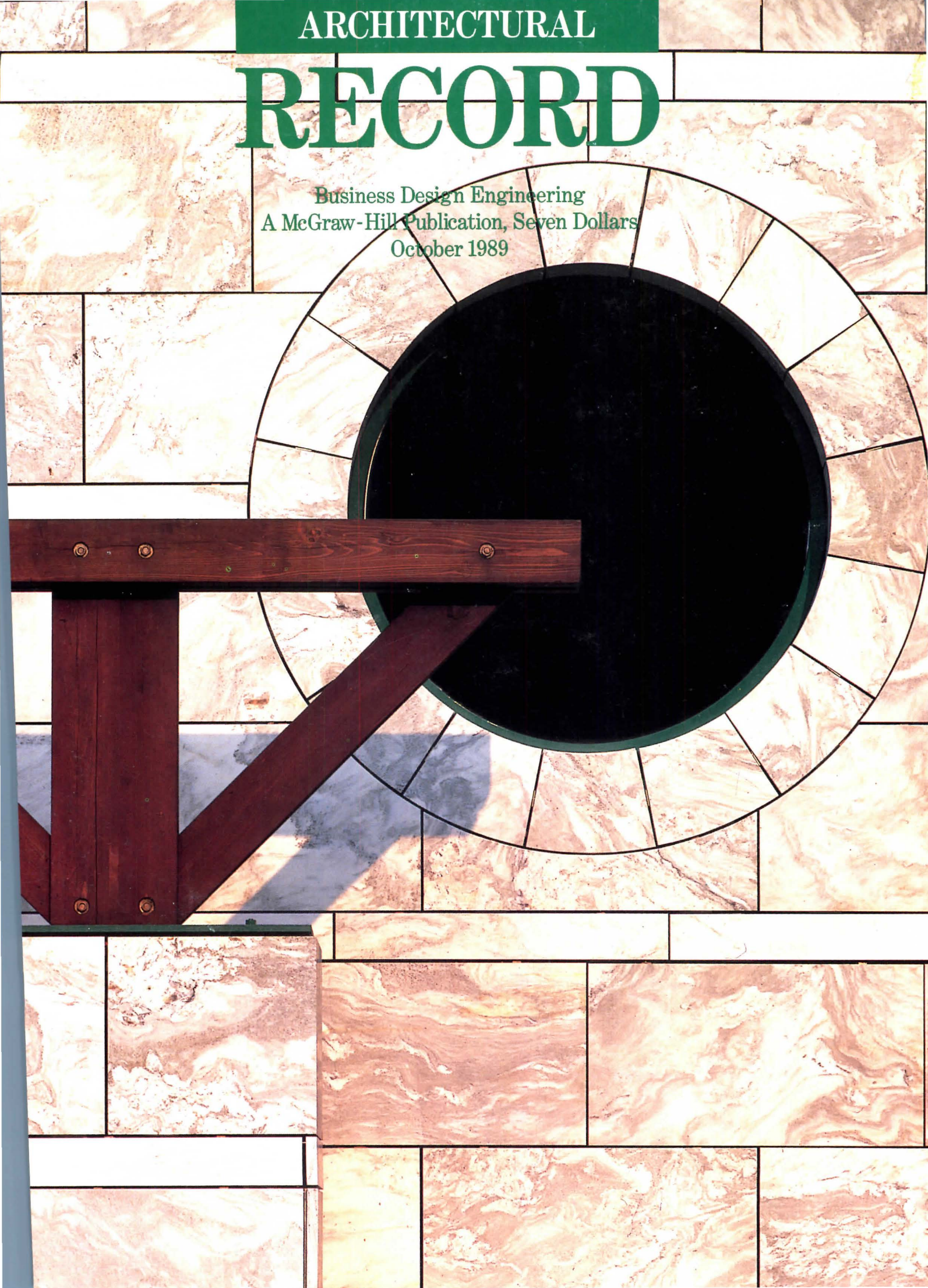
ARCHITECTURAL RECORD

Business Design Engineering
A McGraw-Hill Publication, Seven Dollars
October 1989



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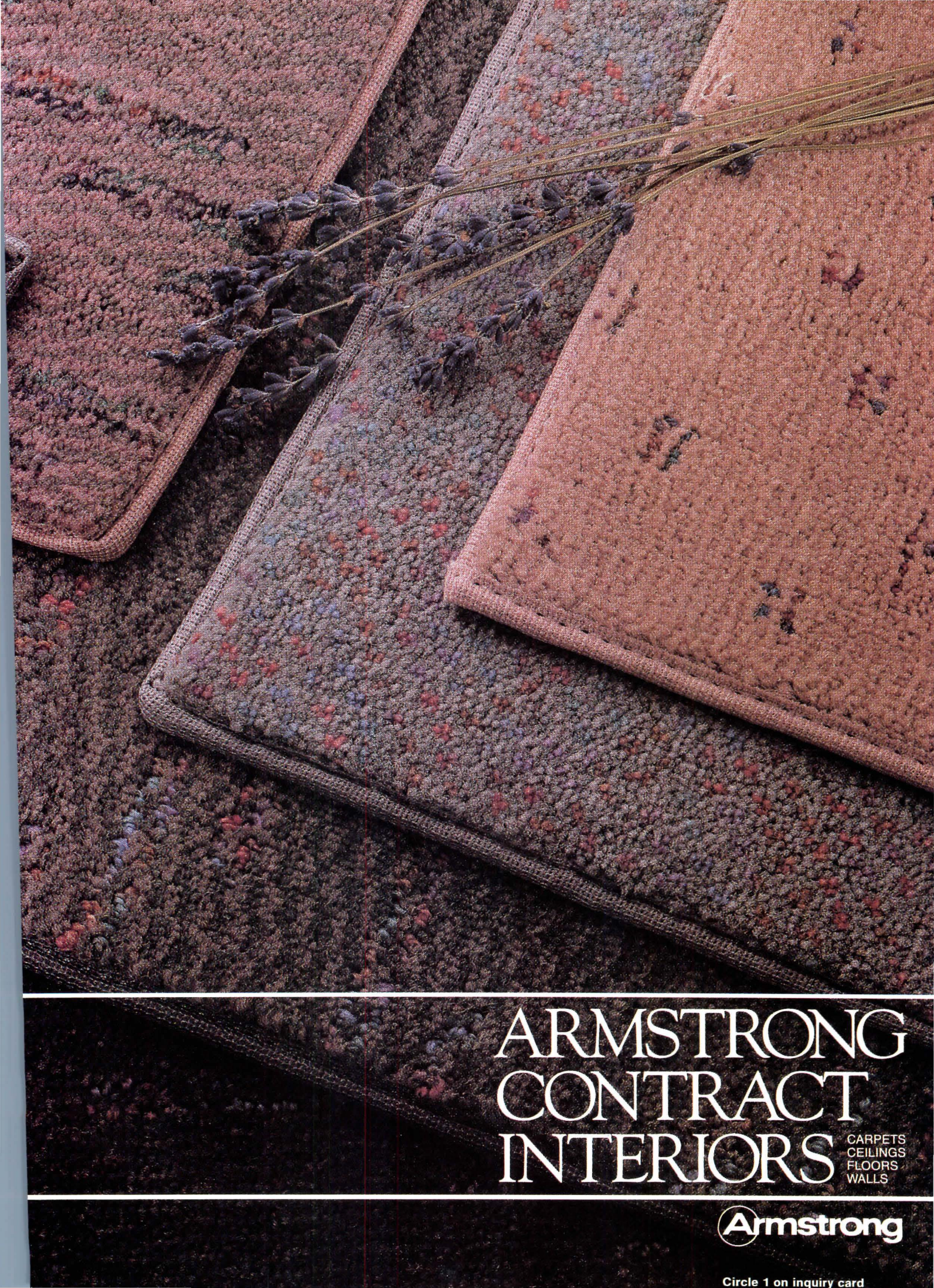

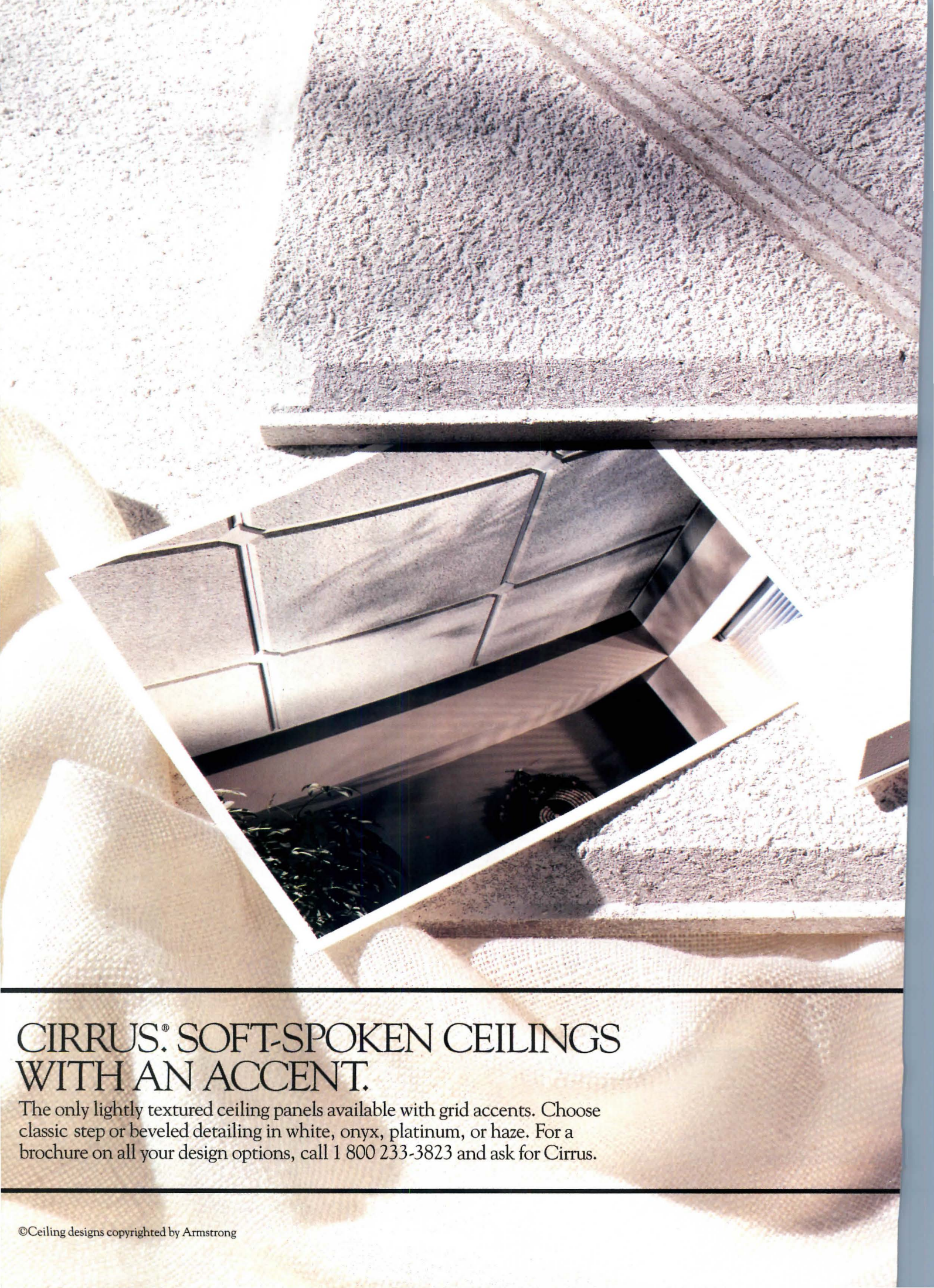

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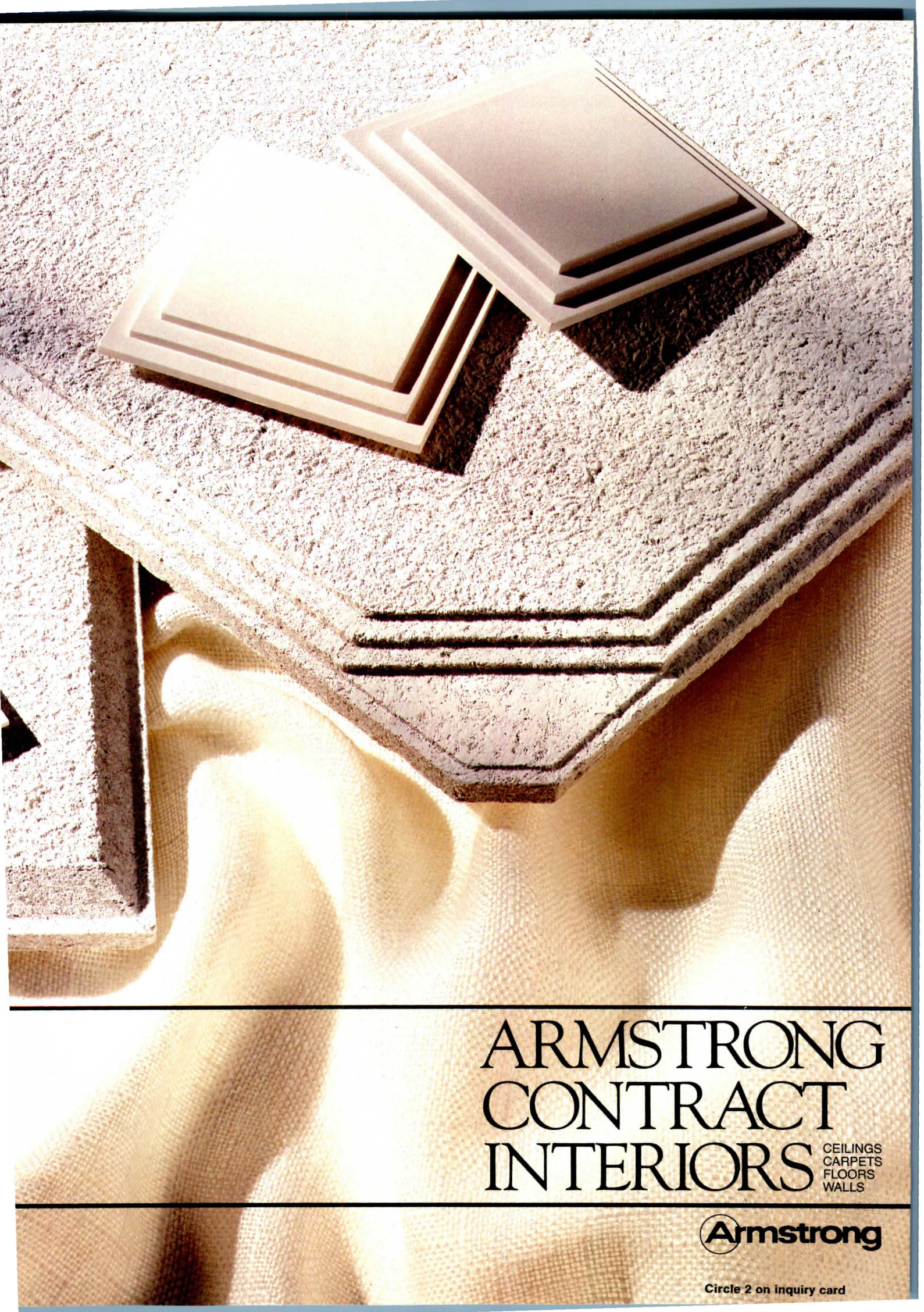

Letters

Until I saw exhibits of Coop Himmelblau's drawings, models, and photographs, including the "rooftop remodeling" [ARCHITECTURAL RECORD, cover, August 1989], I had never understood what was meant by the expression "architecture is frozen music."

Coop Himmelblau's work is obviously frozen jazz and jazz/rock fusion.

Jim Davis
Elizabeth, New Jersey

After viewing the article on James Stirling's new Science Library at the University of California at Irvine [RECORD, August 1989, page 43], I'm sure the building will certainly create a major architectural presence if viewed from the angle of the photograph. It seems to resemble that of the *USS Enterprise* starship of *Star Trek*—or is it a Klingon vessel? Ah, well, it certainly could conjure more "major architectural presence" if we could just lick the scientific principle of levitation of buildings and models.

I mean no disrespect for the architect's designs, but it's not every day one discovers the exciting imagery of spaceships in architectural design news!

W. Otie Kilmer
Purdue University
West Lafayette, Indiana

I feel Steven Ross's review of GEOCAD version 3.3 [ARCHITECTURAL RECORD, July 1989, page 137] did not give potential users a true picture of what I believe to be the best available "add-on" to AutoCad for architects.

The review implies that the "fewer features" and "small symbols library" are drawbacks, when in reality they are strong points. The features are extremely well thought out and simple to use. The architectural logic has been provided by a seasoned professional architect who truly understands production drawings, programming, and AutoCad. The result of this experience is a brilliantly simple architectural production tool. The equally well-thought-out symbols library is easy to use. The symbols are of the highest architectural quality, compared to the rudimentary symbols of AEC.

I have four years' experience with GEOCAD and one year with AEC. GEOCAD has not only proven to be a kinder and gentler system but also faster and more productive. Mies's old maxim holds true here that "less is more."

Eric J. Erickson, AIA
Sterling, Virginia

I agree. As the review said, GEOCAD is a fine product that seems to have been overshadowed by the high-powered marketing of some of its competitors.—S. S. R.

Corrections

In its coverage of San Francisco Centre [RECORD, May 1989, pages 122-127], this magazine regrettably but repeatedly misspelled the name of architects Whisler-Patri. Consistency is not always a virtue.

Derrick Smith should have received credit as the designer of the pool house at Seaside, Florida [ARCHITECTURAL RECORD, July 1989, page 98].

In the article A/E/C Systems '89 product roundup [RECORD, August 1989, pages 122-127], some photographic credits were inadvertently transposed. Number 8 should have been credited to Architrion by Gimeor, Mac version; number 11 is by VersaCAD, Mac version; and number 14 is ArchiCAD by Graphisoft, Mac version.

Calendar

Through October 21
"Aldo Rossi, USA," an exhibition at Max Protetch, New York City.

Through November 4
"Franco Albini: Architecture and Design 1934-1977," an exhibit of buildings and furniture by the Italian architect; at the New York Institute of Technology School of Architecture, Old Westbury, N. Y.

Through November 26
"Building the City Beautiful: The Benjamin Franklin Parkway and the Philadelphia Museum of Art," an exhibition at the Philadelphia Museum of Art.

Through March 4
"Masterworks of Louis Comfort Tiffany," showing 65 of Tiffany's works, many never exhibited before; at the Renwick Gallery, Washington, D. C.

October 6 through November 26
The fourth Annual Exhibition of Architectural Delineation, selected from submissions to the American Society of Architectural Perspectivists; at the Art Institute of Chicago.

October 12 through December 3
"The Architecture of Jean Nouvel," an exhibit of the French architect's work, at AIA Headquarters, Washington, D. C.

October 17 to February 18
"Blueprint for Modern Living: History and Legacy of the Case Study Houses," a major exhibition of 36 experimental prototypes published by *Arts and Architecture* magazine from 1938 to 1962; at the Museum of Contemporary Art, the Temporary Contemporary, Los Angeles.

October 23-25
Architectural Lighting: Basics for Design and Application, a continuing education course offered by the College of Engineering, Pennsylvania State University; in State College, Pa. For information: Donna Ricketts, 409 Keller Conference Center, The Pennsylvania State University, University Park, Pa. 16802 (814/863-1743).

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, and WESTERN ARCHITECT AND ENGINEER) (ISSN0003-858X/89) October 1989, Vol. 177, No. 12. Title® reg. in U.S. Patent Office, copyright © 1989 by McGraw-Hill, Inc. All rights reserved. Indexed in Reader's Guide to Periodical Literature, Art Index, Applied Science and Technology Index, Engineering Index, The Architectural Index and the Architectural Periodicals Index.

Every possible effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage.

Executive, Editorial, Circulation and Advertising Offices: 1221 Avenue of the Americas, New York, NY 10020.

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Change of Address: Forward changes of address or service letters to Fulfillment Manager, ARCHITECTURAL RECORD, P.O. Box 566, Hightstown, NJ 08520. Provide both old and new address; include zip code; if possible attach issue address label.

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Publication Office: 1221 Avenue of the Americas, New York, NY, 10020. ARCHITECTURAL RECORD (ISSN0003-858X/89) published monthly, except semi-monthly in April and September by McGraw-Hill, Inc. Second-class postage paid at New York, NY and additional mailing offices. Postage paid at Windsor, Ontario, Canada. Registration Number 9617.

Postmaster: Please send address changes to: ARCHITECTURAL RECORD, Att: Fulfillment Manager, P. O. Box 566, Hightstown, NJ 08520. THIS ISSUE is published in national and separate editions. Additional pages or separate editions numbered or allowed for as follows:
Eastern Section 32Ea through 32Ed.
Western Section 32Wa through 32Wb.
Sunbelt Section 32Sa through 32Sh.
Special Section 32Ra through 32Rb.

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Cornell University Center for the Performing Arts, Ithaca
James Stirling Michael Wilford and Associates in collaboration with Wank Adams Slavin Associates, Architects
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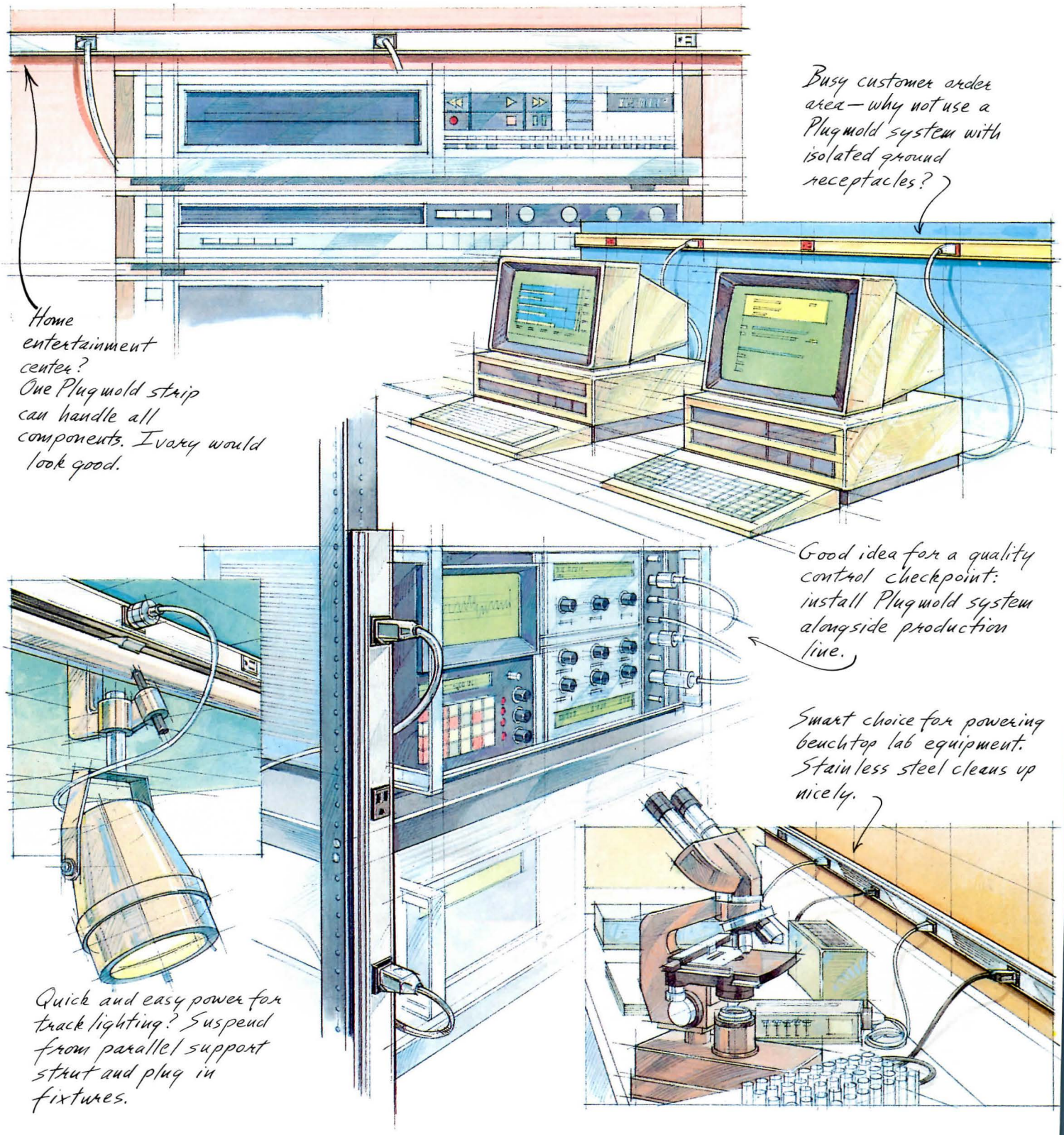

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Restoring the Fine Arts Commission's lost prestige

Those of you who pay attention to what gets built in our nation's capital will remember that Washington, D. C.'s, 79-year-old Fine Arts Commission was once a force to be reckoned with. Without enabling legislation of any sort, this federal review board, relying solely upon the prestige and clout of its members, imposed its authority upon presidents, mayors, and powerful developers. Commission watchers enjoyed what for many could not have happened too often: the summary ordering back to the drafting board, by this august body, of those of each decade's crop of architectural stars who failed to meet the commission's strict esthetic standards. And the commission's rulings were almost never challenged.

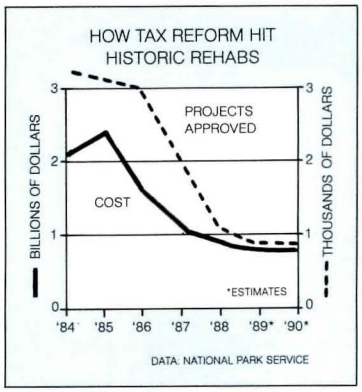
Who were these powerful people, and who are they now? Do the present commissioners carry prestige comparable to that of their predecessors? The Fine Arts Commission is a group of seven presidential appointees. Formerly it was a roster of outstanding architects, painters, sculptors, and landscape architects. Daniel Chester French was once a commissioner, as were Frederick Law Olmsted, Jr., and Daniel Burnham. In more recent years Gordon Bunshaft, Aline Saarinen, Hideo Sasaki, and Burnham Kelly graced a commission headed by the painter William Walton. Over its entire history, just over half of the appointments to the commission have been architects. None, however, has been appointed since 1980, and since 1984, for the first time in history, there have been no architects included. Today's commission, except for its chairman, National Gallery of Art director J. Carter Brown, is an undistinguished lot, with few or no esthetic qualifications, a mix of Ronald Reagan campaign donors and friends. Any accomplishments of this group are attributable to Brown.

Because President George Bush gets to appoint the entire commission in his first year, and because five of the seven incumbents' four-year terms will end this month, it is time to urge the White House to select a body of qualified new commissioners that includes a fair share of architects. The AIA has submitted a list of nominees to Bush, but at this writing has not made their names public. Two or more leading architects would be welcomed enthusiastically by the commission staff and by Carter Brown, should he be reappointed. Write the President and urge him to take this unprecedented opportunity to restore the commission's lost power and effectiveness. *Mildred F. Schmertz*

A shrinking market in rehab? Not necessarily

The number of building renovations using federal historic-rehabilitation tax incentives declined by nearly one-half from fiscal 1987 to 1988, dropping to a level only one-third of that before Congress sharply reduced the incentives in 1986, according to figures released by the National Park Service. And that number is projected to decline further in 1989 (graph).

Comments Ward Jandl, chief of the Technical Preservation Services for the service, the decline is not so much due to the reduction in the investment tax credit but, rather, the new passive-activity rules [that allow only $7,000 of credit against an investor's active income—and only for persons with total incomes less than $250,000].



The 1986 legislation cut the investment-tax credit for historic properties from 25 to 20 percent. Additional legislation in 1987 created the passive-activity rules, making syndications of limited partners ineffective for investors with high incomes that they needed to shelter.

Historic renovation had undergone an explosion of activity following Congress's passage of the Economic Recovery Tax Act of 1981. The number of renovations certified as appropriate for the 25-percent credit grew from 1,802 in FY 1982 to 2,572 in 1983, peaking at 3,214 in FY 1984.

In FY 1988, as in earlier years, the most popular form of the historic-preservation tax credits was for rental housing. They comprised about half of the projects certified by the Park Service. Some three-fourths of the renovations would not have been undertaken without even the low current incentives, the Park Service found in a survey of approved projects.

Legislation to amend the passive-losses-and-credits provisions of the 1986 Tax Act was introduced in March 1988 in the Senate by John C. Danforth and in the House of Representatives by Barbara B. Kennelly. The proposals, however, failed to pass. *Bill Black, Washington, D. C.*

Light at the end of the tunnel

Comments Ian Spatz, counsel to The National Trust: While the anticipated liberalization of tax rules under the Community Revitalization Tax Act moves at its anticipated slow pace, liberalization related to historic-structure rehabilitation within another large tax package has already passed the House Ways and Means Committee. The new rules would eliminate the $250,000 ceiling on the personal incomes of investors in rehab projects who wish to take advantage of the $7,000 offset to regular income currently allowed. "That alone is a big victory for us," says Spatz.

Even without liberalization, groups of investors with incomes under the limits continue to take advantage of the current tax concessions, as the graph clearly shows, albeit at a much slower pace than before the limits went into effect. And some see the slower pace as a healthy correction for a market that had become overheated. The failure of Philadelphia developers' Historic Landmarks for Living is cited as an example of expansion beyond what the market would bear, as occurred in office construction prior to the Tax Reform Act. *C. K. H.*

For new opportunities in office-building design, try unique geographic situations

Bart Johnson

Cincinnati's new skyline (and suburbs) continue to grow.

While the construction of office buildings takes a breather elsewhere, some cities continue to see opportunities for expansion. Among them: those in Ohio. The average vacancy rate in Akron, Cleveland, Columbus, Cincinnati, Dayton, and Toledo combined is 9.8 percent—less than half the national average, reports Ohio Department of Development director David Baker. In cities such as Akron it is actually falling. He attributes this to a record number of business starts across the state and (less attractive to developers) low rental rates that have attracted the new business to the state. Cleveland is currently absorbing more than a half million square feet of commercial space on an annual basis. Cincinnati is one example of reasonable rates, which vary from $4.50 to $19 per square foot. Construction is especially strong in the suburbs. Columbus has not had any speculative construction since 1986 and is now hurrying to catch up. "We expect our current boom to continue well into the next decade," says Baker. "With our strong economy fueling demand for new space, developers are taking a closer look at Ohio." *C. K. H.*

Architects not alone in problems with AIA contract documents

The U. S. Supreme Court recently handed down a little-noticed decision that allowed one party to an AIA contract containing an arbitration clause to force the other into a trial—skipping arbitration entirely. The courts' loophole? An A-201 clause stating: "The Contract shall be governed by the law of the Place where the Project is located"—in this case (*Volt vs. Stanford),* California, where parties may avoid arbitration when the dispute involves third parties who are not part of the arbitration agreement. The plaintiff, a building owner, in suing an electrical contractor, had only to make the engineer and construction manager codefendants to qualify in the Supreme Court's eyes.

"It is imperative that the building industry review its construction contracts and state laws [to avoid this situation]," says construction consultant Gary Morgerman. But, says Vicki Young, counsel to the American Arbitration Association, California is the only state she knows of where arbitration may be avoided this way. But, if other states were to have such laws, architects would be equally vulnerable.

Morgerman finds other problems for contractors in the new A201 that "draw them into project design in a superficial and troublesome way. Some may be better off using the more straightforward 1976 version." But this may not be a viable alternative for those no longer able to find the older forms. *C. K. H.*

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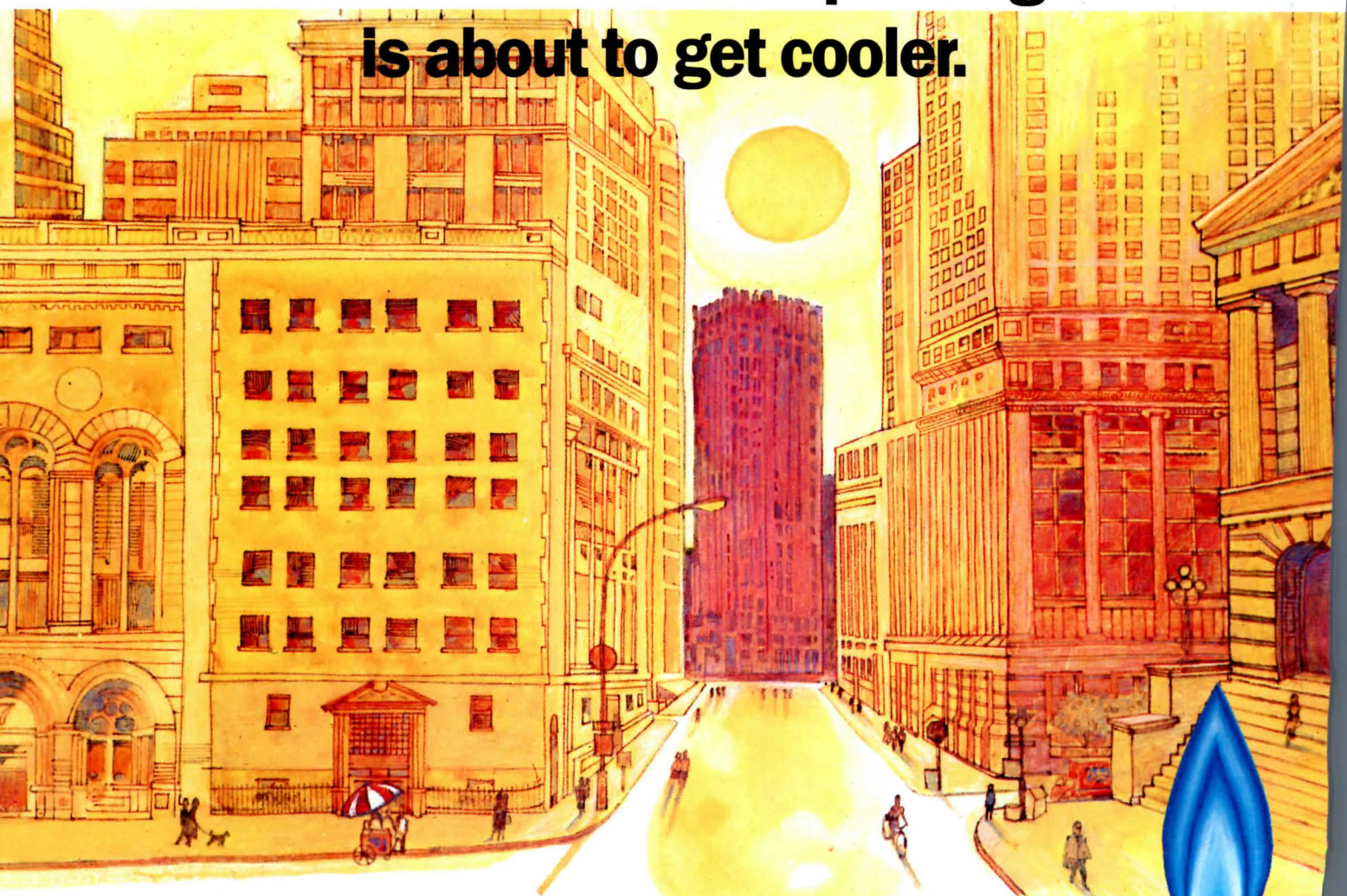

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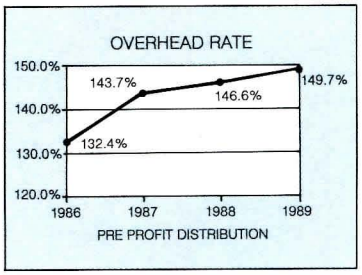
Business news continued from page 33

Rising overheads keep design-firm profit levels flat



While revenues of design firms rose 15 percent during the past year, rising overhead rates have conspired to keep profits at slightly above 8 percent—the same as those in the previous 12-month period. This according to the latest survey by the *Professional Services Management Journal*. The culprits? Not salaries, which only rose 2.7 percent, as opposed to a projected 6 percent for 1989 [RECORD, April 1989, page 21], but insurance and computer use. While 80,000 new jobs were created (an average 10-percent expansion per firm), revenue per staff member increased by 5 percent. One bright note: regional disparity seen in previous surveys evened out: Firms in the previously depressed Southwest and Mountain regions showed marked improvements in income.

According to *PSMJ* publisher Frank Stasiowski, one answer to rising overheads due to use of computers is to raise direct-labor billing multipliers, because CAD can add as much as 10 percent to direct-labor costs while reducing the number of hours that can be billed. The average multiplier this year is 3.06 following many years at 3. Firms with CAD (up to 80 percent from 71 last year) *are* more profitable by more than 1 percent and "firms are recognizing the changing cost relationship in their multipliers." In another *PSMJ* survey, a quarter of the firms surveyed reported 50-percent productivity gains from their use of CAD, while others had gains ranging from none to 100 percent. *C. K. H.*

New handicapped bill hobbled by vagueness

Access for the handicapped, an issue that has had fairly wide support in the building community, is creating second thoughts in and outside that community now—at least over details in new legislation that seems certain of passage in Congress. (It passed in the House of Representatives at the beginning of September.) In the past, architects, engineers, and contractors widely supported such efforts, for both humanitarian and business reasons. (The required remodeling of older buildings to make them accessible meant new work.)

The new civil-rights measure, S.933, which has the support of President Bush and which was approved by the Senate Labor and Human Resources Committee before the August recess, would bar discrimination against the handicapped by requiring more far-reaching physical accommodations than are currently called for by existing laws. Among the other proposed accommodations: installation of elevators in new buildings higher than two stories; access via ramps in all new buildings; and other substantial modifications. Senate committee staffers reportedly cited experts as saying that the added cost for new buildings would amount to some 1 percent.

Industry groups and others are now saying that the bill is too vague and that it needs clarification on how it would work. As the draft bill stands, the provisions would be enforced only through local building inspectors' interpretations, or through legal challenges. There is also concern about the cost, estimated to run into many hundreds of millions of dollars.

One contractors' group, the Associated Builders and Contractors, is concerned about the lack of clarity. President Robert L. Turner says that, while his group basically supports the overall goals, there are "loosely defined provisions within the bill that could affect the construction work place."

Senator Orrin Hatch of Utah, the ranking Republican member of the Labor and Human Relations Committee, generally supported the Democrats' bill, but added during an August 2nd hearing before his committee that "small businesses are inadequately protected."

"A measure of this type is long overdue," said AIA president Benjamin Brewer. But he added: "Now the question becomes, is it workable? At the moment, several important terms are ill-defined or undefined, there are few guidelines for compliance, and the bill could create problems for projects for which designs are already under way." *Peter Hoffmann, Washington, D. C.*

Asbestos fights back

A recent rule by the Environmental Protection Agency to ban future manufacture and use of asbestos in the U. S. is, predictably, under fire from the asbestos industry.

The Asbestos Information Association/North America in late August filed a petition with the Fourth Circuit U. S. Court of Appeals in Richmond, Va., to review the agency's July 6 rule. "We believe EPA's policy decision is an unfounded, politically convenient attack on an industry that greatly benefits the American public, an industry that currently manufactures vital industrial and consumer products under some of the most stringent safety standards in the world," said asbestos association president B. J. Pigg.

Pigg added that current scientific evidence does not support EPA's ban on asbestos-containing products. An association press release contends that "such a ban is contrary to the international strategy for controlled use of asbestos, as adopted by the International Labor Organization and World Health Organization, and as followed by most nations."

It adds that no epidemiological studies to date indicate that low cumulative exposure to any form of asbestos puts society at risk. Asbestos-containing products show no significant risk of inhalation when the fibers are bound into a product.

The proposed ban includes asbestos-cement pipe and shingles, and asbestos-containing roof coatings, gaskets, and brakes. The release adds that asbestos-cement pipe has been safely used in the U. S. since 1931 and accounts for more than 300,000 miles (some 38 percent) of pipe used for drinking water.

In the release, EPA administrator William Reilly is quoted as saying at the time of EPA's ban that 3,000 to 12,000 persons may be dying every year due to asbestos exposure in the workplace. Retorted Pigg: "There is no doubt that asbestos has been a major occupational-risk problem in the past, and we are not here to debate that point. Those unfortunate deaths, however, are attributable to very high exposures many years ago, often in unregulated workplaces, to products containing asbestos that are no longer manufactured. The EPA ban, however, has nothing to do with these past exposures." *Peter Hoffmann, Washington, D. C.*

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Construction finance: The Federal Reserve's dilemma: Reduce inflation and keep construction growing

With residential construction and sales picking up with the rest of the economy, the difficult part of the Federal Reserve's game plan must be implemented.

By Phillip E. Kidd

As the pace of economic activity has dwindled, the Federal Reserve has gradually moderated monetary policy. Its phased easing has been intended to reduce inflationary pressure by keeping the economy only rising at a modest rate. So far its plan has worked, but for how much longer?

Concerns about the potential for a substantial increase in inflation surfaced during the second quarter of 1988. At that time, the Federal Reserve began a year-long, step-by-step, firming of monetary policy. That tightening ended late in the first quarter of this year, when evidence emerged that the economy was finally slowing.

In gradually firming monetary policy throughout 1988, the Federal Reserve's intention was to trim back the real economic advance from an inflation-inducing pace of 3.5 to 4 percent to a much less inflationary 2- to 2.5-percent rate.

Significantly, the Federal Reserve could pursue a measured approach to tightening monetary policy a year ago because the economy was undergoing a substantial transition. The impetus for maintaining real growth was shifting away from consumer spending toward higher manufacturing production and rising exports.

In the process, consumers began to save more. This additional savings enlarged the pool of funds to finance the expansion of manufacturing and exporting. Interest rates rose, but not severely. That permitted monetary policy to be snugged systematically over many months without hurting the expansion. Then when inflationary pressures did surge earlier this year, the Federal Reserve was neatly positioned to slow the economy without promptly dumping it into a recession.

The economy's deceleration was confirmed by the decline in real GNP growth from 3.7 percent in the first quarter of 1989 to 2.7 in the second quarter. Moreover, the rather lackluster economic statistics this summer suggest that growth in real GNP slipped some more in the third quarter.

As expected, the more leisurely economic pace has halted the climb in inflation. Price gains, especially for food and energy, and also for raw and intermediate materials, have moderated this summer. Labor costs, although higher than a year ago, have leveled off.

Nevertheless, inflation is for the moment stubbornly hovering in the 4.5- to 5-percent range. Although considerably less than the 8.5 to 9 percent of the early 1980s, this rate of inflation is still very worrisome, especially in an economy that is losing momentum.

Now the difficult part of the Federal Reserve's game plan must be implemented. Somehow it must bolster the sagging pace of the economic advance without setting in motion another round of higher inflation. This will not be easy.

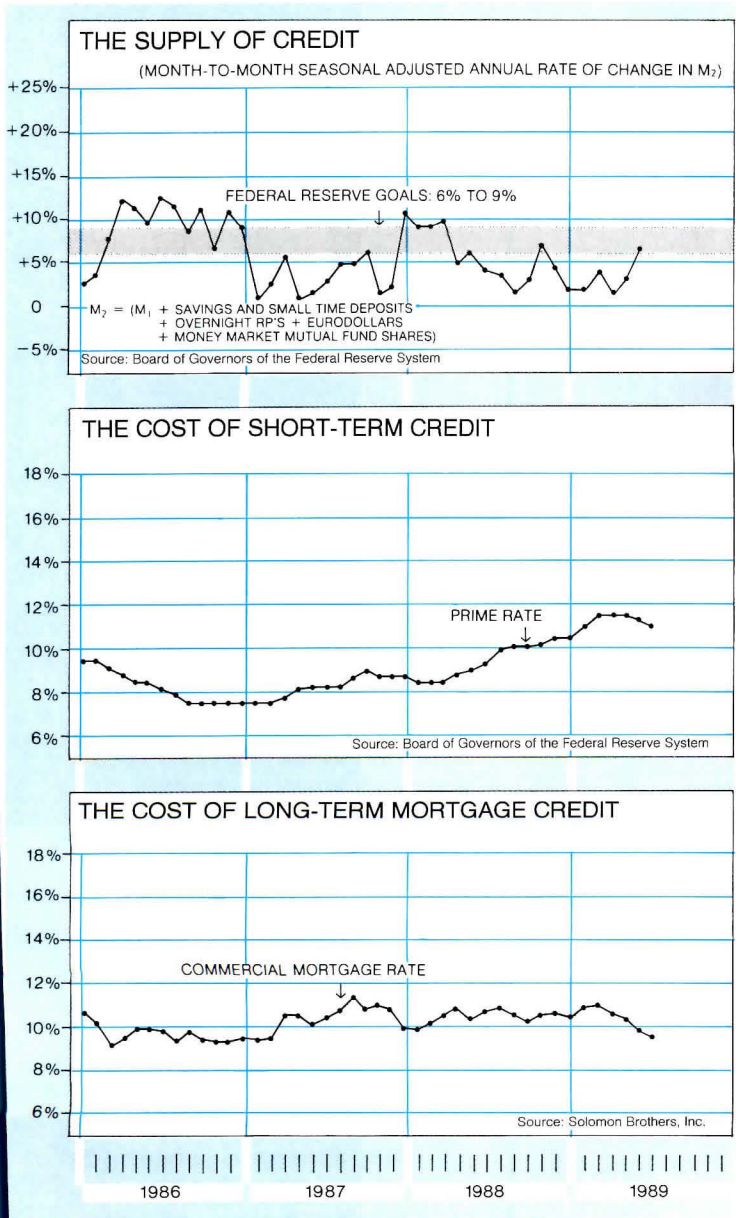
Manufacturing and exporting remain strong. Agricultural production is rebounding. However, these sectors are not so robust that they can reverse the decline in the rate of real GNP growth by themselves. Now, consumers, who for nearly two years have been reining in their expenditures, need to pick up some of the slack.

Throughout the summer, consumers gave mixed signals about their intentions. But lately that has been changing, particularly in regard to house buying.

Since the Federal Reserve began easing in late March, interest rates on single-family, fixed-rate mortgages have fallen almost 150 basis points from 11.25 to 9.75 percent in early August. Initially, that decline helped existing home sales. But as the summer grew hotter, lower interest rates began to stimulate single-family and condominium starts.

As the resurgence in housing activity gains strength, it will push activity in other housing-related industries, such as building materials, appliances, furniture, and other home furnishings, higher. Their upturn will provide enough boost to sustain the economic advance, but the rate of gain will be small enough to dampen inflationary pressures some more. Equally important, a modest upswing in the rate of real GNP growth in the fourth quarter will allow the Federal Reserve to continue loosening monetary policy gradually to support a less inflationary expansion into 1990.

Dr. Kidd is a prominent economic consultant and former director of economic research for the McGraw-Hill Information Services Company.



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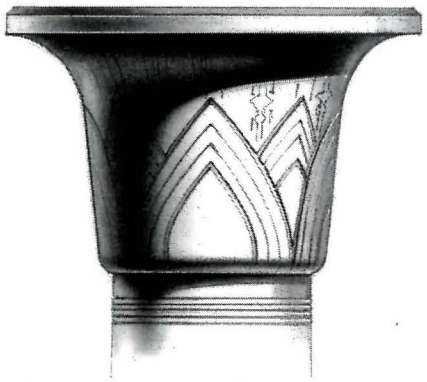

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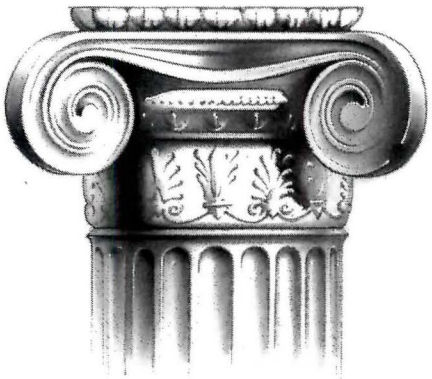

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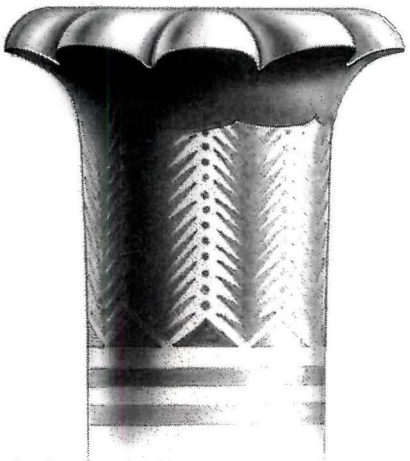

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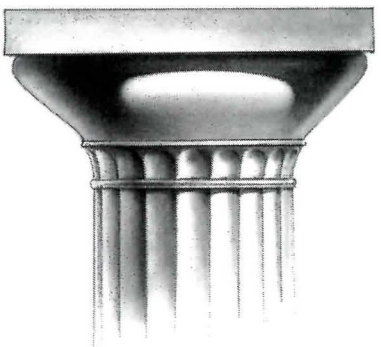

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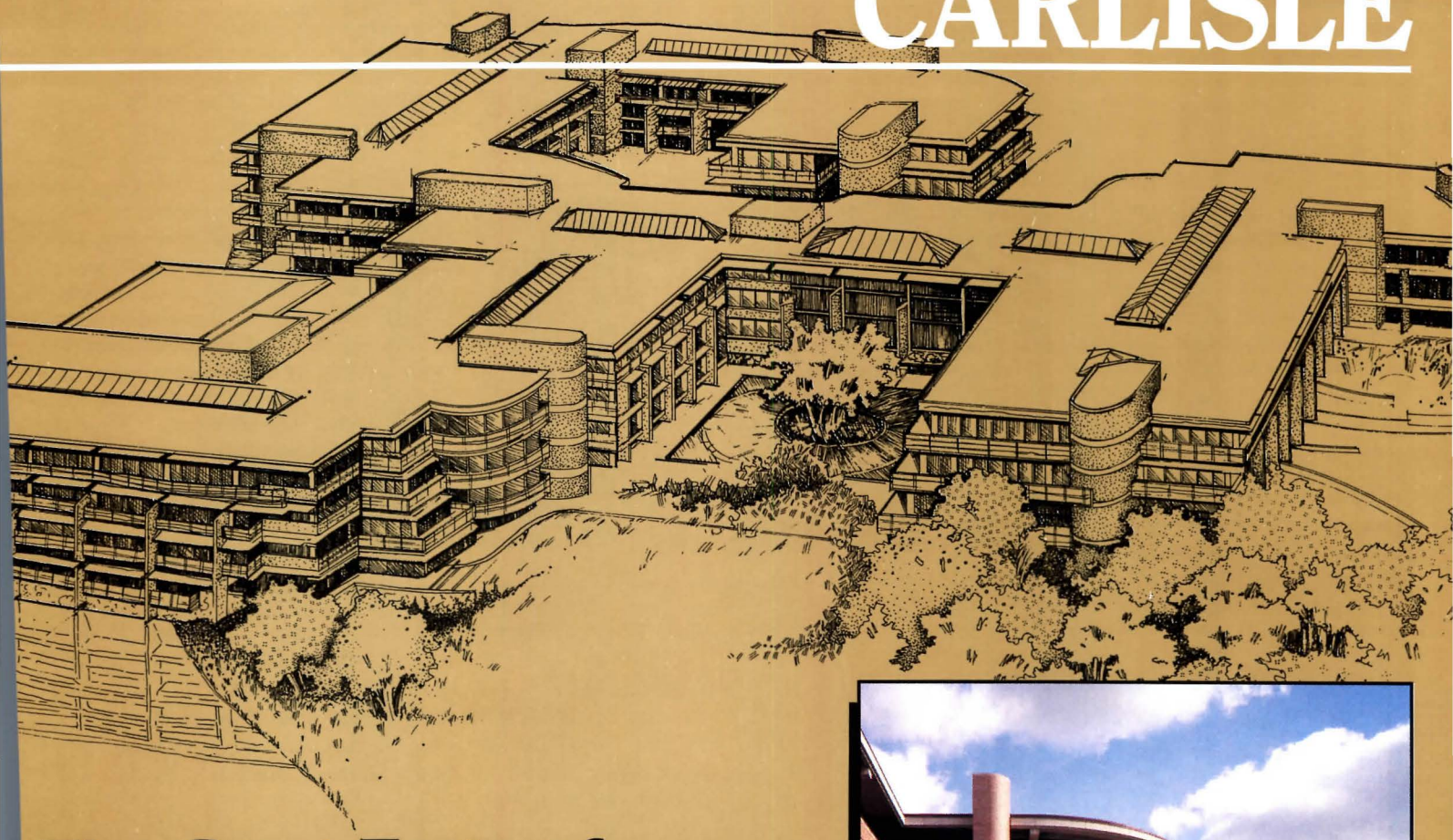

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Development of McDonald's corporate office campus in Oak Brook, IL, planned for completion by the year 2000, is moving right along. The latest addition on the 81-acre site is a multi-level executive office building. The owner, and Chicago architect Lohan Associates selected a Carlisle system to secure the 100,000 square-foot roof structure.

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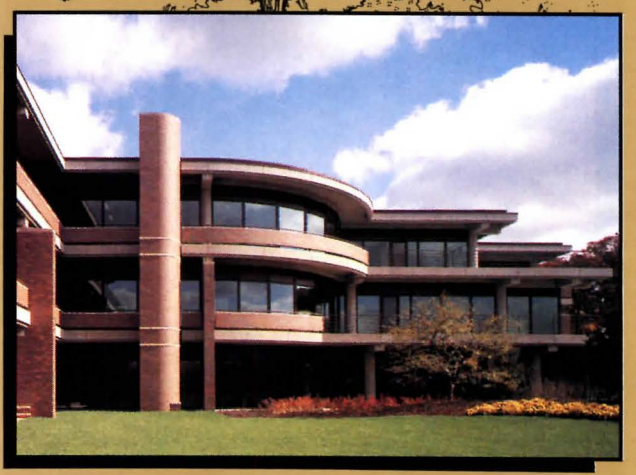

Architect: Lohan Associates
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Marketing: The myths and realities of how architectural services are sold

While architects may rush to sell their services on the strength of their former accomplishments, they will be missing subjective criteria by which a client may actually select them.

By Mark A. Cameron

Last August, RECORD (page 27) published an article by Hastings+Chivetta vice president David Greusel who said, in short, that too much marketing may mean too little architecture, i.e., that by giving a client too much of what he thinks he wants to assure more jobs without proper synthesis, architects are not providing their best professional input. Objections on the part of some marketers prompted RECORD to publish the following article on how marketing can be more effective. C. K. H.

Anne Tomczak

Each year end, Architects Design Group, Inc. sends a very different and distinctive greeting—a poster meant to familiarize potential clients not only with the firm but with the people in it.

Clients have always had a difficult time distinguishing between architectural firms. Today their task is even more difficult. Talented firms abound. And the marketing of their services has passed from novelty into maturity. This results in clients being bombarded with information—indeed buried under an avalanche of sophisticated materials—pestered for appointments, and confused with choices.

A congested marketplace displaces a design firm's experience and ability with marketing intangibles as a basis for their selection. Indeed, studies of clients' buying procedures make it clear that clients use a two-tier selection process while architects only understand and sell to the first.

The first tier is the clients' sorting of design firms by objective-performance criteria: number of projects similar to the one at hand, previous accuracy of cost estimates, quality of documents, and consistency in meeting deadlines and schedules. Since most firms perform well by these professional standards, project performance has little value in distinguishing firms; indeed, it is expected.

Competitive strategies that design firms employ include price, experience, and location. But these, too, seldom make the critical difference that turns the client's decision. Price has already reached its most competitive level. No firm gets even close to final selection without relevant experience. Location is not a new strategy; firms serious about working in various regions have already established offices or associations in them. Technical superiority and design excellence are difficult attributes to prove [for unestablished firms]—partly because most firms claim to have them and architects themselves disagree strenuously over what constitutes them.

The second tier is subjective. Here, *perception* of value is all powerful. Service and unique personal rapport are two competitive strategies that enable a design firm to add value in the client's eyes and, thus, sell to the second tier.

Architects resist talking about service because it is the least sexy aspect of their practices

Who wants to discuss how to decrease the response time to clients' calls? Many architects assume service just happens. Since they have designated a project manager, they assume the client is cared for. Because they have telephones, they assume their telephone manner is fine. Neither assumption may be correct.

It is true that service is difficult to talk about. One cannot project it in a slide during an interview. Because it is intangible, however, does not mean that it is insignificant. Clients are very clear about whether they are being served.

A major retail developer comments: "An architect has to be a lot of things to different clients, but one thing he has to be to all is a person who really listens. Open communications mean projects move forward." Another says: "You spend a lot of time with some consultants, and what they come back with is so off the mark that it appears they weren't in the same meeting with you." Still another: "There's no secret why I hire architect X. He has no magic; he treats my project as if it were his own."

Satisfying clients during a project is as much a marketing function as a function of project performance. When romancing a client for the next project, you may promise fealty, devotion, and 24-hour service. But your client will remember whether—long after his last project—your key people and your principal were really available.

Service as a strategy for adding perceived value to your firm is so elemental, but it is treated as if it were so complex. Architects who come in second in selections often suppose the reasons for losing involve many factors. Sometimes they do. More often they are simple.

It's humbling to think that a client would walk away from an otherwise qualified firm because he does not want to deal with an irascible receptionist. But it happens. It is these small factors that add up to create an image of a firm that is desirable or that clients fear will let them down.

The other strategy for adding perceived value is creating unique personal rapport

Every firm has a unique group of people that no other firm has. Those people have specific talents and relationships that bind clients to their firm. When top-notch people leave, clients often follow. Says one: "I don't hire firms, I hire people; and I keep track of those who worked on our projects, even when they go elsewhere." Says another: "You do business with your friends first, your acquaintances second, and your enemies last."

When one understands the critical role that people play in a firm's uniqueness, it is understandable why clients will fear an architect's bait-and-switch with his staff and why some contractually bind staff to their projects—and why some design firms recruit, train, nurture, motivate, and reward their people as if they are investing in their most valuable resource. They are; and at the same time they are creating uniqueness in the marketplace.

So, is there a myth in marketing? The myth is that clients hire architects only because of their design and technical capabilities. The reality is that they also select the people whom they know and trust to give them top-quality service.

Mr. Cameron is a partner in design-firm marketing and strategic-planning consultants Cameron Associates in San Francisco.

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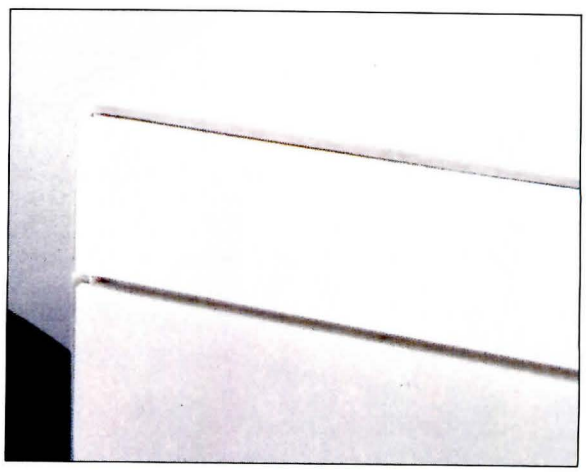
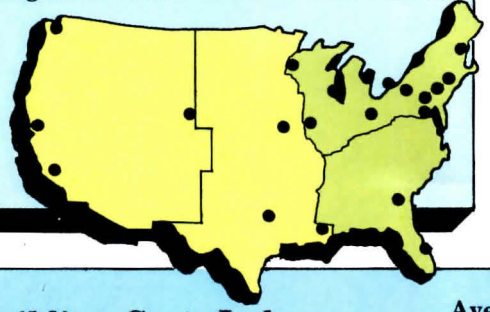


Construction costs: Moderation in the face of unexpectedly strong demand

Summary of Building Construction Costs

	Number of metro areas	4/89 to 7/89	7/88 to 7/89	1977* to 7/89
Eastern U. S.				
Metro NY-NJ	18	1.05	3.15	1978.12
New England States	33	0.44	1.31	1850.01
Northeastern and North Central States	120	0.42	1.52	1750.80
Southeastern States	106	0.36	3.36	1818.87
Average Eastern U. S.	277	0.44	2.31	1803.44
Western U. S.				
Mississippi River and West Central States	122	0.15	–0.22	1706.88
Pacific Coast and Rocky Mountain States	106	0.33	1.96	1810.86
Average Western U. S.	228	0.23	0.79	1755.22
United States Average	505	0.35	1.62	1781.67

*Using only cities with base year of 1977



After what looked like a period in which inflation's unwelcome grip was taking hold of construction costs—culminating in a .81-percent rise in the third quarter of 1988—cost rises have progressively eased for the past three consecutive periods to arrive at the manageable rate of .35 percent in the second quarter of this year, the period on which this latest report is based.

What is especially encouraging about this moderation is that it has come at a time when construction volume has been unexpectedly high. A surprise 11-percent spurt in April almost erased the anticipated declines in the first quarter of 1989 and, while that pace has indeed softened, April's gain (and another 3 percent for nonresidential construction in May) leaves us with a 1-percent gain over the first half of last year in commercial, industrial, and institutional construction—and a 1 percent decline for residential construction.

What is interesting in the cost rises that do exist for this period is that, once again as in other recent reports, the regional distribution of construction volume and cost rises would make the latter not seem responsive to the laws of supply and demand, contrary to what they have been historically. While the North Central states made the healthiest showing in construction volume (up 1 percent over last year, including the value of nonbuilding construction with its downward influence), all of the Central states had the lowest inflation in costs of .15 percent. Meanwhile, the Northeast, where construction volume remained flat compared to last year, had one of the highest cost rises of .42 percent.

What lies ahead? "Having weathered another period of monetary restraint without serious damage," says F. W. Dodge vice president and chief economist George Christie, "the construction sector's prospects for this year's second half are good." But this should not mean new inflation given suppliers' backlogs. *Charles K. Hoyt*

Data supplied by Dodge Cost Systems, Marshall + Swift

Historical Building Costs Indexes

Average of all Nonresidential Building Types, 21 Cities

1977 average for each city = 1000.0

Metropolitan area	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989 1st	1989 2nd
Atlanta	1171.5	1712.6	1925.6	2098.6	2078.0	2360.6	2456.7	2448.7	2518.3	2561.9	2580.9	2697.3	2729.1	2736.6
Baltimore	1018.4	1107.7	1304.5	1446.5	1544.9	1639.5	1689.7	1703.7	1743.8	1765.2	1780.2	1849.1	1891.4	1889.5
Birmingham	1029.7	1142.4	1329.9	1407.2	1469.9	1468.1	1535.7	1594.7	1565.7	1587.4	1542.6	1612.5	1629.0	1636.6
Boston	1028.4	0998.6	1236.0	1283.7	1432.5	1502.0	1569.9	1646.0	1721.0	1773.6	1883.0	1921.6	1944.1	1944.8
Chicago	1007.7	1032.8	1199.7	1323.6	1344.7	1425.8	1439.5	1476.7	1528.0	1599.9	1591.4	1636.5	1654.3	1672.1
Cincinnati	0848.9	0991.0	1323.9	1385.2	1350.4	1362.6	1430.8	1484.5	1486.6	1499.4	1510.9	1526.8	1544.6	1554.4
Cleveland	1034.4	1040.8	1287.5	1388.2	1459.5	1511.4	1475.9	1464.0	1474.1	1525.7	1541.8	1550.7	1536.1	1557.5
Dallas	1042.4	1130.6	1431.9	1481.9	1750.6	1834.3	1925.9	1958.0	1963.3	1973.9	1947.2	1927.2	1930.0	1910.7
Denver	1038.8	1100.4	1495.6	1487.4	1632.2	1679.1	1800.1	1824.3	1821.8	1795.8	1732.7	1725.3	1725.1	1745.4
Detroit	1018.1	1087.3	1275.3	1447.4	1580.3	1638.0	1672.1	1697.9	1692.6	1696.6	1689.3	1734.4	1740.9	1744.3
Kansas City	1023.5	0951.5	1125.8	1233.2	1323.4	1381.8	1407.5	1447.1	1472.5	1484.7	1493.7	1505.6	1511.7	1518.8
Los Angeles	1022.5	1111.0	1255.3	1387.5	1474.3	1503.3	1523.9	1555.1	1571.0	1609.7	1675.1	1789.5	1784.8	1798.2
Miami	1004.5	1080.9	1330.1	1380.6	1369.1	1392.1	1467.6	1522.2	1540.6	1566.2	1589.2	1625.2	1654.5	1638.0
Minneapolis	1060.2	1196.8	1286.9	1327.7	1442.6	1576.8	1624.6	1640.4	1661.0	1674.0	1677.0	1690.6	1700.5	1698.2
New Orleans	1001.3	1138.8	1291.9	1505.7	1572.7	1616.9	1650.5	1691.4	1762.5	1760.2	1699.8	1707.3	1706.9	1690.6
New York	1005.4	1043.0	1247.1	1319.4	1419.2	1491.8	1672.5	1747.2	1806.7	1899.9	1980.9	2065.3	2091.3	2137.6
Philadelphia	1013.8	1074.2	1487.5	1539.5	1660.7	1769.4	1819.5	1922.1	1967.9	1992.7	2023.5	2171.4	2216.4	2220.4
Pittsburgh	1016.1	1015.0	1227.0	1341.7	1493.2	1479.5	1497.2	1576.1	1611.0	1665.8	1647.3	1700.3	1708.1	1721.3
St. Louis	1039.1	1198.8	1275.9	1320.0	1397.3	1451.2	1524.9	1625.5	1641.8	1647.4	1653.5	1705.7	1727.7	1740.6
San Francisco	1083.2	1326.8	1473.4	1644.8	1776.4	1810.1	1856.8	1935.3	1961.8	1995.5	1992.0	2090.9	2079.2	2091.4
Seattle	1142.5	1137.9	1373.4	1616.8	1814.9	1962.7	1979.0	1948.9	1937.9	1925.3	1874.7	1968.0	1962.7	1968.4

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 divided by 200.0 = 75%) or they are 25% lower in the second period.

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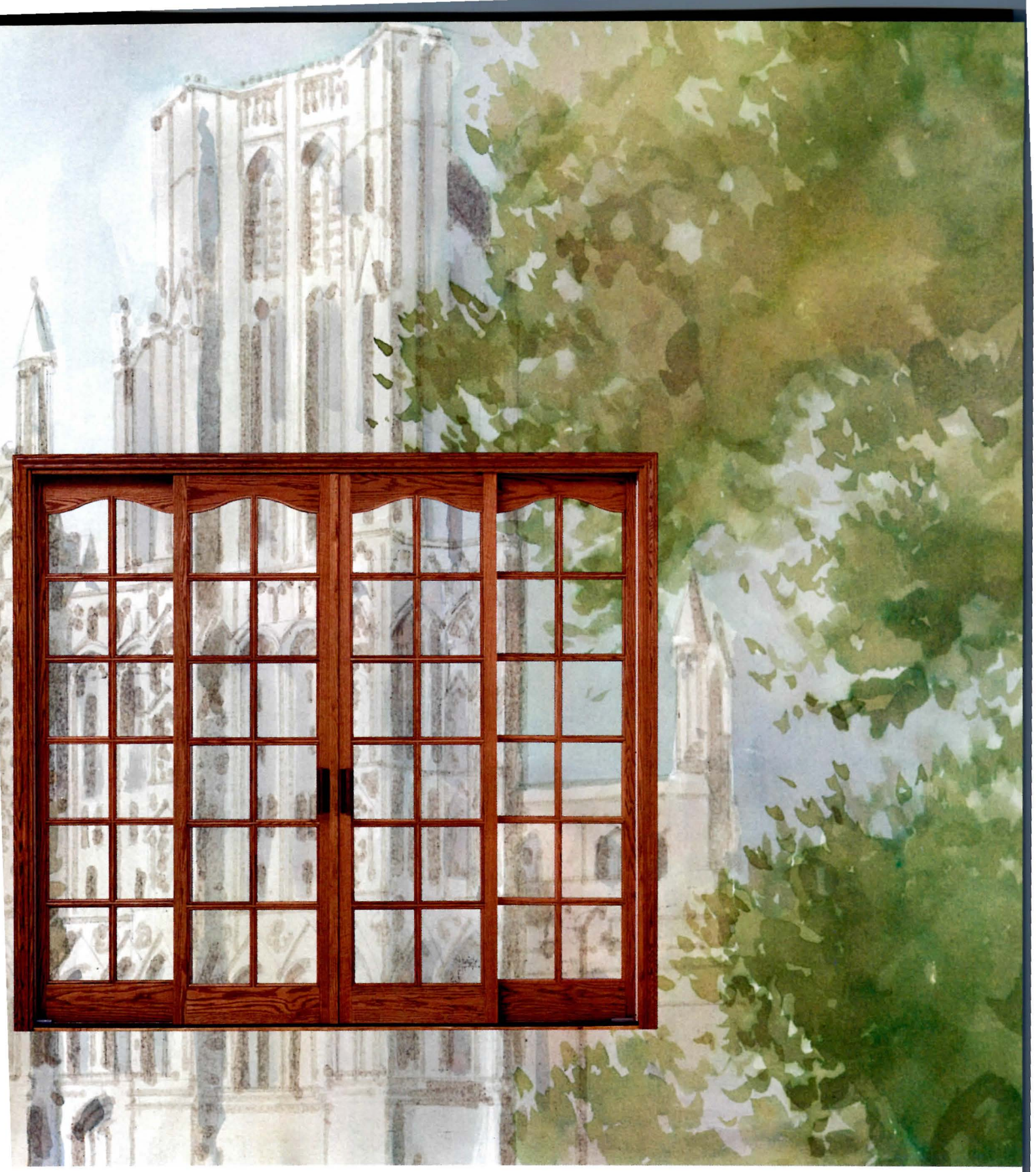

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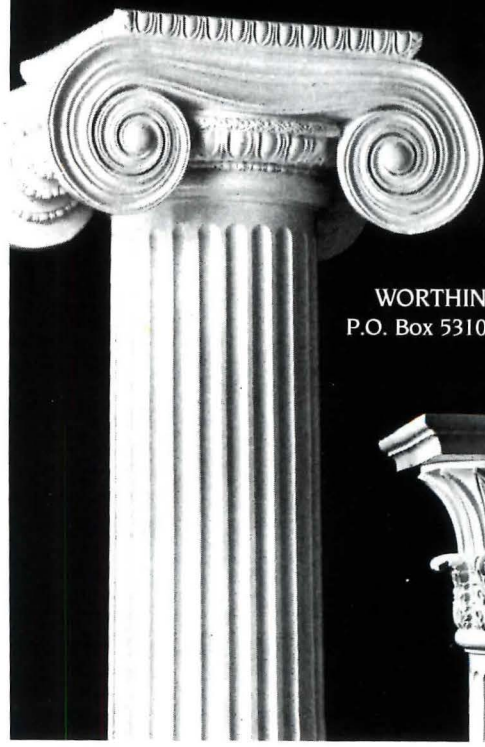

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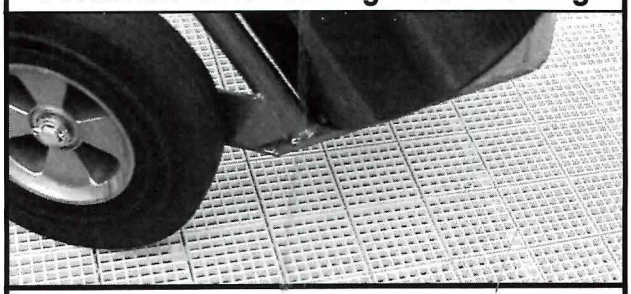

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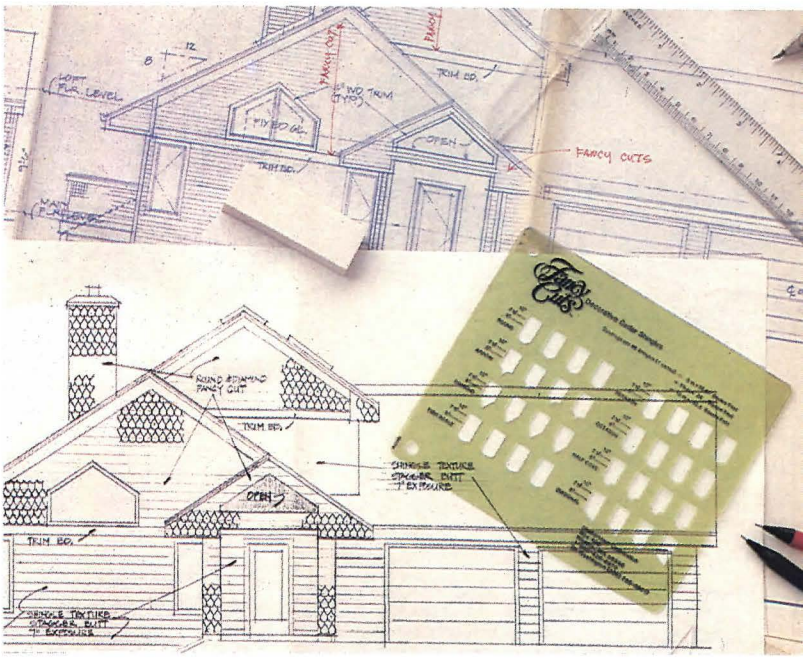

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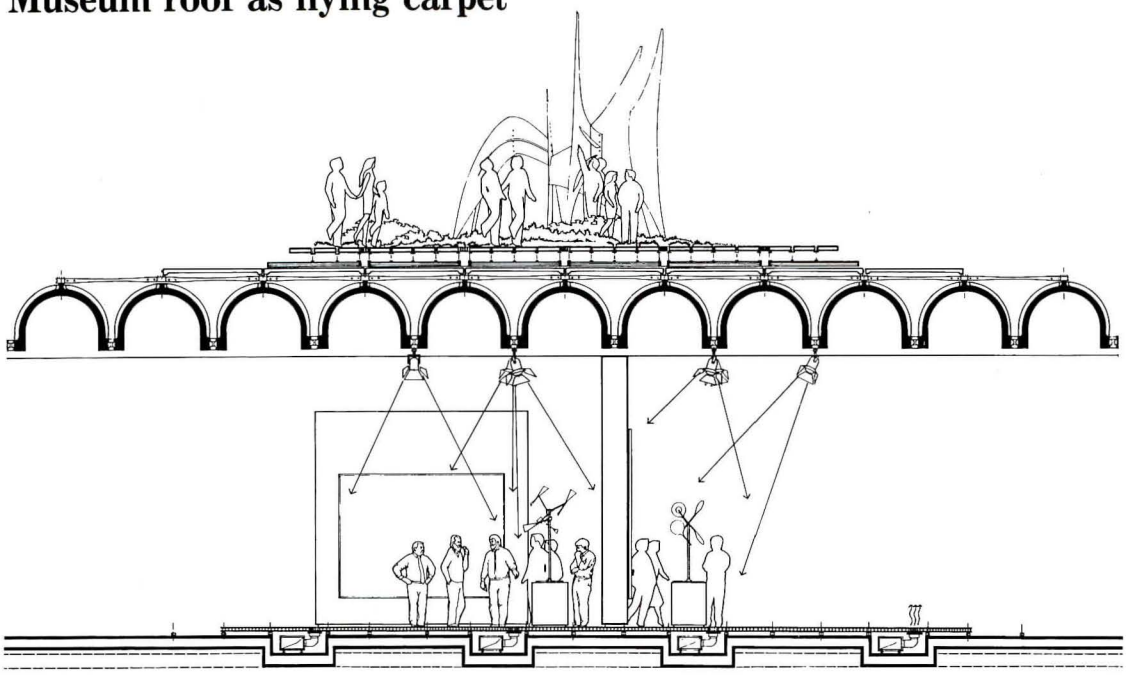
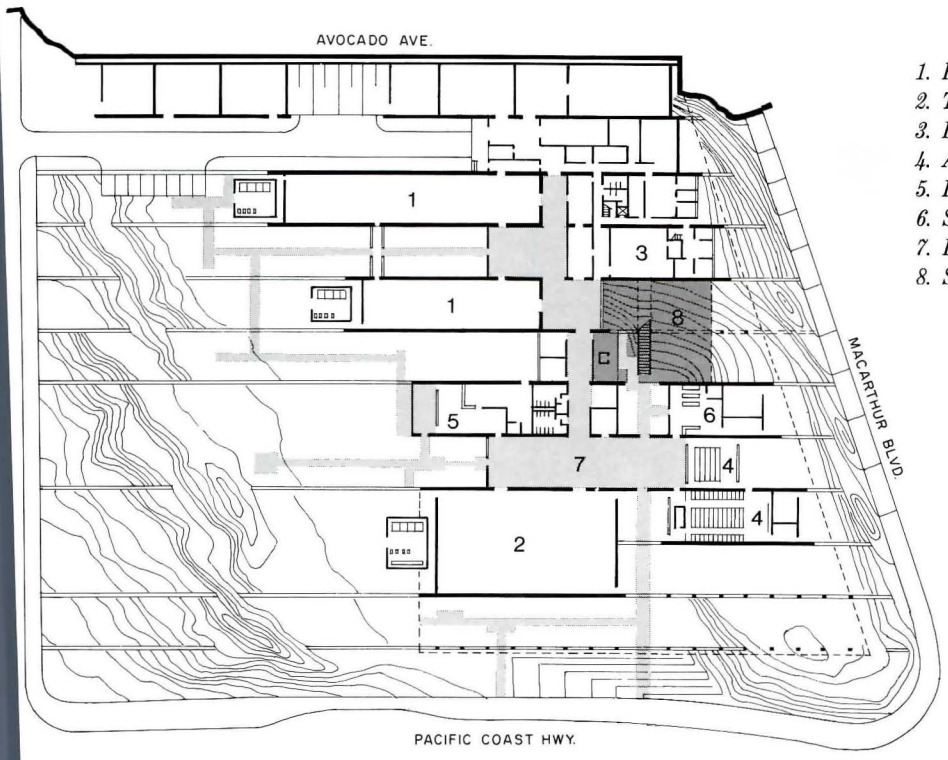
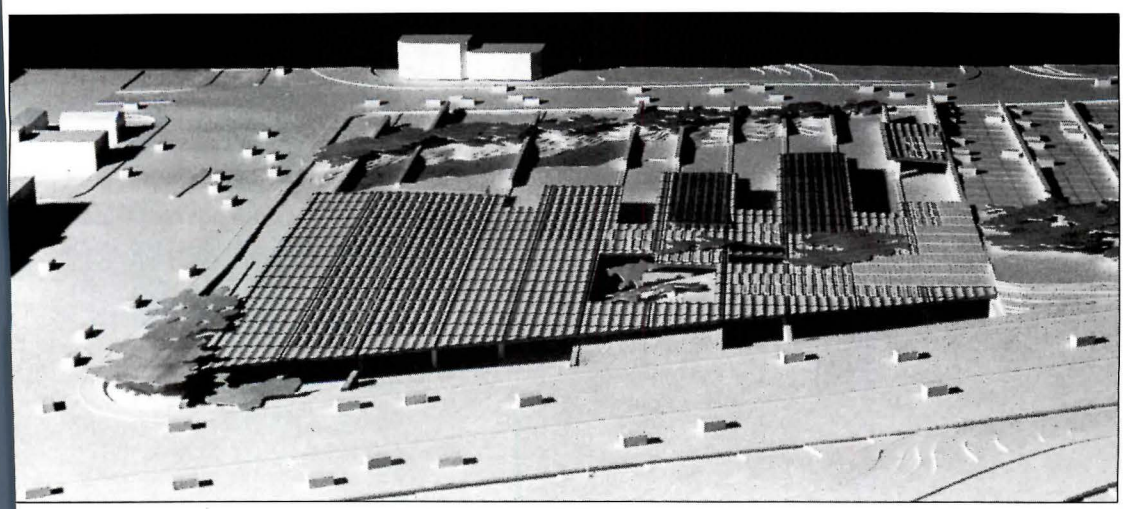
Museum roof as flying carpet





1. *Permanent exhibits*
2. *Temporary exhibits*
3. *Library*
4. *Auditorium*
5. *Restaurant*
6. *Store*
7. *Interior "street"*
8. *Skylit court*



Italian architect Renzo Piano, with his penchant for poetic vision, sees the roof of the Newport Beach Art Museum as a "flying carpet." Because of strict coastline height restrictions, the museum is sunk partly below grade, and visitors will enter the building by crossing the roof to a "secret" entry—a skylight with an escalator to a courtyard below. Besides transporting visitors, the roof, a series of concrete barrel vaults surmounted by metal layers (see typical section), will perform an assortment of functions: it will offer a view of Newport Harbor and the Pacific Ocean, it will support landscaped gardens and sculpture, and it will provide a structural seismic support diaphragm.

Inside the building, space occupies a series of fingers containing galleries for permanent and temporary exhibitions. (The museum's present quarters must often be closed while temporary exhibits are installed.) The fingers, separated by skylit sculpture courts, will be joined by a wide interior "street," which will also give access to such ancillary spaces as restaurants, stores, and auditorium.

Although Piano was eager to let in the Southern California climate with a Mediterranean-style interpenetration of inside and outside, he also had to acknowledge the influence of automobiles on a site bordered by two major highways. The building is protected from intrusive noise partly as a result of its sinkage into the earth and partly as a result of air-conditioning and structural sound isolation.

The museum, which specializes in post-World War II California art, will cost an estimated $25 million and will open in late 1992. Piano's associated architects are the Blurock Partnership, and Ove Arup and Partners are the structural engineers.

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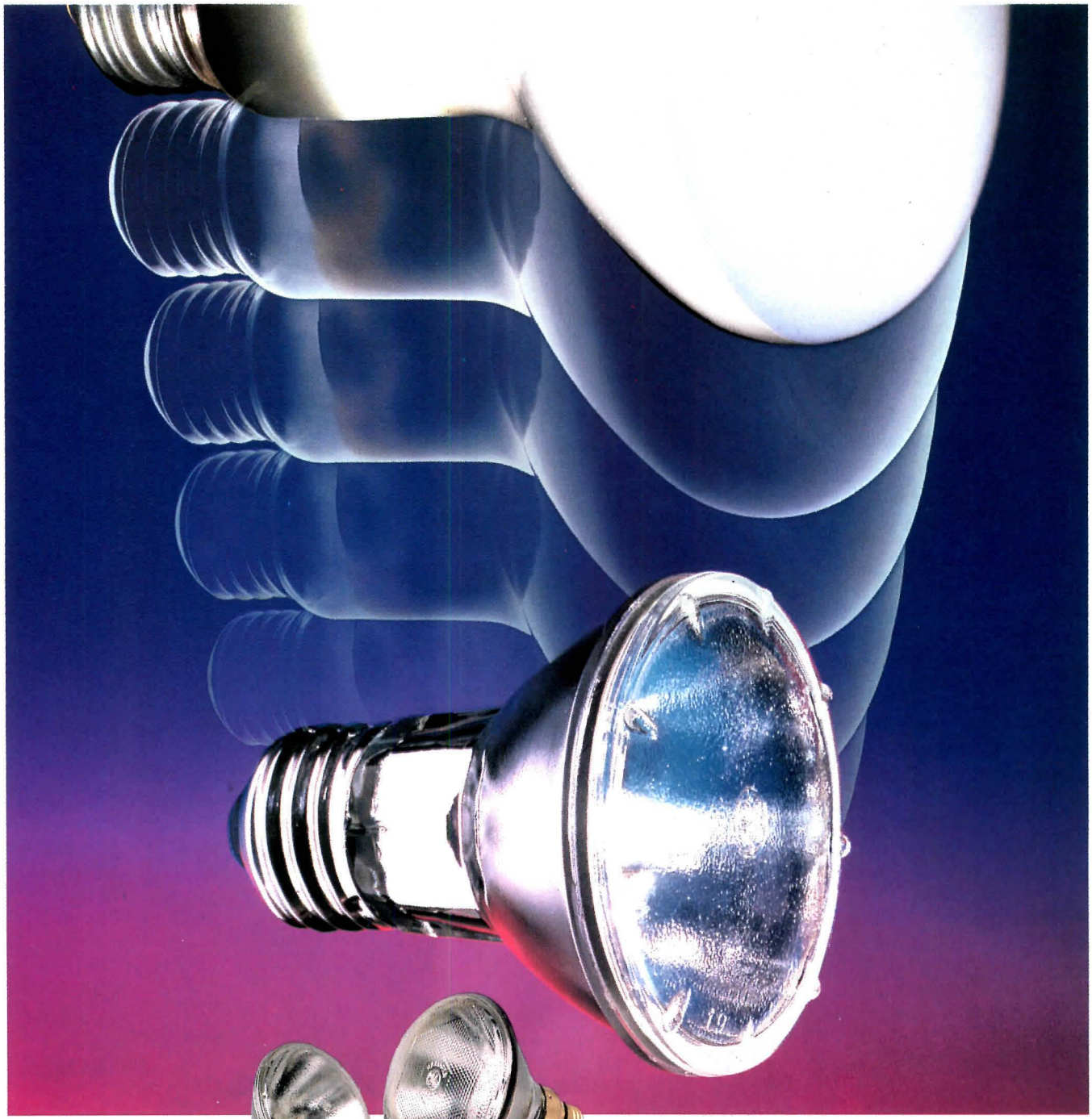

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News briefs

Paul Rudolph received the Gold Medal of the Florida Association of the American Institute of Architects at the organization's fall convention last month. Though Rudolph has for many years practiced in New York City and New Haven, Connecticut, the honor was particularly intended to recognize "those early years in Florida when his work brought the world's attention to the 'Florida School.' "

The documentation of historic structures, using such methods as textual research and measured drawings, is detailed with instructive text and illustrations in *Recording Historic Structures,* edited by architect John A. Burns and the staff of the Historic American Building Survey/Historic American Engineering Record and published by the AIA.

The Historic Theater Preservation Award, newly created by the League of Historic American theaters, was presented to three theaters at the league's annual conference this summer: Carnegie Hall in New York City; The Woodland Opera House in Woodland, California; and Playhouse Square Center, a three-theater complex in Cleveland. The institution also gave its Annual League Award to the Los Angeles Historic Theater Foundation.

Architectural commissions: William Rawn Associates of Boston will design a new concert hall for the Boston Symphony Orchestra at Tanglewood in Lenox, Massachusetts; RTKL of Baltimore has been commissioned to design The Marketplace in Chinatown, a two-acre mixed-use project in Los Angeles; Wimberly Allison Tong & Goo will combine designs for a new hotel and retail facilities with the preserved Old Yarralumia Brickworks at the Canberra Brickworks Resort in Australia.

Post-eclecticism in Cleveland

The Cleveland Public Library may give new meaning to the old concept of eclecticism. The design, by the New York City firm Hardy Holzman Pfeiffer Associates, will have three distinct parts. At the far left of the model, the old library, designed in 1925 by Cleveland architects Walker and Weeks, will be extensively restored. At the far right of the model, a new pavilion, designed to augment the arched windows and rusticated masonry of the original, will replace a demolished newspaper office. And in the middle, an idiosyncratic link will recall the striped canvas awnings characteristic of store fronts that used to line this street.

According to Malcolm Holzman, HHPA'S partner-in-charge, the new pavilion (inset) will constitute one element along a major axis in Cleveland's 1903 Group Plan, an outgrowth of the City Beautiful movement. It will also provide a new front entrance facing the landmark Cleveland Federal Reserve Bank across the street.

The glass and metal link will cover a site now taken by the much-loved Eastman Garden, an urban park. A new garden, which will serve both the public and the library, has been designed for the central-court link. Like the courtyard walls of the existing library, the garden walls will bear architectural ornament.

Architects of record for the $67.5-million project are URS Consultants of San Mateo, California.

Competition calendar

•The annual R. S. Reynolds Memorial Award will be presented to an architect for a significant building or architectural complex in which aluminum is an important material. Nominating forms are due November 14, and submissions by December 18. For a copy of the application: R. S. Reynolds Memorial Award, American Institute of Architects, 1735 New York Avenue, N. W., Washington, D. C. 20006 (202/626-7300).

•The Bronx Museum of the Arts seeks architectural designs for "Visions of Home: New Affordable Housing in the South Bronx," a competition that will result in an exhibition, a catalog, and cash prizes up to $10,000. Architects and architectural students may enter. Programs and plans of the site are available now, and entries are due February 5, 1990. For information: Philip Verre, Project Coordinator, Visions of Home Design Competition, Bronx Museum of the Arts, 1040 Grand Concourse, Bronx, New York 10456-3999 (212/681-6000).

• The American Academy in Rome will receive applications for Rome Prize Fellowships until November 15. Fellows in architecture and the advanced design arts, as well as other fields, receive stipend, travel allowance, housing, most meals, and studio space in the academy's facility in Rome. For applications: The Fellowship Coordinator, American Academy in Rome, 41 East 65th Street, New York, New York 10021-6508 (212/517-4200).

•New York City is conducting a staged architectural design competition for a state-of-the-art Police Training Complex, located on a nine-acre site in the Bronx. From submitted Requests for Qualification, available November 1 and due November 30, the city will select six competitors; the winning design will be announced next spring. For information or forms: Adrienne Bresnan, Division of Design and Construction Management, NYC Department of General Services, One Centre Street, 16th floor south, New York, New York 10007.

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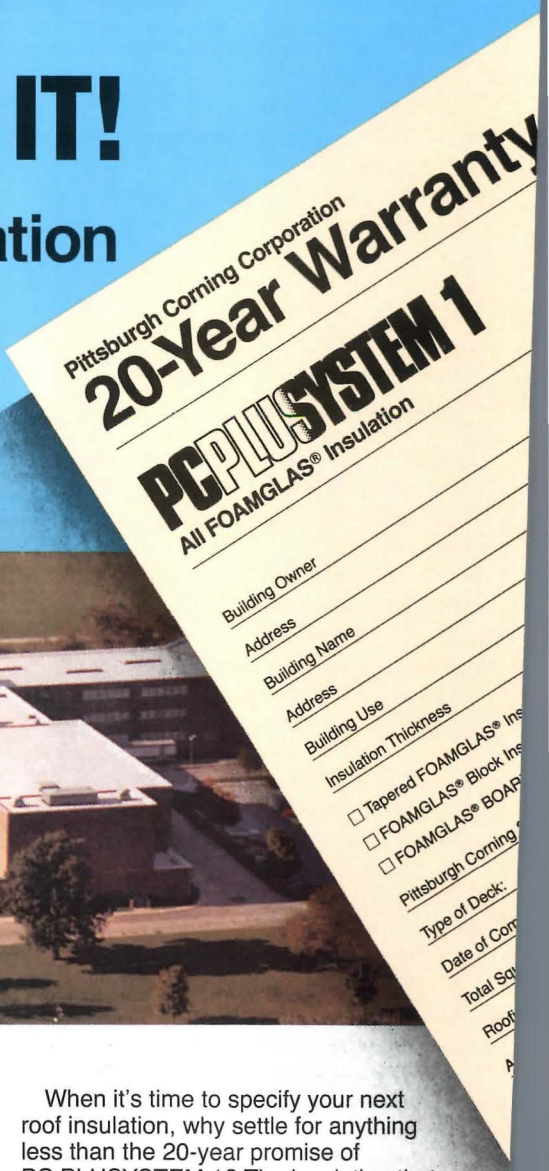

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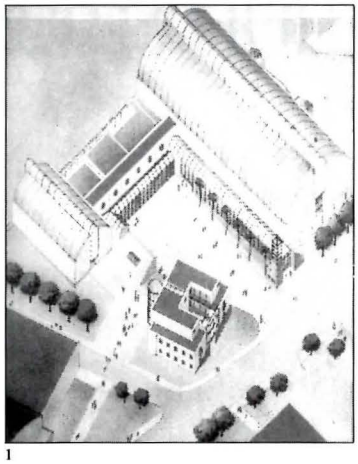
News briefs

California State Polytechnic University in San Luis Obispo will build a new Recreation and Events Center (1), designed by ELS/Elbasani & Logan Architects of Berkeley, California. The multipurpose building, which will be shared by the Physical Education Department, the Recreational Sports Division, and the Student Union, will have spaces for gymnastics, wrestling, dance, weight lifting, and racquetball, as well as four basketball courts with seating for 4,000, a removable stage with three dressing rooms, and an 80-meter outdoor swimming pool.

222 Second Street (2) in San Francisco, a 15-story office building designed by Gensler and Associates, Architects, of San Francisco, was selected as one of three new designs by the city's planning department in the so-called Beauty Contest approval process. The notches and setbacks are intended to allow sunlight onto the Second Street corridor, a requirement of the city's Downtown Plan.

524 Howard Street (3), a downtown office building designed by Heller & Leake of San Francisco, is, like the building above, a winner in San Francisco's Beauty Contest, a selection process meant to control downtown growth. The 200,000-square-foot building will be half offices and half retail, and will have a large atrium to serve both public circulation and art exhibitions.

The Johns Hopkins Ambulatory Care Center (4) in Baltimore, designed by Boston architects Payette Associates, will house the highest-tech diagnostic and treatment equipment currently available, and will consolidate the institution's outpatient treatment capabilities. An underground concourse will connect the two buildings with the school's main hospital and with the city's subway system.



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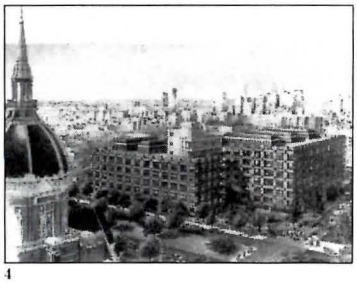

4

The Prince and the architects

By Charles Knevett

The five-year crusade by Prince Charles to improve the quality of Britain's built environment came to a head last month with the publication of his book, *A Vision of Britain: A Personal View of Architecture*, with the opening of an exhibition of the same title at the Victoria and Albert Museum, and with a repeat of his 80-minute television documentary, aired originally last October—all of these factors eliciting a mixed response from the country's 27,000 architects.

Ever since he shocked the profession with his comments in Sir Christopher Wren's courtyard at Hampton Court Palace in May 1984—when the Royal Institute of British Architects celebrated its 150th anniversary at a huge party—the heir to Queen Elizabeth II's throne has dictated the agenda for a Great Debate that refuses to go away.

On that auspicious occasion, he dismissed Mies van der Rohe's proposed sub-Seagram tower for Mansion House, in London's City district, as a "giant glass stump better suited to Chicago," and Ahrends, Burton and Koralek's proposed extension to the National Gallery as "a monstrous carbuncle on the face of a much-loved and elegant friend."

After public inquiries into both schemes, they were rejected. Robert Venturi's alternative plan for the gallery will open in 1991; on the Mies site, James Stirling's alternative will shortly replace a triangle of good, but unexceptional, Victorian architecture.

Since Hampton Court, whenever the issues seemed to be going off the boil, the Prince continued to stoke the boiler, fueling it with the royal quotes that the media love to publish. A new microchip factory, by the country's largest practice, Building Design Partnership, resembled "a prison"; Sir Denys Lasdun's National Theatre was a "nuclear power station"; and Professor Colin St. John Wilson, Professor of Architecture at Cambridge, had designed an "academy for secret policemen," otherwise the £450-million British Library, under construction.

Significantly, however, the Prince started on a different tack last spring. He unveiled Leon Krier's master plan for a development of 3,000 new homes, shops, offices, schools, and leisure facilities, in four "model villages" on the edge of the small market town of Dorchester, made famous as Thomas Hardy's Casterbridge. The Prince was now leading by example, "putting his money where his mouth is." Greatly impressed by what he had heard about (but not seen) at Seaside, Florida, the private new town designed by Andres Duany and Elizabeth Plater-Zyberk for developer Robert Davis, he decided to formulate his own code of design.

The code, which the Prince now calls his Ten Principles, forms the meat of his book and the exhibition. The principles are the senses of Place, Hierarchy, Scale, Harmony, Enclosure, Materials, Decoration, Art, Signs and Lights, and Community. They are a romantic—some would say nostalgic—personal "vision of the future," similar to the principles of townscape championed by the *Architectural Review* and Gordon Cullen in the 1960s.

Leading architects who had been the victims of the Prince's verbal muggings were given the right of reply in a 60-minute television documentary screened the day after he launched his book and opened his exhibition. Lasdun, St. John Wilson, Richard

Continued on page 163

Charles Knevett is the architecture correspondent for The Times *of London.*

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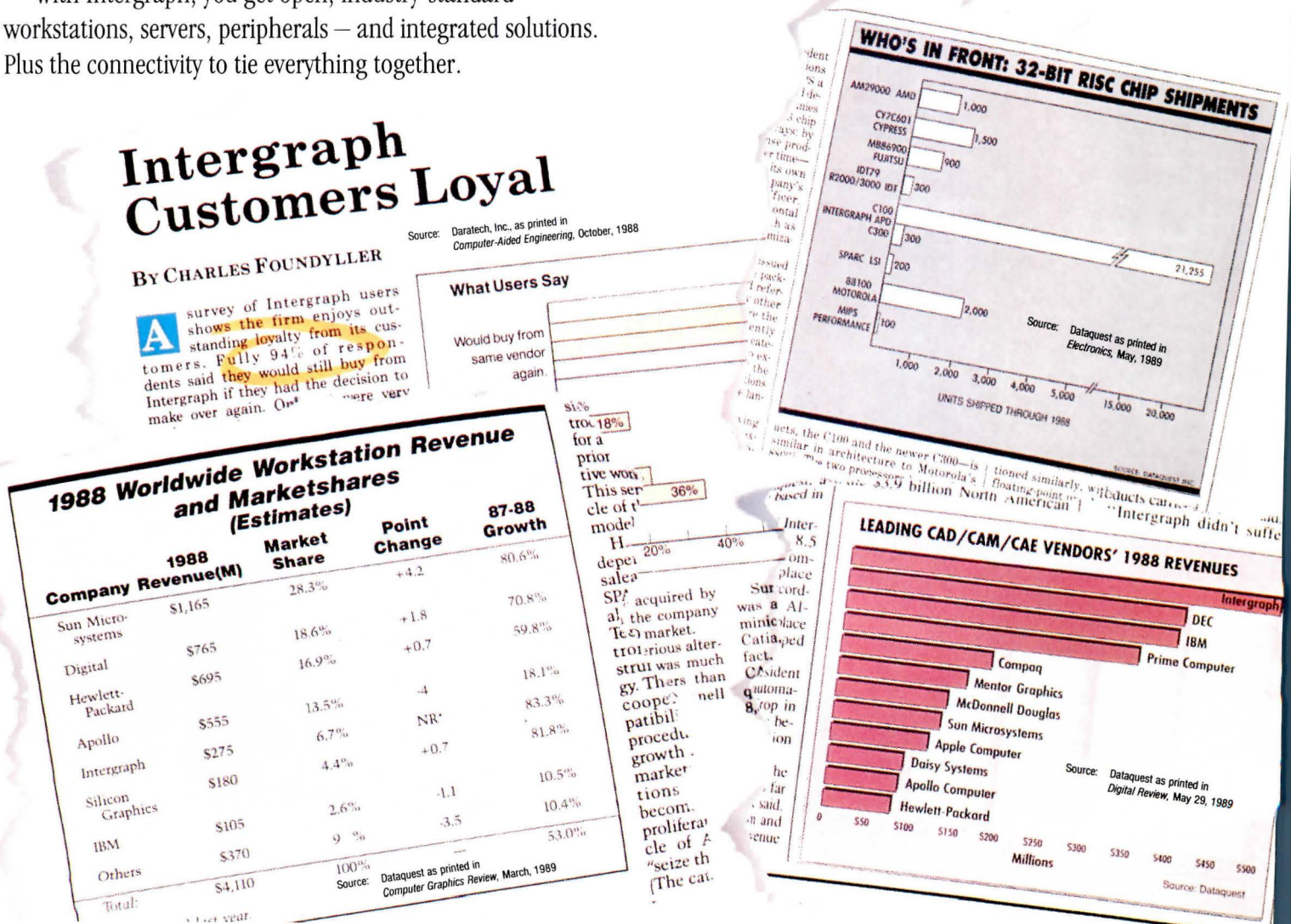
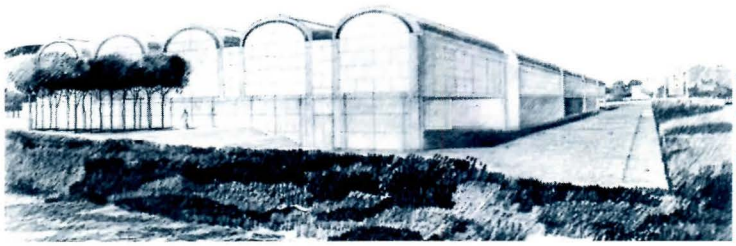
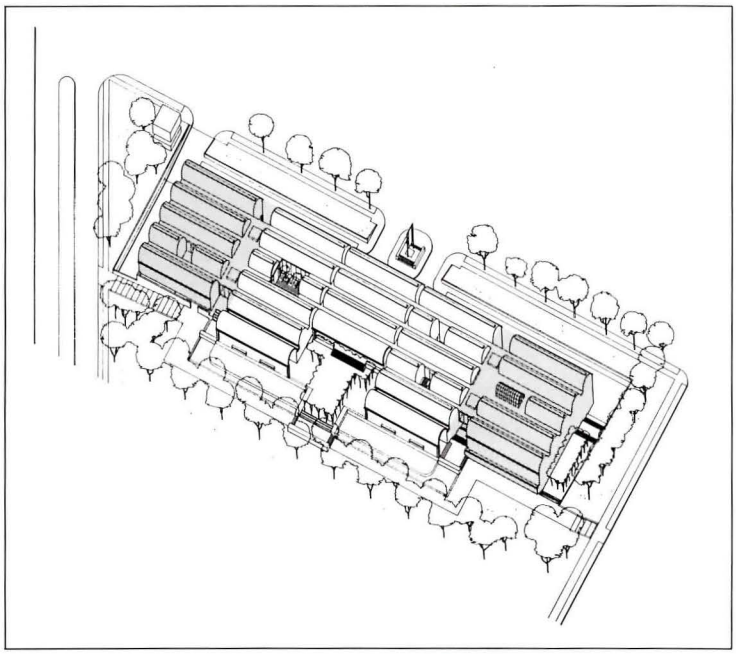
INTERGRAPH



Solicitous additions to an architectural icon



Romaldo Giurgola del.



Louis Kahn's building for the Kimbell Art Museum, which opened in Fort Worth in 1972, has become one of the most venerated icons of contemporary architecture. But though the museum's board recognized its treasure, it also recognized a need for more space at the popular institution. During an important traveling exhibition, for instance, it must store its own collection.

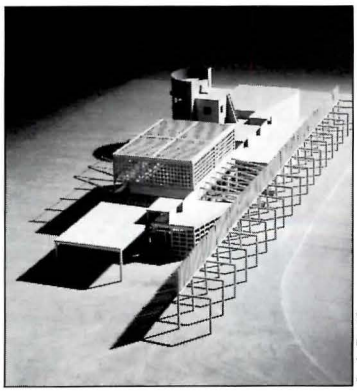
When the museum decided to expand, it moved with caution. First, it commissioned Romaldo Giurgola of Mitchell/Giurgola, who besides being a noted architect himself was a long-time associate of Kahn and has written extensively about his work. Commenting on the original large-scale plans, Giurgola said, "It was almost as if Kahn had left 'design intent' instructions for how the museum to the west could be expanded at some later date." And Giurgola wanted to make "a conscious, subtle visual separation between old and new."

The additions will consist of one new wing at either end of the museum, each extending the cycloid barrel vaults of the original. At the same time, though, Giurgola was careful to create "no confusion or blurring of the distinction between old and new structures." The wings are thus separated from the older building by 20-foot links with sunken roof lines.

Giurgola took care also that the interior not confuse old and new. The ceilings in the links have clerestories and concrete edges that differentiate new and old. Moreover, new interior courtyards take their shape and location from Kahn's lead.

Associated design consultants for the $8-million additions include Thorp Architects of Canberra, Australia, and engineer Frank Sherwood of Karlsberger + Associates, who was the original project director.

Two airports, two personas



Jock Pottle

The increasing availability of air travel seems to have aroused wanderlust in both business and vacation travelers, and the crowds have created demand for both large international airports and small cozy facilities.

East Hampton, New York, at the eastern end of Long Island, lies at the center of numerous vacation communities that attract New Yorkers and suburbanites by the hundreds every summer weekend. The controlling motive behind the terminal designed by Smith and Thompson Associates of New York City (above left) was to offer arriving vacationers a foretaste of the pastoral Hamptons; a long steel arbor reminds the viewer of local verandas and gazebos. Apart from the arbor, the terminal consists essentially of two buildings—a curvilinear office wing sheathed with horizontal cedar siding, and a glass waiting pavilion enclosed in a wood trellis. The glass wall will filter sunlight to the interior by day and transfer illumination to the exterior at night to furnish identification from the air as well as from the ground.

The new Charlottesville-Albemarle terminal (above right) in Charlottesville, Virginia, receives business travelers for the most part. Designed by Roger H. Clark of O'Brien Atkins Associates in Research Triangle Park, North Carolina, it follows a more formal—and more Southern—Jeffersonian model than East Hampton. Thinking of Jefferson's plan for the Lawn at the University of Virginia, Clark envisioned a series of pavilions joined by an arcade. But to complicate the design's massing, two sizes of aircraft land here: small commuter planes with passenger access at ground level, and larger commercial jets that need second-level jetways. On the entrance facade, a second-level canopy with a Classical railing and an arcade in front of the red-brick building will maintain a consistent exterior, even should future expansion require inconsistencies behind the wall.

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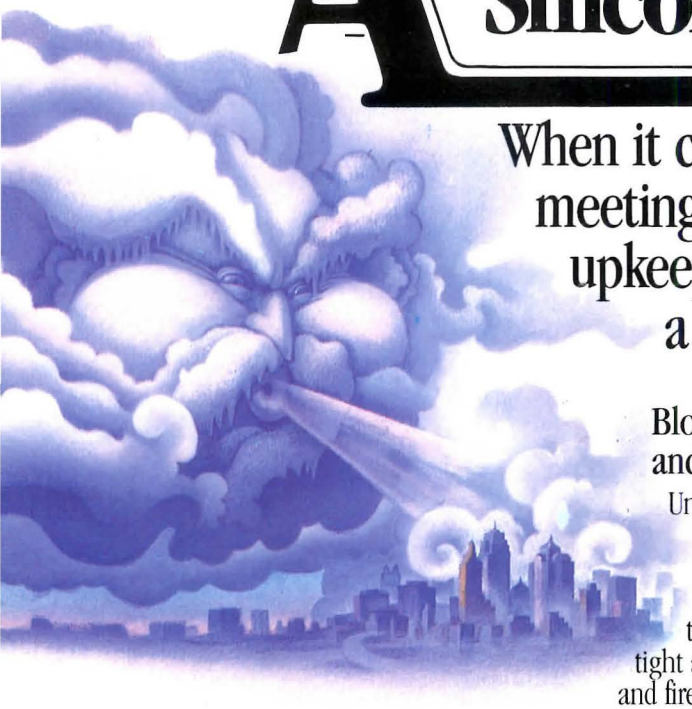

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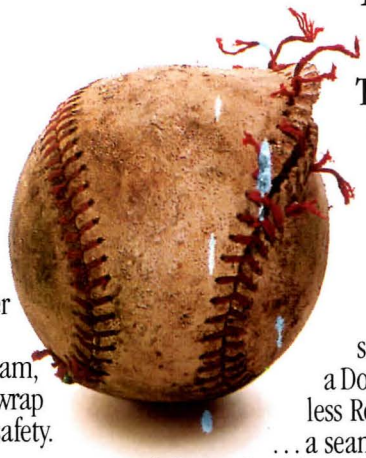

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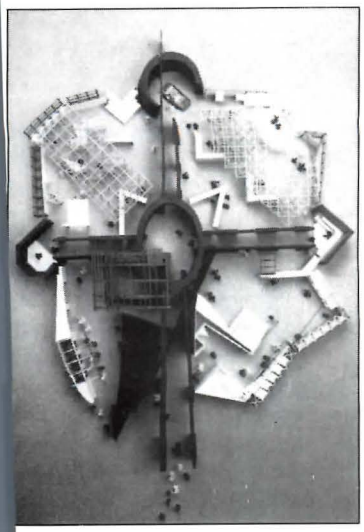
Russian connection: American architecture abroad

Visitors to "Design USA," a multimedia exhibition that highlights selected examples of American architecture and design, can play with a variety of technological toys.

The exhibition opened in Moscow in September and will tour eight other Soviet cities. Besides interactive computers, "Design USA" features a video that operates by touching the screen. And through computer-aided design, visitors can create a three-dimensional chair.

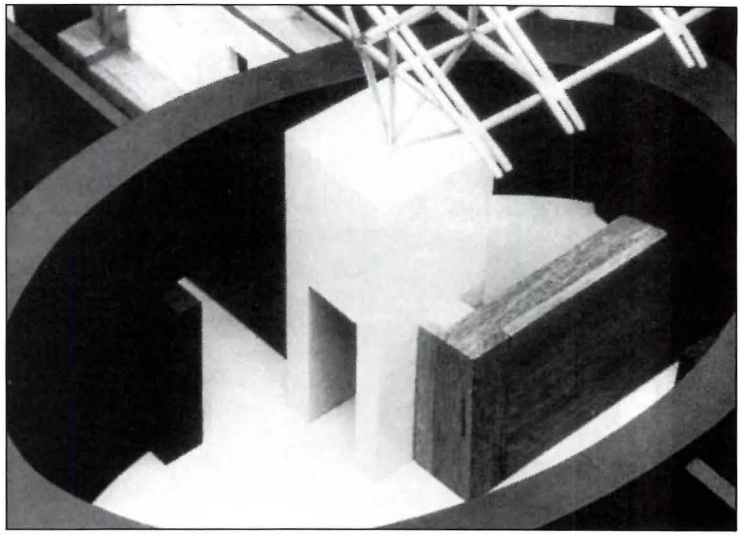
The exhibition highlights contemporary American design, especially architecture, product and graphic design, and design education, with 24 Russian-speaking American guides to demonstrate technology and answer questions about design and life in America.

A 1989 red convertible Corvette on a revolving platform in the automotive-design section is one of the most popular items on exhibit. "It is by far the hit of the show. They love cars," said Betsy White of the United States Information Agency in Washington, which produced the the exhibition. Yoknapatawpha Exhibit Group, a joint venture firm comprising Mockbee, Coker and Howorth Architects, and Communication Arts, both of Jackson, Mississippi, designed the exhibit for USIA.



Thirty-two American firms entered the design competition won by Yoknapatawpha Exhibit Group. Each quadrant of its design houses a section: architecture, product and automotive design, and graphics.

U. S. and Soviet government officials arranged "Design USA" as a means of fostering cultural exchange between the two countries. The exchange includes plans for an exhibition titled "USSR: Perestroika" that will open this December in Orlando and is scheduled to travel to eight other American cities.
—Susan R. Bleznick



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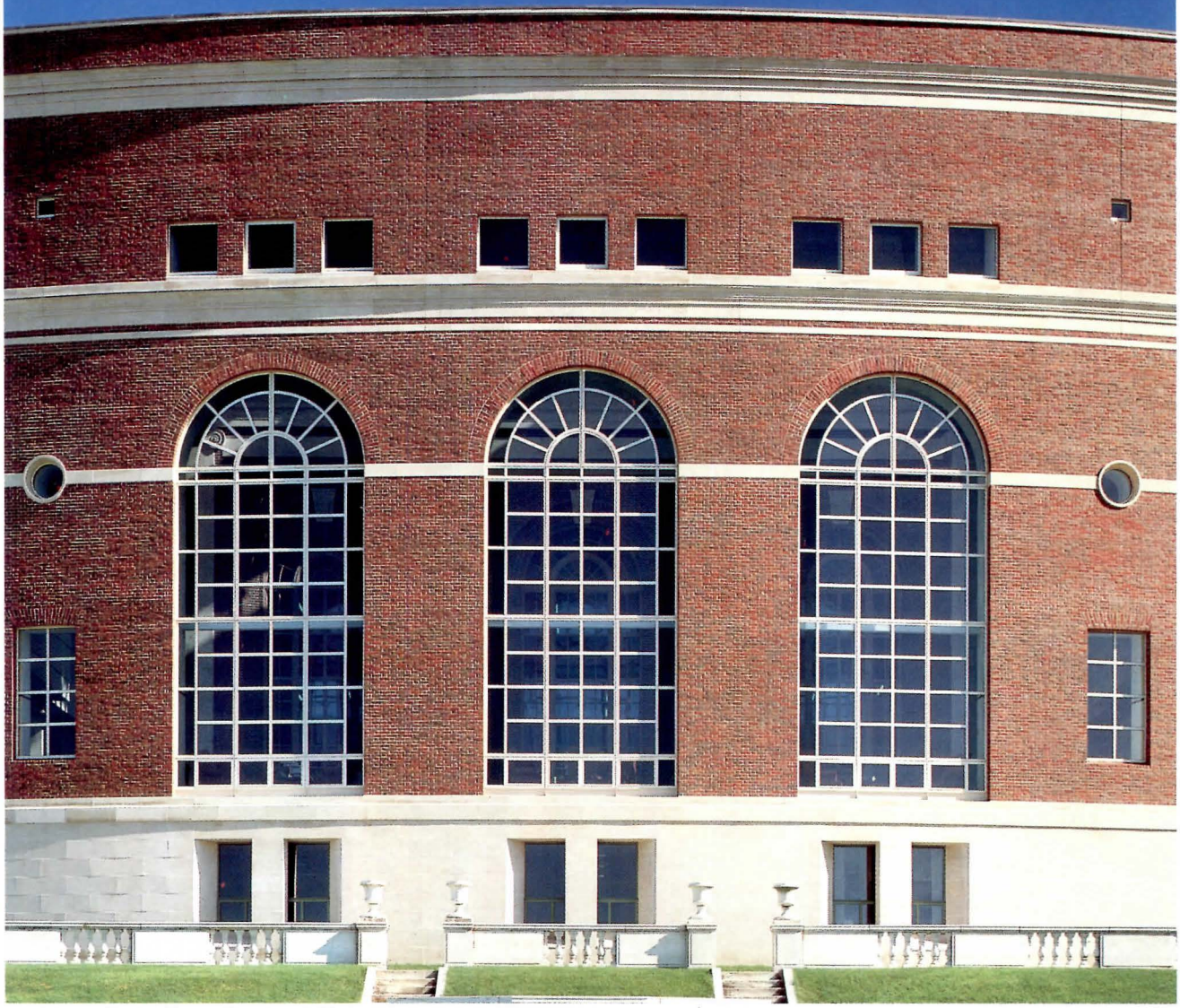

Architect: Perry Dean Rogers & Partners

Photographer: Steve Rosenthal

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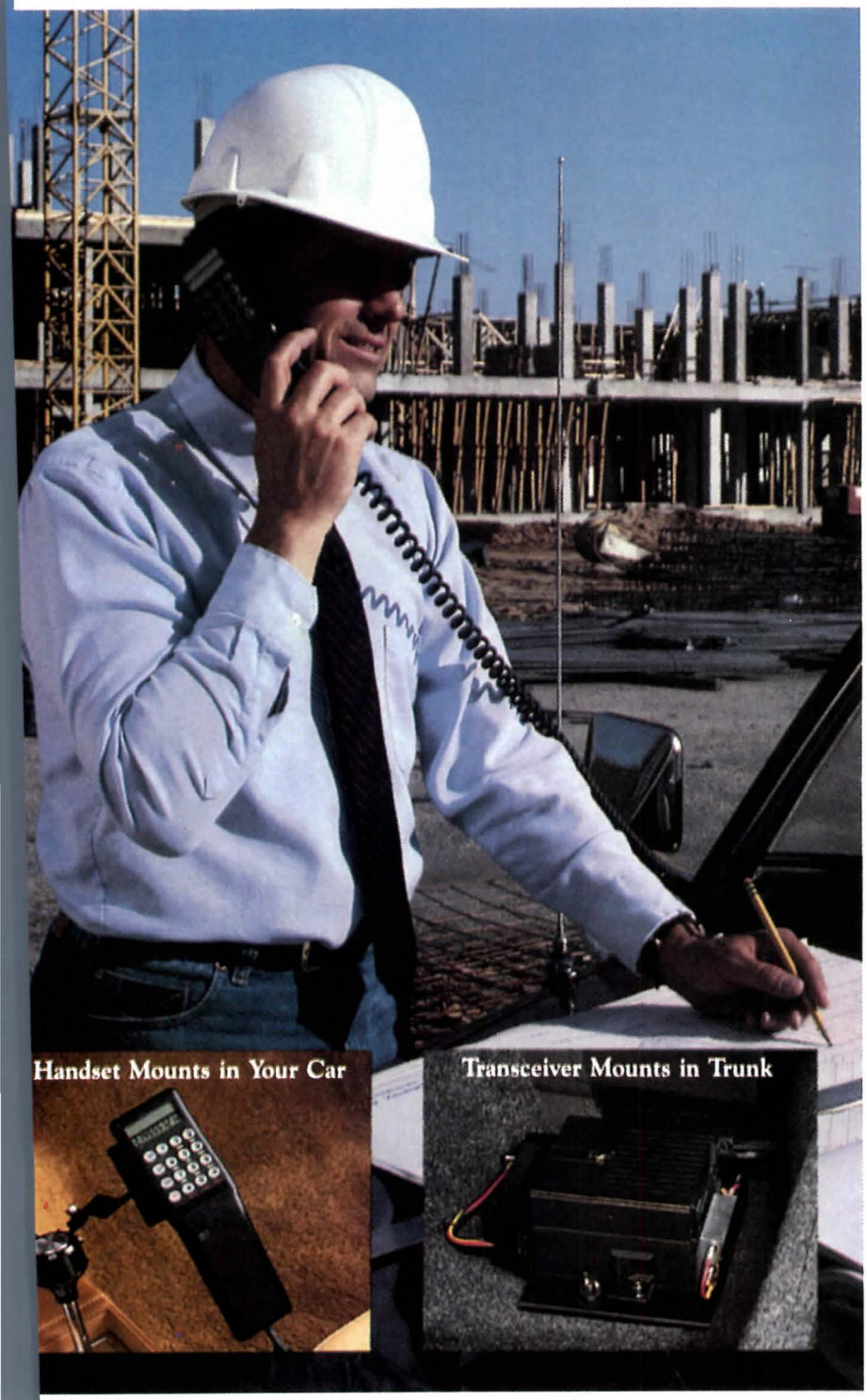

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Design awards/competitions: Colton, California, competition for affordable senior housing

Affordable housing has grown noticeably scarcer over the past decade, and as federal money has dwindled, state and local governments have become more and more concerned with the issue. The small town of Colton, California, with about 20,000 people, saw that it needed 100 apartments for the elderly, and at the same time hoped for a development that would revitalize its downtown area. It therefore held a serious and rather ambitious international competition, which drew 137 entries from seven countries.

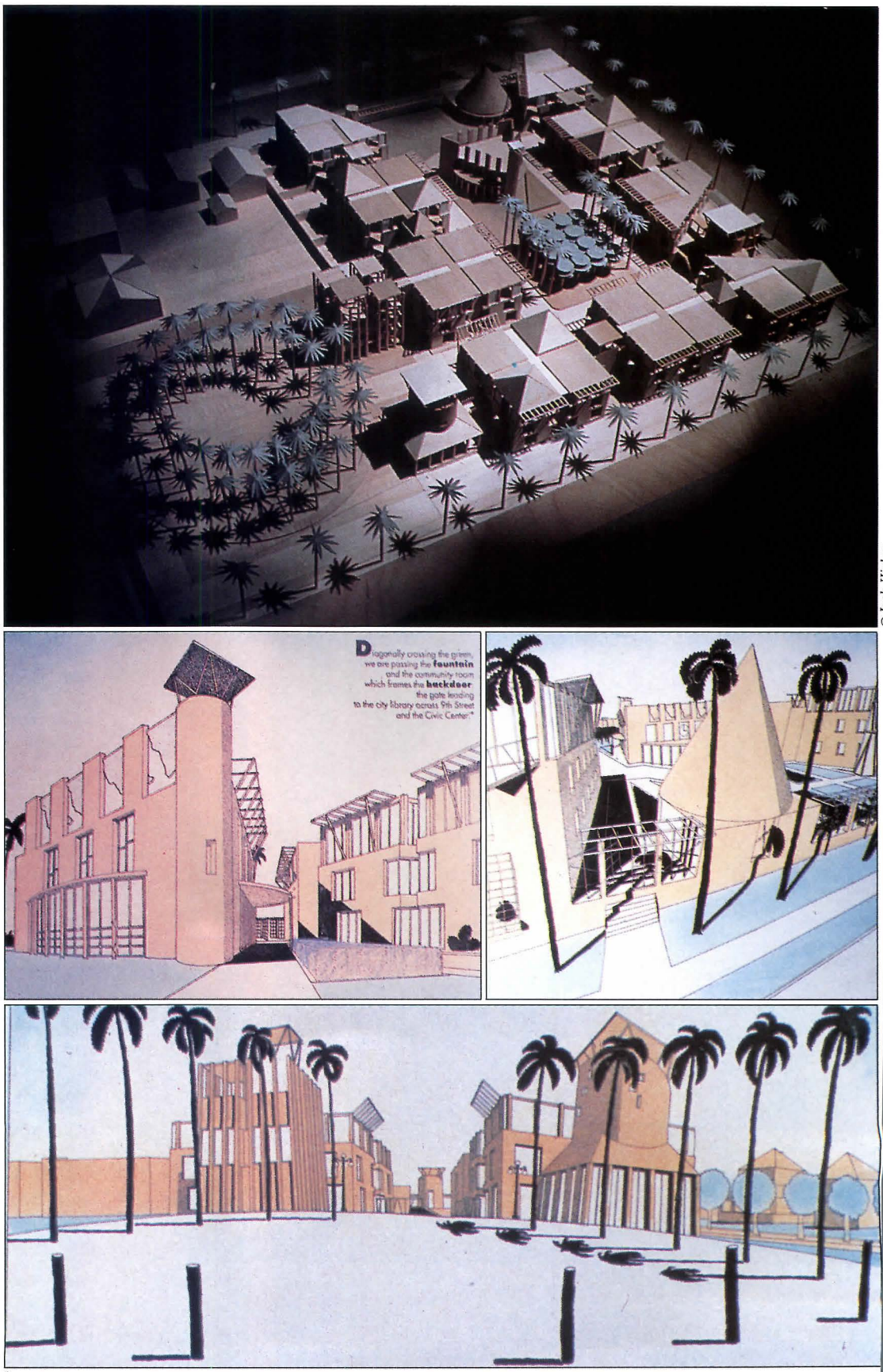
The Redevelopment Agency of Colton, California, seeking appropriate planning solutions for needed affordable senior-citizen housing, conducted a noteworthy international competition. The problem was to design a 100-apartment development on a 2.5-acre site at the center of Colton's historic district, with its turn-of-the-century stucco and wood houses.

Chicago architect Joseph Valerio submitted the Grand Prize design (1). The design was especially commended for a circular palm courtyard (bottom) that leads from a much-loved park across the street to the development's gateway, which is flanked by the reception and administration buildings. Three-story apartment buildings and pergolas enclose an inner courtyard, which contains a triangular community hall (center left) and a conical crafts building (center right).

The design submitted by Miller Pollin of Riverside, California (3), which received First Prize, was the only solution with two-story apartments. The buildings have porches that face existing streets and define an L around an inner courtyard.

Rick Erickson and John Campbell, of Santa Ana, California, submitted a small-scaled development (2) with two- and four-story buildings and townhouses clustered around a central courtyard. The Kagan Company, of New Haven, Connecticut, shaped its apartments with two stories on the street side, four on the inside (4), to free open space with a controlled increase in density. David Smotrich & Partners, of New York City, devised a plan (5) that puts its most important building on the street facing Fleming Park.

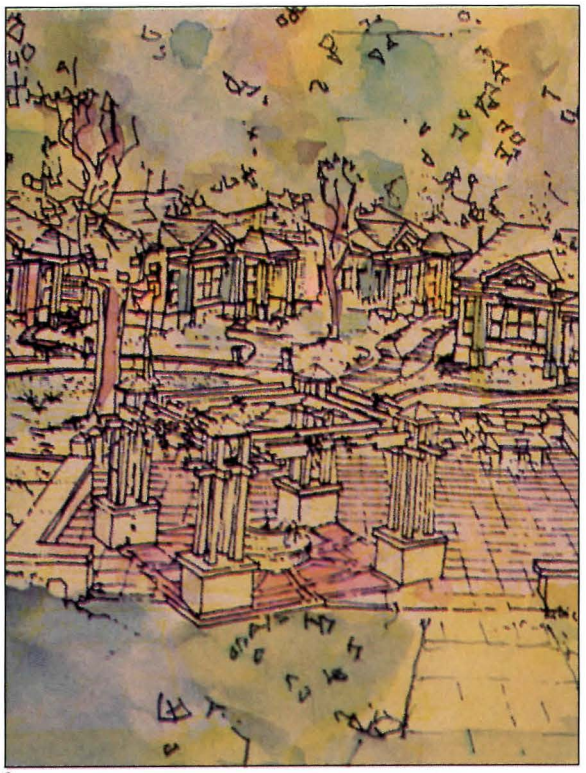
Construction of Valerio's design, budgeted for $7 million, is scheduled to begin in spring 1990. Runners-up each received a prize of $7,500.



©Jack Higbee

1

The jury included architects Donlyn Lyndon, Robert Wellington Quigley, Dana Cuff, and Hilario F. Candela, as well as Connie Cisneros, chairman of the Colton Redevelopment Agency, Charlie Gabriel, a local businessman, Hilda Garcia and Yolanda Bubello, members of the Senior Citizens Council, and Fred Wood, of Cooperative Services, Inc., a consumer group specializing in senior living cooperatives. The competition's architectural advisor was Michael Pittas of Design/Development Services in Los Angeles.



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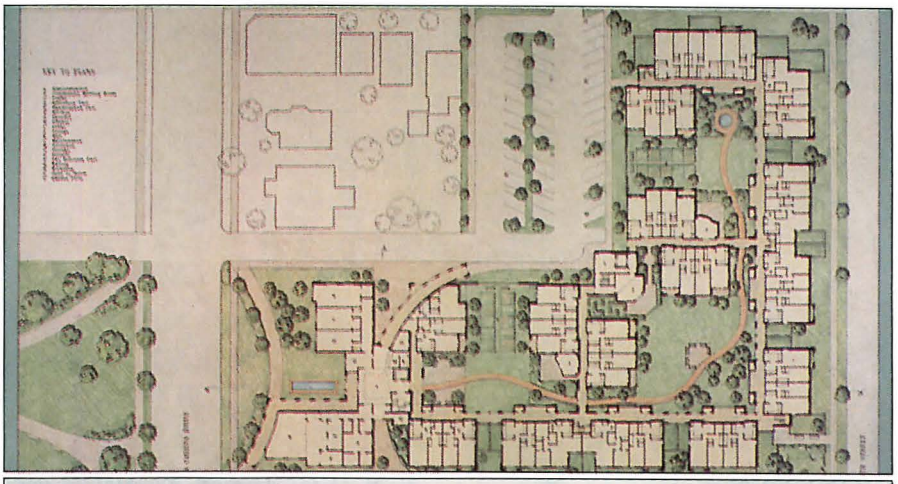

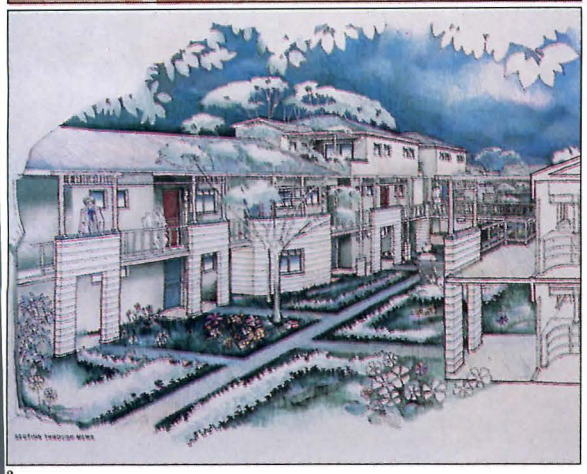

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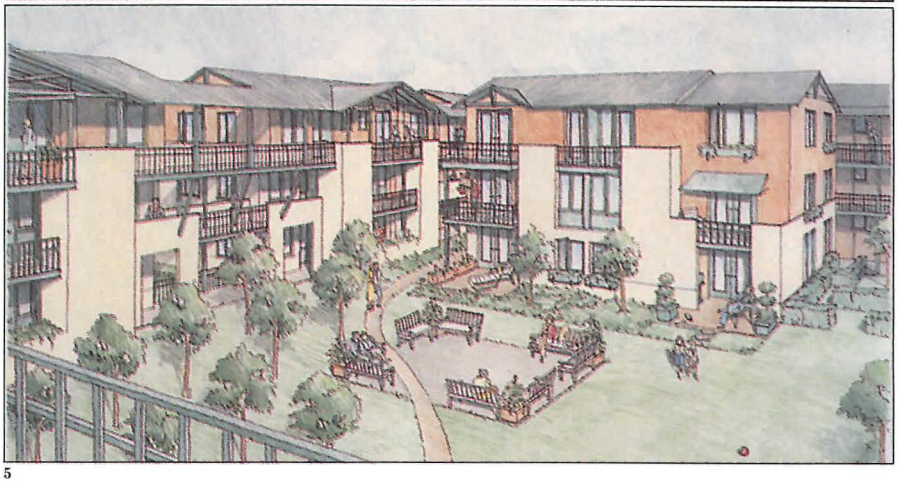

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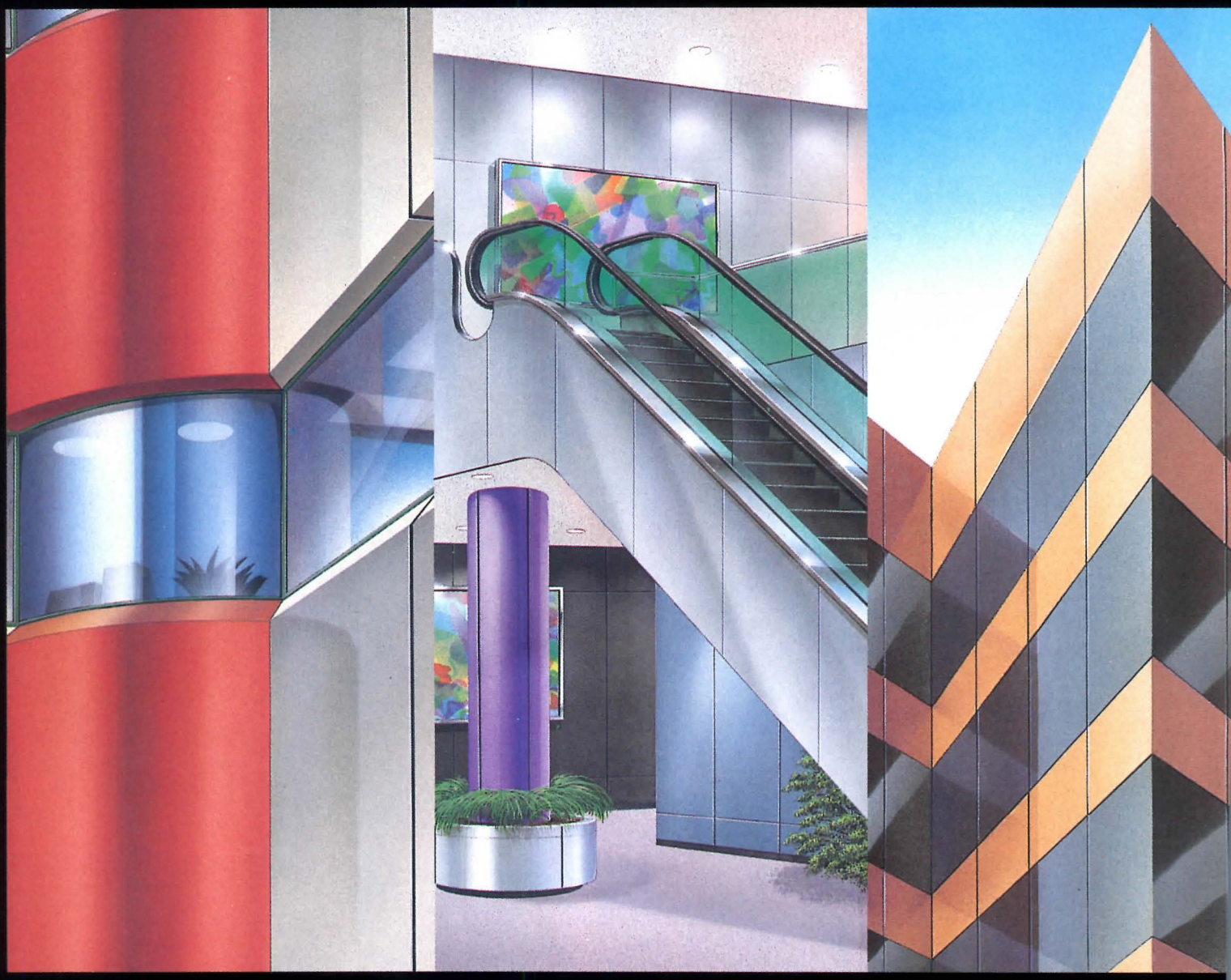

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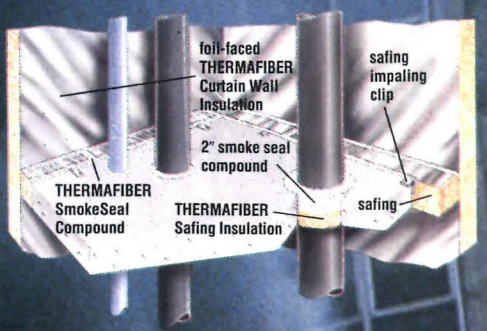

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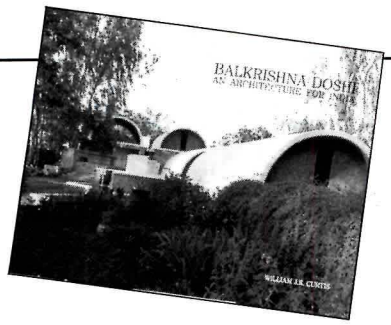

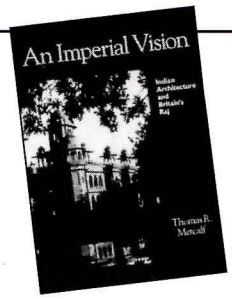

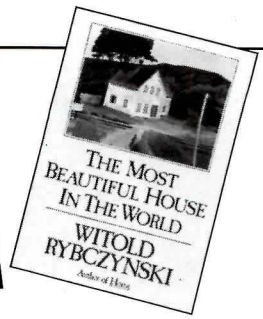

An Imperial Vision: Indian Architecture and Britain's Raj, by Thomas R. Metcalf. Berkeley: University of California Press, 1989, $35.
Balkrishna Doshi: An Architecture for India, by William J. R. Curtis. New York: Rizzoli, 1988, $40.

Reviewed by Marc Wortman

Balkrishna Doshi, one of India's foremost architects and proponents of regionalist style, writes, "What we have had as architecture under British rule is a sort of hybrid thing which does not possess the great qualities of either Indian or European architecture." With nearly every major public building from the century prior to independence designed under colonial aegis, the Indian architect confronts an enormous gap in tradition, and an opportunity to reconstruct it for the modern world. In designing for the new India, therefore, Doshi and his colleagues have reinvented their precolonial past.

The hybrid architecture of the Raj rested upon a "scientific" study of Indian history which was understood by the British to culminate with their own rule over the subcontinent. They designed buildings to demonstrate a mastery of the Indian past and to mobilize the Indian present as part of the empire. Thomas Metcalf's history gives a cogent, engaging view of imperial architecture's intellectual origins, political purpose, esthetic fulfillment—and deeply perverse character.

The Raj's architectural historians and architects—most importantly, Major C. Mant, R. F. Chisholm, and Swinton Jacob—developed a hierarchical conception of the elements of an imagined "oriental" style, which they then reworked to suit British purposes. Metcalf follows the 50-year rise of what was believed to be the highest architectural expression of an otherwise irrational and primitive culture.

The imperial vision is most conspicuous in the grab-bag of details applied to colleges, train stations, revenue buildings, and even the fantasy palaces forced upon the British-educated and subventioned native princes. Most disconcerting are such oddities as Islamic-style minarets used as university clock towers and the follylike accretion of domes, turrets, and latticework applied to secular buildings and even European churches.

Metcalf concludes with the weakening of the Raj's grip on India at the time of World War I, when the untenable character of the hybrid style was becoming clear, and a heavy-handed classical revival represented a shoring up of British power. Herbert Baker joined with Edwin Lutyens to push out the hybridizing architect Jacob in designing the Beaux-Arts and Neoclassical imperial capital of New Delhi (built at native expense), the last marble porticoes of the Raj.

After independence, British-trained Indians sought out the modern world they had previously been denied. One of them, Balkrishna Doshi, eventually found his way to Le Corbusier's Paris atelier. In fact, it was one of Le Corbusier's commissions that brought him back home and set him on the search for an architecture appropriate to India. As William Curtis's monograph shows, Doshi has versed himself in his own country's philosophy and past as well as local forms and needs, and learned to apply the wisdom of the vernacular to modern materials and functions.

After working on Le Corbusier's Indian projects, Doshi eventually set up his own practice in Ahmedabad. His early work there on the Institute of Indology and housing for the Physical Research Laboratory utilized variations on many Corbusian forms, especially his rounded vaults, the Modulor proportional system, and sunbreaks. Doshi coupled these with strategies derived from local prototypes such as balconies and screens, diffused natural light and cross ventilation, and the ambiguous vistas and spaces of traditional temples, mosques, palaces, even vernacular houses.

Louis Kahn, whom Doshi brought to Ahmedabad to design the Indian Institute of Management, influenced his own work on the School of Architecture and Planning, with its deep-cut openings, planar walls, and network of interior passages, open spaces, and functional zones. However, Doshi also had begun to immerse himself in Hindu philosophy, finding himself more and more drawn to the sacred sense of the earth-bound cast of Indian thought and historical expression. He banked the architecture-school complex, creating a protected, partially underground zone of natural light and ventilation.

He has since drawn extensively on vernacular and natural forms in the design of townships, office and housing complexes, city plans, and schools. The linear-arrayed vaults of his own studio, Sangath, although inspired by Le Corbusier, are both raised on a plinth and buried in the earth. They are arranged to embrace intimate, sometimes ambiguous, yet still open spaces and vistas, much like those found in local villages. Outside, watercourses and a grass amphitheater create a natural setting reflecting the *genuine* spiritual and architectural rootedness that Doshi seeks in his work.

Marc Wortman, based in New Haven, Conn., writes on a variety of cultural issues.

The Most Beautiful House in the World, by Witold Rybczynski. New York: Viking Penguin, 1989, $18.95.

Reviewed by Douglas Gantenbein

Canadian architect/writer/teacher Witold Rybczynski explains in this book why architects endure years of grueling classwork only to plunge into a profession characterized by long hours, low pay, and balky clients. Says he: because it's fun.

To a child, a game that is "fun" is characterized by an element of surprise, by free-wheeling rules, and by a sense that it is played for its own sake. So, too, in what Rybczynski calls the building game. "The issue here is not only originality," writes Rybczynski. The architect can push the pencil into any pattern desired. The process is enjoyable in itself—that a building will emerge may almost be regarded as secondary.

Rybczynski's analysis of his profession as an outgrowth of play with Lincoln Logs is but one side trip taken in this brief but insightful book. The excuse for this volume is, nominally, an account of a house Rybczynski built for himself outside Montreal. But just as Rybczynski's plan for a boathouse (intended to shelter a dory he wanted to build) became instead a house, so too does the book change. Like the ripples in Proust's pond, each stage of the home's development leads the author into disquisitions on the nature of his profession, on the importance of context, and how a building can have meaning.

Ultimately, *The Most Beautiful House in the World* is a book of theory. But, unlike most such texts, it has a plot. One wants to see how the little house turns out and, while awaiting the outcome, the reader becomes enlightened.

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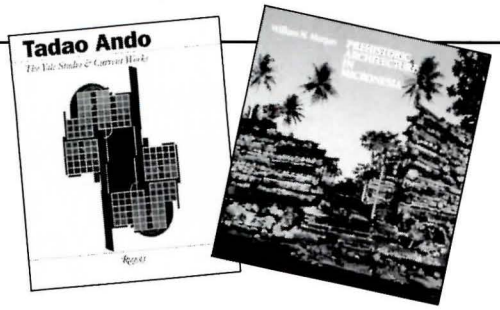

Tadao Ando: The Yale Studio & Current Works, introduction by Kenneth Frampton with essays by Tadao Ando, George T. Kunihiro, and Peter Eisenman. New York: Rizzoli, 1989, $25.

Reviewed by Donald London

This attractive book misrepresents itself. Tadao Ando's 1987 design studio at the Yale School of Architecture is only briefly discussed, and the book shows few examples of the students' work. Perhaps it lost its direction when the original idea to document an East-West academic discourse ran aground, for Ando's conclusions about the studio reveal serious disillusionment. Compared to their Japanese peers, the American students' talents were "limited purely to their form-making ability." He states that "not one of them was able to make a clear, logical presentation of the polemical position of their work." Philosophical values rarely find a place in American architectural education, says Ando, and western architects whose work is spiritually grounded—Mies van der Rohe and Louis Kahn, for example—are perhaps not deeply taught and apprehended in American schools.

Out of this deficit, however, emerges a lovely new monograph on Ando, with a bounty of photographs that convey the silvery quality of the concrete walls so characteristic of his work. Ando's remarks on the projects are lucid and carry the strength of ideological conviction and seeming self-knowledge. The five essays, two by Ando, one by his studio assistant George Kunihiro, and one each by critic Kenneth Frampton and architect Peter Eisenman (whose convoluted locutions send the reader scrambling for the dictionary), are largely unnecessary.

Ando seeks a complexity to counter his self-described "reductive" impulses. Two shopping malls—called Time's I and II—are not flashy but are eerily silent on their canal site. Ando's teahouse projects evoke the spirituality of their traditional function. The warm, glowing Oyodo Teahouse, designed for his own home, is one of his most beautiful projects and, ironically, the only wood building among this work. The question of Ando's ongoing choice of austere poured concrete in "a culture of paper and wood" persists; Frampton's remark that "traditional craft production and modern technology have always found . . . unity in reinforced concrete construction" with its "highly crafted traditional formwork in wood" suggests an answer. The first Rokko Housing project is far from "a quiet building standing quietly in nature," but the sprawling second phase does seem to "synthesize" gracefully with the landscape. On the other hand, the Karaza Theater [RECORD, March 1989, pages 90-93] brings unarticulated banality to an impressive scale. Its interior, designed to "celebrate . . . the art of acting," remains curiously undocumented.

Despite such lapses, the book is comprehensive as a monograph. The glossary definitions provided are useful and contribute significantly to the frail East-West dialog. This collection sympathetically communicates Tadao Ando's arresting spirituality, simplicity, and directness.

Donald London is an architect with Kohn Pederson Fox in New York City.

Prehistoric Architecture in Micronesia, by William N. Morgan. Austin: University of Texas Press, 1988, $49.50.

Reviewed by Marc Wortman

During World War II, pilots on missions over the remote Pacific islands of Micronesia reported sighting enormous stone columns and walls, sculpted hills, and ruined foundations of cities. The vast archipelago encompasses the Mariana Islands—including Guam, the largest island—and the Caroline and Marshall chains, though the land mass totals only 708 square miles in three million square miles of sea. After the war, anthropologists and ethnographers intrigued by the reports returned there and confirmed the existence of architectural traces from island societies dating from as early as prehistoric times to around the period of the first western contacts in 1521, though some villagers still continue to build on the original foundations.

After first hearing of ruins of a Venice-like city while stationed on Guam, William N. Morgan (who produced this volume while maintaining a successful practice in Florida) eventually returned to Micronesia to study and survey the islands' prehistoric architecture. In this volume, he divides the enormous amount of material into five distinct groups, presenting it within each area's cultural and geographical contexts. Though far flung, all of the communities share a reliance on the basalt stone quarried on the volcanic islands.

Architecturally most interesting and beautiful are the Yap Islands, where the villagers continue to join posts, beams, and rafters with intricate bindings. Most advanced and inexplicable are the megalithic columns and hemispheric capstones of the Marianas—believed to have been piers supporting large thatched houses; the ancient city complex of Nan Madol, built with sea walls on islets in a lagoon on Pohnpei; and the sculpted and terraced hills, some over 300 feet high, on Babeldaob in the Palau chain.

This survey, which includes speculative reconstructive drawings as well as photographs and explanatory maps, unfortunately has too much the character of an atlas. The text in particular conveys little of the charm, beauty, and excitement of what must be extraordinary sites.

Briefly noted

Emilio Ambasz: The Poetics of the Pragmatic, with essays by Mario Bellini, Allessandro Mendini, Michael Sorkin, and Ettore Sottsass. New York: Rizzoli, 1989, $50.
The uncategorizable ouevre of Argentine-born Ambasz encompasses the seminal Museum of Modern Art exhibition "Italy: The New Domestic Landscape" (for which he was both curator and designer), the spectacularly successful Vertebra chair, enigmatic interiors for banks in New York and Europe, and the Lucille Halsell Conservatory in San Antonio, which is somewhere between earthwork and building. Critic Sorkin calls this last "Ambasz's first realized ideogram for the world." Though the book is comprehensive and well-illustrated, the essays are more laudatory than informative. Readers can make do-it-youself Ambasz projects out of dust-cover paper cutouts. *J. S. R.*

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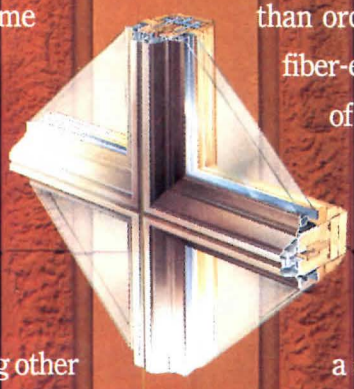

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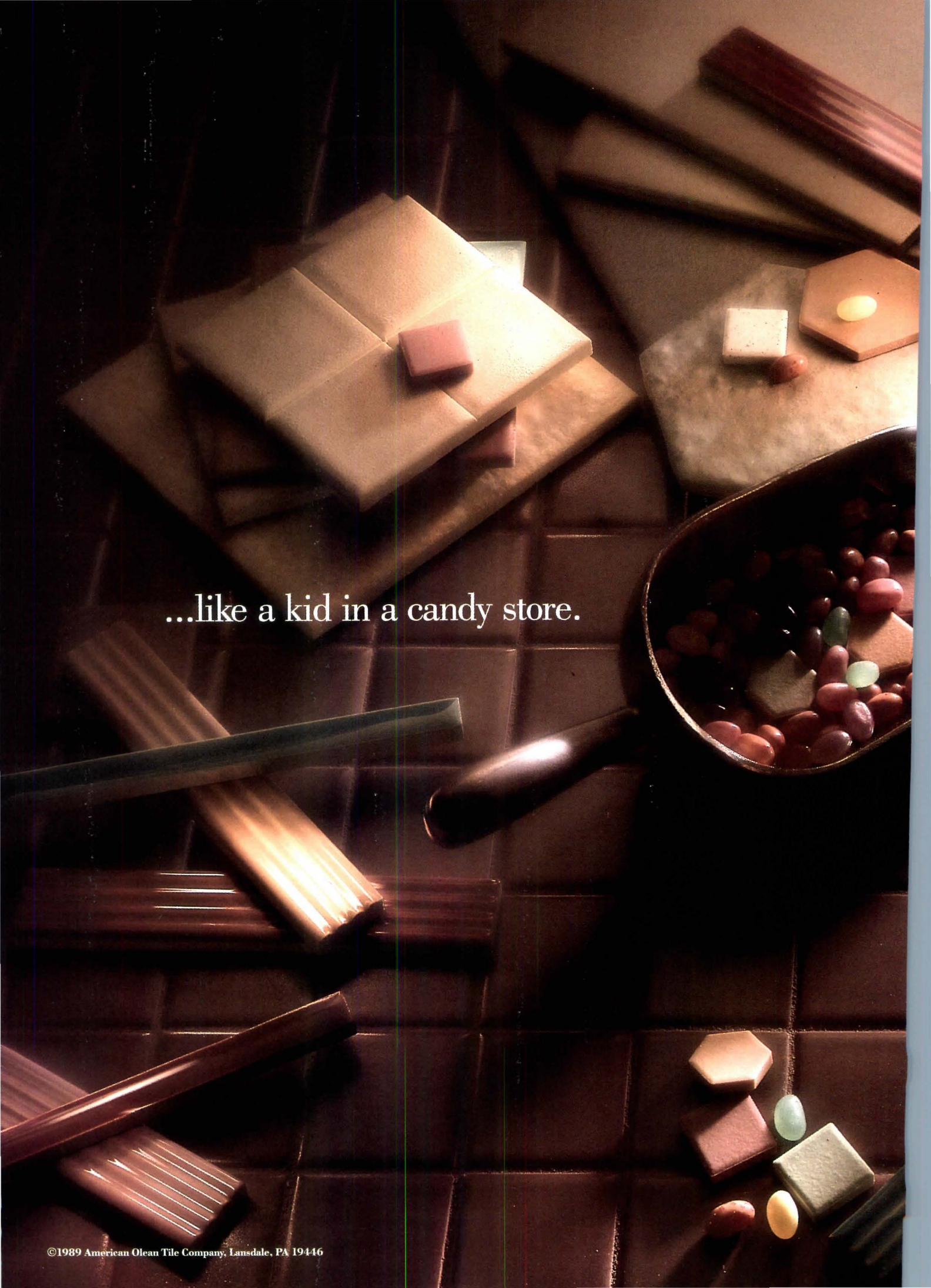

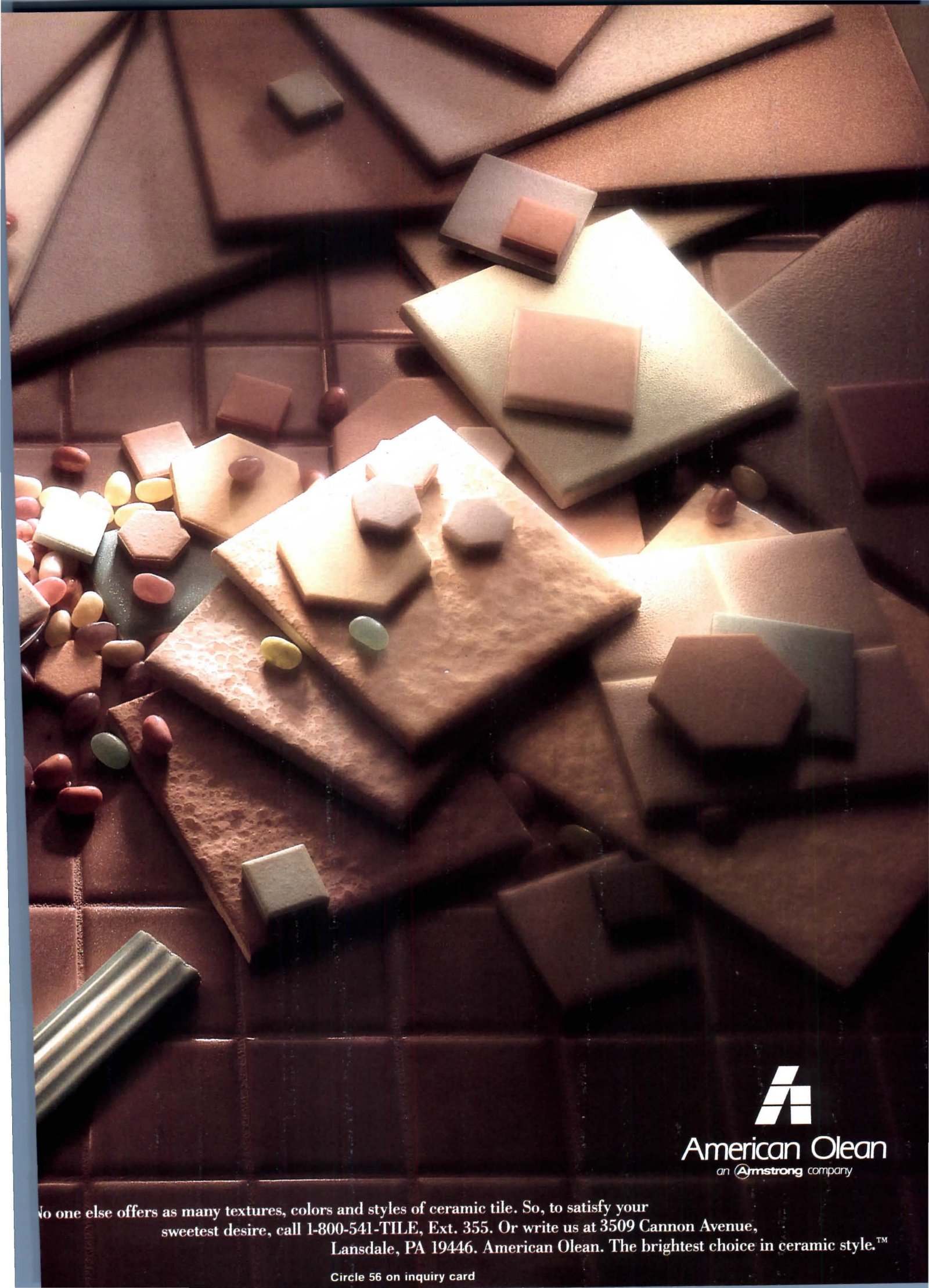

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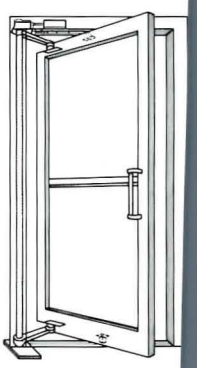

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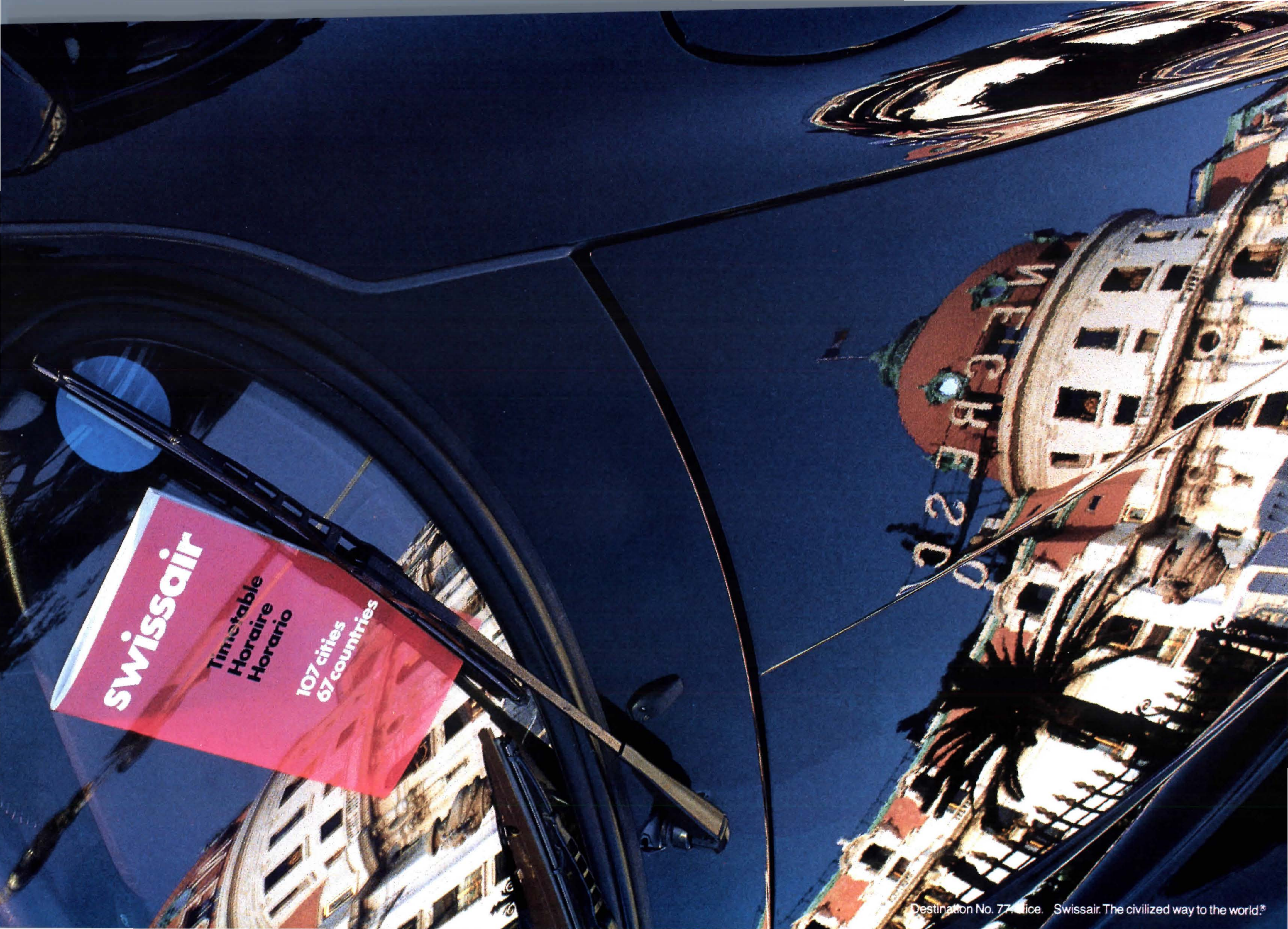
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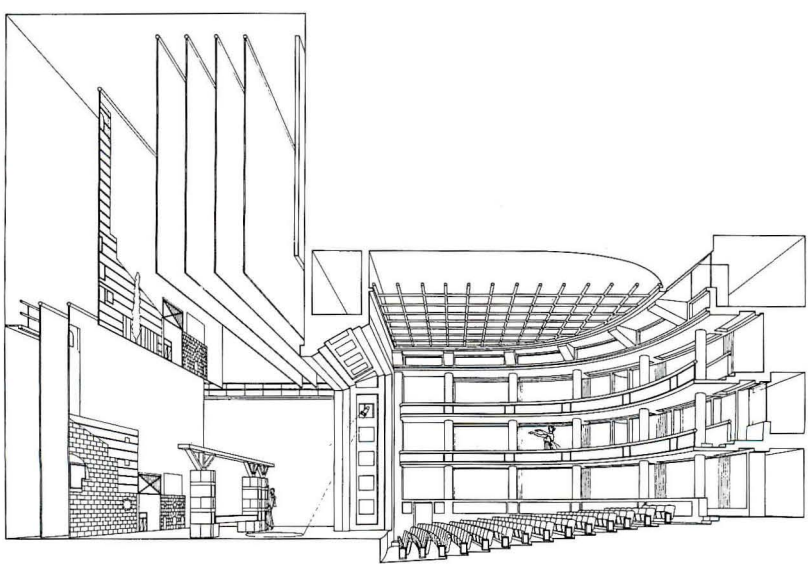
In this issue

The words "institutional building" usually conjure up rather distinct images—not of great architecture, alas, but of structures whose form has been shaped more by a client's fiscal limitations than by an architect's esthetic vision. So it is gratifying to show how the architects of the largely institutional projects featured on the following pages have found ways to address the exigencies of a patron's fiscal bottom line without abandoning their own artistic impulses. An excellent case in point is James Stirling Michael Wilford & Associates' new performing-arts center at Cornell University (drawing below and pages 98-107), a building whose civic character and abstracted historic forms triumph over a typically spare university budget. The architects of the four residential complexes that make up our Building Types Study on dormitories (pages 108-121) likewise wrestled with tight budgets—and tight building sites—producing pleasingly domestic structures notable for their contextual sensitivity and generous public gathering spaces. For the W. G. Davis Computer Research Center at the University of Waterloo, in Ontario, The IKOY Partnership has designed the most refined example to date of its signature "low-tech" look—a mode of building distinguished by the frank expression of machine-made components and systems (pages 122-127). Burr & McCallum also utilized off-the-shelf industrial materials, concrete block and corrugated steel among them, to enliven the modest offices of two Vermont oral surgeons (pages 94-97). Finally, a Japanese trade association commissioned Maki and Associates to design Tepia (pages 84-93), a computer and electronics product-display pavilion located in the heart of Tokyo. This elegant corporate museum's cubist composition, sheathed in a collage of granite, steel, aluminum, and glass, is anything but "institutional."



Perspective section through proscenium theater, Cornell University Center for the Performing Arts, James Stirling Michael Wilford & Associates

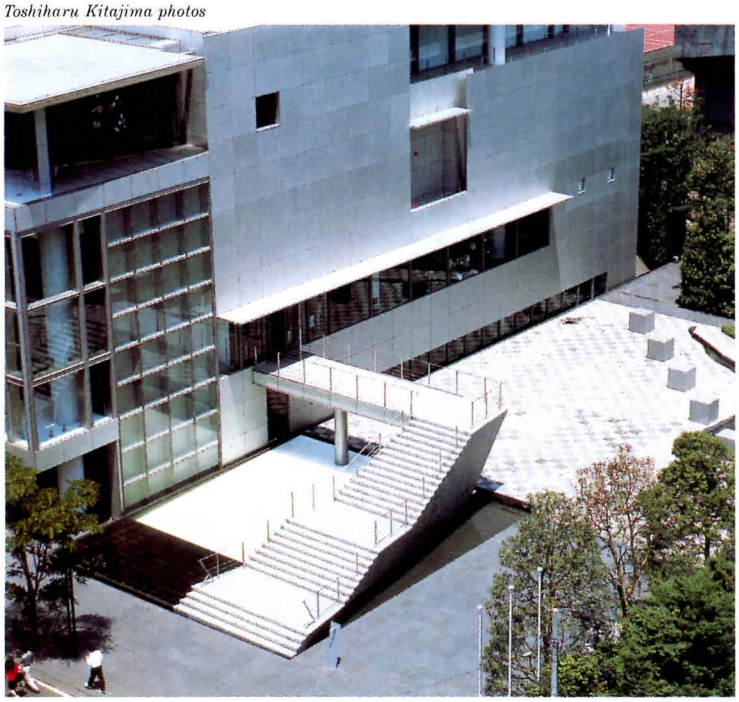
Tepia
Tokyo
Maki and Associates,
Architects

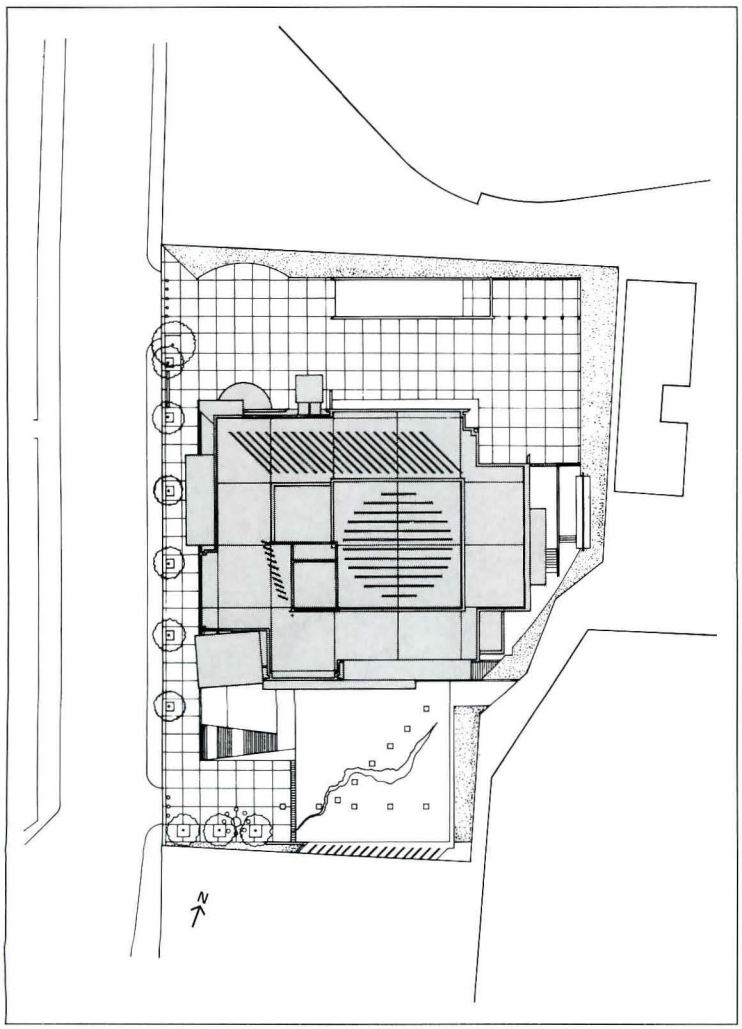

Tokyo collage

Exquisitely crafted and cooly refined, Fumihiko Maki's newest addition to the urban landscape of Tokyo reflects his continuing preoccupation with an architecture of fragmentation.

By Lynne Breslin

Toshiharu Kitajima photos





Baseball and technology represent the twin obsessions of the Japanese. Tepia, the latest building designed by Fumihiko Maki, reflects both preoccupations in its site and function. Located near two baseball stadiums in Aoyama, Tokyo's most sophisticated district, the 150,000-square-foot science center offers an introduction to the latest in computer gadgetry through futuristic exhibitions of advanced electronics and a dazzling media library. Inspired by the planar geometries of De Stijl, it represents the latest in a series of projects designed by Maki to extend and reformulate the Japanese city within a single building.

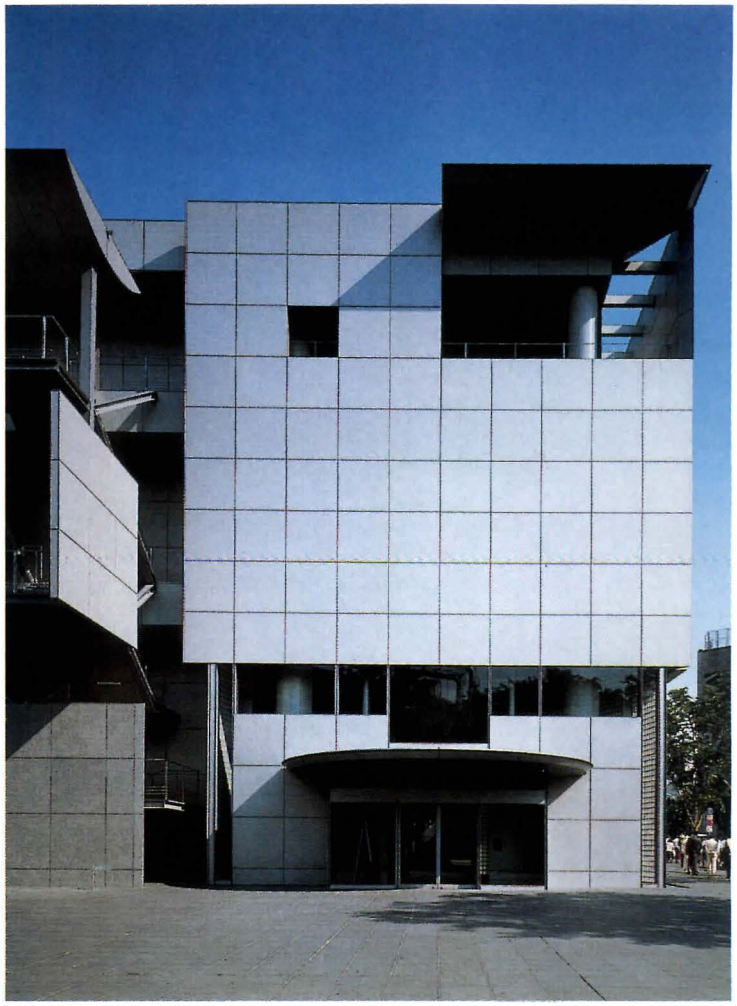
Deeply committed to the vitality of street life, a lesson well learned by the architect from his mentor José Luis Sert during the 1950s, Maki began to assert a new urbanity for Tokyo with his Hillside Terrace project in Daikanyama (1967). This multiuse complex of commercial, residential, and office spaces, at once thoroughly modern and technologically advanced, was scaled to incorporate a collage of urban spaces: passages, plazas, galleries, and atriums. A combination of medieval city, Japanese village, and American strip, Daikanyama succeeded because of its complexity and the way it integrated Japanese street life. Maki's Spiral Building (1985), a five-minute walk from Tepia, also reinterprets the city, primarily through formal rather than functional means. Its layered, fragmented facade registers the ad-hoc and often chaotic juxtaposition of buildings that define one of Tokyo's busiest streets. While the energetic collage on the exterior serves to advertise capitalist enterprise, the building's interior comprises an introspective labyrinth of functions—what Maki describes as a "private city."

Maki's genius for encapsulating the discordant fragmentation of Tokyo is never more apparent than in Tepia. The building's freestanding cube extends beyond the Spiral Building's city wall confinement, and its internal "private city" is released into a garden plaza. Surfaced in granite and pierced by a ribbon of water, the garden resembles the abstract landscape of the Japanese theater, a backdrop to a grand staircase leading from an exhibition gallery at the side of the building. This *scala regia*, or, more appropriately, *hashi*, celebrates public entry and functions much like the bridge in a *Noh* play, which actors use to enter the stage. Throughout Tepia, the boundaries between public and private functions, interior and exterior are subverted by screens of gray granite, glass, aluminum, and steel panels that seem to dematerialize the structure. As in classic Japanese buildings, the exterior material treatment is repeated within the pavilion, further reinforcing the integration of outside and inside.

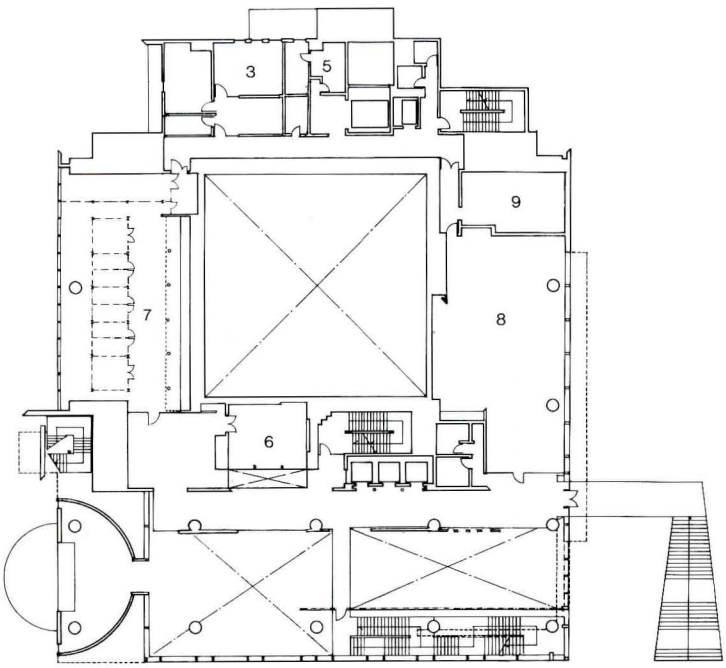
In recent times, only Carlo Scarpa has matched Maki's finesse in exquisitely detailing a building. But the extraordinary poetry achieved by the Japanese architect in joining modern industrial materials is directly related to the esthetic concept of *ma*, rather than a fascination with tectonics apparent in the works of Western Modernists. *Ma*, meaning the space in between, represents a meaningful void in Japanese architecture rather than peripheral residue. A space fragmented by *ma* is perceived as an array of two-dimensional surfaces, rather than a regularized three-dimensional geometry. This fracturing of perimeters is superbly orchestrated throughout Tepia in the masterly stratification of space, reinforcing its distinctly Japanese identity.

Lynne Breslin is a partner of the New York City-based firm Breslin Mosseri Designs and teaches at Princeton and Columbia universities.

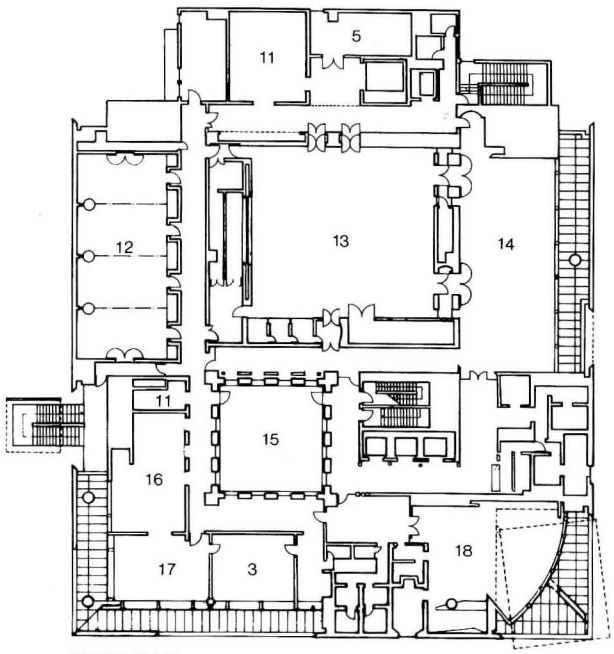
Fumihiko Maki lined up the building, plaza, and garden of Tepia along the street in a serial, rather than axial fashion (plan opposite) to maximize the site. He focused a garden on a sculptural staircase (opposite top), one of several that transform the circulation system into a showcase of passage. The simple, granite-clad volume of the pavilion assumes a dismantled appearance through the architect's skillful layering of materials and insertion of a glazed corner (top and bottom).



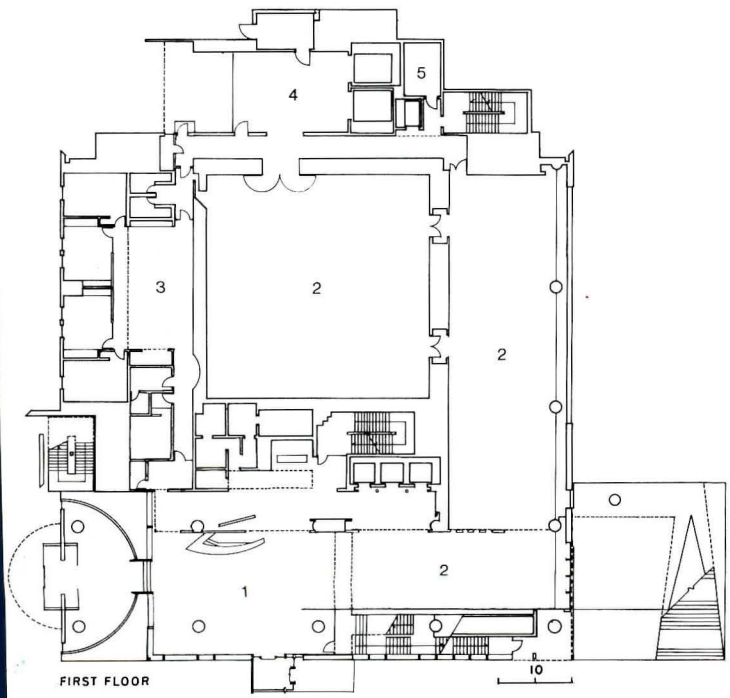
Maki treated the stairs, balconies, and circular canopy above the northern entrance (opposite top left and right) as sculptural episodes off the main building cube. On the granite-faced exterior staircase (opposite bottom), he elegantly attenuated a steel railing to emphasize the material's light weight. Throughout the science center, materials are detailed to amplify the architect's basic modular grid (plans), creating a sense of order within the destabilized composition.



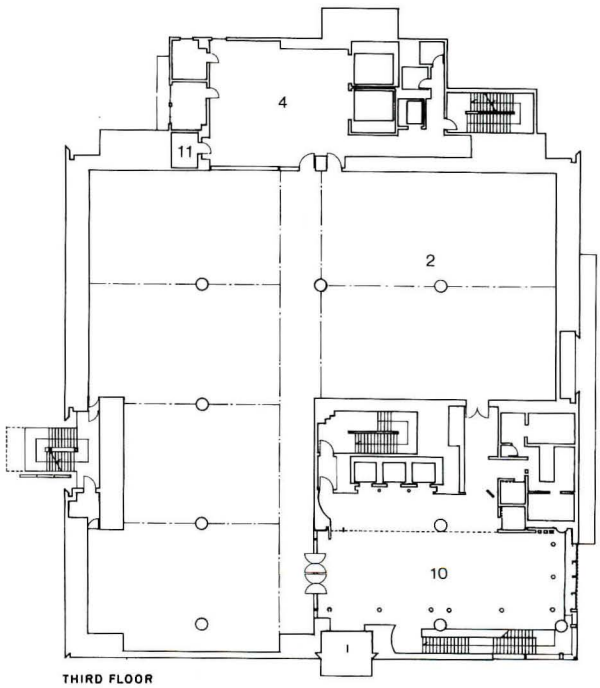
SECOND FLOOR



FOURTH FLOOR



FIRST FLOOR



THIRD FLOOR

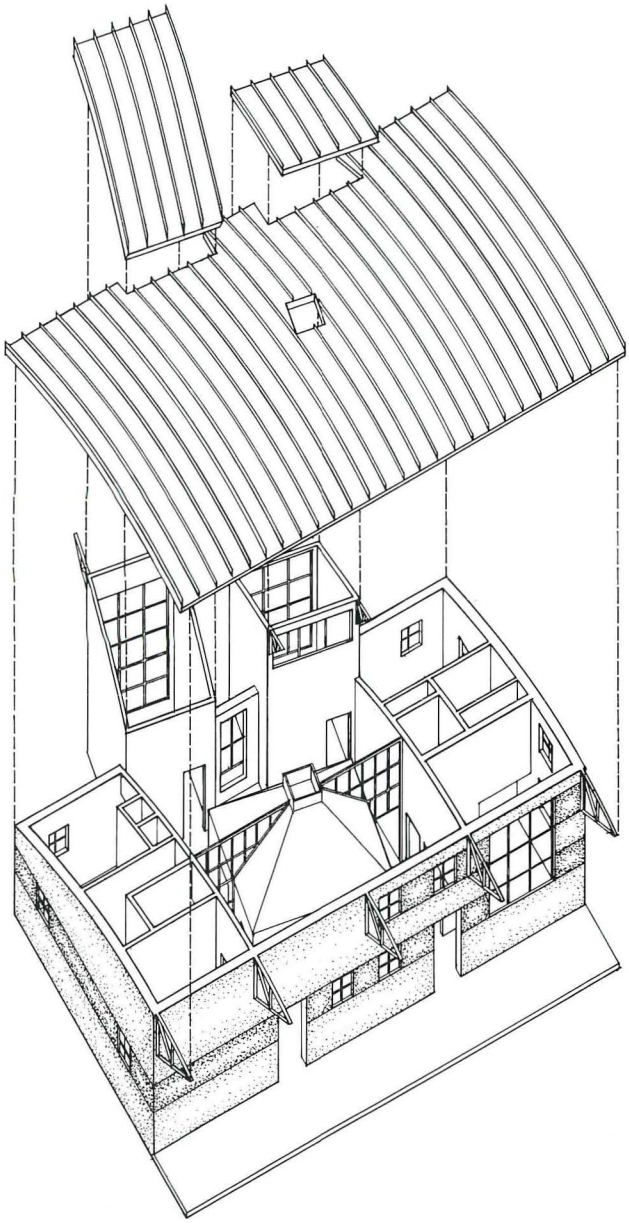
1. *Entrance hall*
2. *Exhibition*
3. *Office*
4. *Preparation room*
5. *Storage*
6. *Theater*
7. *Video library*
8. *Cafeteria*
9. *Kitchen*
10. *Lobby*
11. *Pantry*
12. *Meeting room*
13. *Conference hall*
14. *Foyer*
15. *Courtyard*
16. *Visitor dining room*
17. *Visitor meeting room*
18. *Lounge*

In the entrance lobby (below), a glass-block cylinder replicates the effect of a light-mediating shoji. This screenlike effect is similarly translated by tension-wired, structural glazing (overleaf) in the double-story gallery on the first floor. In the lobby, an information desk is fabricated from layers of sandblasted glass, and walls and floors sheathed in polished marble (opposite top). Perforated metal paneling is used extensively in the hallway leading to the media library (opposite bottom right). Throughout the interior, the décor is limited to a neutral palette of gray, taupe, black, and white that varies in texture. Even the fourth-floor foyer (bottom left) and temporary exhibition space (bottom right and opposite bottom left) maintain this chromatic order.

Tepia
Tokyo
Owner:
Machinery and Information Industries Promotion Foundation
Architect:
Maki and Associates—Fumihiko Maki, principal; Tomoyoshi Fukunaga, project manager; Hiroshi Miyazaki, project architect; Reiko Tomuro, Shuji Oki, project team
Engineers:
Toshihiko Kimura (structural); Sogo Consultants (electrical/mechanical/computer systems)
Consultants:
Kazuko Fujie (furniture); Kei Miyazaki (carpeting/color); Kijuro Yahagi (graphics/signage)
General contractor:
Joint venture of Kajima Corp., Shimizu Construction Co., and Hazama-Gumi Ltd.

Gould/Rothschild
Dental Building
Bennington, Vermont
Burr & McCallum Architects

Strong medicine



The workaday vocabulary of the Gould/Rothschild Dental Building comprises eight-inch-wide smooth and split-faced concrete block, galvanized corrugated-steel siding, steel roof trusses, and red-painted wood windows. The profile of the building's lead-coated copper roof is formed by plywood laid over curved glue-laminated beams.

Andrus Burr and Ann McCallum operate their small architectural office beneath the sloping eaves of a Queen Anne-style house, overlooking the leafy precincts of Williamstown, Massachusetts. In this quintessentially New England college-town setting, it would be easy, and no doubt profitable, to build a practice based on the Berkshires' notable farmhouse-vernacular building heritage. Burr and McCallum, however, have elected to pursue a more challenging esthetic path. Though many of their buildings exhibit a clear awareness of, and affection for, the region's agrarian history, they also bear deliberate references to something a bit less obviously romantic—the abandoned red-brick and metal factories, situated in nearby cities like North Adams and Pittsfield, which to Burr seem "especially beautiful in their current state of dilapidation."

Just over the Vermont border, in Bennington, the architects have designed their most striking homage yet to the visual power of imagery derived from American industry—a 1,400-square-foot medical office building commissioned by two oral surgeons who sought a change from the dropped ceilings and uninspired windowless spaces of their previous office. Burr and McCallum responded with a 25- by 50-foot concrete-block box which, despite its modest size and prosaic material palette, makes a strong statement amid the unassuming ranch houses and doctors' offices that surround the Southwestern Vermont Medical Center.

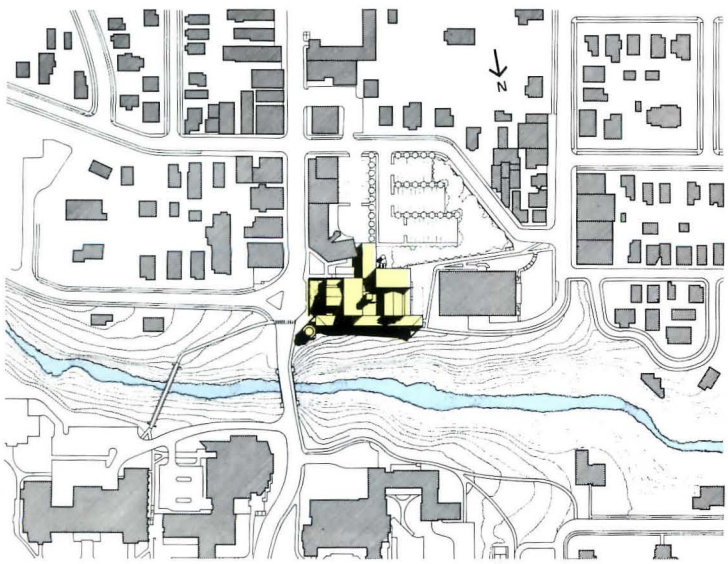
The building's most prominent features—two corrugated-steel appendages housing a pair of operating rooms and, inside, a freestanding hipped-roof receptionist's pavilion—are eccentrically offset elements in an otherwise orthogonal parti (axonometric left). In addition to establishing an interior spatial hierarchy—"as soon as you skew something," notes Burr, "it becomes more important in the plan"—the introduction of a diagonal allowed the architects to create four trapezoidal public spaces that appear more inviting than conventional corridors (plan page 96). Other concessions to the psychological well-being of patients include a glass wall that bisects the interior, acoustically isolating the operating rooms from the waiting room and post-op area, and a counterclockwise circulation plan that enables groggy, swollen-jawed patients to exit through their own door without having to pass through the waiting room. *Paul M. Sachner*

Burr & McCallum investigates the visual potential of industrial forms and materials on an unlikely building type.

Two 18-foot-high operating wings (below and opposite) are sheathed in galvanized corrugated steel, riveted to a wood-stud frame. Full-height north-facing window walls in the wings allow patients calming views of an adjacent stream. A similar glass wall forms an interior acoustical barrier between the operating-room area (bottom) and waiting and post-op areas—an important feature, observes Andrus Burr, given that "people under anesthesia sometimes make quite a bit of noise."

Gould/Rothschild Dental Building
Bennington, Vermont
Owners:
Drs. Roger Gould and David Rothschild
Architect:
Burr & McCallum Architects—Andrus Burr, partner-in-charge; Ann McCallum, David Shaughnessy, Martha Montgomery
Consultant:
Healthco (dental equipment)
General contractor:
Erwin Mattison

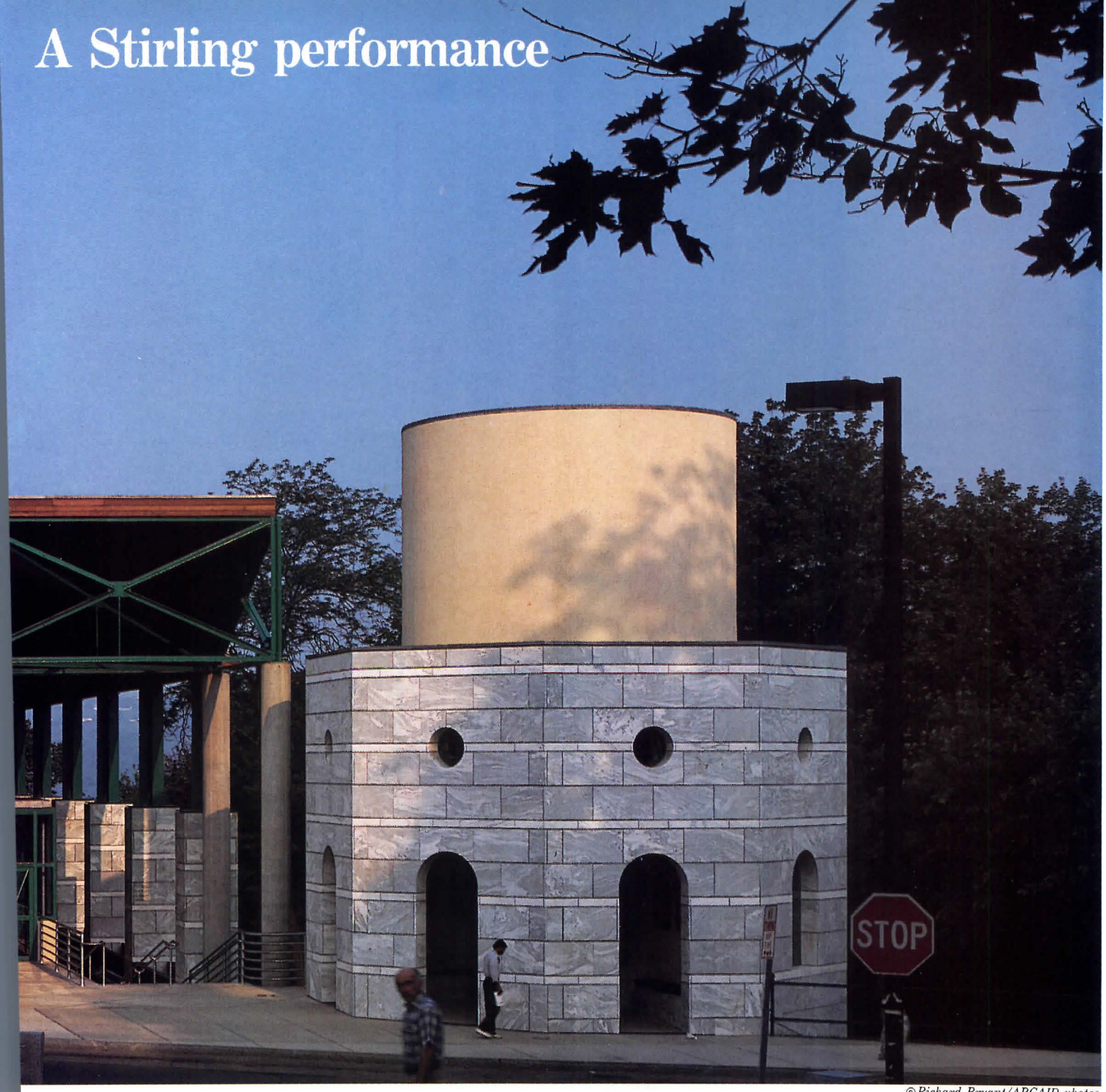
Cornell University Center for the Performing Arts
Ithaca, New York
James Stirling Michael Wilford and Associates,
in collaboration with Wank Adams Slavin
Associates, Architects



American universities have a curious affinity for the work of British architect James Stirling. Over the past decade, the architect and his partner Michael Wilford have completed a school of architecture for Rice University and a museum for Harvard, and last year were commissioned to design a science library for the University of California at Irvine [RECORD, August 1989, page 43]. The latest addition to this roster of academic institutions is the Cornell University Center for the Performing Arts, which opened last April. Like Stirling Wilford's recent projects, the $16.8-million complex reflects the firm's preoccupation with abstracted historic forms. In this case, the architects drew upon images from Renaissance Italy in accommodating a dense program of theaters, studios, classrooms, and offices on a narrow lot wedged in between Cascadilla Gorge and Collegetown, a low-scale commercial district south of the main campus (site plan).

As with the schemes for the Stuttgart Staatsgalerie and Clore Gallery, Stirling Wilford triumphed over the site's given awkwardness by devising an ingenious circulation pattern that integrates the building with its surroundings. Rather than extend

A Stirling performance



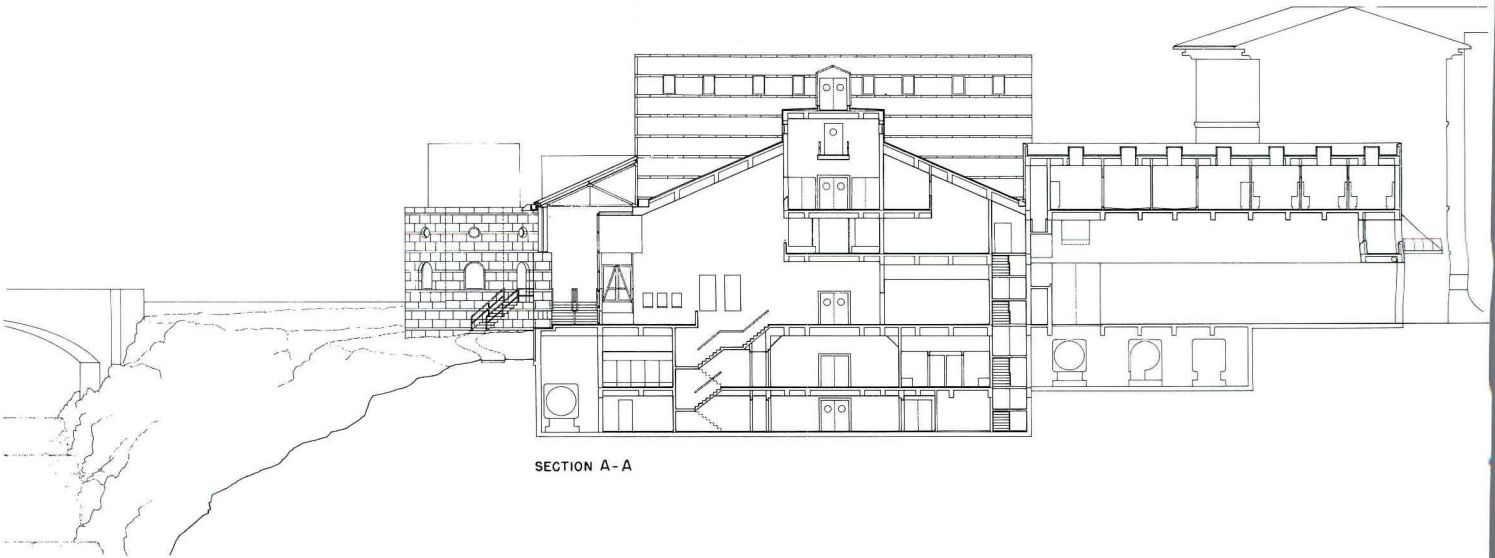
©Richard Bryant/ARCAID photos

the structure to the street line, the architects recessed its bulk behind a plaza, punctuating the corner nearest the campus with a freestanding octagonal pavilion containing an information center, bus-stop shelter, and offices for visiting performers (above). On the side of the building facing the gorge, they joined the clustered volumes to a grand, steel-trussed loggia that parallels an indoor ramp and an existing footpath along the edge of the chasm. It is this two-sided orientation that is the real genius of the center's design. The loggia, which actually is the building's front facade, focuses attention on the wooded beauty of the gorge and reinforces pedestrian patterns on campus. By placing the entrance in the middle of this long passageway, the architects were able to utilize the steeply sloping site to full advantage, stacking the building's various functions on six levels within a small footprint.

The gabled street elevation of the performing arts center is also pleasing in scale and detail, activated by a projecting bay window that provides glimpses of dancers whirling around their studio. But the building's link to College Avenue is severed by a remote, walled-in plaza, which even Stirling admits should have included steps for sitting and lounging (the benches of his pergola are uncomfortably high). The parts of the building most lacking Stirling's strong hand, however, are the interiors. Although the proscenium theater in itself is an elegant, intimate space, and displays a clever use of materials, the internal organization of the center is buried in a confusing maze of corridors.

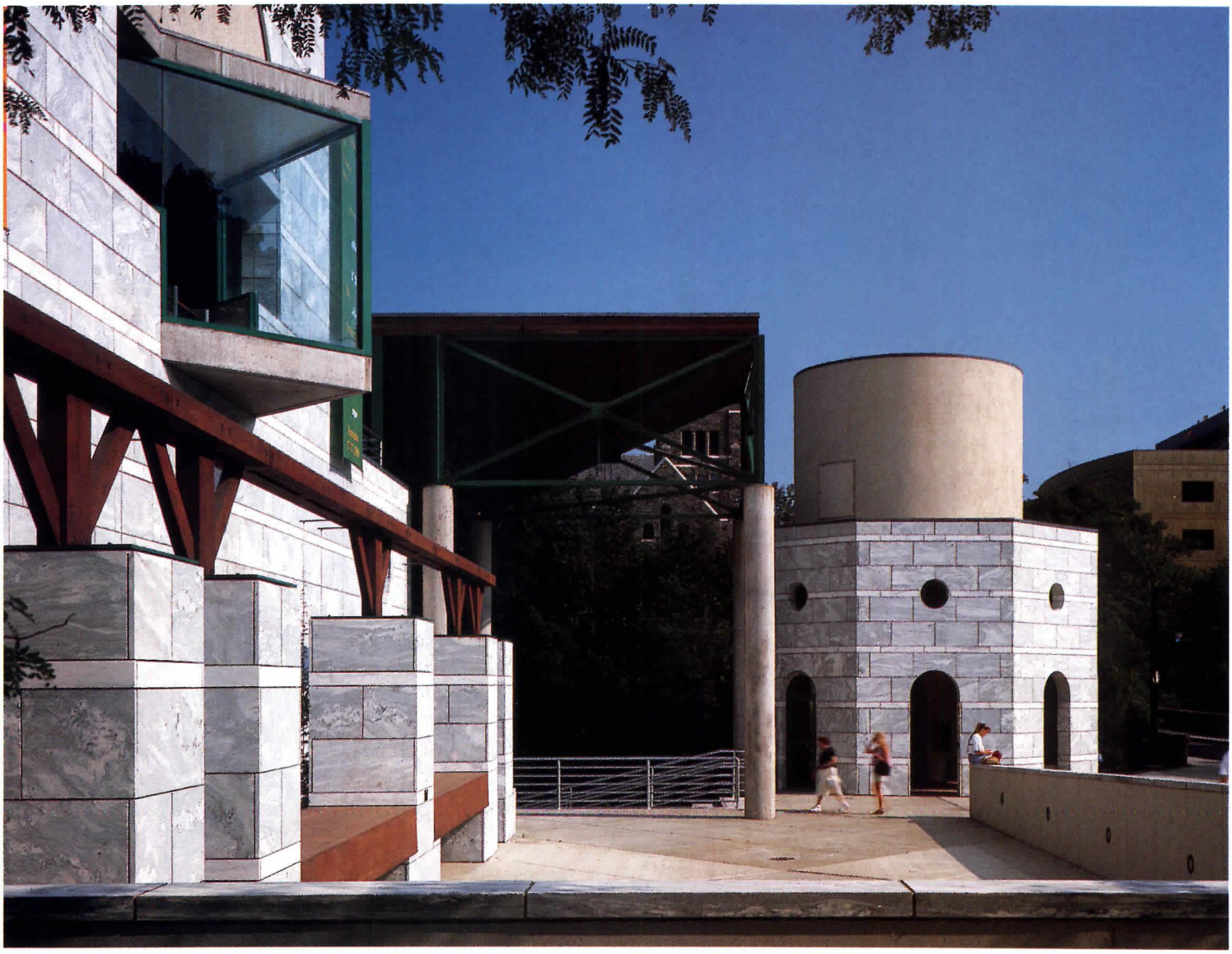
Despite these flaws, Stirling Wilford has created a striking urban presence on a modest budget and scale. In stressing the building's two-fronted identity, the architects sheathed the most prominent volumes in a thin veneer of Vermont marble, detailed with their signature open joints, and simply rendered the rear elevations in stucco. The center's light-colored, spartan neoclassicism contrasts with the dark masonry of nearby Victorian structures, yet includes elements sympathetic to the campus architecture, such as a campanile (appropriately housing an elevator), which echoes the many towers dotting the town's skyline. Its captivating civic spirit explains why American academe is attracted to Stirling Wilford and keeps coming back for more. *Deborah K. Dietsch*

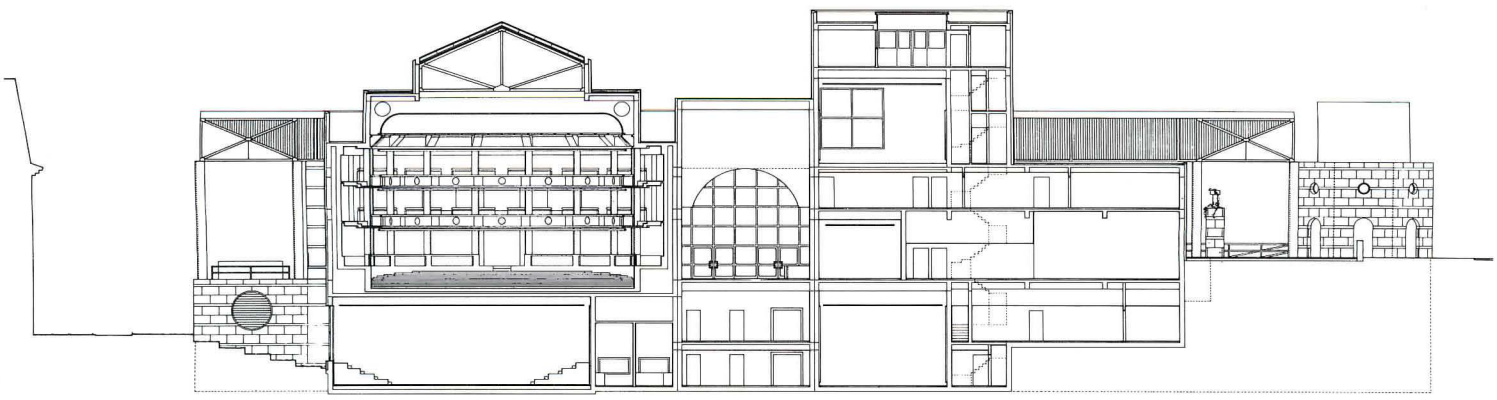
Stirling Wilford designed the Cornell University Center for the Performing Arts to recall the forms of a marble-sheathed Italian hill town (left), including a basilica, bell-tower campanile, and baptistery. At the street corner nearest the campus, the architects anchored the complex with a two-story octagonal pavilion (below and opposite). Its ground-floor arcade shelters a waiting area for bus riders and its upper floor houses offices for visiting artists. The stuccoed drum at the top of the structure was originally



SECTION A-A

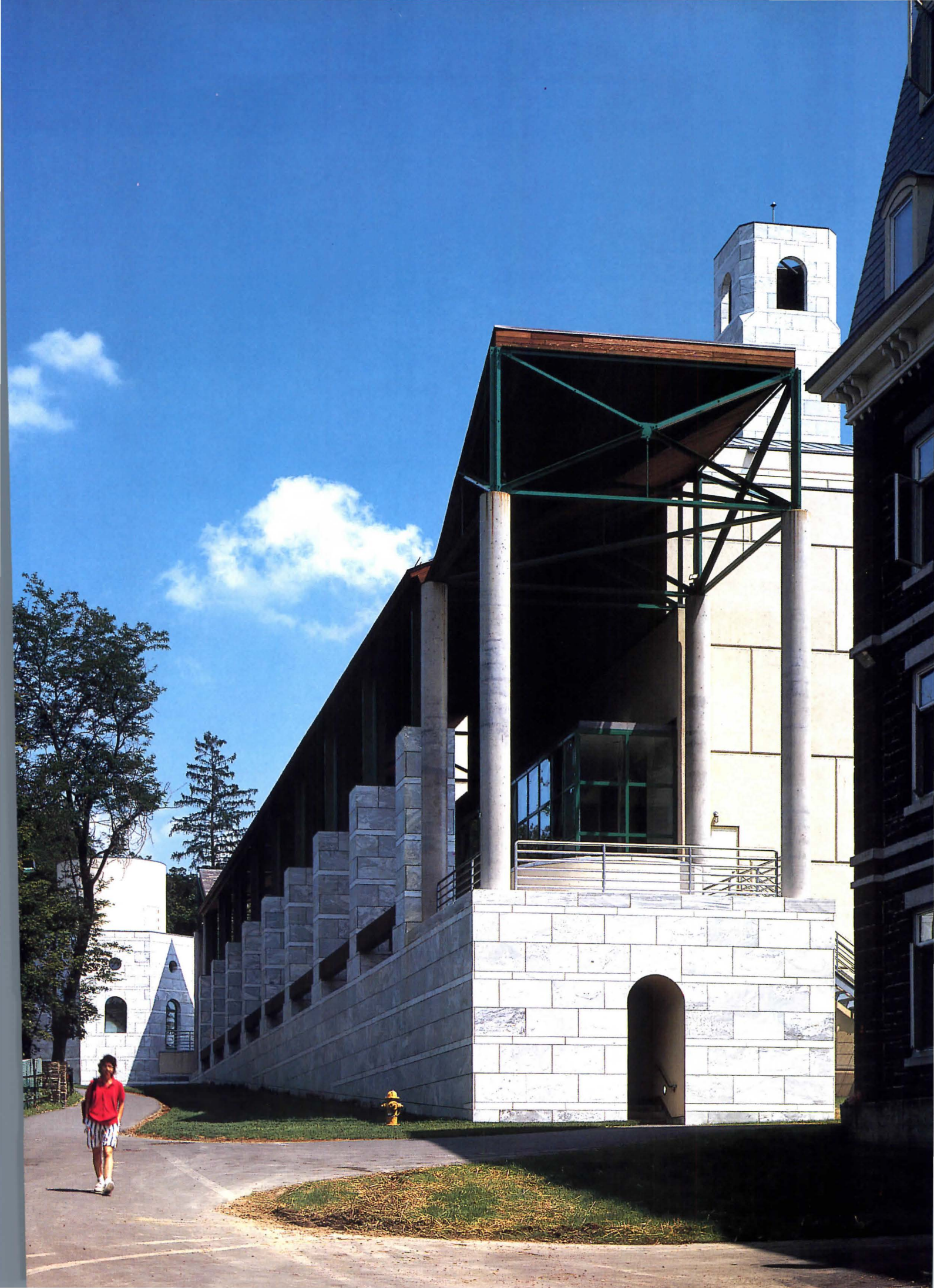
intended to be encircled by an electronic billboard. The main functions of the Center are contained within clustered volumes recessed behind a wall-enclosed plaza (below and opposite), which is flanked by a timber-framed pergola and concrete-columned loggia leading to the entrance (below). By pushing the building to the rear of the site, Stirling Wilford was able to arrange the complex program of theaters, studios, offices, and classrooms into a variegated section that conforms to the existing contours (bottom).

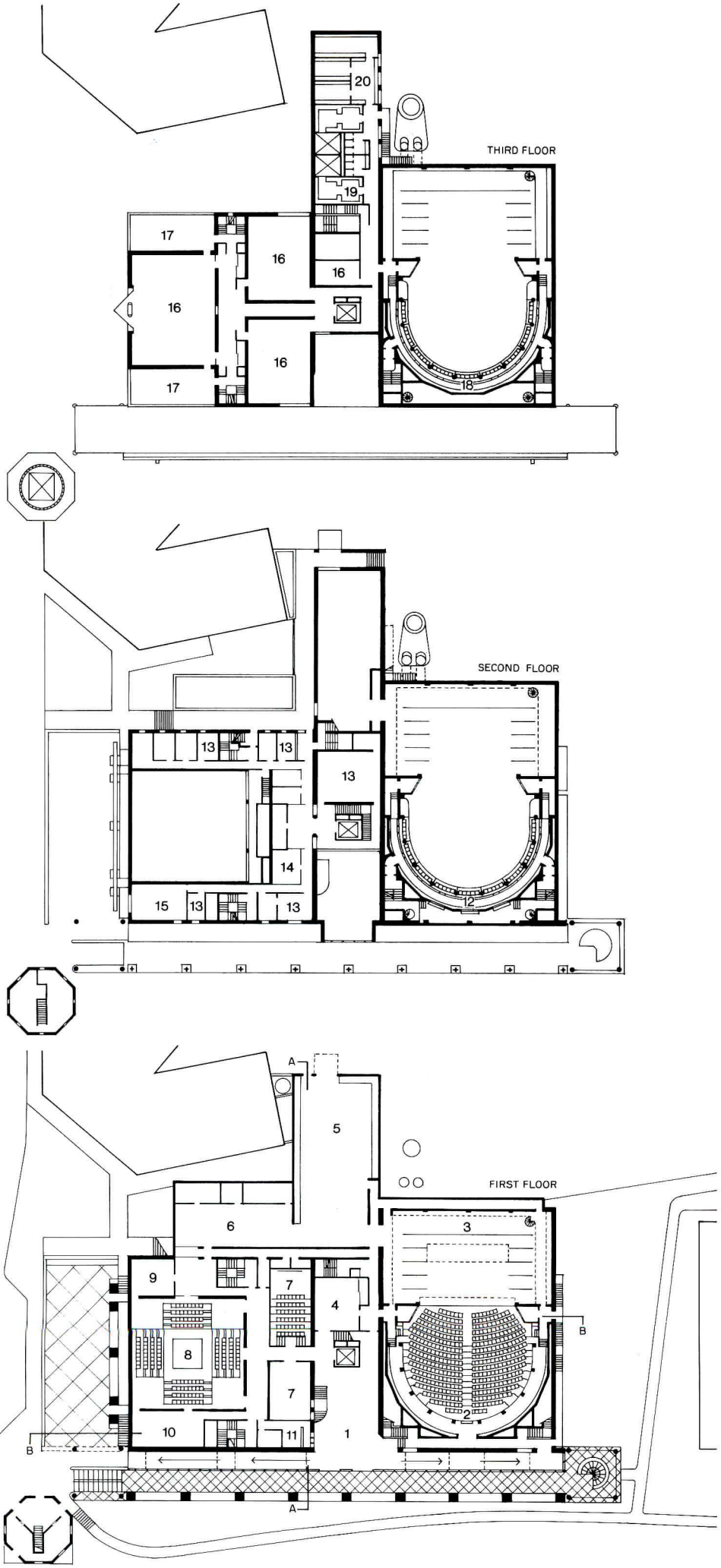




SECTION B-B

Stirling's Modernist roots are most evident in the large-scale loggia that stretches from the side of the plaza (top) to Cascadilla Hall (opposite), following an existing footpath. "It subdues the varied articulation of the building's functional volumes," explains the architect. The loggia is elevated on a marble-covered podium that contains a stair at its western end leading to a parking structure (opposite). Its steel trusswork rests on concrete columns and supports a soffit of stained redwood planks covered with Vermont slate. The outer edge of the loggia is defined by square posts clad in the open-jointed marble panels (left and right above) that also sheathe the pavilion, bell tower, and gabled street elevation (top). Due to budgetary constraints, the two rear facades adjacent to the garage were covered in scored stucco (opposite), which Stirling hopes might be decorated with a trompe-l'oeil landscape painted by muralist Richard Haas.



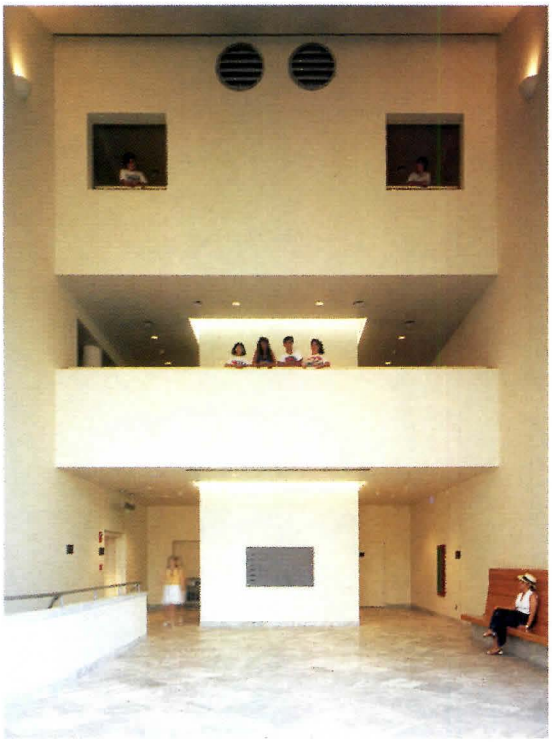


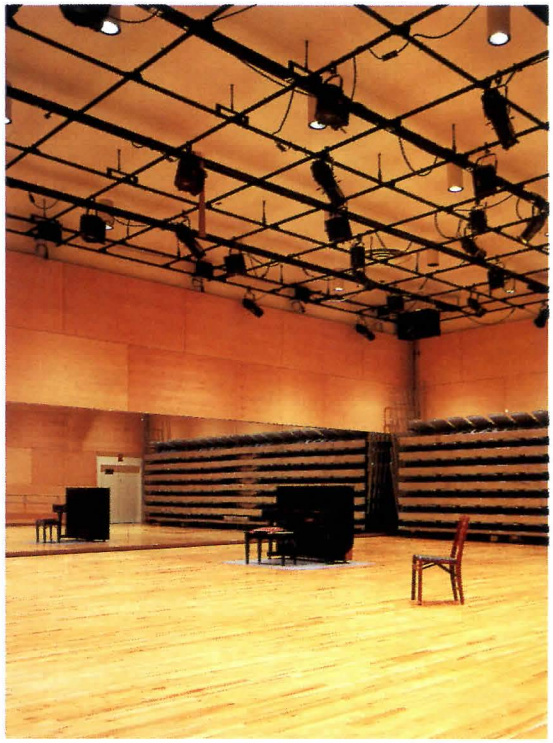
The entrance to Cornell's new performing arts center is contained within an arched opening in the glass-enclosed portion of the loggia (opposite). It adjoins a three-story-high lobby located in the center of the building that serves as the foyer to the building's main performance spaces: a horseshoe-shaped proscenium theater (right in plans) and the Class of 1956 Flexible Theater (left in middle and bottom plans), which can be adapted for a variety of seating and activities. At the rear of the building, a block containing production facilities for scenery and props provides truck access to the pair of theaters. Surrounding the flexible theater are studios and classrooms for Cornell's theater, dance, and film departments (the music department is located elsewhere on campus). "We used the smaller teaching spaces and offices as a kind of stuffing between the major performance spaces in order to separate them acoustically," explains Michael Wilford. On the third floor, a dance studio (left in top plan) is flanked by outdoor terraces and a triangulated bay window projecting over the plaza.

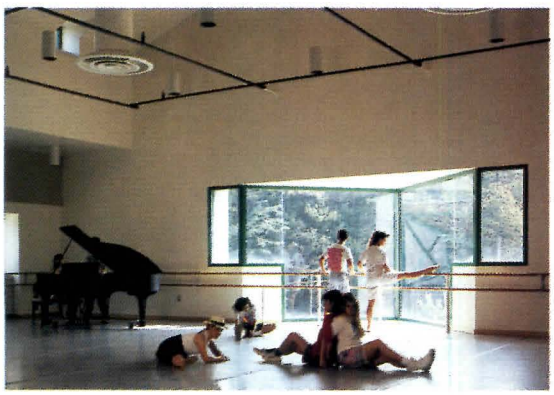
1. *Foyer*
2. *Proscenium theater*
3. *Stage*
4. *Greenroom*
5. *Scenery shop*
6. *Welding/properties shop*
7. *Classrooms*
8. *Flexible theater*
9. *Electrical shop*
10. *Lighting lab*
11. *Box office*
12. *First balcony*
13. *Office*
14. *Archive*
15. *Conference room*
16. *Studio*
17. *Terrace*
18. *Second balcony*
19. *Student lockers*
20. *Dressing rooms*


EXIT
EXIT

The most impressive space of the performing arts center is an intimate 456-seat proscenium theater (opposite) with an adaptable thrust stage (bottom right). In the main lobby, a freestanding elevator shaft is bridged by a reception area off administrative offices overlooking the three-story entrance hall (below left). The ten performance spaces within the building include one dance studio under the proscenium theater (below right) and another on the third floor (bottom left), which is oriented to the street.

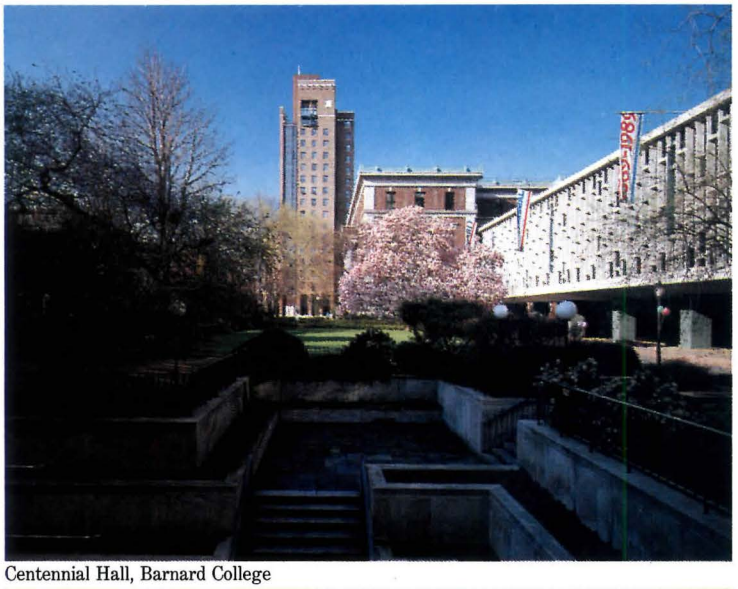






Cornell University Center for the Performing Arts
Ithaca, New York
Architect:
James Stirling Michael Wilford & Associates—James Stirling, Michael Wilford, partners-in-charge; Robert Dye, Robert Kahn, Walter Nägeli, Ulrike Wilke, project team
Associate architect:
Wank Adams Slavin Associates—George Gianakopoulos, partner-in-charge; Stephen Bono, project architect; Joan Nix, Leonard Franco, project team
Engineers:
Severud Associates (structural); Wank Adams Slavin Associates (mechanical/electrical)
Consultants:
Artec Consultants Inc. (theater planning/acoustics); Jerry Kugler Associates (exterior lighting); Works Inc. (signage)
Construction manager:
McGuire and Bennett Inc.
Contractors:
Tougher Industries Inc. (mechanical); Mato Electric Co. (electrical)

School ways



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Centennial Hall, Barnard College

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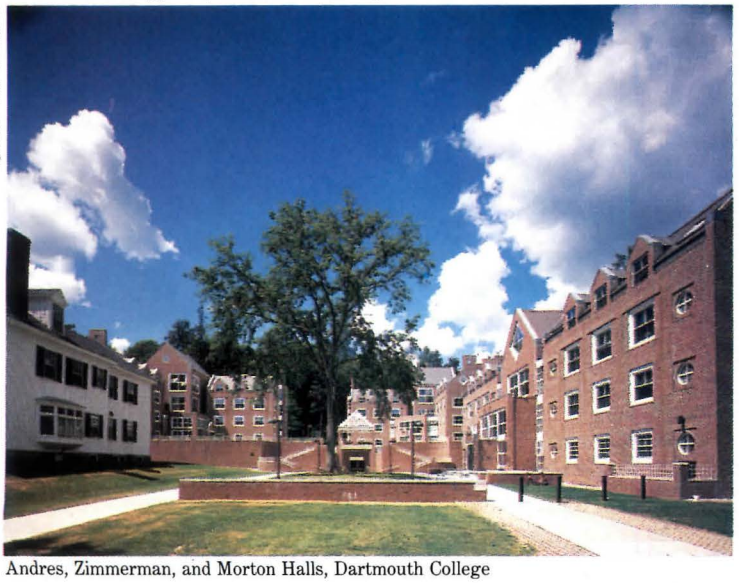
Class of 1927/Clapp Hall, Princeton University



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Andres, Zimmerman, and Morton Halls, Dartmouth College

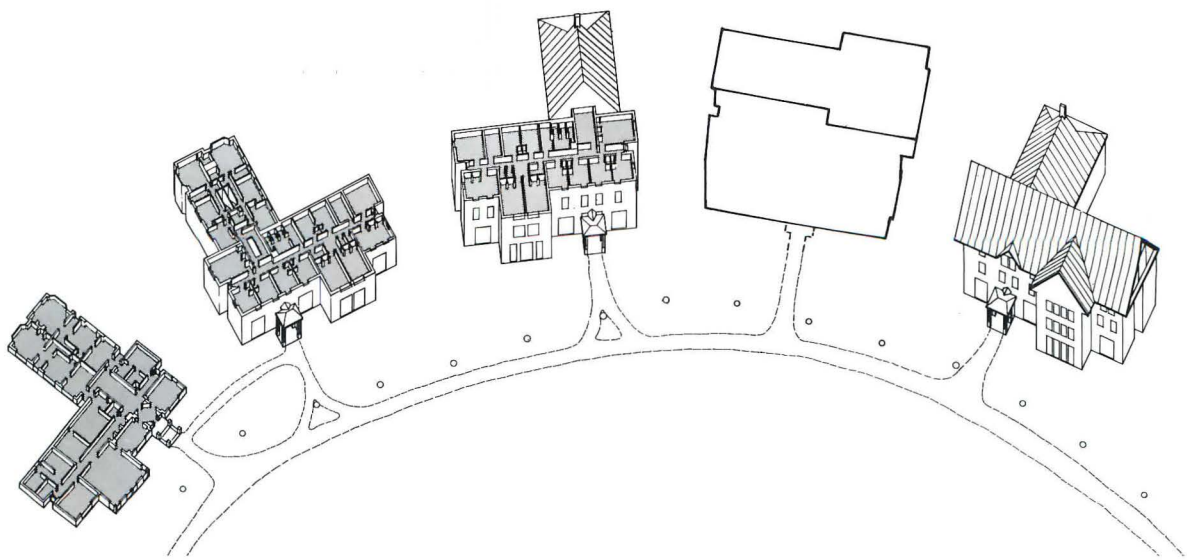
Being the new kid in class is never easy, especially when the school in question is steeped in tradition. Such was the problem facing the four dormitories featured here. Somehow each had to fit into an ivy-leafed context without losing a sense of its own identity. While three of the dorms evoke the materials and forms of earlier architecture, they establish roots to their surroundings more through orientation to outdoor space than through any use of gables, bricks, or columns. By defining important outdoor rooms and reinforcing their campuses' plans, all of these projects earn places at the head of the class. At the Lawrenceville School (opposite), Short and Ford followed in the footsteps of Olmsted, designing a row of dorms that look onto a crescent-shaped lawn. Barnard College in New York had a radically different setting, but James Stewart Polshek made sure his high-rise dorm (top left) gave definition to an edge of the campus's main lawn that had long been a bit ragged. Koetter, Kim & Associates created a new outdoor space for Princeton University, using its dorm (middle left) to divide an amorphous quadrangle into two more clearly formed ones. Herbert Newman's trio of dormitories at Dartmouth College (bottom left) also gives form to a set of carefully conceived landscaped spaces, while introducing the residential college model found at other Ivy League institutions to Dartmouth. These projects break through the often stodgy confines of earlier dormitory architecture and provide greater variety in living arrangements—from the standard single or double room to multibedroom suites. While even small intrusions can throw communities like college campuses out of kilter, the dormitories featured here enhance, rather than disrupt, the rhythms and patterns of their settings.

Clifford A. Pearson

tudent Houses, Lawrenceville School

©Michael Moran

To help define an outdoor space known as The Crescent, the architects placed the dorms (below) closely together so they would "read as a wall of buildings," explains William H. Short. Short and Ford worked with the late landscape architect Philip Winslow, who had established a reputation as an Olmsted expert, to integrate the new buildings into a campus plan begun by Olmsted (opposite bottom). Interiors, such as a lounge (opposite lower right), were designed by Dian Boone for flexibility, casual charm, and easy maintenance.



Geometric progressions

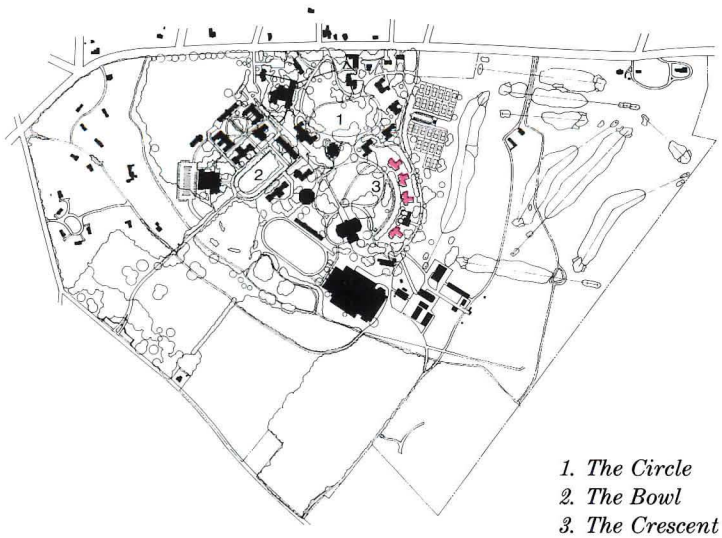
Student Houses
The Lawrenceville School
Lawrenceville, New Jersey
Short and Ford, Architects

It began with The Circle, a joint project of Frederick Law Olmsted and Peabody and Stearns. Four decades later Delano and Aldrich added The Bowl. And now, thanks to Short and Ford, there is The Crescent. Such geometry has served the Lawrenceville School well during the past century as key outdoor spaces around which buildings are placed. Endowed with memorable names, these landscaped areas act as magnets holding the New Jersey prep school's sprawling campus together.

Working as planners, Short and Ford tied the Olmsted portion of campus to a less clearly defined area anchored by a modern dining hall. As architects, the firm reinterpreted the Queen Anne style used by Peabody and Stearns to create a set of four dormitories that modulate the heaviness of masonry surfaces with skeletal wood elements such as entry pavilions and bay windows.

The dorms, which accommodate girls admitted after Lawrenceville went co-ed in 1987, continue the school's tradition of "houses"—residences that bring students together with faculty masters. Each of the buildings provides single and double rooms for 35 girls and apartments for two masters and their families. The four dorms share the same floor plan, although two are flipped, and each features slight differences in fenestration. A parlor, coat room, and lounge extend along the ground floor, while dorm rooms occupy the second and third floors. The apartments comprise a two-story wing with access for students from the common rooms and private entrances on the side of the building for the masters.

While clearly influenced by the massing, materials, and roof pitches of Peabody and Stearns' buildings on The Circle, the new dorms serve up a more abstract Queen Anne style that is quite modern in its handling of solids and voids, and in the way it combines brick, painted metal, and shafts of glass. "We wanted to play with a mix of introverted elements like dark brick and extroverted ones like open pavilions and bay windows," explains Michael Farewell, one of the principals-in-charge of the project. The dorms don't feign age, but sit behind a line of mature oaks as if they had been there awhile—a neat little trick executed with the help of the late landscape architect Philip Winslow, an Olmsted expert who kept the spirit of the campus's original plan very much alive. *C.A.P.*

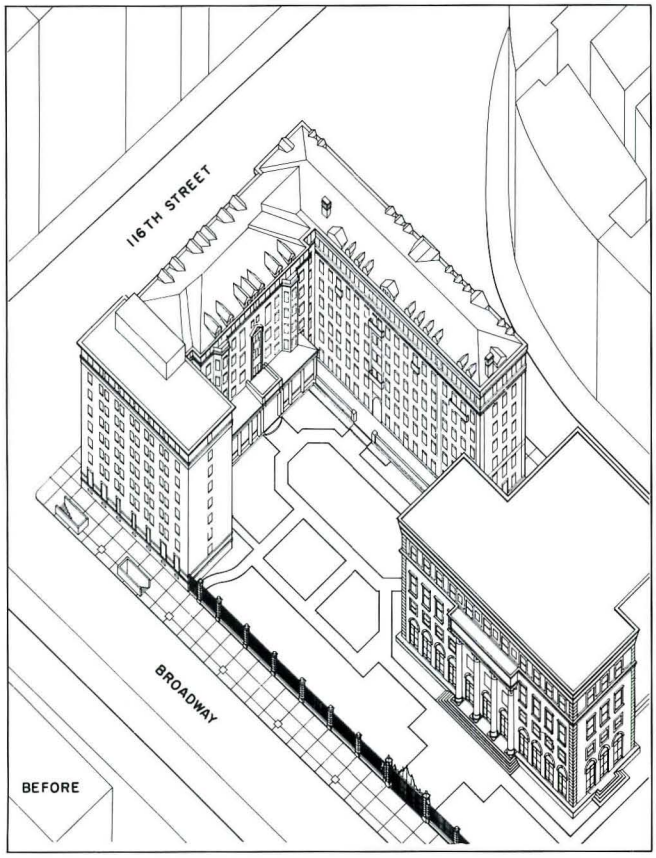


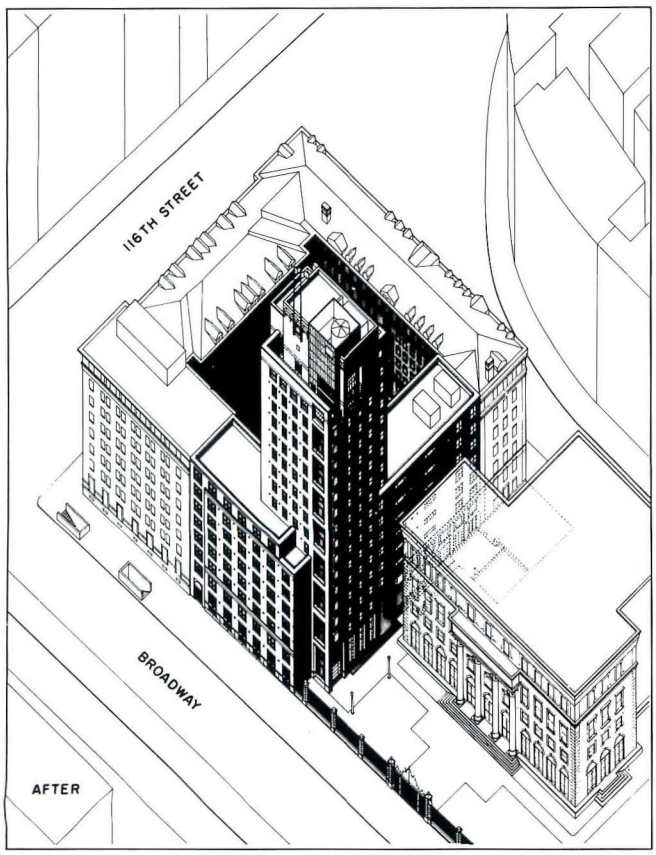
1. *The Circle*
2. *The Bowl*
3. *The Crescent*

Student Houses
The Lawrenceville School
Lawrenceville, New Jersey
Architect:
Short and Ford Architects—William H. Short, Charles A. Farrell, Michael Farewell, James A. Gatsch, principals-in-charge; James Repka, Mary Horst, Gerry Meagher, David Burton, Marta Anez-Spangler, Alison Baxter, project team
Engineers:
Blackburn Engineering Associates (structural); Kallen and Lemelson (mechanical/electrical); Princeton Junction Engineering (civil)
Consultants:
Philip N. Winslow (landscape design); Dian Boone (interior design)
Construction manager:
Lehrer McGovern Bovis of New Jersey

Centennial Hall
Barnard College
New York City
James Stewart Polshek and
Partners, Architects

Holding court





It may be a high-rise dorm at a prestigious women's college, but Centennial Hall at Barnard is no ivory tower. For instead of isolating itself from its often raucous Morningside Heights surroundings, the building makes significant urban gestures to its own compact campus and to the larger campus of Columbia University across the street.

Making peace with one's context is certainly the accepted approach in architecture these days. But James Stewart Polshek and Partners must have been sorely tempted to buck the trend with this project. They faced not only the intrusive nature of a major urban boulevard named Broadway, but also a discordant mix of building styles ranging from stately Renaissance Revival to insipid Modern box. Polshek's first decision was to carefully insert the 400-bed dorm into an open area at the 116th Street end of the school's major outdoor space, Lehman Lawn (axonometrics left). This approach would put the new building in the company of other dorms and solidify the residential character of this part of campus. It also would allow the architects to turn a poorly defined garden open to the noise of Broadway into an enclosed courtyard and to establish the strong southern edge that Lehman Lawn always needed.

Polshek organized the building into two major parts: an L-shaped mid-rise that conforms to the massing of the existing dorms and a 17-story tower that breaks free from its neighbors and stands as a handsome symbol of a college celebrating its 100th year. Both elements are dressed in Flemish-bond brickwork to tie them visually to the older buildings on campus and to those across the street at Columbia. The new building also respects the street wall established along this portion of Broadway, rising seven stories before stepping back ever so slightly for the eighth floor. By placing the tower at the corner of the complex instead of at the center of one facade, Polshek minimized its shadow on the courtyard and maximized its impact as a campanile on the lawn. In assembling a tower with planes that are rectangular and vertical, solid and floating, Polshek created a design that recalls the work of one of his favorite architects, Eliel Saarinen.

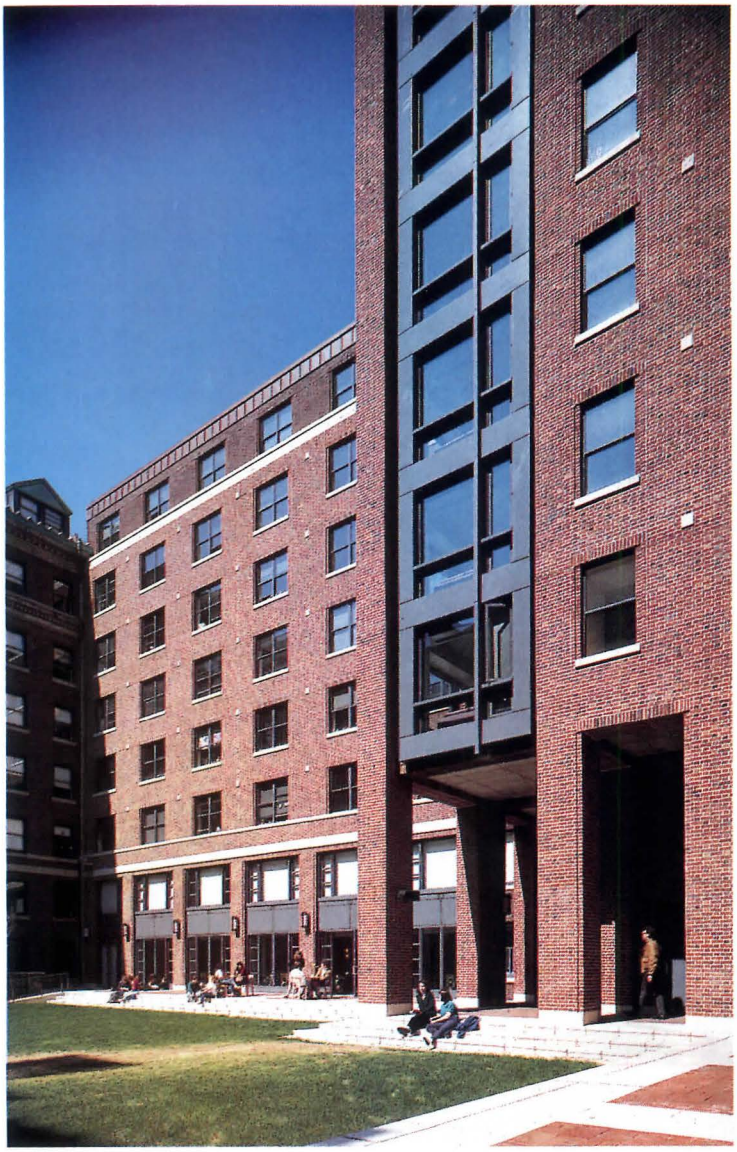
From Broadway, Centennial Hall is a brick composition punctured by various openings: standard-sized windows for dorm rooms, two-story windows for lounges and an ironwork arch on the ground floor. From Lehman Lawn, however, the building turns into an essay in layering; slices of masonry, separated by a shaft of metal and glass, emphasize the vertical and make the tower seem taller than its 17 stories. On both facades the architects clearly distinguish public spaces from private ones, using metal and glass to set the dining room and lounges apart from the brick and stone-clad dorm rooms.

Inside the building, dorm rooms spread out in L-formations with two lounges—one overlooking the lawn, the other the courtyard—on each floor. On the ground floor, a two-story dining room faces the courtyard, while at the top of the building two different meeting rooms offer spectacular views of the city and beyond. *C.A.P.*

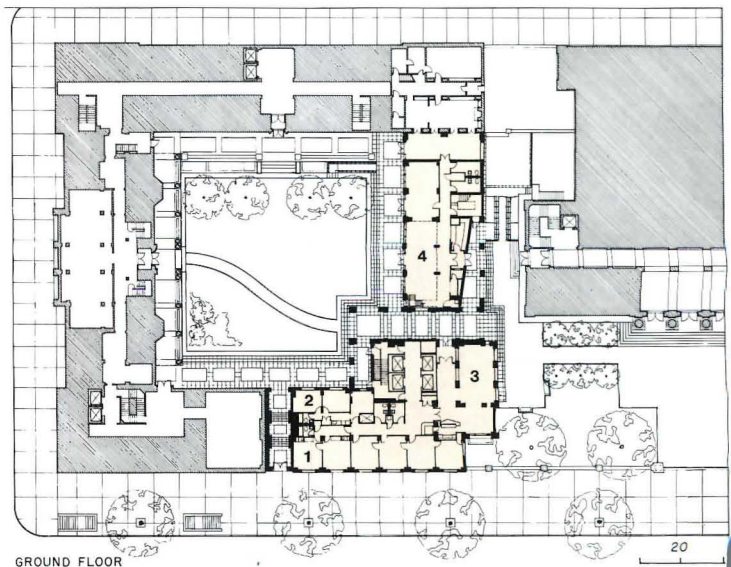
Jeff Goldberg/ESTO photos

The new courtyard balances verticals with horizontals, while steps form a transition from building to open space (left). A nonstructural iron arch on the Broadway facade serves as a secondary entrance to the courtyard and is aligned with the columned entry to an older dorm (right). A first-floor lounge looks onto Lehman Lawn (opposite top left), while a 17th-floor meeting room presides over the Hudson (opposite bottom left). The yellow in the café was inspired by a similar color at Monet's home at Giverney.

Centennial Hall
Barnard College
New York City
Architect:
James Stewart Polshek and Partners Architects—James Stewart Polshek, design partner; Joseph L. Fleischer, managing partner; Richard M.



1. *Office*
2. *Guest*
3. *Lobby*
4. *Café*
5. *Dorm room*
6. *Lounge*
7. *Bathroom*

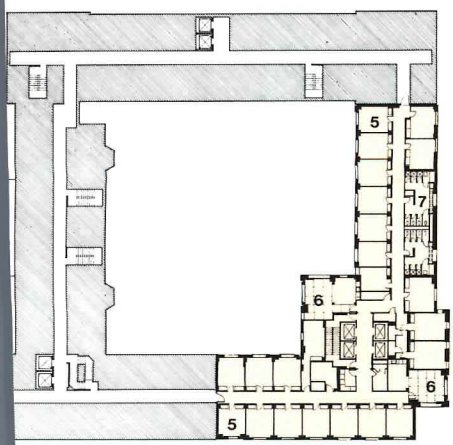


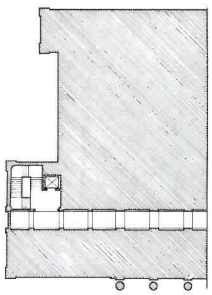
Olcott, design associate; Duncan Hazard, managing associate; Joanne Sliker, project manager; Jihyon Kim, job manager; Charmian Place, interior design; Uday Dhar, Kevin McClurkan, Blake Middleton, Holly Ross, Annette Rusin, Michael Woods, technical staff

Engineers:
The Office of Irwin G. Cantor (structural); Cosentini Associates (mechanical/electrical)

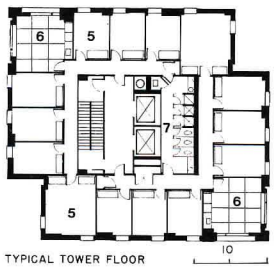
Consultants:
Innocenti & Webel (landscape design); Cline Bettridge Bernstein (lighting)

General contractor:
Tishman Construction Corporation





YPICAL MID-RISE FLOOR

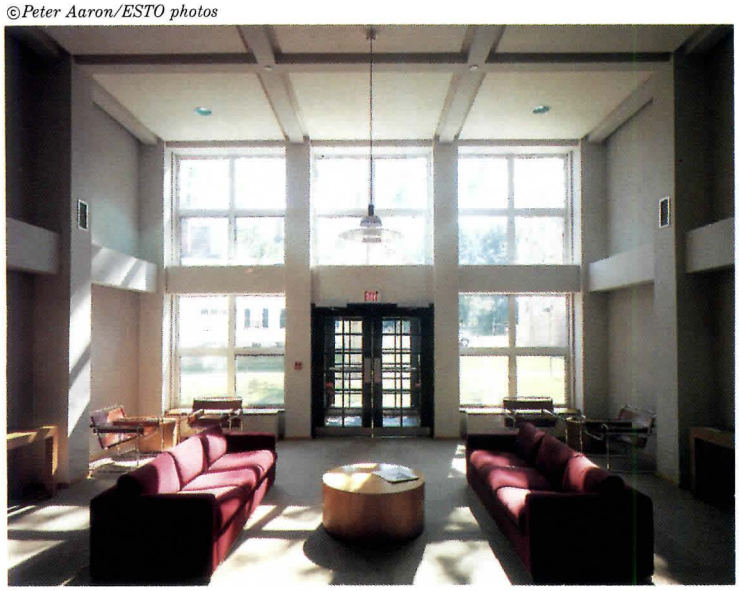


TYPICAL TOWER FLOOR

Andres, Zimmerman, and
Morton Halls
Dartmouth College
Hanover, New Hampshire
Herbert S. Newman Associates,
Architects

Common ground

©Peter Aaron/ESTO photos



Wishing to establish a new tradition, or at least borrow one from other Ivy League institutions, Dartmouth College asked Herbert S. Newman Associates to design a set of new dormitories that would form its first residential cluster. The key to creating such a cluster would be common space—both indoors and out. Linked together by a pair of outdoor rooms and a generous, all-purpose social space, Newman's three dorms do indeed command a common identity and a strong sense of place.

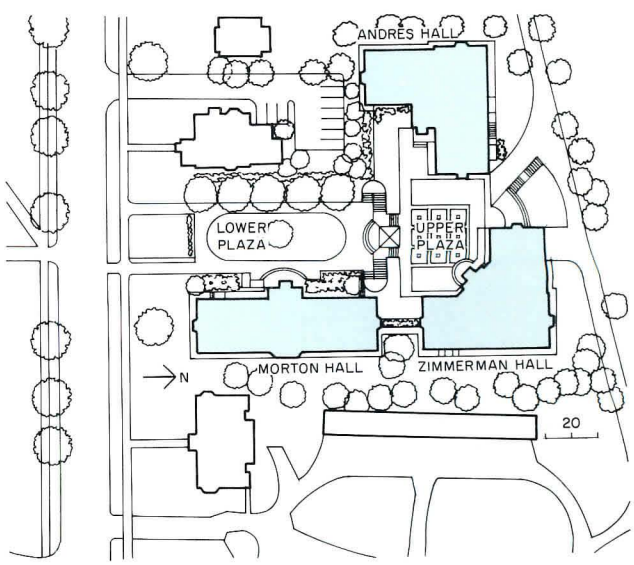
"Our models were the houses at Harvard and the residential colleges at Yale," explains Robert Godshall, the project manager for the architects, a graduate of Dartmouth, and a current resident of New Haven. Like its antecedents in Cambridge and New Haven, the residential cluster at Dartmouth emphasizes community and provides an apartment for a faculty master. Dining, however, is not part of the program, as all students eat at a single facility elsewhere on campus.

Red bricks, sharply pitched roofs, dormers, and the occasional oculus tie the new buildings to older Georgian structures on campus. Most importantly, such elements, even when they are a bit out of scale (e. g., diamond attic windows and two-story windows looking into upper-level study rooms), wrap the dorms in an easily identifiable style that helps them read as one complex, not a random collection of objects.

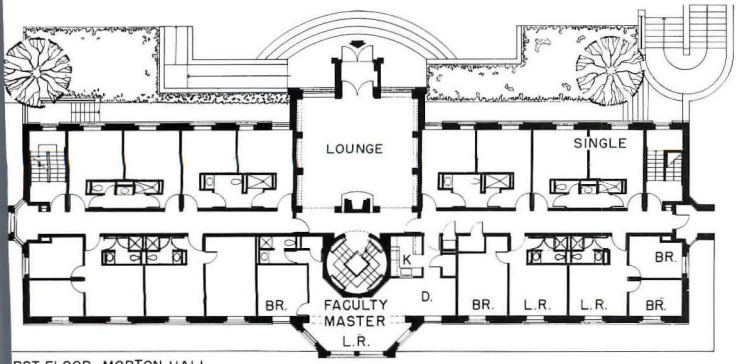
The two L-shaped buildings are almost identical, varying only in their front-door treatments. In both, the main staircase wraps around a three-story lounge, emphasizing its role as a focus of social activity. All of the dorms feature light-filled study rooms on the top floor, a far cry from the dark and dingy reading rooms found in the basements of older facilities. And instead of cramped, residential dorm rooms, these buildings offer mostly two- and four-person suites with bathrooms exclusive to each grouping, an arrangement that allows Dartmouth to rent out suites in the summer to adults attending conferences.

While each dorm has its own lounge, the entire complex shares a large social room called Cluster Commons. Located below the upper plaza and set behind an outdoor staircase that negotiates the site's change in levels, this multipurpose room seems to be scaled best for large functions, rather than informal gatherings. Skylights and access to the outdoors keep the room bright. *C.A.P.*

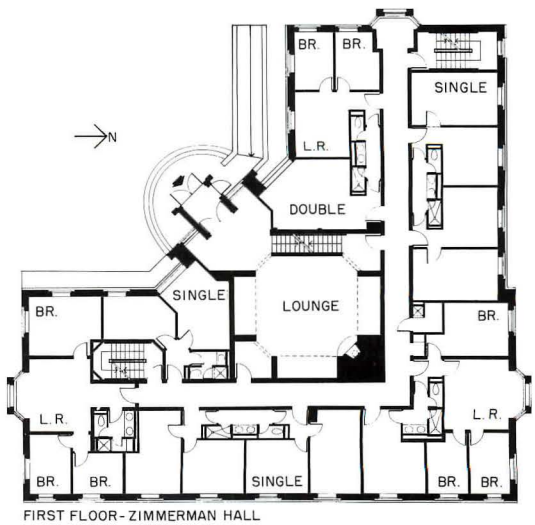
Unlike new dorms at some colleges, Dartmouth's residential cluster provides generous amounts of social areas, such as a central lounge in each building (top) and a Cluster Commons beneath the complex's upper plaza. A hip-roofed pavilion (opposite) announces the exterior entrance to the commons, which can also be entered directly from each dorm. Typical floor plans (opposite) show the dormitories' combination of two- and four-person suites. Single rooms and a few doubles are also available. The 100,000-square-foot complex cost just $76 a square foot to build. Conventional steel framing was used for the commons, while a more unusual light-gauge metal framing technique (similar to a joist-and-beam system) was used for the dorms themselves.



Architect:
Herbert S. Newman Associates—Herbert S. Newman, principal; Robert Godshall, project manager; Diane Abbott, job captain; Dennis DeLorenzo, Andrew Hardenbergh, Tony Terry, Toyota Horiguchi, Elisabeth Martin, design team
Engineers:
Martin-Horton Associates (structural); Helenski-Zimmer, Inc. (mechanical)
Consultant:
Rolland/Towers (landscape)
General contractor:
Jackson Construction Company



RST FLOOR - MORTON HALL



FIRST FLOOR - ZIMMERMAN HALL

Class of 1927/Clapp Hall
Princeton University
Princeton, New Jersey
Koetter, Kim & Associates,
Architects

Double identity

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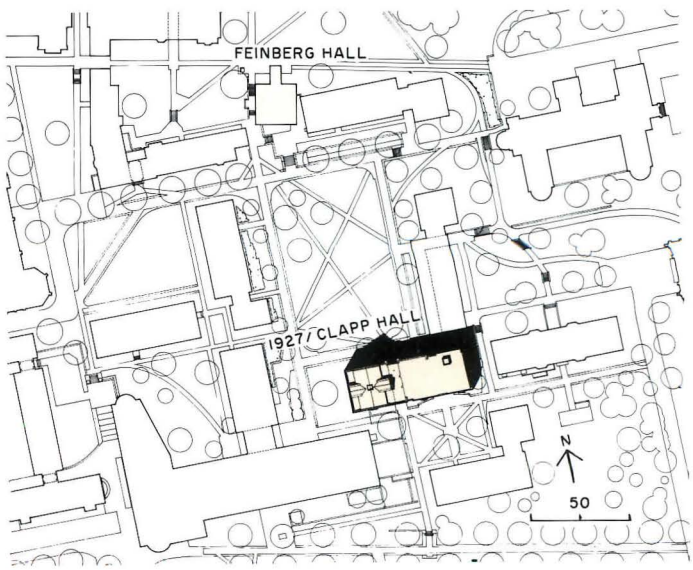
Not only does the dormitory Koetter, Kim & Associates designed for Princeton University have a double name, Class of 1927/Clapp Hall (for its two primary donors), it also faces two different quadrangles and presents dual front facades. No subordinate rear elevation here.

The dorm's difficult site in the middle of Princeton's Wilson College posed several challenges—negotiating a sharp drop in terrain, defining two outdoor spaces where there previously had been one, and mediating between a series of modern dorms and their collegiate Gothic predecessors. The architects, though, can't blame the client for the site: offered the chance to build on an easier parcel on the edge of the campus, Koetter, Kim opted for doing it the hard way. "We feel at home with more urban settings," explains Susie Kim, one of the firm's principals.

Taking pedestrian circulation as its starting point, Koetter, Kim designed 1927/Clapp Hall around a passageway or portal that cuts through the building and brings people from a large upper quad to a small lower one. The portal divides the building in two, while columned arches at either end tie the building together. "It acts as both zipper and pivot," says Kim, emphasizing the portal's dual nature. By pulling people through the building and surrounding them with architecture, the architects took a different approach from that of Tod Williams, whose Feinberg Hall directly across the quad forces pedestrians to slide around its sculptural edges [RECORD, March 1987, pages 100-105].

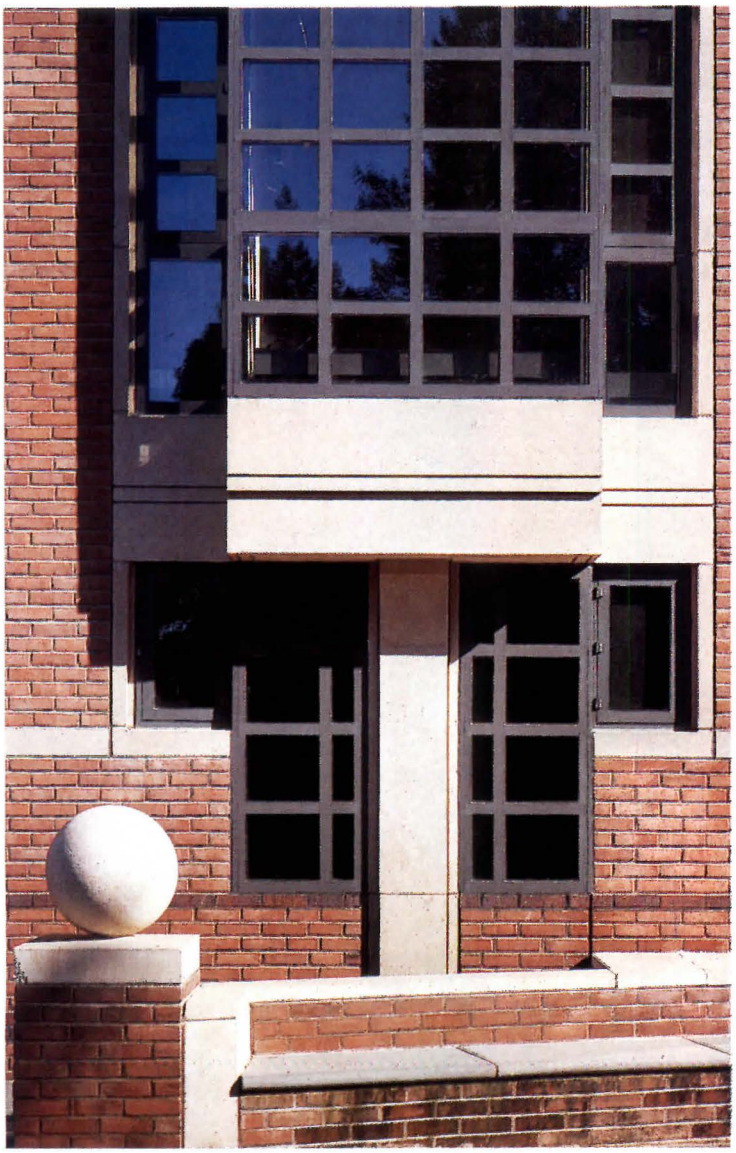
Fond of playing mannerist games with facade elements, Koetter, Kim continually defies expectations. For example, at the south end of the portal (middle left) it balances an engaged column with a pilaster, instead of another column, and seemingly supports a gently curved arch with glass, instead of something more solid. Other elements exert strange influences over their neighbors: a small section of the pediment above the main entry, for instance, attracts—as if by magnetism—a similar piece from a brick surround above it (opposite).

Inside the building, common spaces are kept to a minimum (to reduce maintenance, according to the client). Most of the living quarters, though, are two-bedroom, four-person suites with generous living rooms. The three-bedroom suites under the building's gable roof feature double-height living rooms. *C.A.P.*



Situated near one end of what had been a poorly defined quadrangle, Class of 1927/ Clapp Hall creates two separate outdoor spaces (site plan opposite). The smaller of these spaces serves as a "vestibule" for the main entrance to the building and features a curving cast-stone bench (below). Both the north facade (opposite top) and the south facade (opposite middle and bottom) incorporate an off-center passageway and playful surface treatments into mannerist, but balanced compositions.

Elements like roof crenellation (below right) and sharply pitched gable roofs (section below) allude to older architectural styles on campus. Construction consists of masonry bearing walls with precast concrete plank flooring. Exterior materials include brick, cast-stone trim, and coated copper. Plans offer two- and three-bedroom suites, plus a few double rooms. The fenestration in one room (opposite) shows Koetter, Kim's predilection for visually supporting a void with another void.



Class of 1927/Clapp Hall
Princeton University
Princeton, New Jersey
Architect:
Koetter, Kim & Associates—Fred Koetter, Susie Kim, designers; Kent Knight, project manager; Edgar Adams, project architect; Jim King, Clifton Page, Frank Chirico, project team
Engineers:
John Born Associates (structural); BR & A (electrical/mechanical); McPhail Associates (geotechnical)
Consultants:
Robert Fleming & Associates (landscape design); D. Schweppe (lighting); Todisco Associates (specifications)
General contractor:
Lehrer, McGovern & Bovis

William Davis Computer Research Center
University of Waterloo
Waterloo, Ontario
Mathers & Haldenby Inc., Project Architect
The IKOY Partnership, Design Architect

Machine tools

The latest project by The IKOY Partnership is a computer-research center that enlarges on the firm's pursuit of "appropriate" technology as both an esthetic and pragmatic goal.

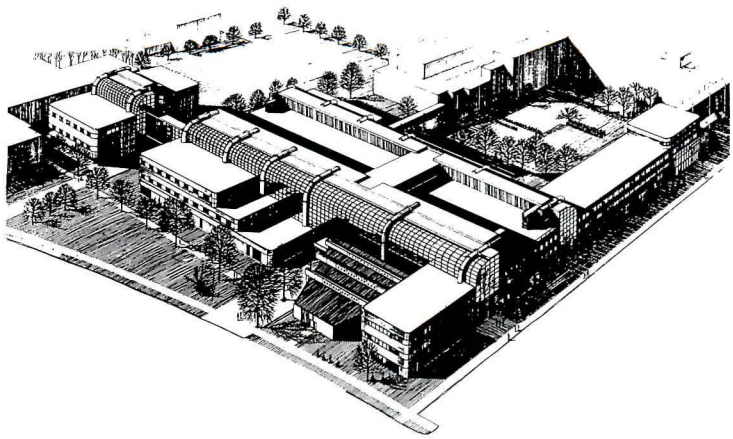
Ron Keenberg, IKOY's partner for design, likes to think of the William Davis Computer Research Center at the University of Waterloo, in Ontario, as itself resembling an immense graphics-programmed computer: a streamlined metal casing wrapped around inner workings revealed as nascent lines and forms traced against a glass screen. If so, it is a user-friendly machine: the building represents a progression in the firm's address of architecture as industrial artifact, in both the "hardware" of integrated assemblies using off-the-shelf components and the "software" of responsive planning and well-made spaces.

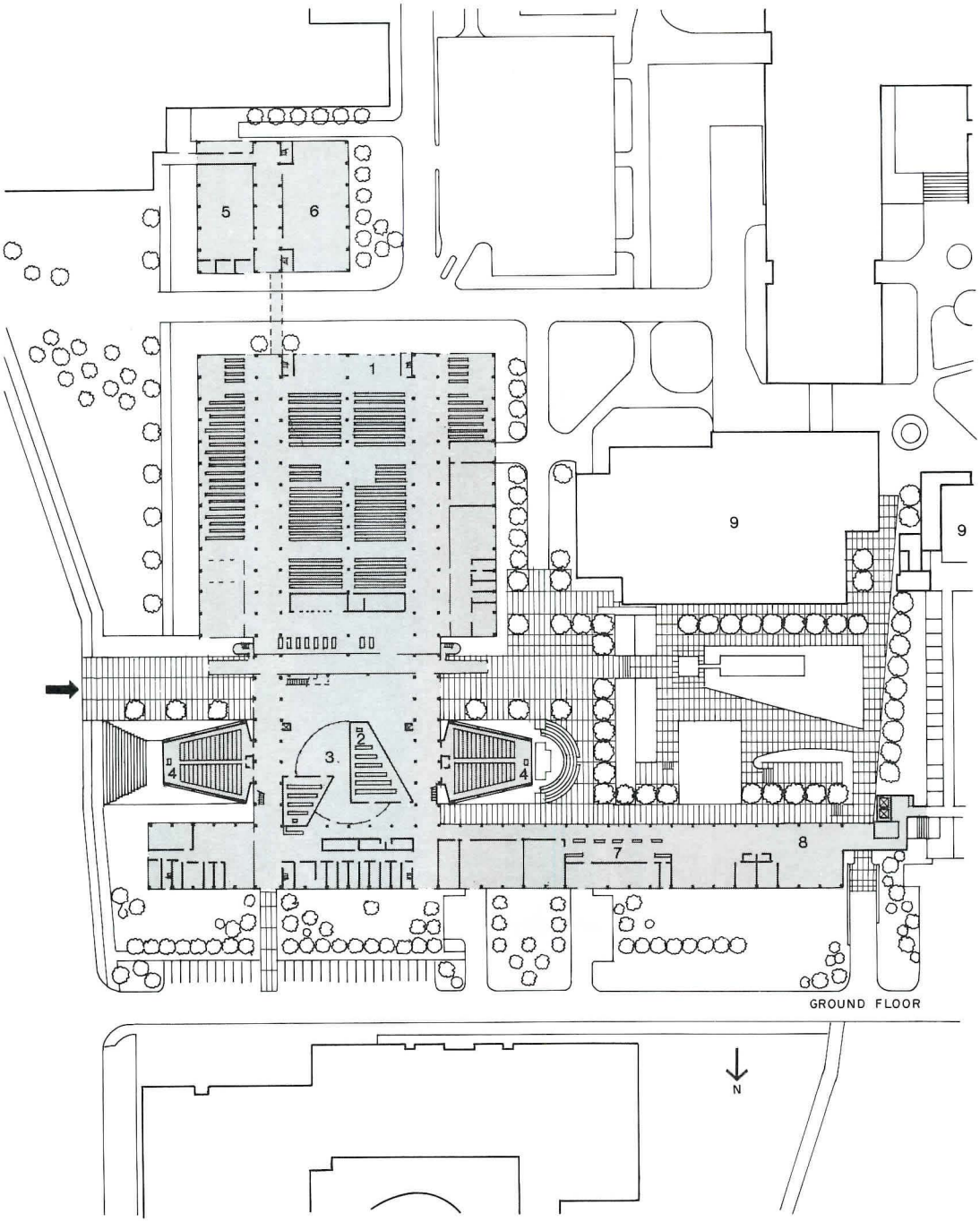
The University of Waterloo, though hardly a household word in the U. S., is a world leader in computer research and intended the new facility to reflect that stature. At the same time, it hoped to arm its prized scholars against the lure of Silicon Valley—or competing academic institutions—by providing them, in addition to a first-class working environment, public spaces capable of promoting collegiality among the building's occupants and interaction with their peers in other disciplines and in industry. The chosen site is accordingly triangulated by major parking areas, which offer public access, and by buildings housing engineering, mathematics, and science. In support, the computer center provides both a distinct campus gateway and intracampus linkages that themselves become significant spaces.

The grandest are a pair of three-story promenades formed by glazed half-arch vaults whose parallel corridors run across the full width of the building. On the cross axis a perpendicular wing forms an L-shape that completes a new quadrangle overlooked by the wing's culminating dining hall. The connective network of galleries, halls, arcades, and courts is Ron Keenberg's answer to the client's concern that a building so insistently of its time might become dated. It is, he says, an analog of longstanding collegiate tradition, as is the planning hierarchy that locates public spaces—library, lounges, cafeteria, large lecture halls—at ground level, classrooms and offices in more private quarters flanking the galleries on the two upper floors.

A more apt comparison might be made with the Davis Center's immediate predecessor, IKOY's earth sciences building at the University of Manitoba [RECORD, May 1987, pages 130-133]. The new center employs much the same basic vocabulary, but brings it to a new level of sophistication, particularly in the meshing of mechanical and electrical systems with the precast concrete structure. (Ironically, in bidding it proved cheaper to cast the haunched columns in place.) The key was the use of a hollow-core slab to double as hvac ducts, making it possible to cut floor-to-floor height from 15 feet to 12 feet and slash costs proportionately. Interior offices and labs derive added flexibility from plug-in electrical fittings that allow do-it-yourself changes in layout of space and equipment. Easily accessible power raceways line the corridors; fluorescent fixtures hung upside-down to reflect from white ceilings provide glarefree indirect light. The structure also supports a skin made up of metal grids into which interchangeable windows and corrugated panels can be inserted as interior configurations dictate.

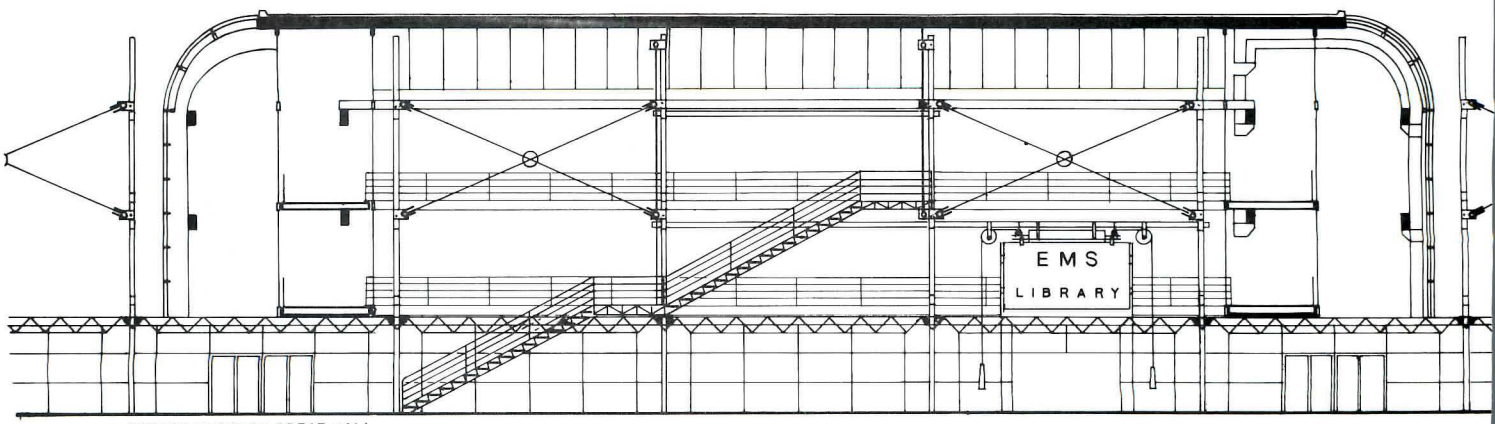
For all its mutability, however, the computer center conveys, particularly in its public spaces, a distinct sense of place. Proclaimed by a clear geometry of form and a vivid rainbow palette, the interiors suggest a controlled celebration of technology that can only assure a welcome contrast for occupants engaged in serious and solitary work. *Margaret Gaskie*



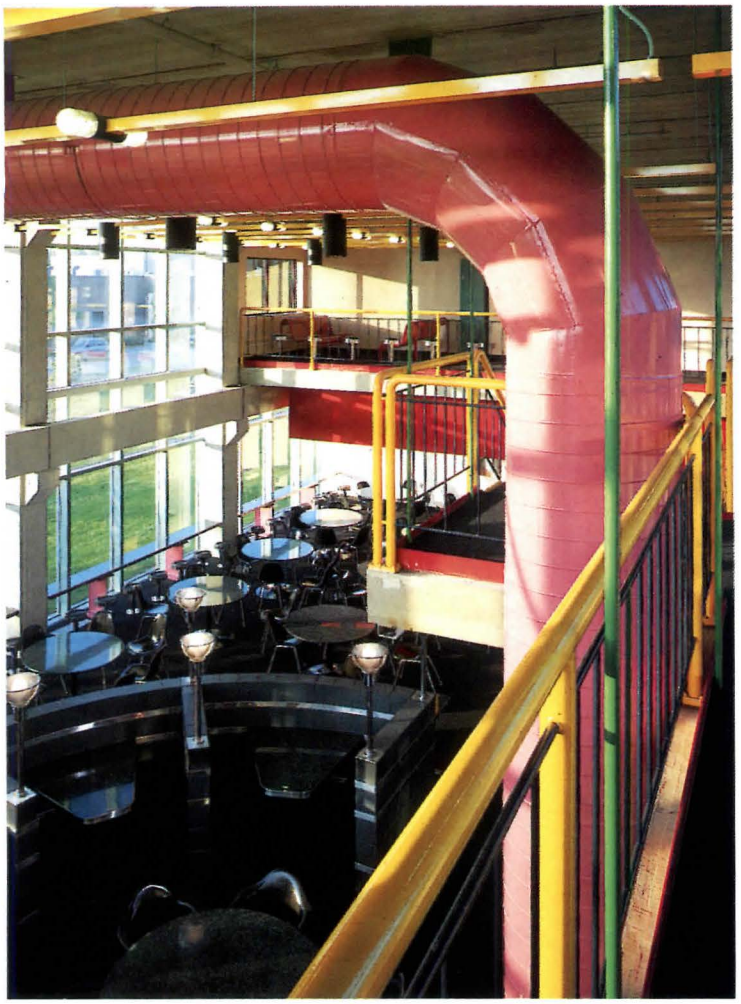


The gateway to and through the Davis Center (photos opposite) is a just-off-axis lobby that runs from nearby parking off the ring road circling the campus to the new quadrangle embraced by the building's arms. Forming a crossroads, the lobby is dominated by the glass-sheathed half-vaulted galleries that march in tandem through upper-floor classroom and office areas. On the ground floor the south wing houses the library, where the galleries overlook open-ceilinged reading rooms on either side of the stacks. To the north a central "VIP lounge" serves as an antechamber to an enclosed lecture room which is augmented on either side by larger clear-span lecture theaters hung from bright-red trusses outside the building proper. Less formal areas include casual seating off the lobby and a two-story dining hall at the center's west end.

1. *Library*
2. *Presentation*
3. *Lounge*
4. *Lecture*
5. *Clean room*
6. *Manufacturing*
7. *Servery*
8. *Dining*
9. *Existing*



SECTION THROUGH GREAT HALL



Most evident in the large public spaces—dining hall (left), lounge (below left), galleries (opposite)—the designers' let-it-all-hang-out approach plays a weighty concrete structure (haunched columns, beams, bent beams at the vaults, hollow-core slabs) against the crisp geometries and vivid colors of metal components. In the gallery, the chrome yellow of stairs and railings, for example, is echoed in the squared troughs of light fittings, which extend to fixtures more commonly seen on airport runways. The assemblies' air of offhanded precision also characterizes fittings like the soda-fountain stools in the dining room, which reappear in the ground-floor lobby seating (there in company with red metal park benches) and on landings throughout the galleries.

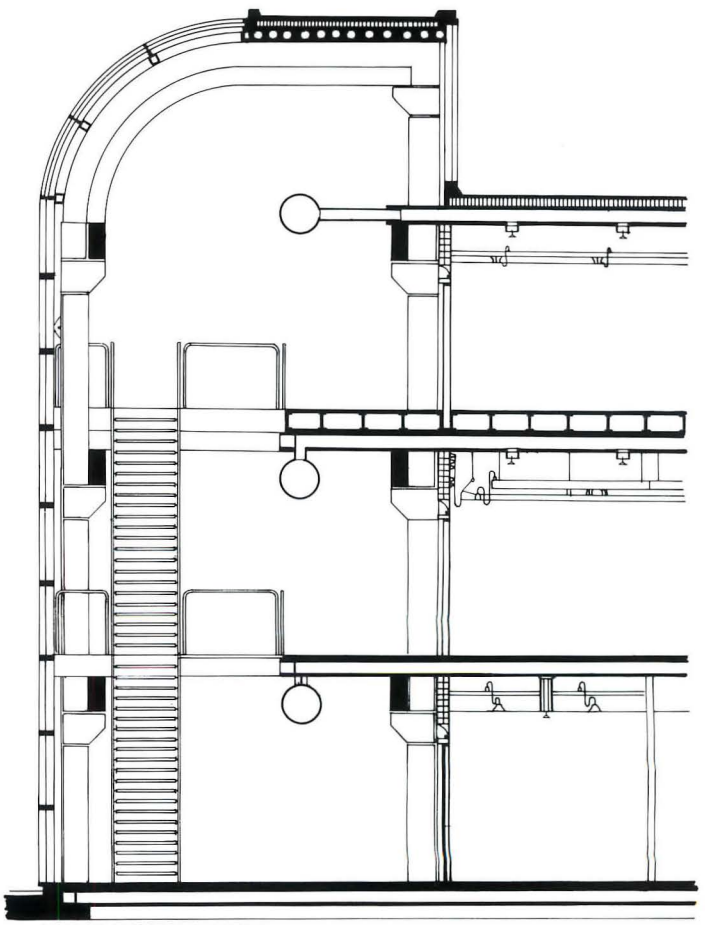
William Davis Computer Research Center
University of Waterloo
Waterloo, Ontario

Project architect:
Mathers & Haldenby Inc., Architects—Andrew S. Mathers, partner-in-charge; W. D. Tough, project administrator; Henry Lowry, D. Freel, project architects

Design architect:
The IKOY Partnership—Ron Keenberg, designer; Arthur Buse, design coordinator; Charles Thomas, Magda Hulsbosch, Dan Benson, Doug Birkenshaw, Rick Andrighetti, Carol-Anne Coulter, Ingrid Cryns, Jon Soules, David Driscoll, Leslie Woo, project team

Engineers:
M. S. Yolles & Partners Ltd. (structural); The Mitchell Partnership Ltd. (mechanical); ECE Group (electrical)

Project manager:
Spantec Ltd.



SECTION THROUGH GALLERIA

Suppressing the office energy appetite

By carefully analyzing existing products and techniques, The Croxton Collaborative has given the National Resources Defense Council a new headquarters that is expected to use less than half the energy of comparable commercial space.

While many clients have lofty goals for their projects, the National Resources Defense Council (NRDC) might be said to have particular audacity. The council asked its architect, The Croxton Collaborative, to help reduce energy demand by more than one-half over comparable commercial-office space without using exotic technologies, *and* to provide an attractive, productive national headquarters. For years the NRDC has actively promoted conservation as a means of reducing the health risks associated with nuclear power as well as acid rain and global warming, two byproducts of coal-fired power plants. As part of the solution to these problems, they expect their modest 25,000-sq-ft headquarters to lead the way to dramatic reductions in energy use by commercial facilities nationwide. Lest one conclude that this is an overambitious goal, Dr. Arthur Rosenfeld of the Lawrence Berkeley Laboratory (as recounted in the council's *Amicus Journal*) indicates that conservation in all sectors already saves the nation about $150 *billion* annually. On the other hand, Rosenfeld claims that alternative-energy strategies such as solar-powered space and water heating have been worth only about $200 million a year.

Although the project was conceived in response to the particular needs of the NRDC staff, it was also intended to be replicable. No products or techniques were used that had not been on the market at least a year. NRDC scientists analyzed all the products considered for the project and selected only those that were manufactured using environmentally safe processes and, once installed, did not emit toxic gases into the workplace.

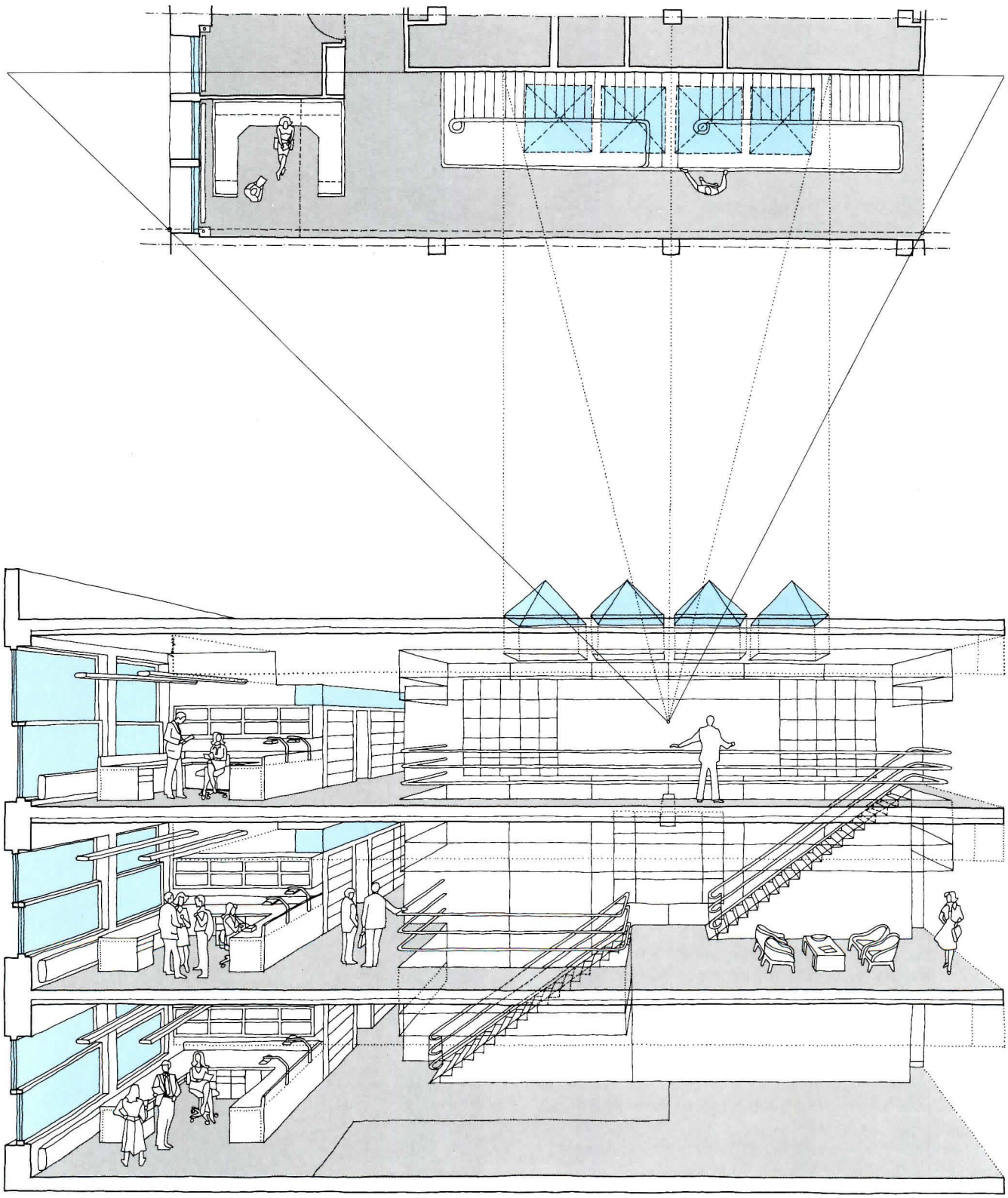
Design approach

The client fortunately had a wider horizon than just counting up watts per square foot. Having worked with The Croxton Collaborative before, the NRDC felt comfortable with the architects because all parties agreed that this ambitious undertaking required a constant dialogue. The architects were involved in selecting the space—the three top floors of a 1920s loft condominium in Manhattan. The structure came with uninsulated masonry walls, but with generous (though dilapidated) skylights, high ceilings, and large window openings, it was the right raw material for the marriage of amenity and conservation. "There are a lot of people doing energy-conservation in buildings," says Croxton partner Kirsten Childs. "What's been lost in many cases is the quality of light and of the user's environment itself." Every effort was made to bring outside light into the space, even when it did not directly reduce energy consumption (right and page 133). But the architects did not reinvent the wheel: most of the conservation strategies involved innovative use of existing products or fine-tuning of details. Many of the NRDC staff are lawyers who require private offices, which line the exterior; however, even the interior open-plan work spaces have access to natural light through clerestory bands of glass in the perimeter offices (drawing opposite). An open stair under one of the refitted skylights ties the three floors together. Festooned with artwork, it has become the NRDC's sun-dappled social focus.

Lighting

Lighting accounts for nearly half of the expected savings. "People still design for 50- to 75-footcandle lighting levels," says Helen Diemer of Flack & Kurtz, Croxton's mechanical/electrical

Three floors of a New York loft building were renovated for the NRDC's new offices. Existing skylights were replaced with glass incorporating a heat-reflecting film (axonometric); they light interior workspaces and a communicating stair. Glass aprons hung from the soffits control smoke in the event of a fire (photos opposite).



Many of the NRDC staff are lawyers who require private offices, which line the exterior; however, even the interior open-plan work spaces have access to natural light through clerestory bands of glass in the perimeter offices.

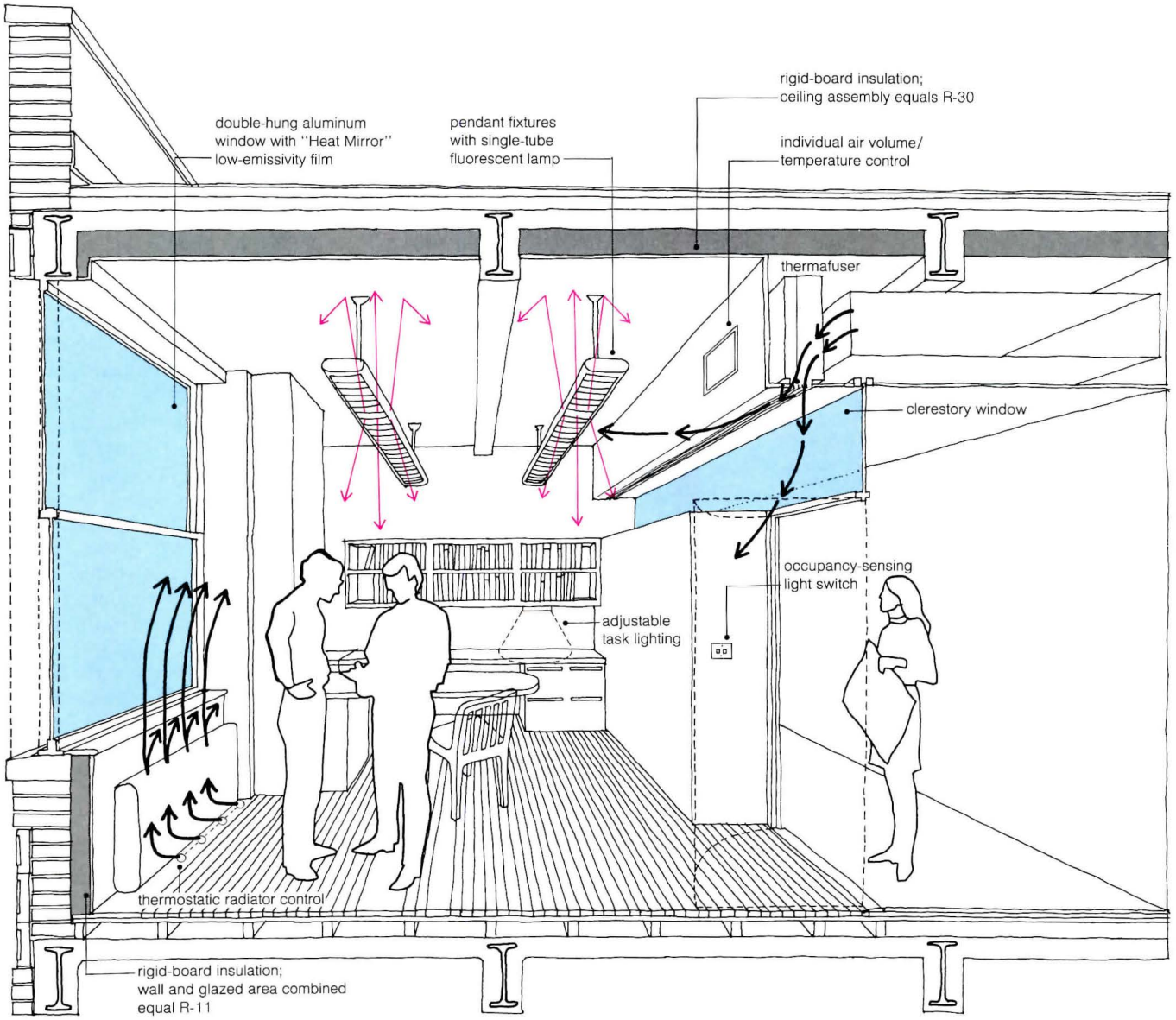
consultants. "The NRDC's acceptance of 25 to 30 footcandles went a long way toward getting the kind of energy savings they were looking for." As a result, cooling loads were reduced (as much as 25 to 30 percent, according to Flack & Kurtz), magnifying energy savings. The architects also paid close attention to the *quality* of light and color rendering, both of which are critical at lower illumination levels. Light-colored walls and ceilings diffuse rather than absorb light, and walls are washed by supplementary fixtures. For ambient lighting, Flack & Kurtz specified a T8-type triphosphor-coated single fluorescent tube within a parabolic-type fixture, which offers efficient distribution and low glare. The tube is about 1/2 in. smaller in diameter than conventional tubes, a shape that allows more efficient diffusion by the fixture, and the three-coat phosphor treatment improves color rendering. The lamps are controlled by electronic ballasts, another energy-saving feature. Perimeter offices rely on natural light during the day, but within *all* offices occupancy sensors automatically turn lighting off when no one is working. Photocells control supplemental fixtures in the main stair when outside light fades.

Insulation

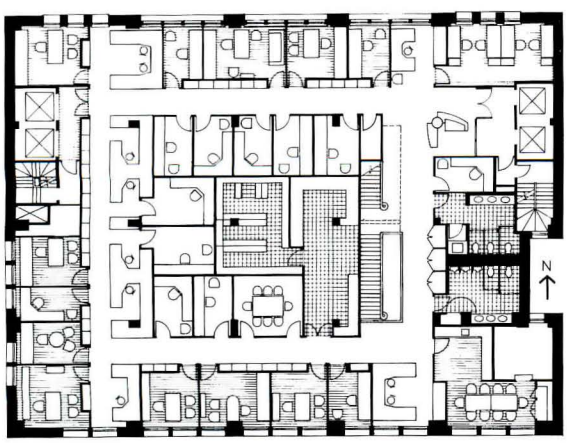
In a typical office building, heat generated by lighting, equipment, and occupants means that air must be mechanically cooled unless the temperature drops below 55F. Thus, exterior wall insulation is of less value in commercial installations than in residences, where internal sources of heat are fewer. Nevertheless, the addition of rigid-board extruded polystyrene to improve the wall assembly to R-11 offers winter peak-period savings and increases comfort by reducing drafts. The roof was insulated to R-30. The new windows are thermally broken double-hung aluminum. The sealed insulating-glass units have suspended within them a low-emissivity film ("Heat Mirror") which has very high thermal resistivity. The film was specified to reduce infiltration of ultraviolet light and infrared spectra, as well as visible wavelengths that contribute to heat gain. The skylights are tinted to reject the greatest amount of heat; the northern and eastern exposures are almost 100 percent transparent.

Mechanical systems

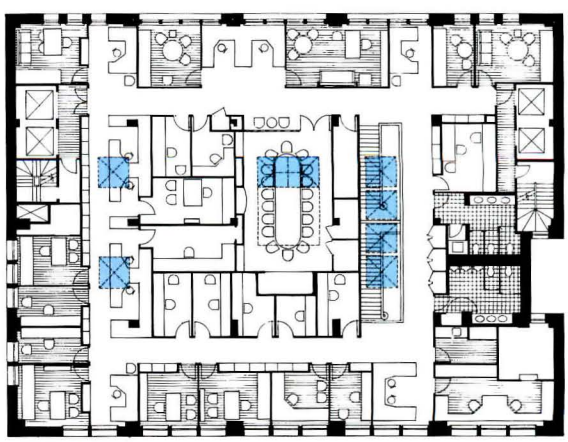
In a tenanted occupancy, the options for saving energy in the cooling and heating systems may be limited by space availability or the quality of equipment that comes with the building. Though the NRDC preferred not to keep its structure's existing two-pipe steam system, alternatives were too expensive. "The other tenants weren't prepared to buy into our agenda yet," says NRDC analyst Robert Watson. With improved windows and additional insulation, the existing radiators were too big; therefore, new radiators with individual controls were added to allow occupants to adjust the level to suit themselves. Separate cooling units were provided for each floor, and a condensing water system with a cooling tower was used, which offers greater efficiency than standard all-air systems and requires less mechanical space. An economizer cycle uses fresh air for cooling when temperatures range at or below 55F. Croxton preferred more efficient gas-fired cooling units, but they are not yet available in a small enough size. The system changes the air at the high end of New York City standards, for greater comfort, and air-flow control devices have been installed in each office.



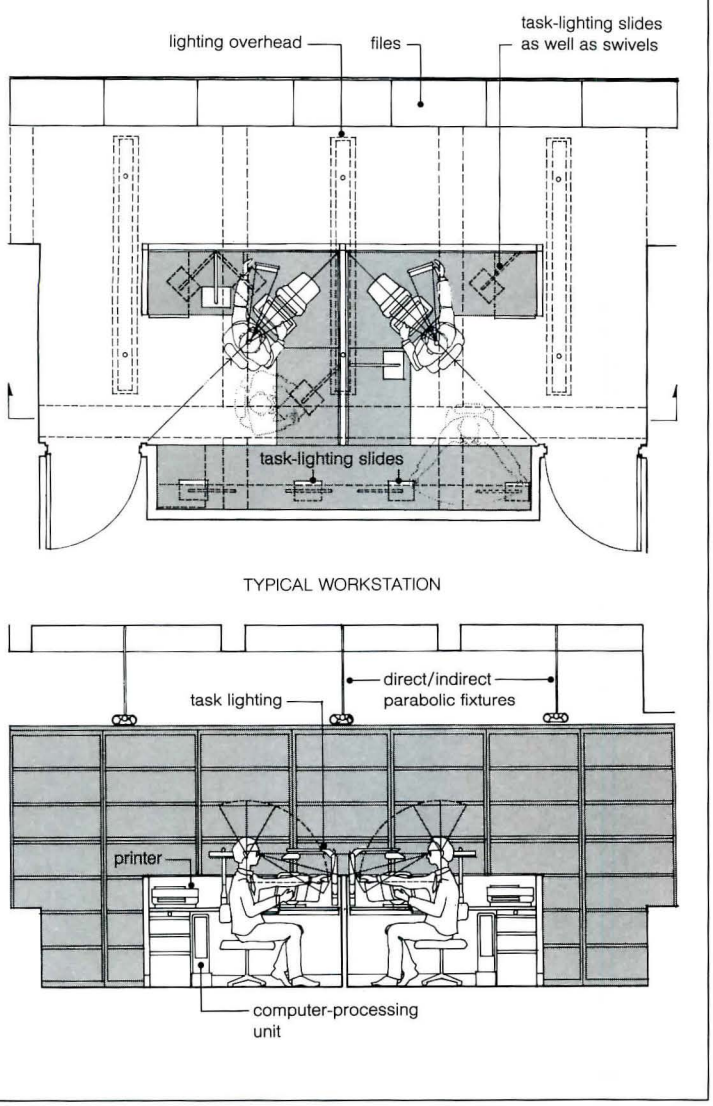
TYPICAL PERIMETER OFFICE



ELEVENTH FLOOR



TWELFTH FLOOR



Efficient lamps, ballasts, and fixtures as well as lower ambient light levels reduce the electrical demand attributable to lighting from 2 to 3 watts per sq ft for typical office buildings to 0.5 watts per sq ft. Compact fluorescent-type task lighting adds additional brightness on the worksurface where it is needed (above). In the end, there is no substitute for the ever-varied and space-defining qualities of sunlight, evident in the NRDC's board room (opposite).

Measuring toxicity

The NRDC is sensitive to indoor as well as ambient air quality, and products were selected that would not have significant toxic off-gassing. Thus, an 80/20 wool-nylon blend was chosen for carpeting, with a natural jute carpet backing and a jute-and-hair carpet pad. Installation was stretch-in tackless-strip rather than glue-down. Wood-panel products were sealed to prevent formaldehyde emissions. Furnishings were tested by an independent laboratory, and release of no more than 0.1 ppm of detectable formaldahyde was accepted. Latex-paint formulations were selected over solvent-based alkyd types. The council would have liked to use a phenolic-foam insulation (of a type that emits minimal ozone-depleting chlorofluorocarbons—see pages 134-135), but it had not yet been approved for use in New York City.

Prognosis

While it is too soon to verify the council's projected energy savings, other questions about the strategies *can* be answered. With many alternative energy-saving methods foundering because technology is still unproved or maintenance excessive, how easy is it to match the NRDC's commitment? "Although we are using readily available items, we're still pushing the state of the art," says Flack & Kurtz's Helen Diemer. On the other hand, she sees lighting manufacturers in particular making very rapid progress. Watson says some costs will come down: "A dimmable T8-type ballast now costs about $200, about eight times what a standard dimmable unit would cost. But within a year we expect to see better and more affordable versions." Product advances are, however, of little value if they are not used. It takes an owner willing to analyze the tradeoffs between first cost and payback, but, as Watson points out, "It's clear that architects need to become more sophisticated. Nobody ever looks at the effect of lighting's heat load on hvac or the contribution daylighting can make." The NRDC estimates that it paid almost 30 percent more up front, but it expects the investment to be amortized in six years with corresponding savings afterward.

Of course there are larger issues here. By demonstrating that energy use can be dramatically cut while increasing workplace quality, the NRDC hopes that such strategies can become a new standard. But how is this to be accomplished when such costs in the commercial sector are usually passed on to tenants by landlords? The NRDC's Watson feels that utility companies can play a big part by favoring the construction of efficient systems through education and creative rate-setting. They have a large stake, since reducing peak consumption can lower demand for expensive new power plants. And utilities *are* beginning to get involved: Seattle City Light, for example, has just opened a lighting-design lab (sponsored in part by the NRDC) in which architects, engineers, building owners, and developers can learn to design high-quality and efficient systems. With commercial lighting alone consuming more than a third of the electrical energy produced in the U. S., the demand for the equivalent of 100 1,000-megawatt power plants could be eliminated, according to the NRDC, if the full conservation potential in this area were to be realized, with corresponding reductions in air pollution and global warming. And while such vast improvements remain in the future, the NRDC's new headquarters proves that energy efficiency, in Robert Watson's words, "doesn't mean you have to wear miners' helmets." *James S. Russell*

Headquarters of the National Resources Defense Council
New York City
Architect:
The Croxton Collaborative—Randolph R. Croxton, director of architecture; Kirsten Childs, director of interiors and facilities planning; Charles Burleigh, project coordinator
Engineers:
Flack & Kurtz (mechanical/electrical/lighting); the Office of James Ruderman (structural)
Consultants:
David Goldstein, Robert Watson (project scientists, NRDC)
Contractor:
SDR Construction

The sky's the limit

First the bad news: The sky (or at least its protective ozone layer) is falling down, due to the destructive effect of chlorofluorocarbons. Now the good news: Manufacturers of foam-insulation boards containing CFCs are on the verge of developing safer products.

Hailed as major tools in the war against energy waste in the 1970s, foam insulations made of polyisocyanurates, extruded polystyrenes, and phenolics are now under attack as contributors to the problem of ozone depletion in the upper atmosphere. As a result, manufacturers of these products are racing to meet deadlines imposed by an international agreement restricting the use of a key ingredient. Thanks in part to a joint public-private research effort, the manufacturers seem to be winning the race, running faster in finding substitutes than they had expected just a few months ago.

The culprit at the center of the controversy is the family of gases known as chlorofluorocarbons (CFCs), which are extremely stable, fully halogenated (hydrogen-free) and nontoxic. They serve as blowing agents to expand the cells in the manufacture of some of the most popular rigid foam boards. Because of their high insulating value per unit of weight, products containing CFCs have grown as a portion of the market in the years since the 1973 Arab oil embargo and today are used in about 60 percent of new commercial roof construction, 50 percent of new residential construction, and at least 30 percent of insulation retrofits, according to the Polyisocyanurate Insulation Manufacturers Association (PIMA).

One of CFCs' attributes—their molecular stability—turns out to be their downfall. Because CFCs don't break down in the lower atmosphere, they rise to the stratosphere where their chloride ions destroy the layer of ozone that protects the earth from the harmful effects of ultraviolet radiation. Recent studies point to the rapid deterioration in this layer, a condition that could increase the incidence of cancers in humans, adversely affect crops and aquatic life, and contribute to global warming. (Ozone in the stratosphere has a very different effect than ozone closer to the ground; the former provides a UV shield, while the latter is a component of smog and can cause lung damage.)

Two other major sources of man-made CFCs are refrigeration chemicals and cleaning solvents used in the electronics industry.

Responding to dire warnings on stratospheric ozone depletion, 30 countries and the European Community signed an agreement in 1987 known as the Montreal Protocol, which calls for a 20 percent reduction in the manufacture of CFCs by 1992 and a 50 percent reduction by mid-1998. A more rapid phase-out of CFCs, however, was demanded by environmentalists.

The foam-insulation industry responded by moving up its own self-imposed deadlines. In April, PIMA set a new target date of December 31, 1993, for the elimination of all fully halogenated CFCs in its members' products.

Some of the most promising replacements for CFC-11, the blowing agent used in foam insulation boards, come from the hydrochlorofluorocarbon family. HCFCs pose less of a threat to the ozone layer because they break down before they reach the upper portions of the atmosphere. As a CFC substitute in urethane and polyisocyanurate products, experts are testing HCFC-123 and a variation, HCFC-141b; in extruded polystyrene products, they're trying out HCFC-142b.

A public-private research project (involving PIMA, the National Roofing Contractors Association, and the Society of the Plastics Industry, along with the Department of Energy, Oak Ridge National Laboratories, and the Environmental Protection Agency) has developed insulation boards utilizing HCFC-123 and HCFC-141b and is currently testing them, says David McElroy, chairman of research at Oak Ridge.

Issues raised by the new blowing agents include R-values (thermal resistance), costs, fire resistance, and toxicity.

"Both of the substitute gases are better thermal conductors," says McElroy, "so fresh R-values will be lower." (By "fresh," McElroy refers to the R-value of the insulation when it is new.) Experts now agree that certain types of foam insulations lose some of their insulation capabilities over time. Exactly how much "thermal drift" takes place and how R-values for these products should be determined are hot issues in the industry right now. (See "CFC substitutes and thermal drift," opposite.)

Insulation using HCFCs will have a slightly lower R-value than that using CFCs, says Laurie Buehler, director of communications for PIMA. The association estimates a 4 percent reduction in R-value for products with HCFC-123 and a 7-to-10 percent reduction for those

Insulation boards at a glance

Type of insulation board	Expanded polystyrene	Extruded polystyrene	Poly-isocyanurate	Phenolic	Glass fiber	Cellular glass	Fiberboard	Perlite
Use CFCs?	No	Yes	Yes	Yes	No	No	No	No
R-Value*								
1-inch	3.85	5.0	5.80 - 7.5	—	4.0	—	2.78	2.78
2-inch	7.69	10.0	13.5 - 14.7	16.67	8.0	5.71	5.26	5.56
3-inch	11.49	15.0	20.9 - 22.7	25.0	—	7.14	—	8.33
Estimated percent of thermal value retention								
1 year	80 - 100	95 - 100	—	100	100	100	100	100
5 years	80 - 100	90 - 100	87	100	100	100	100	100
10 years	80 - 100	80 - 97	72	100	100	100	100	100

*All R-Values taken at 75F

Source for R-Values and thermal value retention: National Roofing Contractors Association

with HCFC-141b.

It is clear that costs for manufacturing the new foam boards will be higher, reflecting outlays for research and new equipment. Raw-material costs will also be higher, at least in the short run, since the current supply of HCFCs is scarcer than that of CFCs. But the cost of CFCs is already going up in anticipation of the reduction of CFCs available under the Montreal Protocol. In addition, the U. S. government is considering imposing a tax or levy of some kind on CFCs to encourage reduction in their use in all kinds of products.

"Though costs will go up," admits PIMA's Buehler, "we feel our products will still be market competitive in terms of price."

Oak Ridge Lab's McElroy says costs for blowing agents may go up by as little as 15 percent or as much as 50 percent. Dr. Gert Baumann, manager of process chemicals for Mobay Corp., a major chemical producer based in Pittsburgh, says cost may turn out to be the major problem facing the reformulated insulation boards.

Baumann says substituting HCFCs for CFCs should have no effect on the product's ability to retard fire, or its structural properties. McElroy is less certain. "The new products will have to prove they meet existing fire standards."

As for toxicity, no evidence is available on the subject yet. Long-term toxicity tests are currently underway, but results will not be known for some time.

One manufacturer, Dow Chemical USA, is already set to convert to a new blowing agent for its Styrofoam brand of extruded-polystyrene insulation boards. Three of the company's nine North American plants are now using HCFC-142b instead of a CFC, and all of the plants will have converted by the middle of 1990.

Dow expects no change in Styrofoam's R-value or its ability to resist fire, says Dale Keeler, a technology associate with the company. How much more the new product will cost has yet to be determined. "Originally, we estimated HCFC products would be 30 percent more expensive," relates Keeler. Now the company believes the increase may be less than that.

E.I. Du Pont de Nemours & Co., which along with Allied Chemical and Penwalt is one of the three major suppliers of CFCs, recently introduced an experimental blowing agent called Formacel-R that is a combination of HCFC-123 and HCFC-141b. Available for testing now, Formacel-R should be commercially available in 1993.

Until a replacement blowing agent becomes available for polyurethane and polyisocyanurate products, manufacturers will reduce the amount of CFCs they use by mixing water into their formulations. Water reacts with other ingredients in the manufacturing process to form carbon dioxide, which acts as a partial blowing agent.

Some formulations using water reduce CFC use by between 15 and 50 percent. R-values for these products, however, go down accordingly.

The chances are architects will be specifying and contractors using foam-insulation products with lower R-values and higher costs in the near future. The long-term effectiveness and safety of these products, though, has yet to be determined. But it is clear that the industry has made great leaps forward in switching from an environmentally hazardous product to one that will be safer. Depending on one's perspective, such progress can be attributed to either a group of responsive, forward-thinking companies or to pressure applied by an international hue and cry.

Clifford A. Pearson

CFC substitutes and thermal drift

As the debate over thermal drift in foam insulation products continues to rage, the use of CFC substitutes promises to complicate matters.

Thermal drift is the tendency of certain insulation materials—especially polyurethane and polyisocyanurate products—to lose R-value (and thus insulation capacity) over time. This change in R-value stems from slow leakage of the gas trapped within the material's cells.

While no one disagrees that thermal drift occurs, how much it affects R-values is controversial. There is no widely accepted standard to gauge the point in the life of a product at which its R-value is set, nor is there any agreement on how long or under what conditions in-lab aging should take place. A product's coating or facer may influence thermal drift as well, but once again, there is little agreement on exactly how this should be factored into its ultimate R-value.

Before thermal drift was recognized as an important issue, some manufacturers of polyurethane and polyisocyanurate products claimed thermal resistance of close to R-10 per in. of insulation. Today manufacturers indicate a range of between R-5.6 and R-8.

Lacking a consensus standard, the Roof Insulation Committee/Thermal Insulation Manufacturers Association has recommended using an R-value of 5.6 per in. of foam thickness when calculating thermal resistance of polyurethane and polyisocyanurate insulation boards over their normal life in a roofing system. The Polyisocyanurate Insulation Manufacturers Association has strongly disagreed with this assessment, however, saying it doesn't differentiate between products that have coatings with high resistance to gas permeation and those with low resistance.

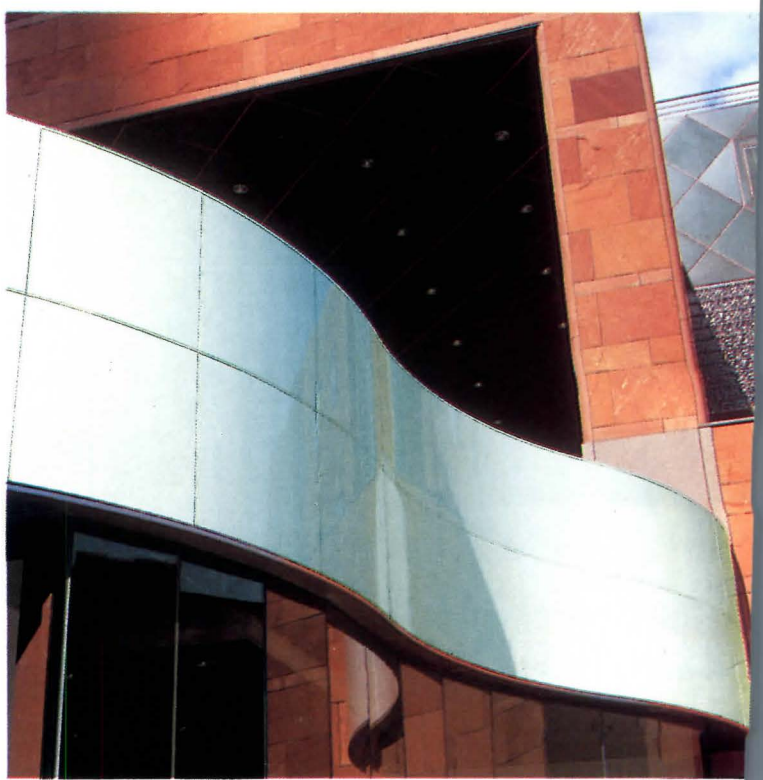
Now that manufacturers of foam insulation have dedicated themselves to eliminating CFCs from their products, specifiers are asking how changes in the products' composition will affect thermal drift.

David McElroy, chairman of research at Oak Ridge National Laboratory and a participant in a joint research project investigating substitutes for CFCs in foam insulation, says "fresh" R-values will most probably be lower for the new products, "but we don't know what the 'aged' R-values will be."

One way of reducing thermal drift now being explored by researchers, says McElroy, is to make the cells holding the insulating gas smaller than they currently are. These cells are between 0.5 and 1.0 mm in diameter in today's product, but might be reduced to about 0.2 mm in the future. "The hope is that with smaller cells, there will be less thermal drift," explains McElroy.

If manufacturers can replace CFCs with new blowing agents and reduce the size of the cells that contain these gases, they may quell two major controversies at the same time. But if the new CFC-free products do not reduce thermal drift to a factor of little consequence, a cloud will continue to hang over the industry. *C.A.P.*

The Museum of Contemporary Art (Los Angeles)
Design: Arata Isozaki & Associates
Associate Architect: Gruen Associates
Construction: HCB Contractors



A seductive performance by Neopariés

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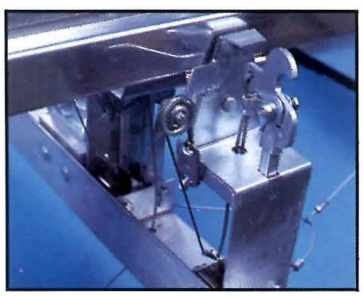

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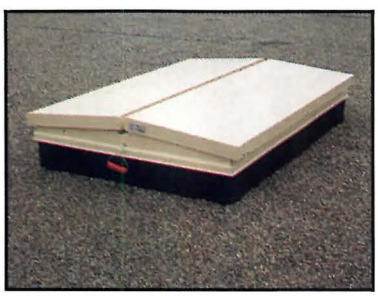

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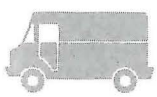
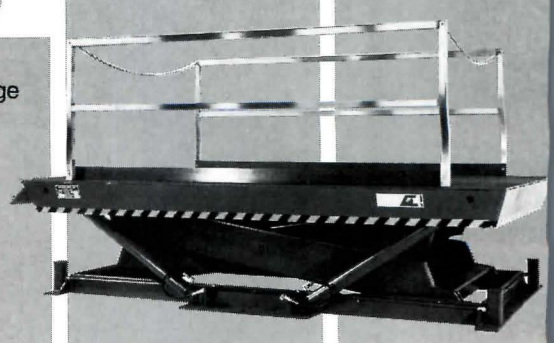


Step Vans
Bed Height Range
24″ - 30″

City Delivery Trucks
Bed Height Range
33″ - 48″

Semi Trailer Trucks
Bed Height Range
42″ - 58″



New products: contract textiles/upholsteries

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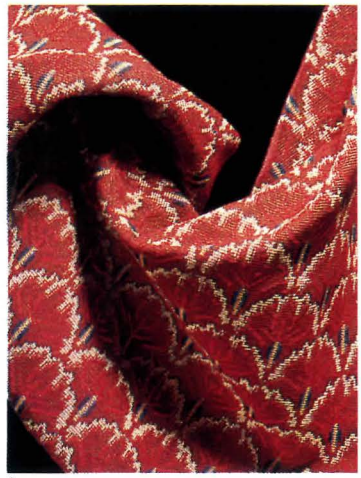

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The warmth, pattern, and texture that textiles—as upholstery and wallcoverings—add to the workplace are well worth the care and time involved in making an informed selection.

The upholstery specifier should look at the construction of the fabric as a whole, not just at one particularly high test number, to project its performance in a specific use, whether task chair or executive sofa. Three pertinent standards: tear strength, abrasion resistance (the much-cited Wyzenbeek test) and seam slippage. The product-safety responsibilities imposed by law must be met—and the prudent designer leaves a paper trail of product compliance documentation with the appropriate fire marshal or building department. Stricter fire-hazard standards have focused attention on the long-term efficacy of topical flame-retardant treatments, and are encouraging the development of new self-extinguishing fabrics. All of the textile materials shown on these pages can meet the most stringent current codes. They're also good-looking. *J. F. B.*

1. Wool upholstery
Boulevard, a wool blend, and all-wool Quadrant are pictured on Sunar-Hauserman and Comforto chairs. Yoma Textiles, Inc., New York City.
Circle 300 on reader service card

2. Fine-denier nylon
Craftex Mills' Enduralon collection is woven of Caplana nylon, a textured yarn said to offer superior pill- and abrasion-resistance as well as wool-like luster and dyebility. Allied Corp., Fibers Div., New York City.
Circle 301 on reader service card

3. Cotton moiré
Montespan Ottoman Stripe (or, Napoleon meets the Sultan) blends viscose and cotton. The six colorways range from predominantly deep jewel tones to soft neutrals. Brunschwig & Fils, New York City.
Circle 302 on reader service card

4. Needlepoint effect
Also based on historical precedent, in this case Colonial Williamsburg, Carnation Needlepoint is woven in France of rayon and cotton. Schumacher, New York City.
Circle 303 on reader service card

5. Cotton and linen
Rossetti, a Victorian floral with a strong linear feeling, reads like a broad stripe on a flat surface, while furniture curves highlight the details of the pattern. Unika Vaev, Orangeburg, N. Y.
Circle 304 on reader service card

For more information, circle item numbers on Reader Service Card

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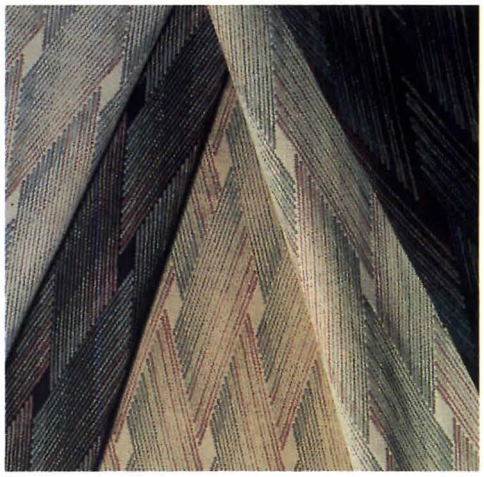

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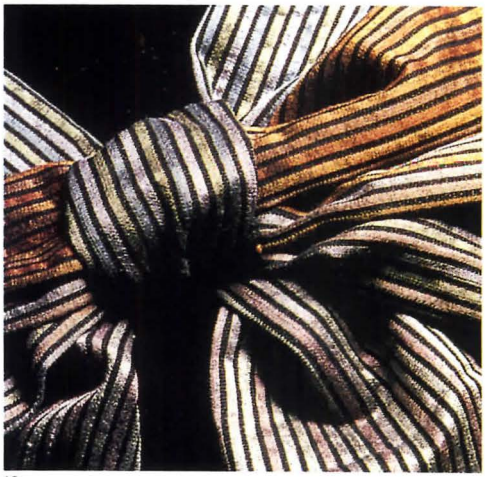

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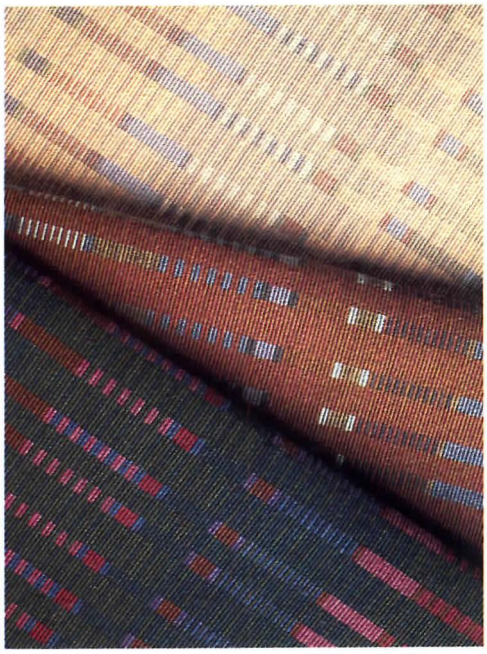

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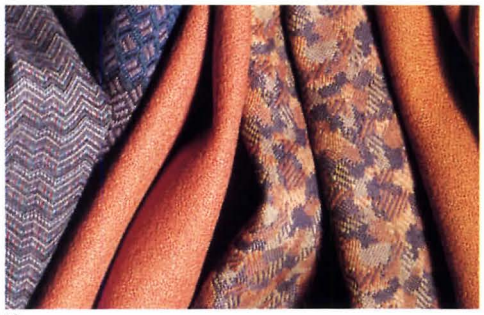

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6. Tropical colorations
An all-cotton repp, Martinique comes in over two dozen solid shades described as ranging from pale shell and sand to exotic flower colors. Donghia Textiles, New York City.
Circle 305 on reader service card

7. Floral tapestry
Appearing anything but businesslike, Garden of Eden comes in five colorways, each one containing multiple shades woven in cotton and polyester. DesignTex Fabrics, Inc., Woodside, N. Y.
Circle 306 on reader service card

8. Flat-woven wool
Looking like a cross between Indian quillwork and a computer graphic, Bar None is woven with "floating" yarns on the reverse of its all-wool face, a construction said to provide extra pattern depth and fabric durability. Jack Lenor Larsen, New York City.
Circle 307 on reader service card

9. Basketweave pattern
An all-cotton Belgian tapestry, Webbwood has bicolor basketweave bands placed diagonally on a contrasting ground. It is part of a Reference Library presentation of contract wovens arranged by color. Greeff Fabrics, Inc., Garden City, N. Y.
Circle 308 on reader service card

10. Wool jacquards
A new, mostly wool upholstery series includes three patterns woven on jacquard looms that can use as many as 16 colors in the weft direction for a range of subtle colorations. Carnegie, Rockville Centre, N. Y.
Circle 309 on reader service card

11. Grounded upholstery
Nylostat seating fabric has carbon face-fibers and backing that dissipate electrostatic charges through the grounded chair base. Its excellent surface resistivity recommends Nylostat for areas of heavy PC use; the nine different colors are just for fun. Momentum Textiles, Bellevue, Wash.
Circle 310 on reader service card

12. Light-catching
Woven with a puckered texture, Scintilla is a blend of silk, rayon, and polyester that offers both sparkle and durability. Brickel Associates, Inc., New York City.
Circle 311 on reader service card

13. Tone-on-tone
Venturi chair shown is upholstered in wool/nylon Billiards, the panels covered in modacrylic-blend Moiré. Both are from a collection treated with Teflon stain-repellent finish. Knoll International, New York City.
Circle 312 on reader service card

Continued on page 144

New products: contract textiles/wallcoverings

Textiles intended for vertical surfaces must be fire-rated by the ASTM E84 tunnel test; the 1988 Edition of NFPA 101 Life Safety Code requires the more severe ATMI room/corner test. As of December 1989, New York will require that fire-gas toxicity data on interior finishes be filed with the state. A trade group, the Association for Contract Textiles, is sharing the cost of this testing among its members, with fabrics of identical yarns and weaves tested generically.

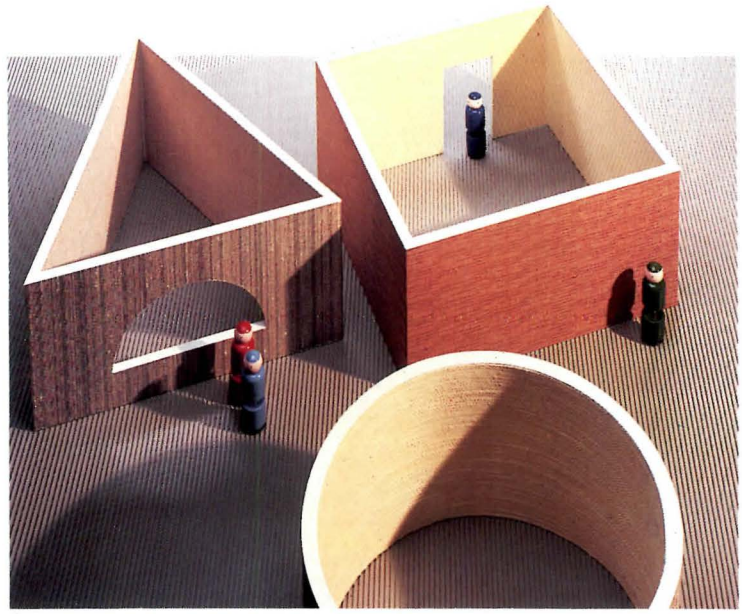
1. Linen
Besides traditional beiges, the Croftercraft 6 paper-backed wallcovering line of over 60 linen and linen-blend weaves includes new shades of peach, lavender, and green. Hamilton Adams Linen, Secaucus, N. J.
Circle 313 on reader service card

2. Three-dimensional weaves
The Belgian-made Color Weave Collection has been styled by Laura Deubler Mercurio specifically for the U. S. market. Offering 72 coordinating colors, the tightly woven wallcoverings come in four textures: file rib, vertical rib, geometric twill, and a waffle weave with accent dots. OJVM, Marlboro, N. J.
Circle 314 on reader service card

3. Natural fibers
Classic Wall II contains seven patterns in linen, cotton, and viscose, in colors that range from neutrals to deep teal greens and jewel tones. DesignTex Fabrics, Woodside, N. Y.
Circle 315 on reader service card

4. Solution-dyed textures
Made of Marquesa Lana olefin, new Saqqara wallcoverings come in 280 colors, with textures that resemble linen, silk, and worsted wool. The fabric can withstand repeated cleanings. Amoco Fabrics and Fibers Co., Atlanta.
Circle 316 on reader service card

5. Nondirectional crepe
Woven of Dacron polyester specifically for wall panels, Carina crepe is said to have exceptional dimensional stability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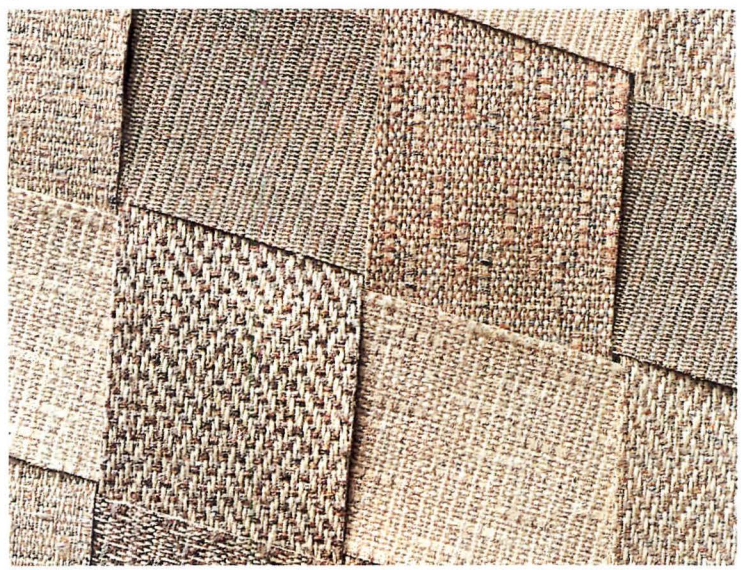
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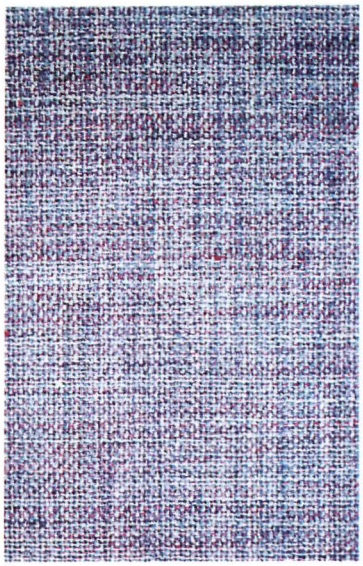
For more information, circle item numbers on Reader Service Card



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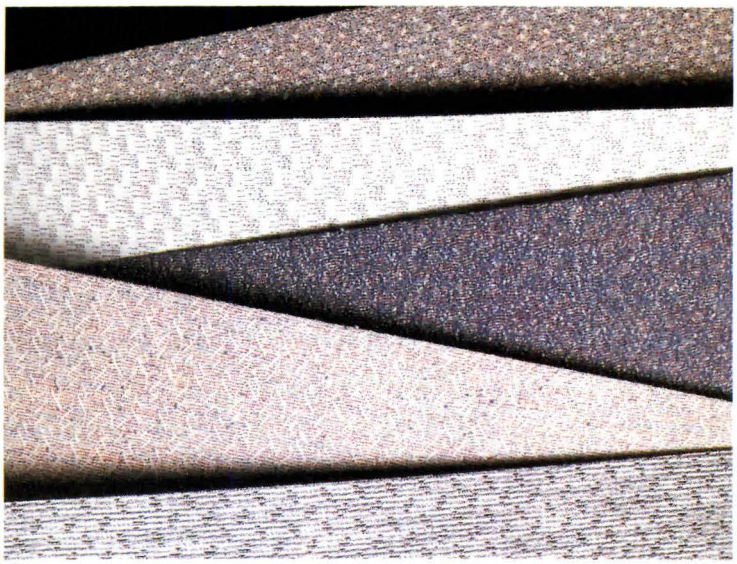

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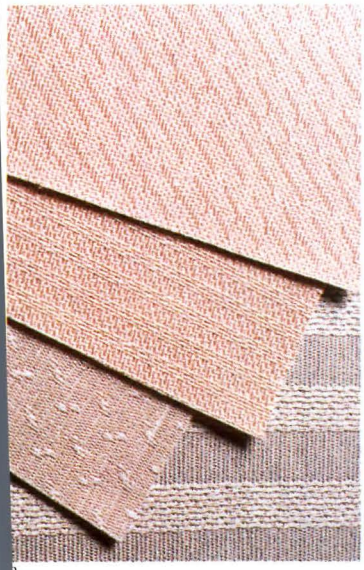

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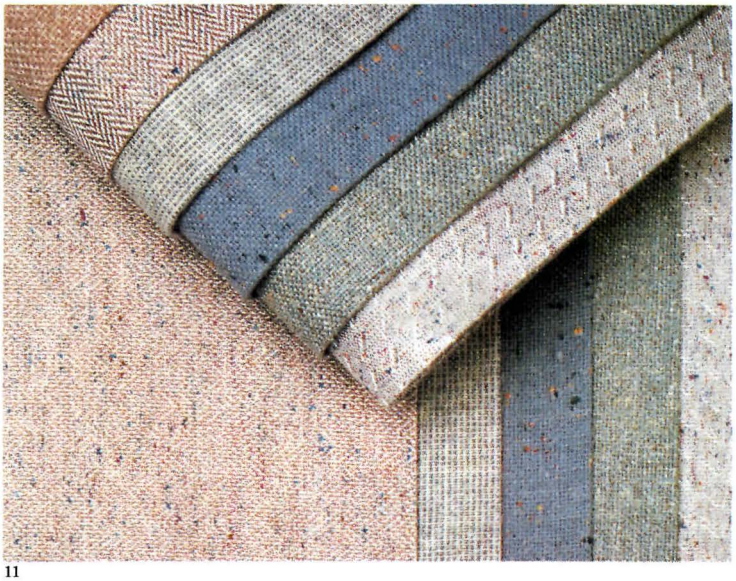

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to resist sagging and stretching. Guilford of Maine, Guilford, Me.
Circle 317 on reader service card

6. High-traffic wallcoverings
The VWC-1 vinyl collection offers 1,500 colors and three-dimensional, fabric-look textures. J. M. Lynne, Smithtown, N. Y.
Circle 318 on reader service card

7. Soil-hiding wall fabric
Woven of an inherently flame-resistant Trevira polyester, Degas is part of the Hi-Tech line of 12 multicolored fabrics for high-traffic areas. StretchWall, Long Island City, N. Y.
Circle 319 on reader service card

8. Cost-effective
Vicrtex's Nouvelle polypropylene wallcoverings come in eight distinct weaves; the color range includes neutrals, pastels, and saturated mid-tones. Vicrtex, Wharton, N. J.
Circle 320 on reader service card

9. Wovens
New FiberTech wallcoverings offer both plain and unique weaves, twills, and geometric patterns in 226 colorways. The Nouvelle polypropylene fabric resists moisture, mildew, and stains. Genon Wallcoverings, Hackensack, N. J.
Circle 321 on reader service card

10. Patterned verticals
Vertical Variations is a "woven-to-order" program derived from standard products, available for applications requiring as little as 250 yards. Knoll, New York City.
Circle 322 on reader service card

11. Coordinating colors
With nine new designs, a 92-color Vertical Surfaces wallcovering collection coordinates with panel and upholstery fabrics. Maharam, Hauppauge, N. Y.
Circle 323 on reader service card

12. Abrasion-resistant
Xorel fabric is made of a proprietary fiber said to be durable, scrubbable, and inherently flame-resistant. Pictured is Nexus, a multicolored overall twist. Carnegie Fabrics, Rockville Centre, N. Y.
Circle 324 on reader service card
More products on page 159

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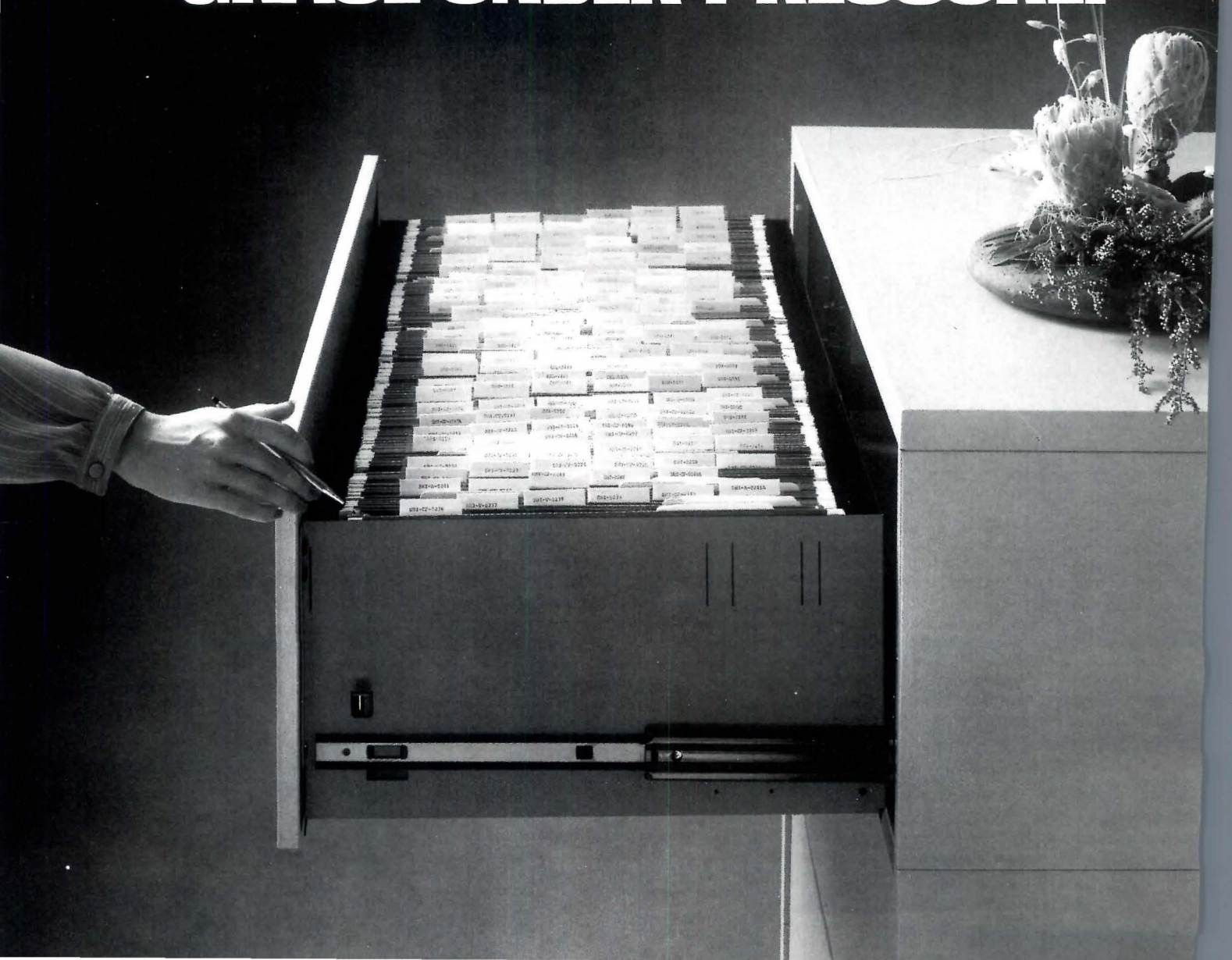

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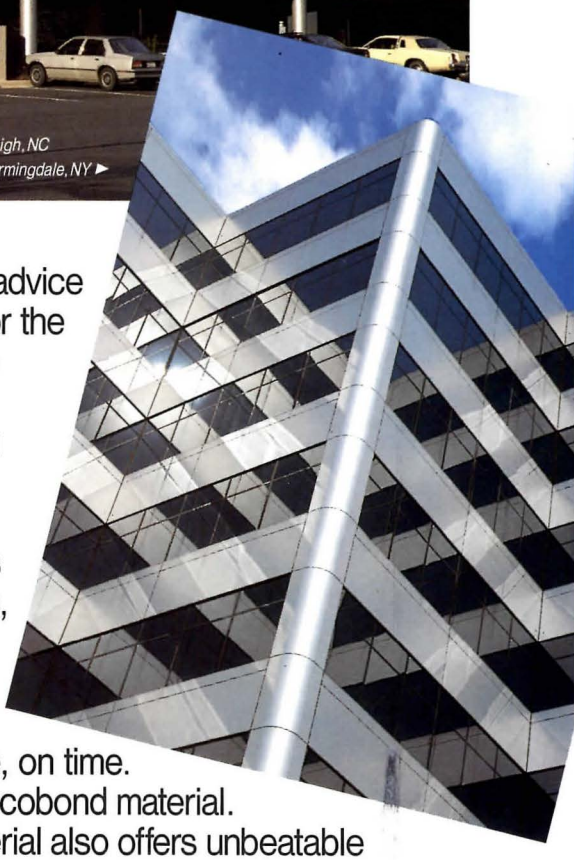

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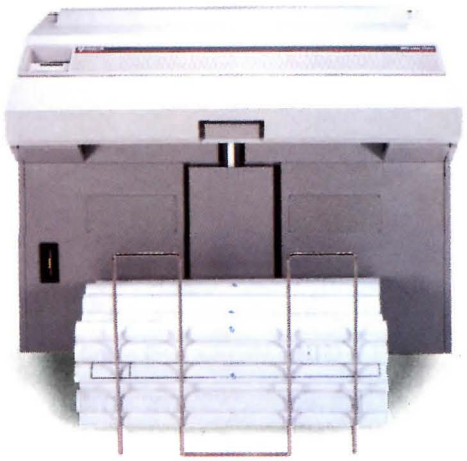

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Software reviews for architects

With RFP, the architect using the software can search the employee and consultant database in many ways.

By Steven S. Ross

RFP Version 4.0

Software to help automate the process of preparing proposals in general and federal Standard Forms 254 and 255 in particular. It combines a powerful database function with a variety of options for printing.

Equipment required: IBM PC, XT, AT, PS/2 or compatible, 640K, fixed disk (the program files alone take about 1 megabyte; data files can be almost unlimited in size), PC-DOS or MS-DOS 3.0 or higher. For printing SF 254/255, you will need one of the following: a dot matrix printer with tractor feed (either narrow-carriage with a sideways-printing program such as Sideways from Funk Software, or a wide-carriage printer), or a Hewlett-Packard LaserJet II or compatible with the 92286V Landscape Forms Cartridge. For 12-pitch (12 characters to the inch) printing on the LaserJet, instead of the standard 10 pitch, you will also need the 92286M or N cartridge.

With the dot matrix printers, you get the text blocks in the proper places on-page for SF 254/255. You then overlay supplied transparencies containing the form material itself, and photocopy the printout and the form together.

Vendor: A/E Management Services, Inc., 4439 Napier Rd., Plymouth, MI 48170 (313/455-0180). There are three main program modules (report writer, proposal generator, 254/255 generator) at $1,500 for the first module and $800 for each additional. The complete system purchased all at the same time is $2,795. The text import utility (for importing ASCII text into a field as you are editing it) is an additional $300. RFP Junior, only for SF 254/255, is $500. Demo disk and documentation are $50.

Manual: Excellent, but wordy. Architects will not read it. But office managers and others responsible for producing documents will find it a godsend. The demo package doubles as an excellent tutorial. There's also a quick-start tutorial in the main documentation.

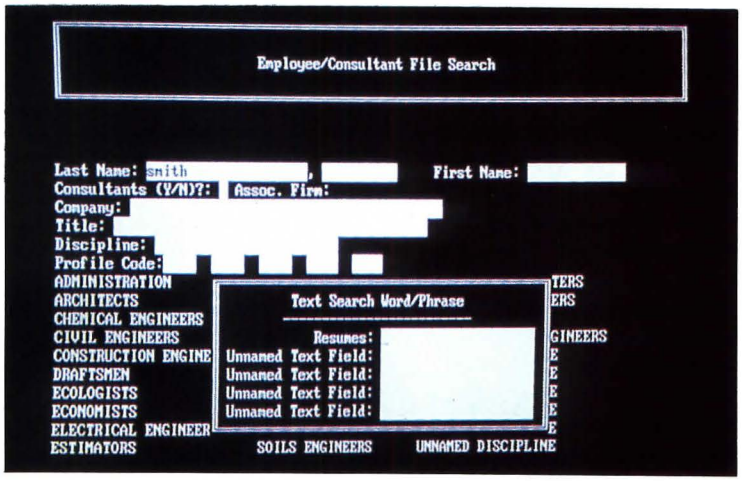
Ease-of-use: Good. In fact, this is the way high-capacity software should be written: The on-screen prompting and fill-in-the-blank screens are fine. The basics are almost intuitive. But using this package to its maximum potential will require a learning curve. As users get familiar with it, they will pick up the extra commands at their own pace.

The built-in word processor is adequate, but no prize. It is set up so that you will not write more text than a block of space on a form can hold. The result is that it is poor at keeping formatting with text. You can use your own word processor for the heavy-duty text keyboarding, import the files, and use the built-in editor for fine-tuning. Changing the type pitch or the column width of a field will remove boldfacing and underlining; you will have to replace them on-screen one at a time.

In fact, you run the risk of losing formatting if you have wordwrap on at any time after you have flagged text for underlining and boldface. But when you are actually entering text, you will want wordwrap on, to see where lines break between margins.

When editing text, move text blocks first, before doing other work. Otherwise, you will have to save the file and retrieve it before continuing.

The text import module can only handle ASCII text. Most word-processing software allows creation of ASCII files, but you will lose formatting information, and tabs will usually be turned into a series of spaces. For users of old Wordstar software, RFP includes a public-domain program to turn Wordstar document files into ASCII.



Error-trapping: Good. The database is actually a dBase III+ program. It is stable, powerful, and standard. The on-screen preparation of text blocks for standard forms is almost what-you-see-is-what-you-get. There are ways to destroy data (see text) or to produce "doubles" of names and data, but problems are minor and easily sidestepped. If you plan to create a new proposal by editing an old one, RFP copies the old file to a new filename, leaving the original untouched—and untouchable.

You can occasionally lose data you've typed into a screen by moving to another screen without saving or printing, ignoring on-screen prompts. We found that one typist new to the program (and, actually, quite new to word processing) was most likely to do this when entering small amounts of information on each of a number of screens.

RFP is an extremely stable program. Nevertheless, as with most MS-DOS or PC-DOS software that depends on indexed database files for storing and retrieving information, losing all power or turning off the computer in the middle of text entry can cause the program to become confused. That's because data are not re-indexed in the database until you exit normally. You may be able to relink the data to RFP by using the re-index option on the maintenance menu. If power is unreliable in your area, invest in an uninterruptible power supply.

Installation may require using the DOS ASSIGN command to fool your computer into thinking the floppy drive with the installation program is in Drive A. Few people will ever have to worry about this, but it is preferable to have drive assignments built into the installation program itself. The DOS ASSIGN command can scramble directories if misused. The installation program uses a utility to decompress files as they are loaded. We discovered that the utility is incompatible with an early version of the Award BIOS, used on some older IBM clones.

Review

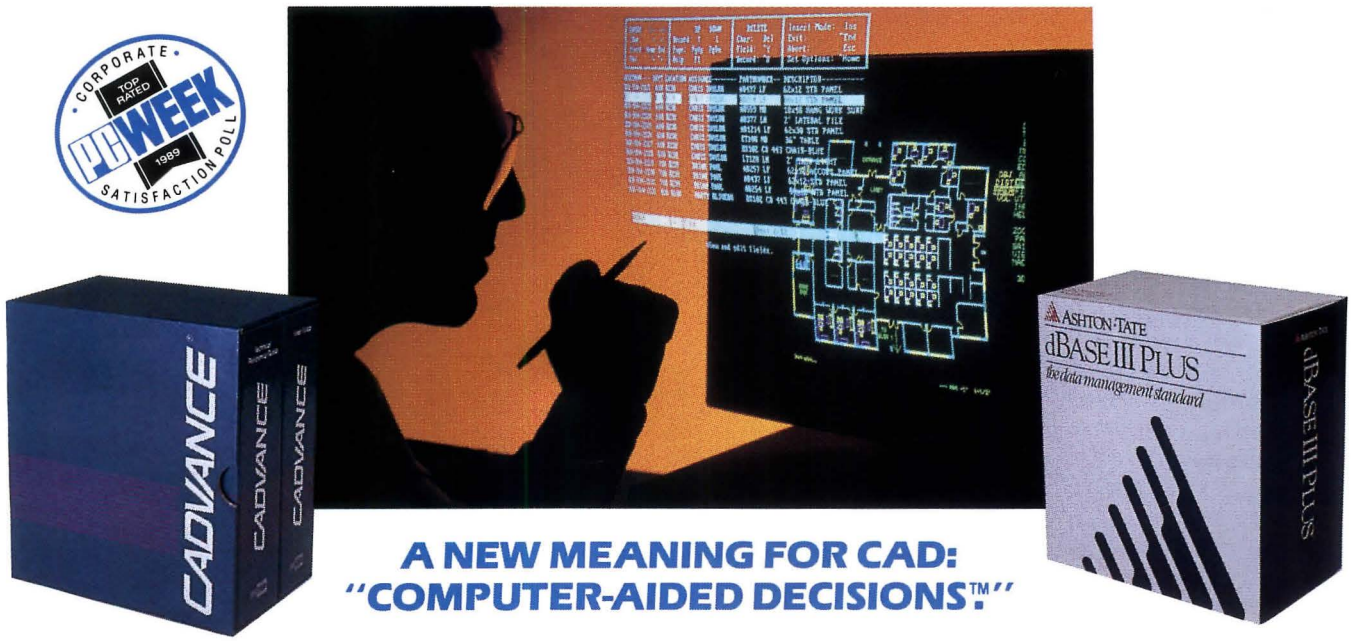
To use RFP, a firm first creates separate databases covering employees (resumes can be up to two pages long), projects built, project owners, and so forth. Users can also create a database of "boilerplate" information about the firm. The databases can be coded so that germane projects, employees, boilerplate, and associated consultants can be described in any combination and in any order for a proposal.

You can also start out by

Continued on page 151

Mr. Ross is a prominent computer consultant and a regular contributor to RECORD.

THE CADVANCE/dBASE CONNECTION.



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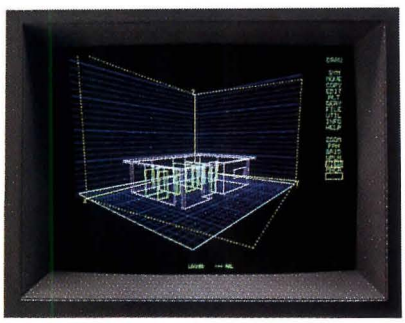

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	CADVANCE	AutoCAD	VersaCAD	MicroStation	CADKey
Overall Performance	1	3	4	3	2
Relative value	1	4	5	3	2
Ease of installation	1	3	4	4	2
Documentation quality	1	2	4	3	2
Product support quality	1	3	4	2	5

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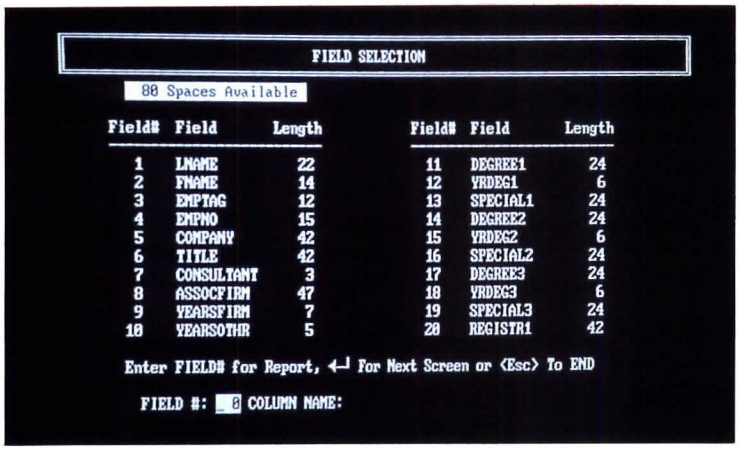
Circle 69 on inquiry card

Software reviews continued from page 149

There are special fields in most of the databases to help customize material for needed business reports.



constructing an SF 254 on-screen, typing in new information. When the form is stored, the information in the separate fields of the SF 254 will be distributed into the separate databases.

Most firms, of course, already keep this sort of information in electronic form, with word-processing software.

Why then should a practice invest heavily in a custom package such as this? To make the investment worthwhile, a custom package should allow easy assembly of information for a specific proposal. It should also allow easy editing of boilerplate to fit new circumstances. The output should look nice. And, for those who do plenty of federally funded work, the ability to type material directly into Standard Forms 254 and 255 is a must.

RFP scores high on all these counts. It uses an extensive menuing system to access the data you have stored, create new information, and place everything into a final document or generate a mailing list of leads. What's more, it is fairly easy to import your existing word-processing files into RFP with a minimum of new keyboarding, using the optional import module.

Files can also be exported to Ventura, the desktop publishing package from Xerox. There they can be combined with images for a particularly polished document. Ventura, in contrast to RFP, is a difficult package to master, however, so do not expect to go from simple word processing to the typesetting of polished brochures in one learning step.

Or, the files can be saved to disk in plain ASCII, to be picked up by your own WP program.

RFP's functions are particularly useful for preparing standard forms such as the SF 254 and 255. A list of existing 255s can be scanned, for instance, to find one that can be edited for submittal as part of a new proposal. Also, the order of projects in the database can be changed, to emphasize specific job qualifications.

Information you can place in the 10 individual databases includes:

- Owner address and contacts. Multiple owners with the same name can be entered (if you did several projects for one owner, for instance).
- Your own firm's branch offices and joint-venture partners.
- Your employees and associated consultants.
- Other consulting firms and prospects (used for generating leads and doing promotional mailings).
- Project descriptions, including fees, awards the project may have won, construction budgets, and so forth.
- A list of codes you use to sort and select information. This database starts with the codes used on SF 254, and can be added to. If you create many codes of your own, you may want to print out a final list of codes and descriptions, to help you select projects to include in a proposal later. That's because you can only enter the code on-screen, and not a description. You can easily forget what each code means.
- The boilerplate database, which allows text segments of up to 10 pages each. The number of segments is limited only by your disk space.

Name and address information about private clients and federal agencies is collected from the other databases.

The *Engineering News-Record* construction cost index, current to 1986, is included to help you scale old project fees and budgets up to current values.

There are special fields in most of the databases to allow you to customize RFP to your business.

- "Long character fields" can be up to 35,000 characters each if you have the disk space available. (It really is not cost-effective to use RFP with less than 20 megabytes of disk space.) They are used to add descriptive information to the various databases.
- "Short character fields" are 10 characters or less. They are mainly useful for defining disciplines for employees, or one-word descriptions for projects (hospital, library, and so forth).
- Dates (entered month-day-year).
- Money, or other numbers. The largest value is 9999999.99.

You can search your data by location, project type, size, and so forth. When prospecting, you can create a mailing list of all outside consultants, for example, that handle a certain type of project.

Duplicate names from the various databases will be weeded out if you sort by name, but not if you are creating labels sorted by zip code. Neither of our two testers could imagine a prospect list big enough to bother sorting by zip code, however.

Other problems you might encounter are due more to the power of the software to pull data out of various databases, than to problems in the software itself.

For instance, SF 255, item 4, requires totals to be based on personnel in the submitting office only. If that office is set up as a parent, you may also get totals from the branch offices. You have to go back to the database and tell RFP to split the branch totals away from the main office.

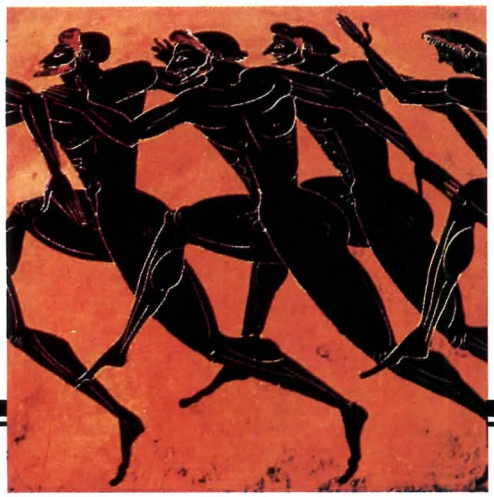
In short, RFP will help make the well-organized office even better, and in a remarkably short period of time. Disorganized offices will have to get organized to use RFP in a cost-effective way. You might think of that as a useful benefit rather than a drawback.

IBM Operating System/2 Extended Edition Version 1.1

Major CAD vendors will be offering OS/2 versions of their software by the end of 1989. Does OS/2 offer enough advantages over PC-DOS or MS-DOS to switch? And what are the relative merits of OS/2 and Unix? The machine resources required to run OS/2 are, to put it mildly, huge. Although OS/2 will run on machines as old and as small as an IBM-XT/286, it is really meant for the new generation of fast 80386 computers with huge fixed disks (hard drives) of 100 megabytes or more, in a networked situation.

Equipment required: Computer using the Intel 80286, 80386, or 80486 CPU chip, 3 megabytes of random-access memory, 20

Continued on page 153



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Software reviews continued from page 151

If you want to network computers, you need a program that adds to DOS, or a new operating system that has networking built in, such as Unix or, now, IBM's OS/2.

megabytes of fixed-disk space. *Vendor:* IBM, Armonk, NY 10504. $830. Similar software available from Microsoft, Redmond, WA 98073. OS/2 includes the operating system itself, a database manager, Presentation Manager (a Macintosh-like interface) and LAN Requester. OS/2 LAN Manager is a separate, evolving product.

Review

First, some history. The concept of an operating system was fleshed out in the 1960s. Until then, every programmer had to write all the routines for such basic matters as control of the computer screen, keyboard, and printing. As the number of programs grew, it was realized that it would be more efficient to put most of such common functions in one place—the operating system. Less time would be wasted writing the same thing over and over. And, data could be more easily exchanged from one system to another.

If there were no operating system, for instance, a disk formatted to accept AutoCAD files might not be usable by a word-processing program or a spreadsheet. But because DOS does the formatting, everything fits together more easily.

What a difference a few years make. A complete version of MS-DOS or PC-DOS comes on one or two disks and contains about 700 kilobytes of code. Most of that, in fact, can be ignored by most users. The parts of DOS that most people need—a few so-called "hidden" files—take up about 100 kilobytes.

If you want to network computers, however, you need a network program that adds to DOS (such as software from Novell), or you need a new operating system that has networking built in, such as Unix. There are also Unix offshoots such as Xenix, AIX (for IBM) and A/UX (for Apple). Now there is also OS/2.

OS/2 and Unix can also manage more memory in the computer itself than can DOS. To efficiently manage more memory with DOS, you need some kind of "DOS extender" software. The Phar Lap extender is becoming the near-term standard for CAD software.

Finally, as new computers get bigger and bigger, the software that can run on them gets more and more complicated. So the operating systems emerging now take over more of the functions that programmers have been putting into their own software. Both Unix and OS/2 have substantial database-management capabilities, for instance. That leaves programmers more time to direct their efforts toward improving things in their software itself, rather than reinventing commonly needed functions like a database or a common screen for the user to start the program.

The result is that OS/2 with Presentation Manager is huge—20 megabytes of various files. And various commercial versions of Unix are even bigger. In use, from 2 to 3 megabytes of these files end up coexisting with CAD software in the computer's memory. That's 20 to 30 times more than DOS needs.

If OS/2 and Unix do about the same things, why worry about which one to choose? Why not pick the best CAD package and then get whatever operating system works with it? For a totally new CAD installation, that perhaps is a wise approach. But you want CAD now, and you want to protect your investment.

Here are some general guidelines:

Unix is primarily for situations where drawing files are shared from a common database. That is, you have a CAD program running on a workstation, and you tell it to dive into a huge project database on another computer and extract a file to work on.

DOS with a networking program can also do this, although there are in practice more problems with DOS file-locking (you do not want one person widening a stairway from a database while another is ordering the materials based on the old drawing) and with transferring really big files.

In theory, Unix workstations can be mid-priced, because they do not need huge amounts of disk storage, while the central file server is fairly expensive. In contrast, networked DOS computers generally have all the processing power in the (typically expensive) workstations themselves, and the file server can be quite cheap (an old computer with a huge new fixed disk and a tape backup, perhaps).

There are network programs that allow DOS computers to talk to computers that have nothing to do with DOS. The system used to test software for ARCHITECTURAL RECORD, in fact, uses a Macintosh II connected with Appletalk to a specially built IBM AT-compatible (a machine with an 80286 CPU chip, normally using DOS). In the summer of 1989, an IBM PS/2 Model 80 with an 80386 chip was added. It is being equipped to run OS/2, Xenix, and DOS.

OS/2 goes one step further. It allows the use of a separate program that fits on top of it—OS/2 LAN Manager. In theory, this will allow sharing of applications (CAD software, for instance) as well as of files. In other words, one computer using OS/2 and OS/2 LAN Manager can send both drawing files and applications to old DOS-based personal computers that also have a LAN Manager interface but are not big enough to run OS/2 itself. Or they may be running only an old-style DOS network program such as available now from Novell. Microsoft promises a LAN Manager interface for the Apple Macintosh, too. OS/2 also has a DOS "window" that runs your old software, although slowly.

The idea is that in an OS/2 office with LAN Manager, the "user" portion of an application runs on the local workstation—the Input screens and Help screens. The under-the-hood "engine" of the application can run on the server (the central computer with the drawing files and the CAD software).

Depending on the applications program being run, and on the power of the workstation, more or less of the application can end up on the workstation or on the server. This allows some flexibility in office planning. The 80386 chip is more than a bigger, faster version of earlier chips. It also handles memory far more efficiently, making writing CAD software easier.

And, although the current version of OS/2 handles data 16 bits at a time—and is thus suitable for older 80286 computers—only 80386-equipped computers will likely be able to use the full versions of OS/2 in the future.

So: To preserve the ability to more easily upgrade to new operating systems, particularly OS/2, plan ahead and buy computers equipped with the 80386 chip. If money is a problem, buy 80386SX-equipped computers. They will run a bit more slowly than the 80386, but are only slightly more expensive than 80286 computers. And they preserve upward compatibility to all of the future OS/2 products and eventual Unix-based systems.

But: You do not have to run OS/2 versions of CAD software now, unless you must move to a networked system. The massive amounts of memory and disk space needed for OS/2 can be purchased later for your existing computers.

Doing business in Singapore takes a bit of cultivation.

Although the business world of Singapore is thriving, trying to deal with its three very distinct cultures —Chinese, Malay and Indian—takes patience, time and understanding.

Let's have a meal, let's make a deal.

An essential tool of business is hospitality. Visitors are treated to lavish entertainment before and during negotiations. Also, it's important to know that you're required to return the favor. An excellent choice for dinner is the Domus restaurant at the Sheraton Towers Hotel. Telephone: 737-6888

Everyone's a winner.

Saving face is important. Singaporeans won't tolerate losing an argument, but they won't let you lose face either as they're very aware of the pride of others. A quick word of advice: just call it a draw.

Are you single?

Don't be surprised if people ask you very personal questions, just answer politely but keep all of your own inquiries as objective, considerate and impersonal as possible.

Northwest notes.

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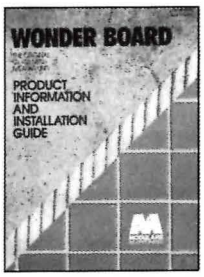
Product literature

For more information, circle item numbers on Reader Service Card

Architectural hardware
All standard Russwin cylindrical and mortise locksets, levers and knob handles, closers, and exit devices are illustrated in a 16-page specification catalog. Russwin Div., Emhart Hardware, Berlin, Conn.
Circle 400 on reader service card



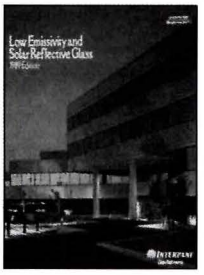
Cementitious backerboard
An eight-page technical guide demonstrates how Wonder-Board performs in fire-rated and standard wall assemblies, and details its use as a substrate for tile on floors, walls, and counters. Modulars Inc., Hamilton, Ohio.
Circle 401 on reader service card

Marble compartments
Color photos of brand-new and 60-year-old washrooms illustrate a 12-page catalog on Marblstal toilet and shower partitions, made of natural marble in four distinct colorations. Georgia Marble Co., Nelson, Ga.
Circle 402 on reader service card

Graphic art
A six-page brochure illustrates FutureVision graphics, large-scale artwork for corporate interiors created using a photographic enhancement technique. FutureVision, Old Westbury, N. Y.
Circle 403 on reader service card

Wood bookcases
A color catalog introduces a line of shelving built not to sag, even under very heavy loads. Header and base trim options let a row of cases look like custom architectural woodwork. Springer-Penguin, Mount Vernon, N. Y.
Circle 404 on reader service card

Fire-rated doors
The 20-minute version of the Fiber-Classic fiberglass door and a B-Label, 90-minute steel door are introduced in a four-page technical brochure. Therma-Tru Corp., Toledo, Ohio.
Circle 405 on reader service card



Coated glass
Color photos of recent projects demonstrate the architectural capabilities of both colored and neutral high-performance glass coatings. Charts list solar values for all products. Interpane, Deerfield, Wis.
Circle 406 on reader service card

Granite and marble
Residential, corporate, and hotel uses of natural stone are illustrated in an eight-page design catalog. Close-up photos show some of the over 100 colors stocked in this country. IGM, North Bergen, N. J.
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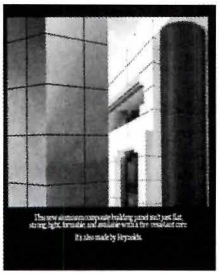
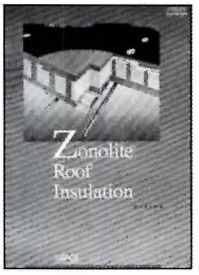


Architectural cladding
An illustrated design brochure on Reynobond, a curvable, aluminum-faced composite panel, documents its fire-, acid-, salt water-, impact-, and scratch-resistance. Reynolds Building Products, Atlanta.
Circle 408 on reader service card



Roof-insulation system
A 12-page specification guide explains the advantages of the Zonolite system, which uses insulating concrete to provide fire resistance and compressive strength. W. R. Grace, Cambridge, Mass.
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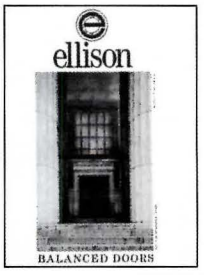

Entrances
Construction details and installation photographs of bronze, aluminum, and stainless-steel entrance systems are included in a 16-page architectural brochure. Ellison Bronze Co., Inc., Falconer, N. Y.
Circle 410 on reader service card

Circular furniture
Colorful nylon-coated steel stools, tables, and umbrella stands, designed by Winfried Scholl, are illustrated in an eight-page brochure. Hewi, Inc., Allendale, N. J.
Circle 411 on reader service card

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 94-97
Gould/Rothschild Dental Building
Burr & McCallum Architects
Wood windows: Marvin. Soffit lighting: Stonco. Locksets: Russwin. Vinyl tile: Armstrong. Pendant lights: Holophane. Recessed lights: Lightolier.

Pages 98-107
Cornell University Center for the Performing Arts
James Stirling Michael Wilford and Associates in collaboration with Wank Adams Slavin Associates, Architects
Pages 98-103—Cladding: Vermont Marble. Sealants: Sonnenborn. Windows: Modu-Line. Storefronts: Kawneer. Entrances: Ellison. Metal paint: Tnemec. Crook-neck lights: Hubbell. Rectangular lights: Crouse-Hinds. Walk lights: Kim. Glazing: Falconer. Railings: Delhi Steel. Membrane roofing: Carlisle. Slate: Ethan Allen Slate.
Page 105—Paints: Glidden. Flooring: Vermont Marble. Cathode lighting: National Cathode. Downlights: Kurt Versen. Hemispherical sconce: Visa Lighting. Louvers: Construction Specialties. Theatrical lighting: Strand Century.
Page 106—Downlights: Kurt Versen. Linoleum: Forbo.
Page 107—Fixed seating: Irwin Seating. Fabric: Hasting Chatham. Carpeting: Bigelow. Up/down lights: Kurt Versen. Low-voltage lighting: CJ Lighting. Wall paneling: Wolf-Gordon Wallcoverings. Interior doors: American Steel Products.

Pages 108-111
Student Houses,
The Lawrenceville School
Short and Ford Architects
Pages 108-110—Brick: Hanford Brick. Detail brick: Taylor Clay Products. Standing-seam roof: Zip-Rib Products. Windows: Pella.
Page 111—Louvers: American Abrasive Mfg. Paints: Con-Lux. Wallpaper: Clarence House. Floor finish: Benjamin Moore. Chairs and tables: Spectrum.

Pages 112-115
Centennial Hall, Barnard College
James Stewart Polshek and Partners, Architects
Pages 112-114—Curtainwall and entrances: Kawneer. Aluminum panels: Construction Specialties.

Double-hung windows: Traco. Cast stone: Bogert Precast. Batten-seam copper: Colonial Roofing. Outdoor fixtures: Poulsen Lighting.
Page 115—(top left) Wainscot and custom woodwork: Frederick Schill. Paints: Sherwin Williams. Tables: Intrex. Upholstered seating: Chairmasters. Fabric: UnikaVaev. Lighting: Nessen. (bottom left) Fabric-wrapped wall: Stretch Wall. Fabric: Maharam. (right) Chairs: ICF. Tile flooring: American Olean. Ceiling: Armstrong.

Pages 116-117
Andres, Zimmerman, and Morton Halls
Dartmouth College
Herbert S. Newman Associates, Architects
Water-struck brick: Morin. Operating and fixed windows: Season-All Industries. Copper roofing: Gracie Roofing. Dorm furniture: Modern Contract. Pendant: Poulsen Lighting.

Pages 118-121
Class of 1927/Clapp Hall
Princeton University
Koetter, Kim & Associates, Architects
Brick: Glen-Gery. Cast stone: Paul Brothers. Copper roofing: Revere. Slate: Vermont Structural Slate. Windows: Fred Boschan. Dorm furniture: Modern Contract.

Pages 122-127
William Davis Computer Research Center
University of Waterloo
Waterloo, Ontario
Mathers & Haldenby Inc., Project Architects
The IKOY Partnership, Design Architects
Pages 122-125—Corrugated aluminum cladding: VicWest Metals. Glazing: LOF (Eclipse). Curtainwall: C. G. Tech, Ltd. Pole-mounted luminaires: ProLight.
Pages 126-127—Stools: Jayden. Benches: Forms & Surfaces. Carpeting: Harden. Uplights: ProLight.

Pages 128-133
Headquarters of the National Resources Defense Council
The Croxton Collaborative, Architects
Pages 128-129—Double-hung windows: Traco. Skylights: Alpen Glass. High-performance glazing: Southwall Technologies (HeatMirror). Panic hardware: Yale. Cabinet pulls and hinges: H.B. Ives. Paints: Benjamin Moore. Carpeting: Couristan. Conference seating: Worden. Systems furniture; conference room panels: Knoll International. Circular pendant fixtures: Mark Lighting. Track lighting: Lightolier.
Pages 131, 133—Pendant lights: Linear. Motion-sensing controls: Tork. Under-shelf task lighting: Zumtobel. Downlights and wall washers: Edison Price.

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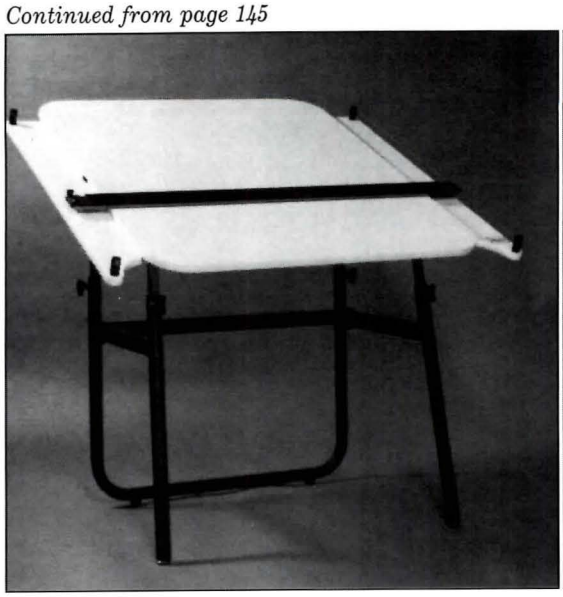
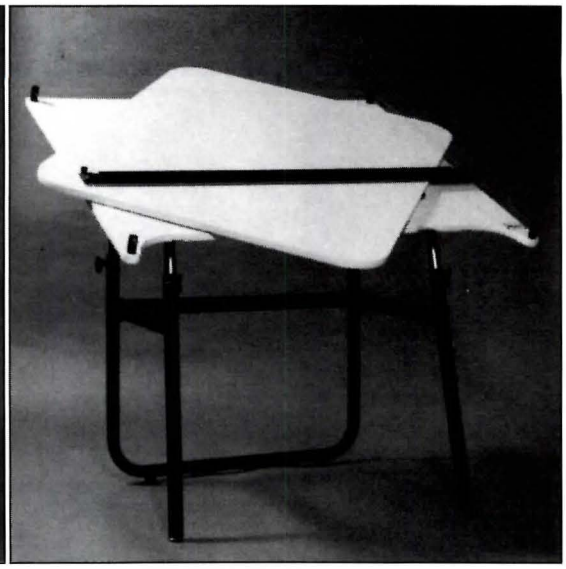
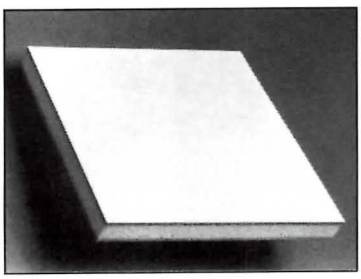
Continued from page 145





Rotatable drafting board
Available in either portable or base-mounted versions (pictured), this drafting board has a drawing surface that can be rotated a full 360 deg without interfering with the parallel slide. A locking device sets the surface at any desired angle. Straps secure the portable board to any existing table. Available in three sizes, up to 34- by 42-in. Kelpro Corp., Syosset, N. Y.
Circle 327 on reader service card
Continued on page 161



Insulated spandrel panels
An extension of the Panel 15 line, Insulative Foam Panels have polystyrene or isocyanurate thermal-insulating foam sandwiched between structural wood panels. Panel faces are aluminum, surfaced with a smooth Kynar finish or a textured-acrylic coating, in any standard, special, or custom color. R-values can be as high as 47.14, depending on core, thickness, and surface specified. Weyerhaeuser Co., Tacoma, Wash.
Circle 325 on reader service card

Vaste containers
Molded of fire-retardant hermoset resin, sculptural ontainers come in four bright el-coat colors. Glassform, ompton, Calif.
ircle 326 on reader service card

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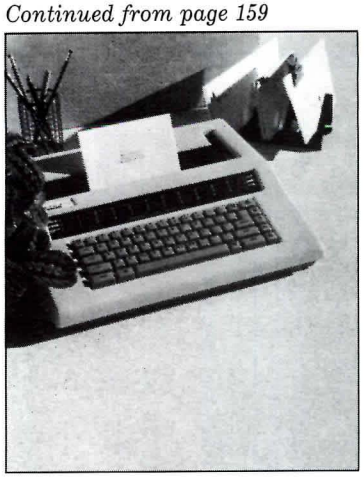
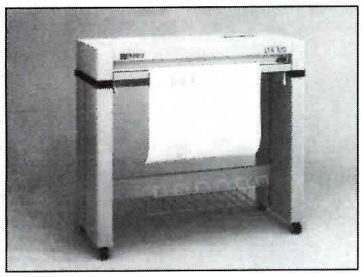
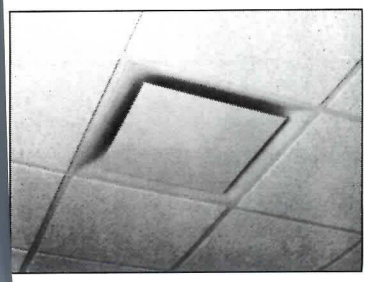
Continued from page 159



Inlaid vinyl
Three new colors—taupe, steel, and white (pictured)—in the Boulevard pattern have been added to the Marathon heavy-traffic flooring line. Congoleum Corp., Lawrenceville, N. J.
Circle 328 on reader service card



Thermal-transfer plotters
A fast, direct-imaging unit intended for users requiring over 20 plots per day, LTX-320/420 plotters create monochrome D- and E-size drawings from all types of CAD systems. Cost: $10,995 and $13,995. Roland Digital Group, Los Angeles.
Circle 329 on reader service card



Flush-face diffuser
The Omni has a smooth, 18-gauge steel face panel with radius edges. Designed for VAV systems, the diffuser is said to project a tight blanket of air across the ceiling, preventing drafts and reducing smudging. Titus Products, Richardson, Tex.
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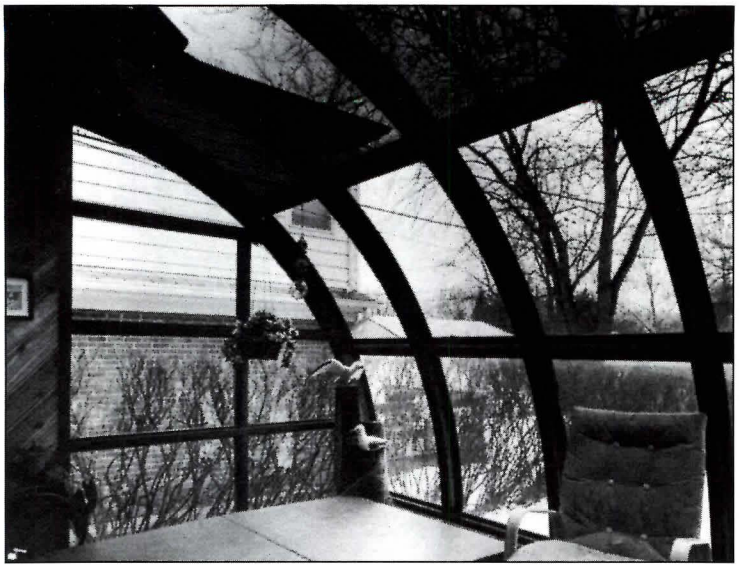

Curved-beam sunroom
Offered in economical kit form, the Sunbeams enclosure has a framework of curved beams made of foamed Lexan resin, with molded-in flanges and end plates. It is said to be light enough not to need a foundation, yet have a load-bearing capacity of up to 100 psf. Plastic glazing panels fit into molded-in channels; the 4-ft beam sections bolt together. Codes permitting, the sunroom can be fastened directly to a deck, and will flex sufficiently to accommodate settling. Keolyn Plastics, Mount Prospect, Ill.
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Continued from page 57

Rogers, and Max Hutchinson, the new president of RIBA, all took part, as well as the "enlightened patron" and developer, Stuart Lipton, and critic Charles Jencks.

The tone was more conciliatory than might have been expected under the circumstances, with few willing to take on the Prince, who has cunningly always refused a face-to-face debate with his opponents. While several observers thought the Prince had dealt in superficialities rather than architectural fundamentals, and all wanted to avoid a style war between Modernism, Postmodernism (which Hutchinson calls Bimbo Architecture) and Classical Revival (which the Prince likes), it was Mrs. Thatcher's government and the developers who bore the brunt of their response. The government lacked vision and a commitment to quality public projects, unlike President Mitterand of France with his *grands projets*, and most developers were still motivated primarily by greed, they said.

Some, like Peter Carolin, Professor-elect of Architecture at Cambridge, took up Richard Rogers's charge that the Prince was using his position to intervene undemocratically in the planning process; others believe, like Hutchinson in his book, that the heir to the throne is using architecture as a political tool to popularize a modern, pro-active monarchy.

In an extraordinary opinion poll conducted last month for the *Architects' Journal*, 78 percent of all architects said they thought the Prince should keep speaking out; 75 percent said they thought his grasp of the issues was average or above average. His support for Classicism and the idea of his Ten Principles improving the quality of what was built were overwhelmingly rejected.

But Sir Andrew Derbyshire, a leading architect and president of the firm RMJM, set the tone for the future. The Prince had been "too shrill" in his condemnations, which provided an "equally shrill and hysterical response" from some architects, notably RIBA President Hutchinson. Despite all the brouhaha, one suspects a truce might be called by Christmas.

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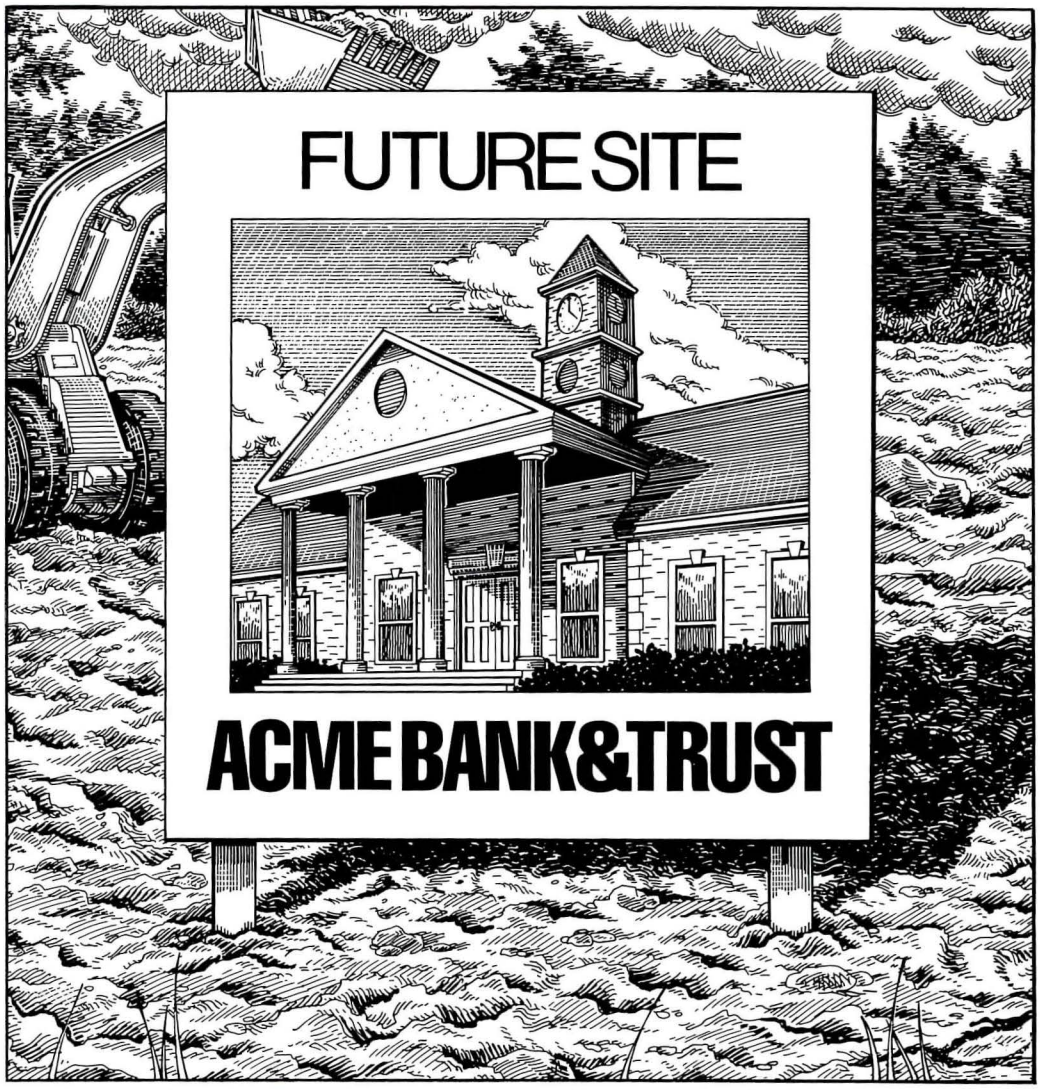

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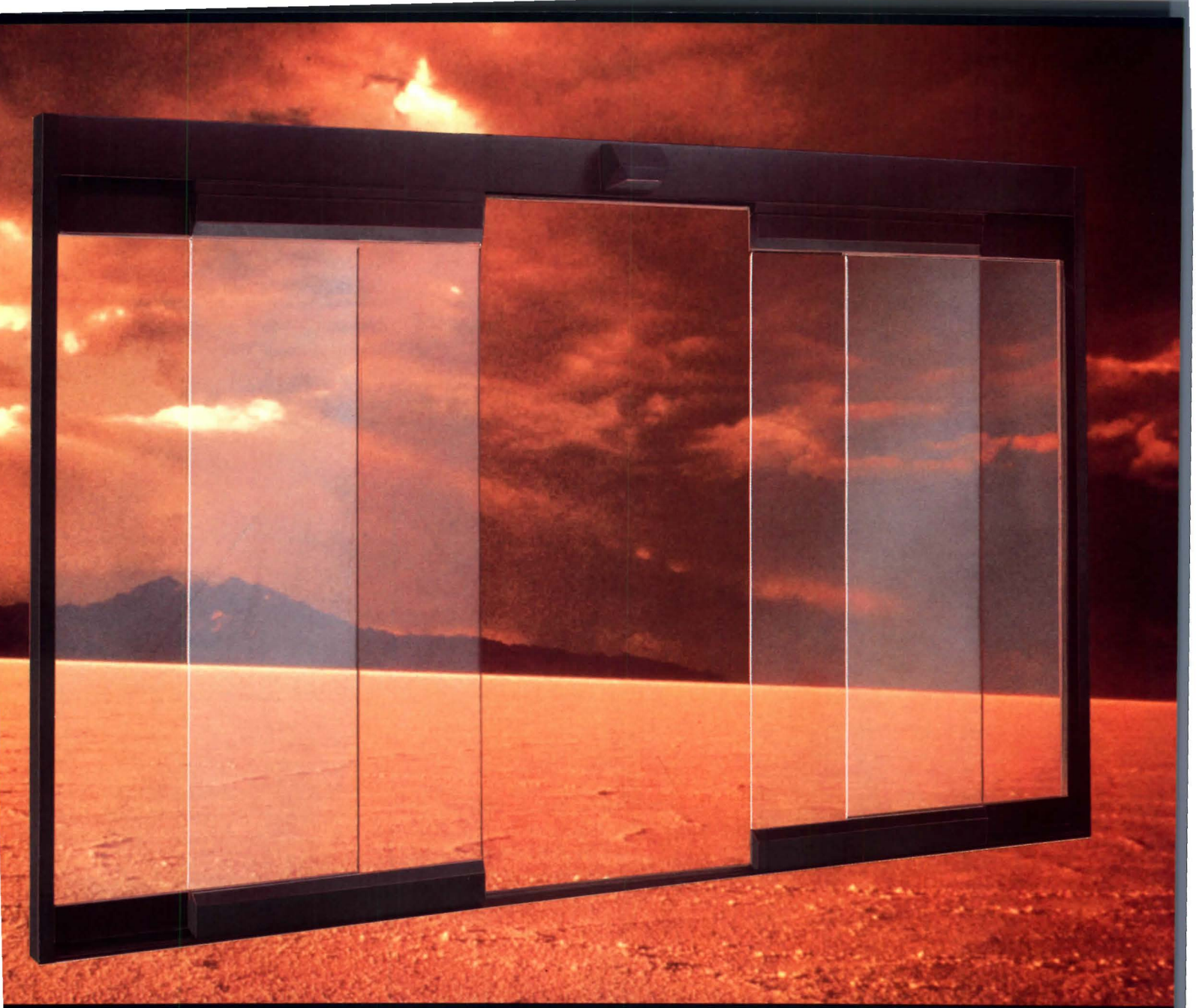

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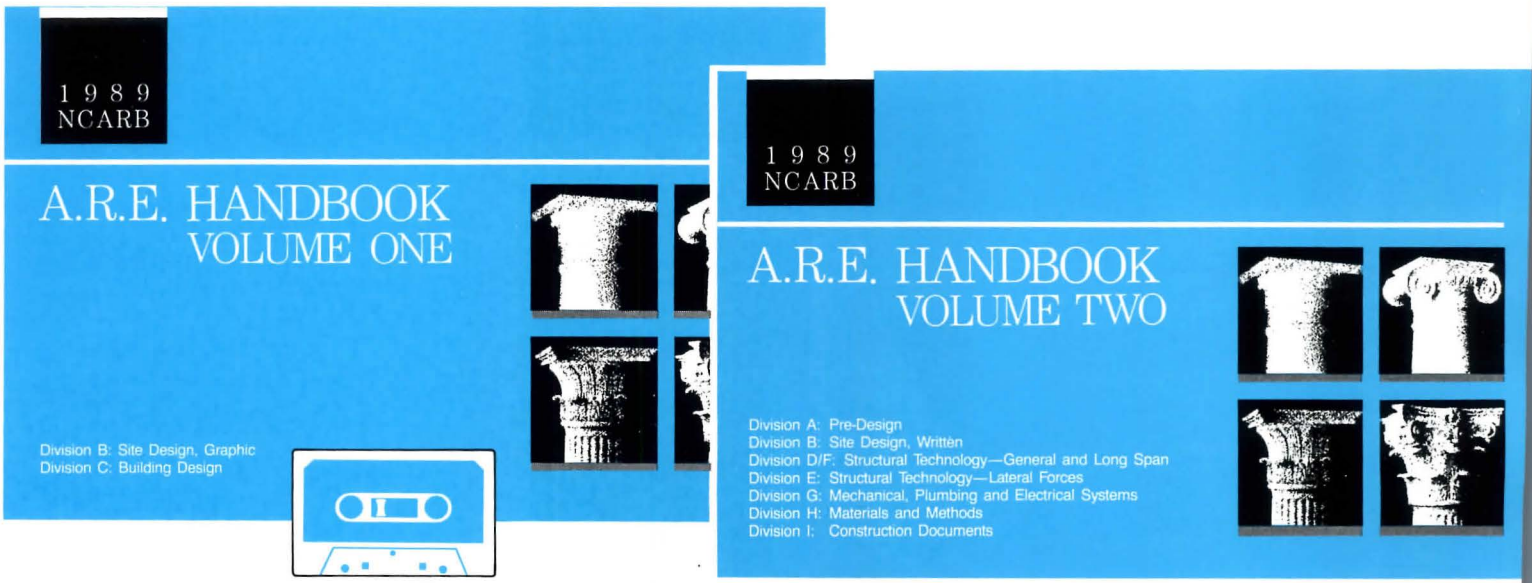

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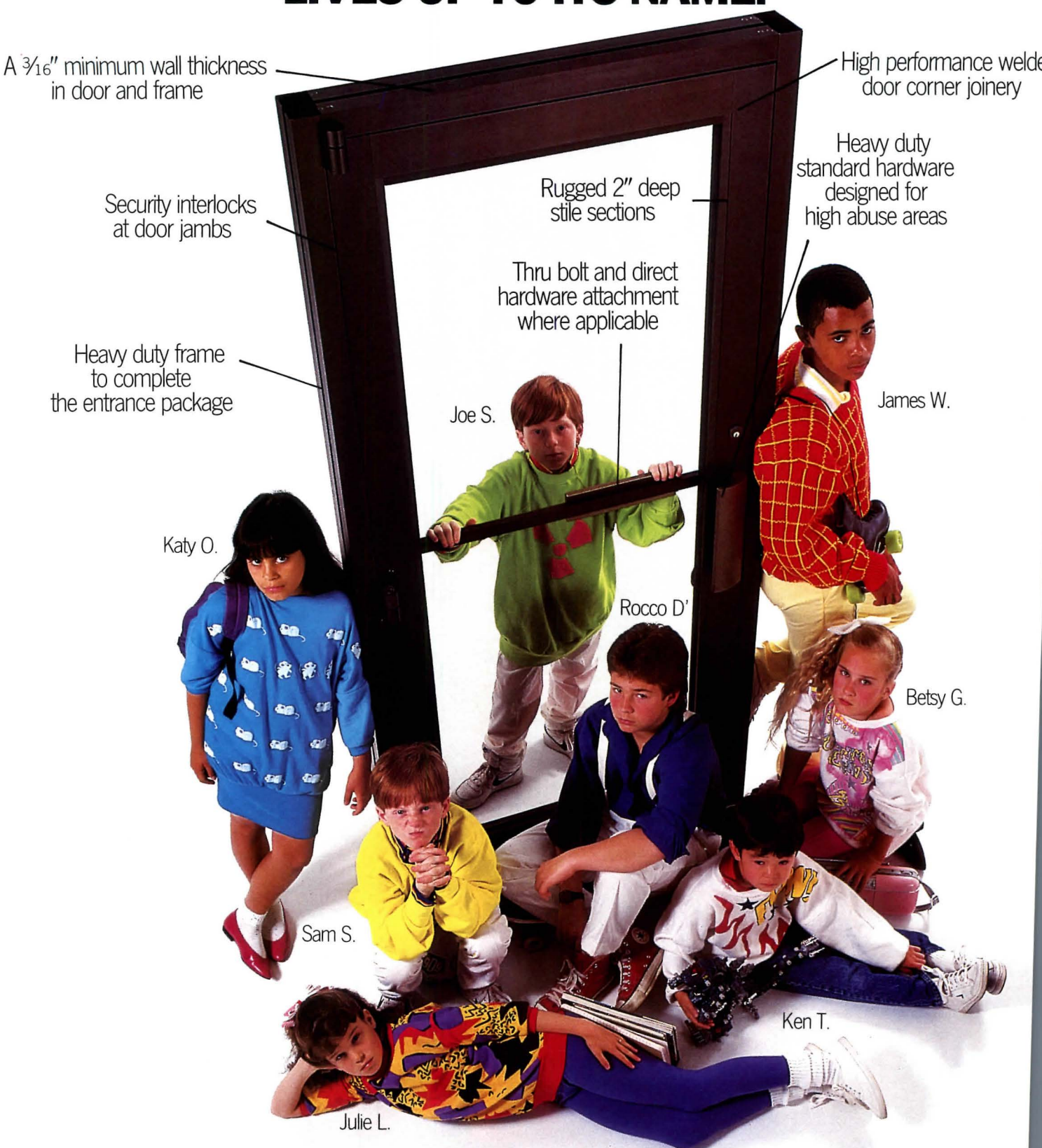

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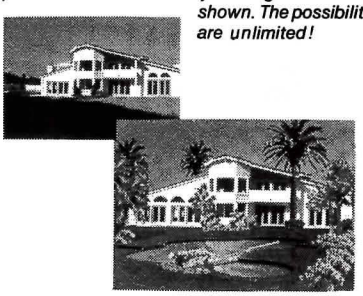

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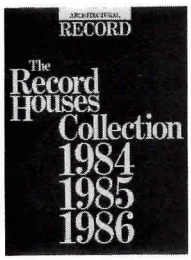

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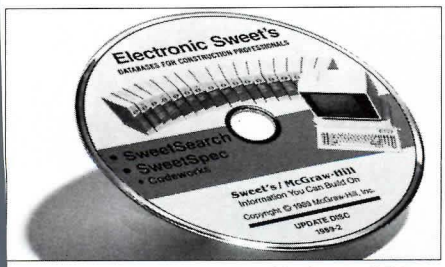

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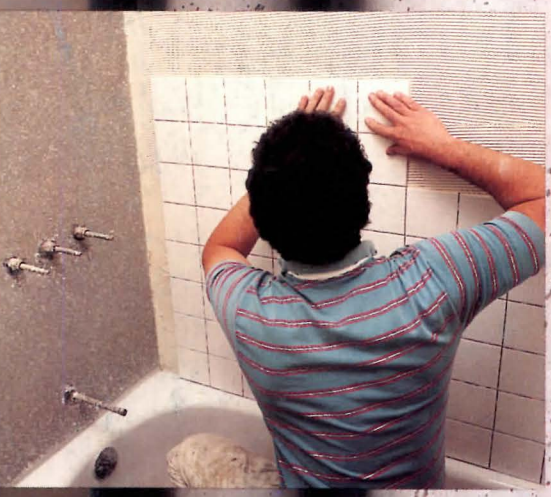

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