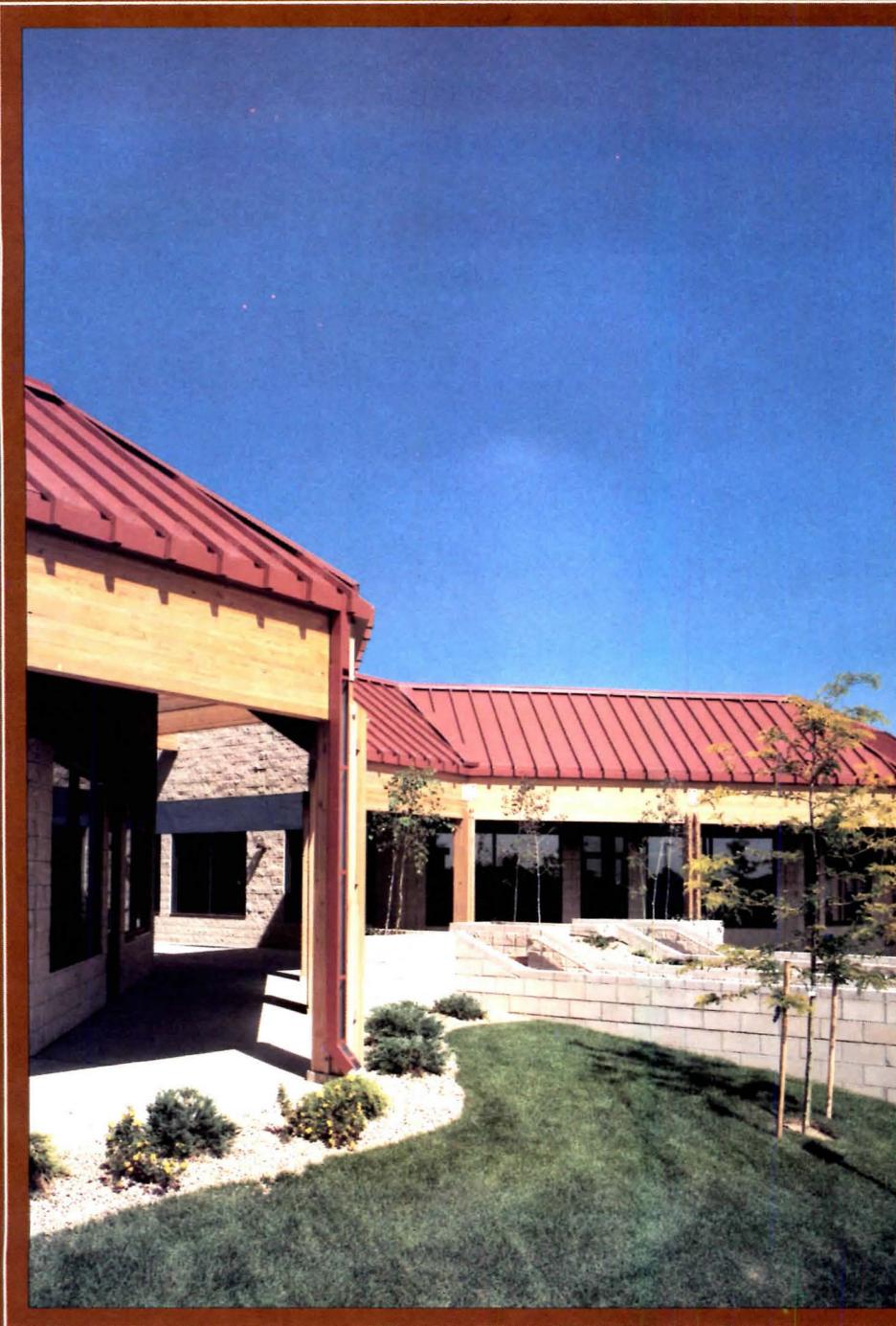
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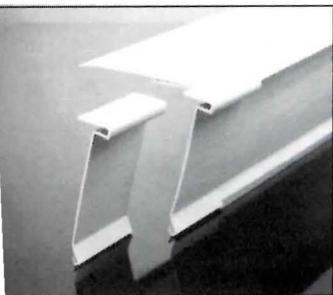


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Exterior luminaire
The uniform density of the *Glow* lamp's acrylic dome produces a soft, even illumination of the texture at night. Ninety percent of the lumens are directed downward, however, in low-glare optical patterns for narrow, wide, or perimeter siting. Single and twin luminaires are proportioned for mounting heights of 8 to 20 ft. Gardco, San Leandro, Calif.
Circle 346 on reader service card

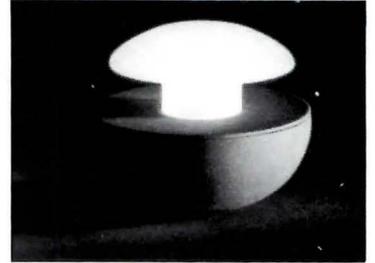


Roofing accessory
Reformed specialty accessories, part of the *Duro-Last* thermoplastic polymer, single-ply membrane roofing system, now include a drip edge and connecting clip, as well as an inside corner (not shown). Said to further reduce installation time, the pvc edge comes with a factory-welded skirt that lifts for sealing, and is then laid back flat for field heat-seaming to deck membrane. Newly designed clips snap over the membrane to cover all joints.
Duro-Last Roofing, Inc., Farmington, Mich.
Circle 347 on reader service card



Exterior insulation system
Used for several years in Europe in multi-unit residential construction, *Sto C-System* modified cementitious ground and finish coats are applied in the same manner as current synthetic-based *Sto* products.

Supplied in economical bag form for on-site mixing with water, *C-System* provides a rilled, rigid surface without the need for expansion joints. The finish coat is offered in 8 colors. *STO Industries, Inc.*, Atlanta.
Circle 348 on reader service card



Halogen table lamp
Piero Castiglioni's grapefruit-sized *Sillaba* lamp diffuses the light from a 12v bulb through a white glass shade. Base is cast-aluminum painted gray or black. FontanaArte, Milan, Italy.
Circle 349 on reader service card
Continued on page 147

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STONE

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The long-term effects of weather on conventional gypsum sheathing, left; and on Dens-Glass.

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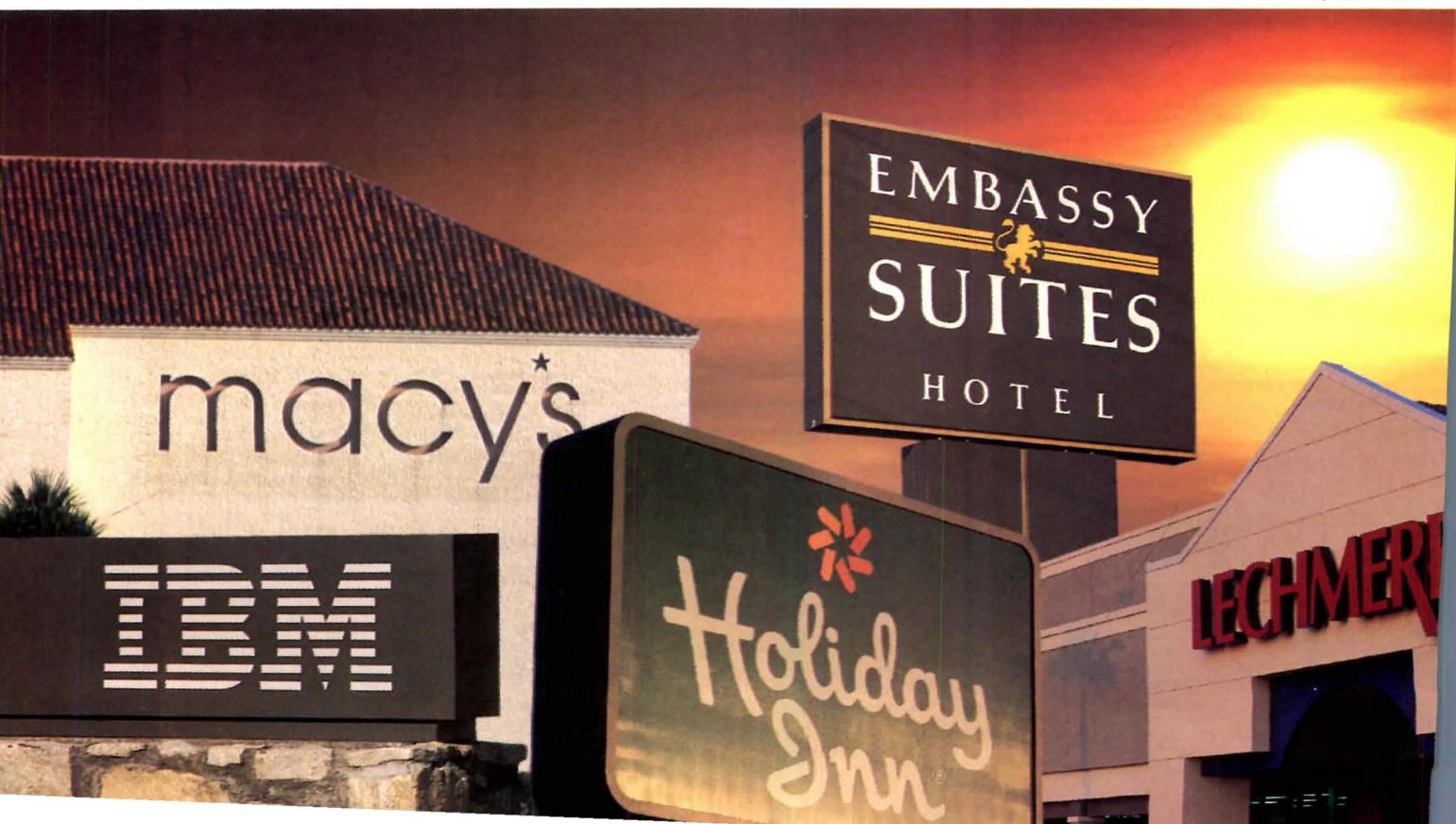
Independent tests produced zero flame spread; zero smoke developed.

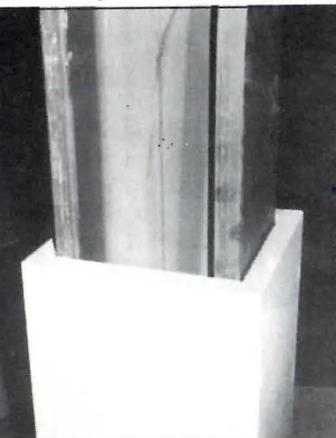
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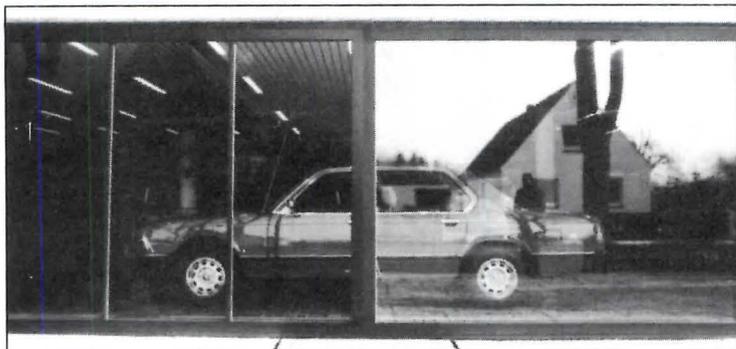
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add-on for both Ioline and other plotters, the PlotServrPlus floppy disk file server lets the letter/printer operate independently; the user can work the host computer without interfering with the plotting or printing process. The device, priced at \$895, can read any 5.25" file stored on either a single- or double-sided 360 Kb or 1.44 Mb IMB-PC format diskette. It can be attached to plotter models as shown, or used as a top unit. Ioline Corp., Land, Wash.

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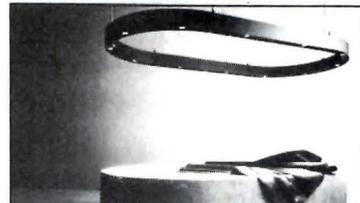


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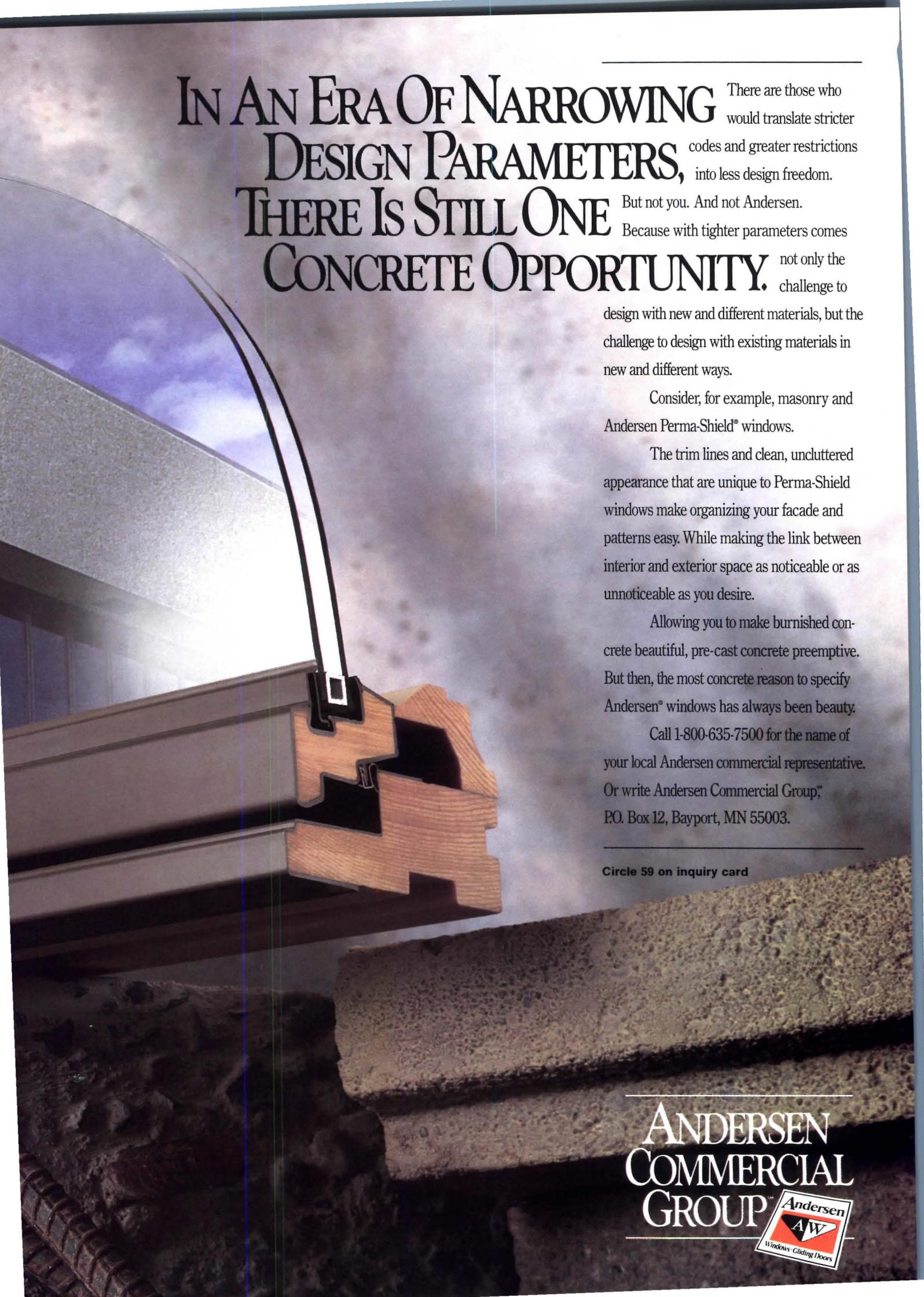
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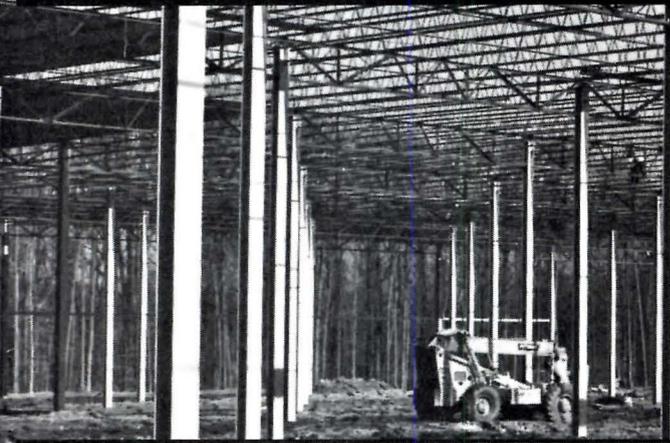
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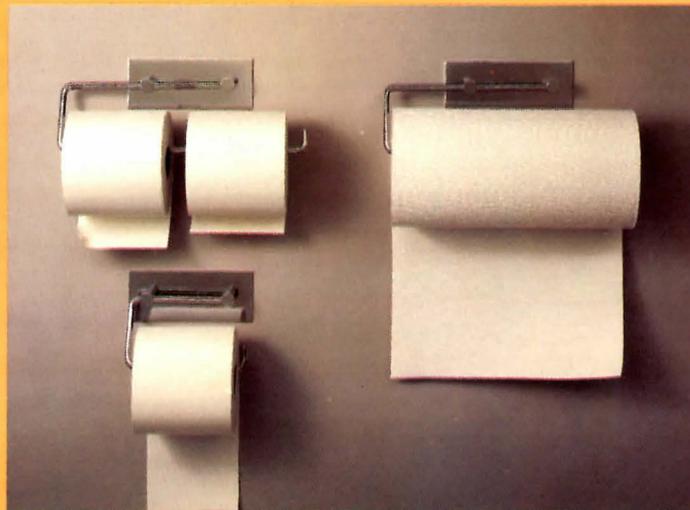
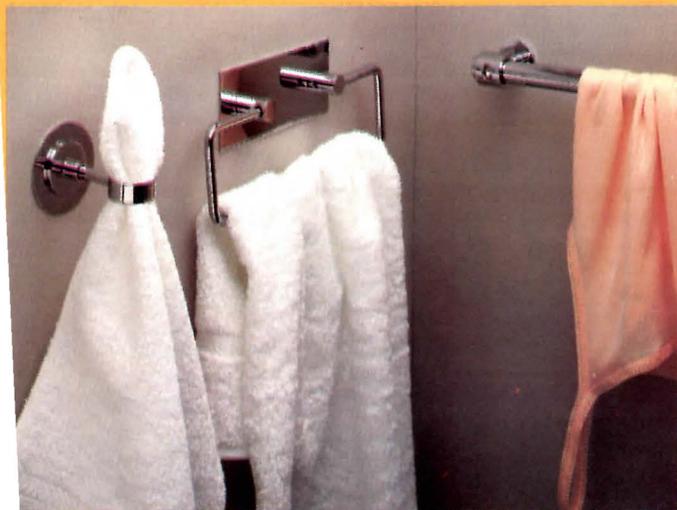
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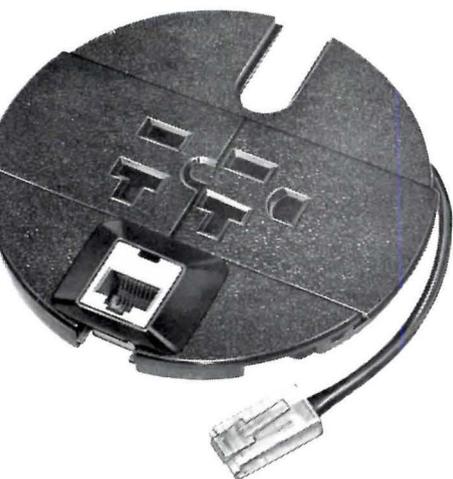
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Manufacturer sources

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 90-95

Dolben Library
Northfield-Mount Hermon School
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Pages 90-91—Brick: Glen-Gery Corp. Roofing: Evergreen Slate Co. Weathervanes: custom by architect, fabricated by W. F. Norman. Windows and exterior doors: custom by architects, fabricated by Doane and Williams. Low-E glazing: Guardian Industries Corp. Site furniture: British American Marketing. Exterior lighting: Boom.

Page 93—Reading tables and Windsor chairs: Lombard. Fluorescent lighting fixtures: Peerless. Carpeting: Bentley Mills. Upholstered chairs: Thonet; Barrit. Book stacks: Wilson. Wood and glass railings: custom by architects, fabricated by Baybutt Const. Co. Ceiling tile: Celotex Corp.

Pages 94-95—Wall fixtures: Visa. Carpeting: Bentley Mills. Paints: Devoe & Reynolds Co. Recessed downlights: Edison-Price Inc. Ceiling tile: Armstrong World Industries.

Pages 118-121

12-in.-sq tile: International American Ceramics, Inc. 1-in.-sq tile: Mid-State Tile Co. 4-in.-sq tile: Summitville Tiles. Grout: American Olean Tile Co.

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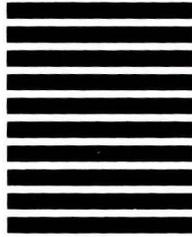
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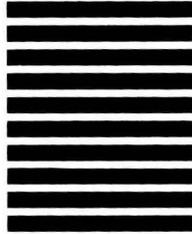
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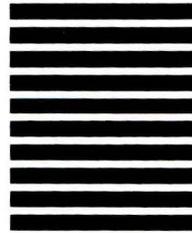
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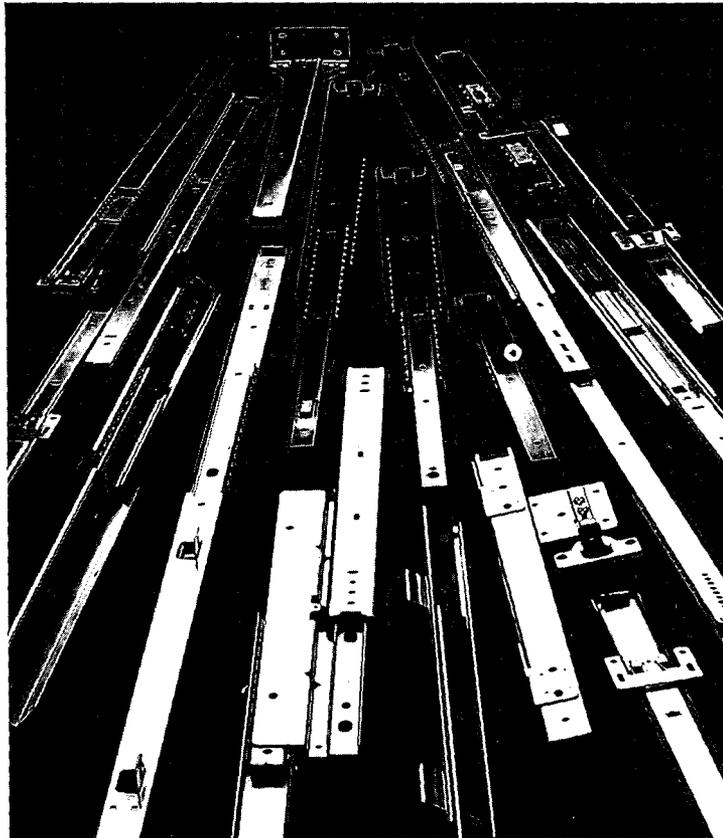
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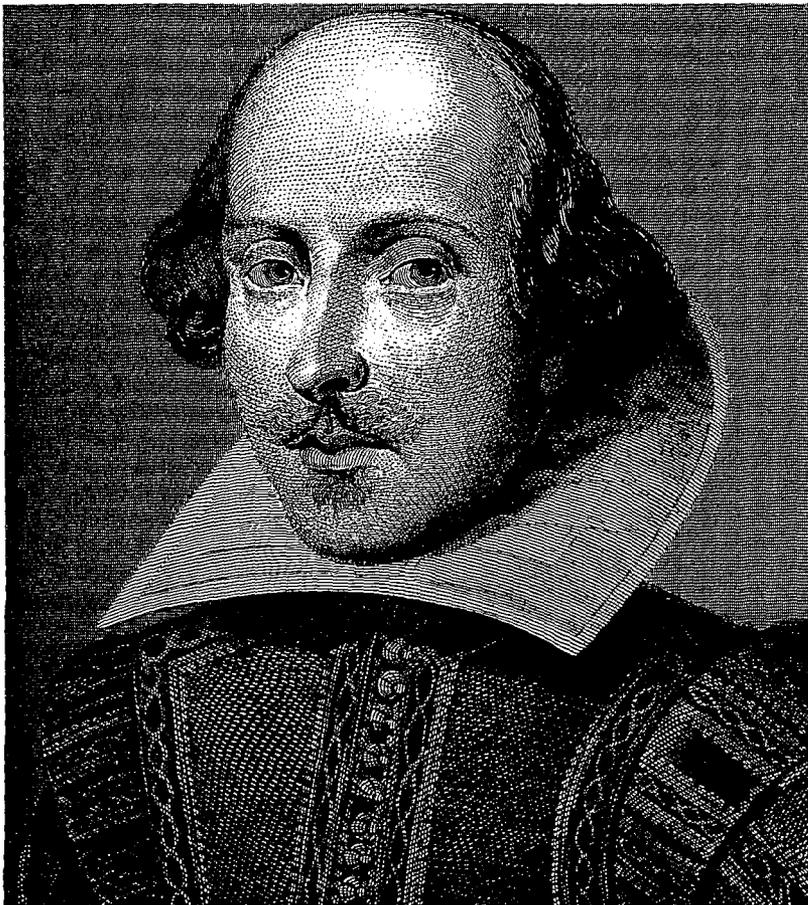
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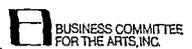
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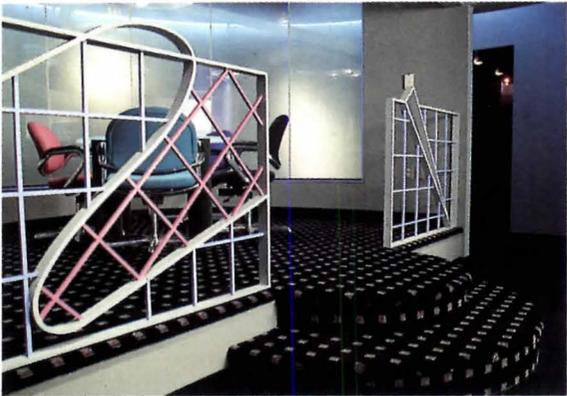
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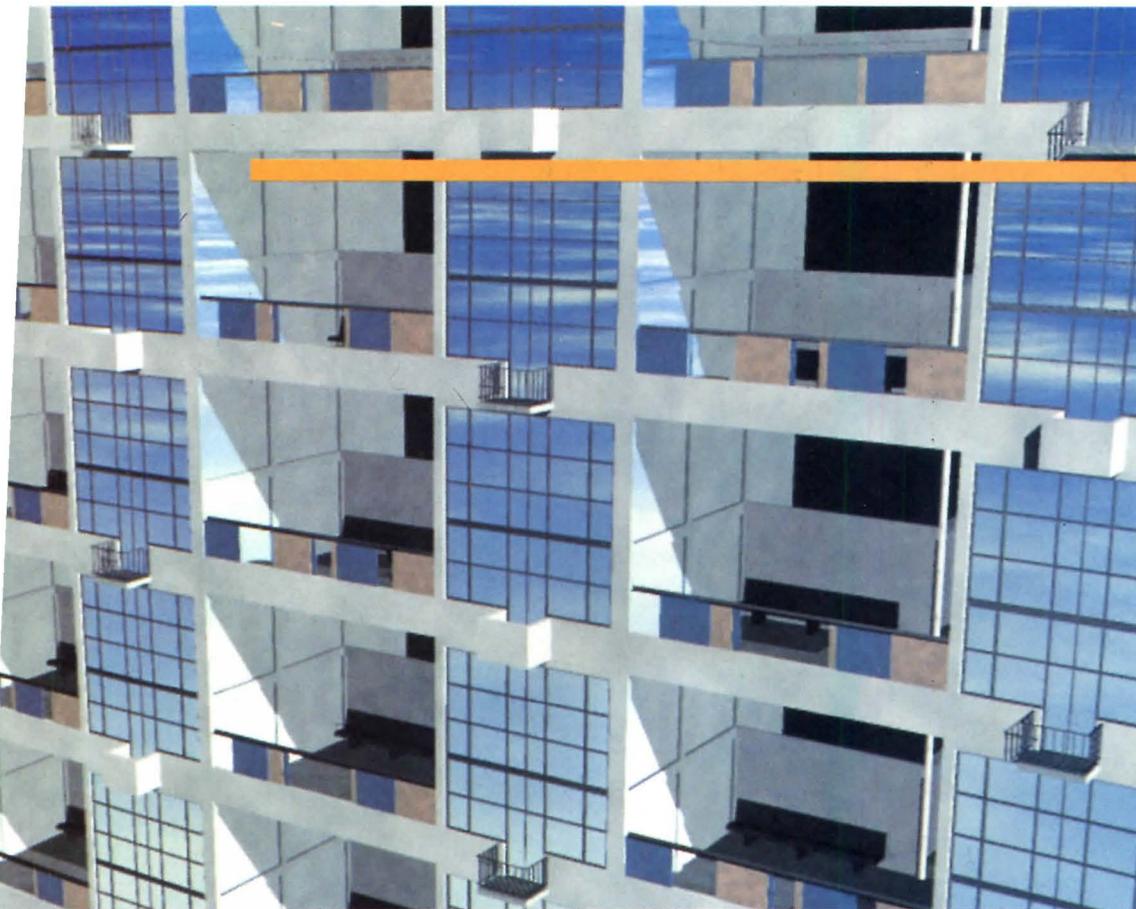
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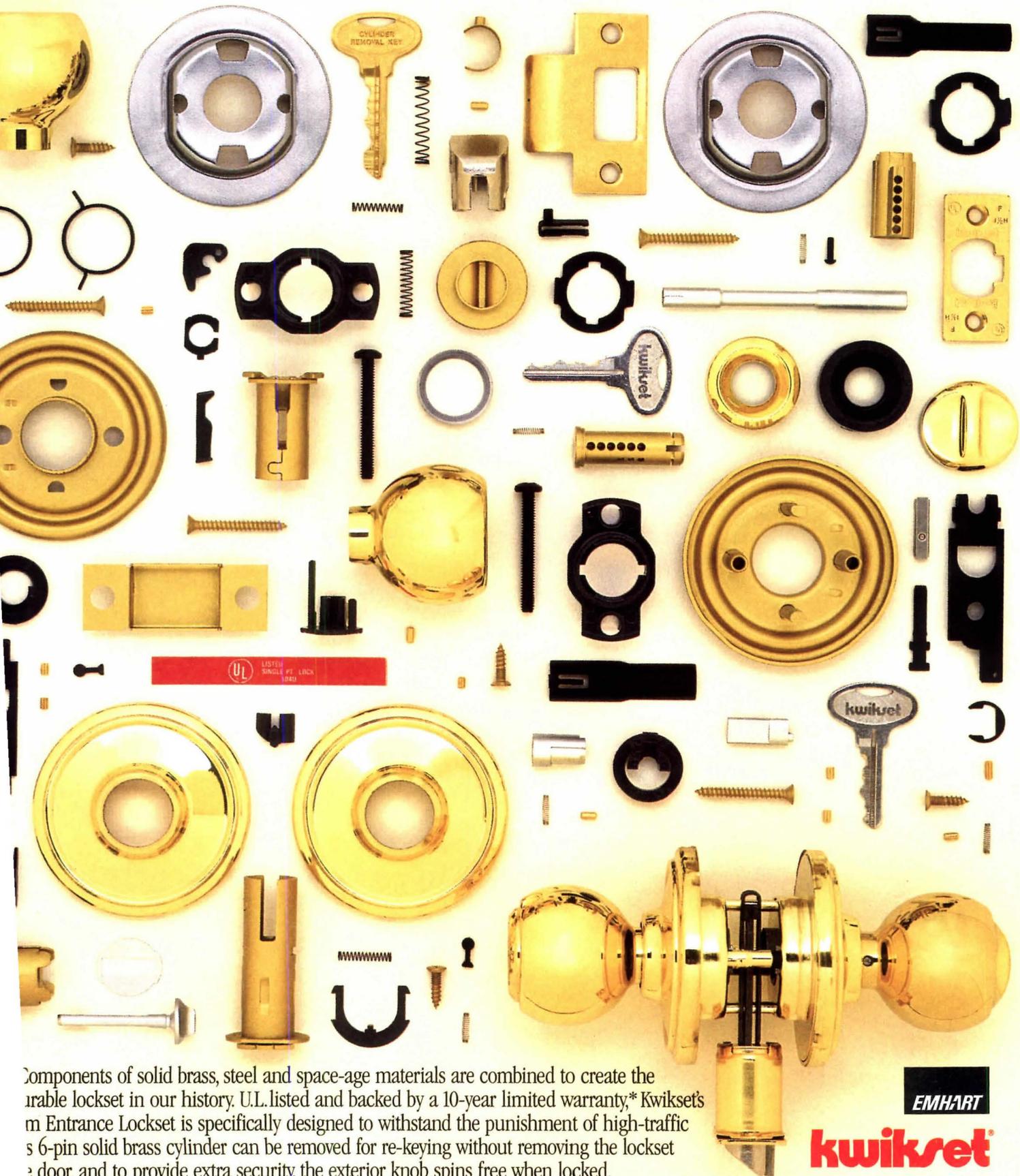
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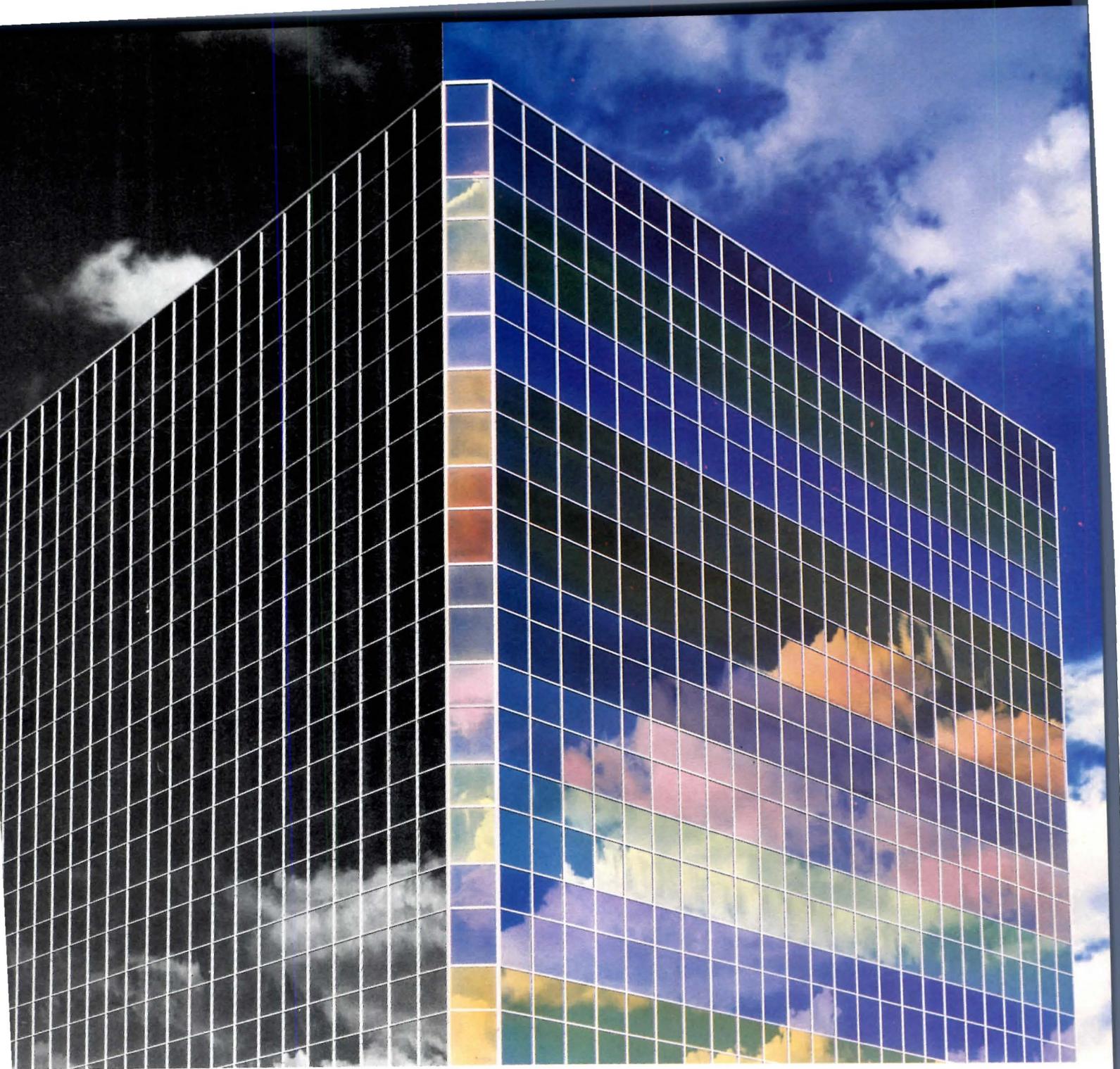
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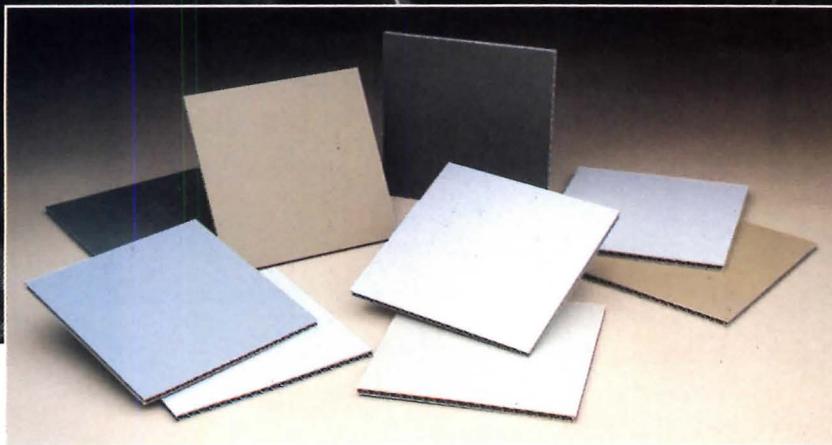
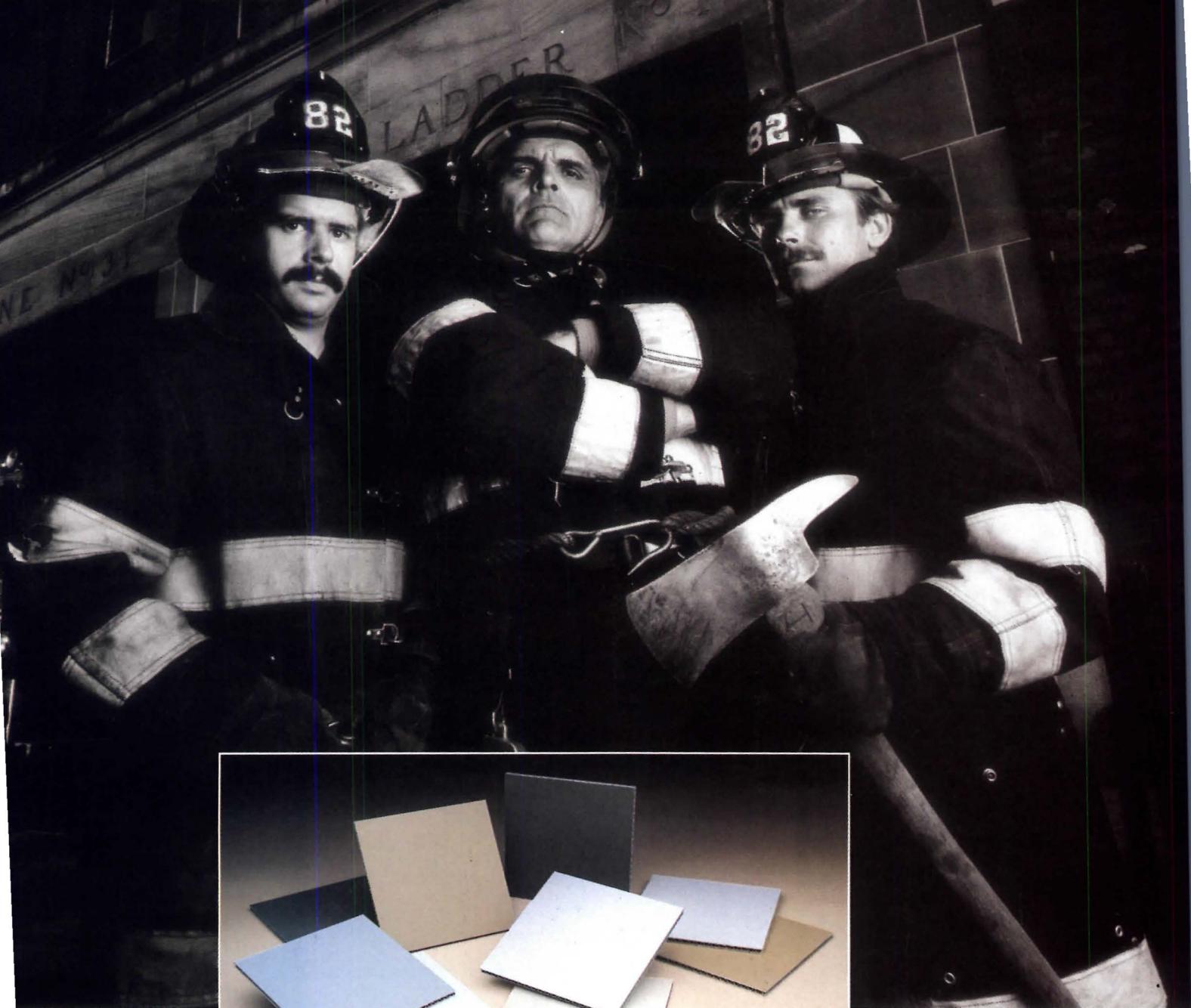
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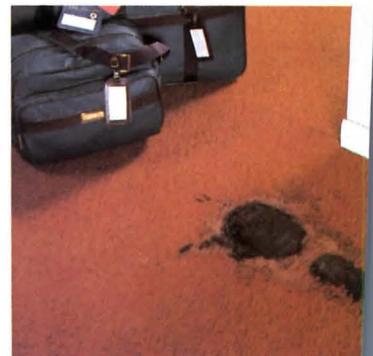


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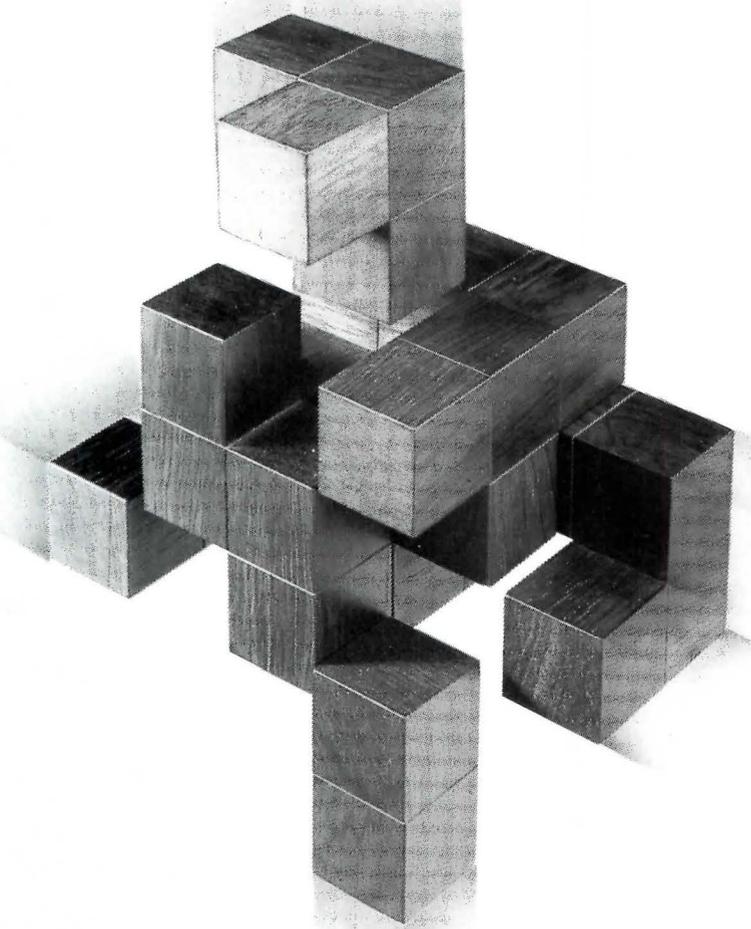
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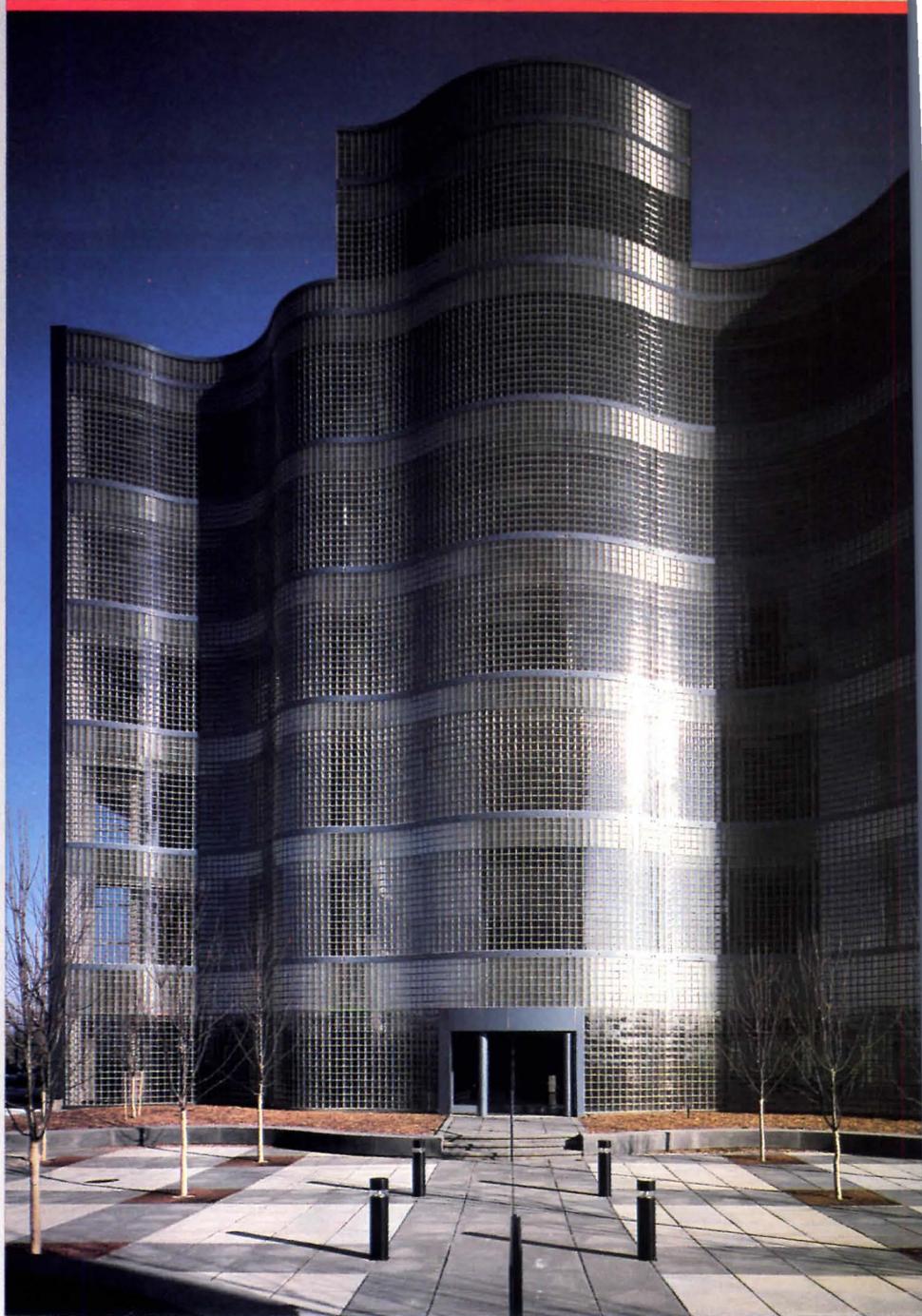
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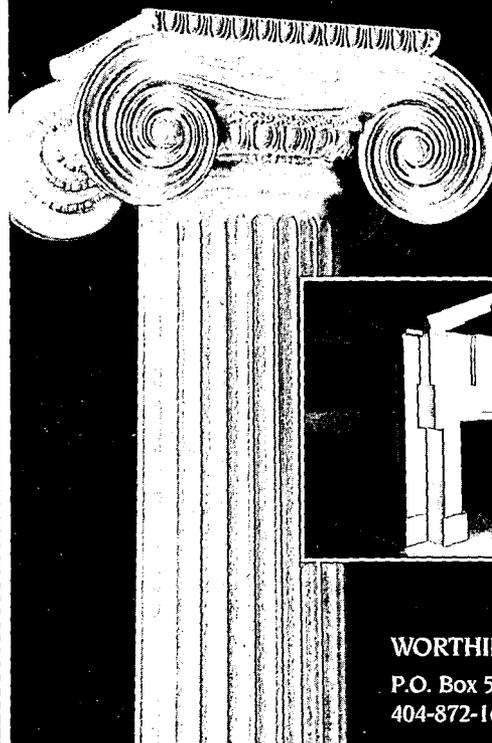
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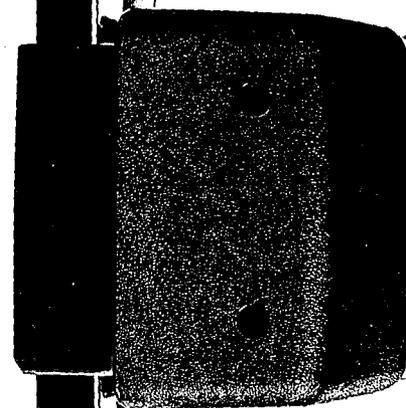
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2.	□	□	□	□	#	#
3.	□	□	□	□	#	#
4.	□	□	□	□	#	#
5.	□	□	□	□	#	#
6.	□	□	□	□	#	#
7.	□	□	□	□	#	#
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9.	□	□	□	□	#	#
10.	□	□	□	□	#	#
11.	□	□	□	□	#	#
12.	□	□	□	□	#	#
13.	□	□	□	□	#	#
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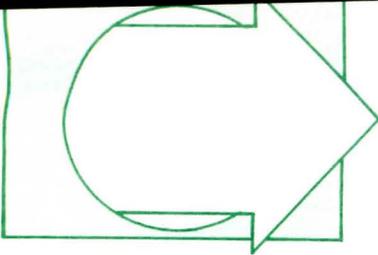
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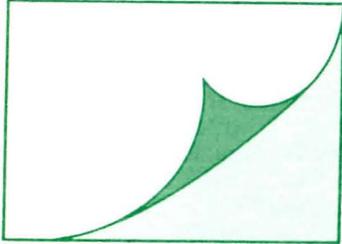
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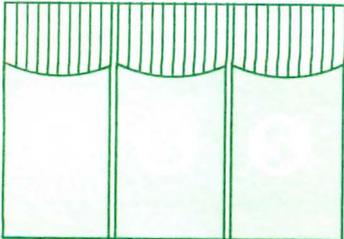
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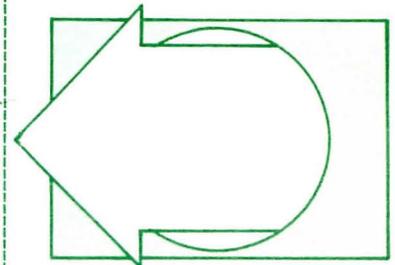
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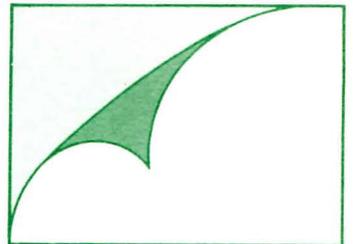
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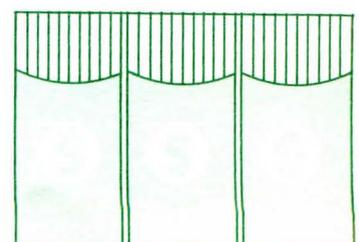
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