Progressive Architecture

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Editor in charge: Thomas Fisher

ARCHITECTURAL DESIGN

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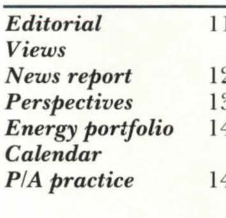
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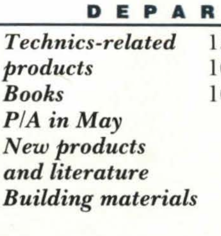
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DEPARTMENTS

Cover
Design by Richelle Huff, based on photo by Paul Hester of Herring Hall (p. 86) and pattern of wallpaper (p. 94) by Cesar Pelli & Associates.

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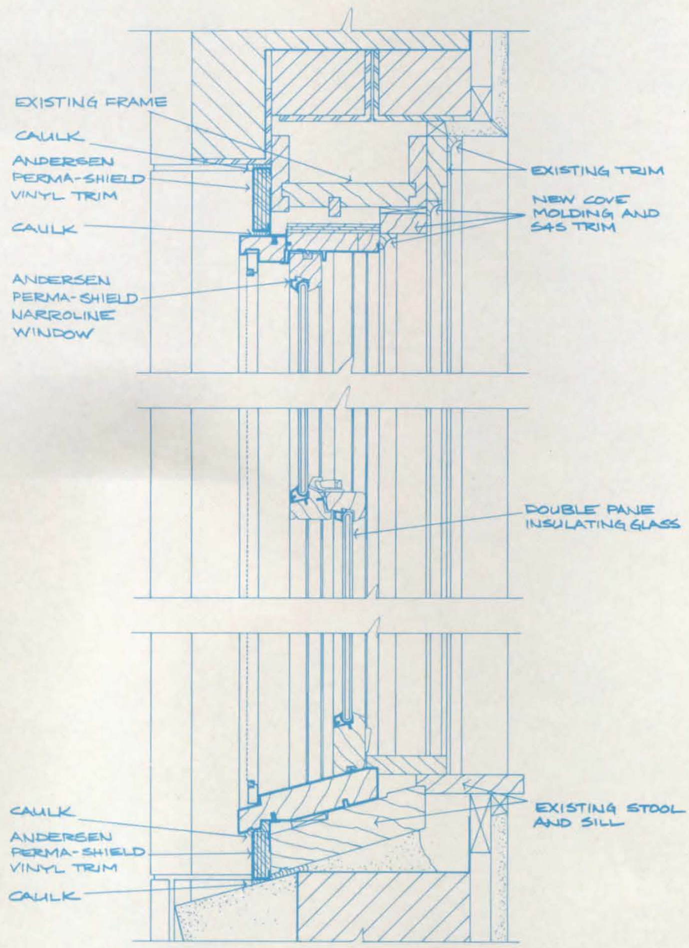

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Twenty-five years on watch II: The press

There are many potential channels for communication about architecture—lectures, conferences, exhibitions, film, electronic media, and many embodiments of the printed word. With all these modes in use, the profession's principal medium for communicating with itself remains what you have in your hand—the architecture magazine.

The content of these magazines has changed somewhat over these 25 years, paralleling changes in practice. The architecture magazines all give more space than in 1960 to interior design, urban design, remodeling, and preservation, for instance. But the mainstay of editorial content—the perennial favorite type of article among readers—remains the descriptive feature about a new work of architecture.

Criticism of current architecture in the magazines has been a subject of heated discussion throughout these years, but there has been little net change. There is, however, generally more effort toward responsible interpretation today than in the early 1960s, when most new accomplishments of Modernism got boosterish coverage (and when articles were often written by editors who had not actually visited the buildings in question). Although P/A has in the recent past published strongly critical features on projects that we have considered major architectural blunders—the New York State government complex at Albany, for instance—the principal means of negative criticism has remained simply ignoring works thought to contribute little to the advancement of architecture.

Although most architects are in favor of strong criticism, as readers, they are much inclined to view negative observations about their own work—even in generally favorable articles—as unjustified or not "responsible." Since professional readers want the kinds of information only the architects can provide—detailed drawings, design rationale, etc.—every explicit criticism must be seen as threatening a magazine's key source of information. (Newspaper writers, by contrast, can be quite cavalier in their criticism.)

Critical writing about public policy was a major subject of professional magazines in the late 1960s and early 1970s, but has diminished as government involvement in development has withered. There are still significant things to be said about policies on landmarks, zoning, and taxation, for instance, and something to be said about worthwhile efforts that are simply not being made (as in P/A's *Essays on Housing,* July 1984).

In the physical make-up of magazines, the most striking change has been the shift from largely black-and-white editorial pages of 25 years ago to a predominance of full-color illustrations. This is largely the result of technical improvements in color photography and printing, but these are not unmixed blessings. Printing techniques and papers chosen to yield good color reproduction make it hard to get the good black-and-white reproduction that used to be commonplace.

The make-up of magazine staffs has changed little, in these years, except for the individuals involved. It remains a valid generalization that about half the editors of a professional magazine have architecture degrees and half come from other fields. (Only the AIA's own magazine, oddly, has had hardly any architecturally trained staff members.) Today's younger staff editors tend to have master's degrees—which were rare in this field in 1960—in whatever they've studied.

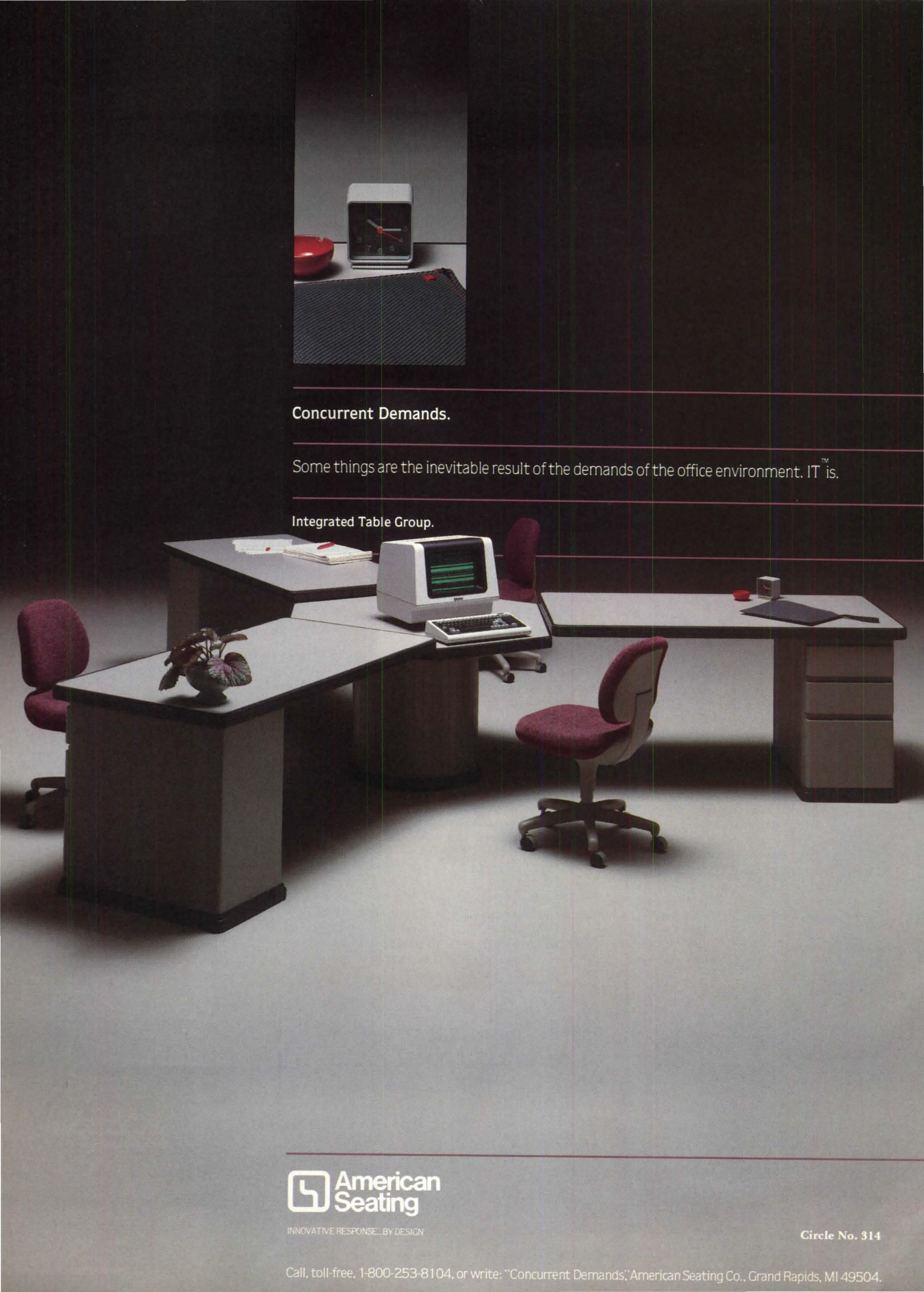
While the major American architecture magazines have played a rather steady role in the profession during this period, other published material on architecture had an almost explosive growth during the 1970s. Newspaper coverage of architecture may still fall short of our expectations—in both quantity and quality—but it is impressive compared to virtually no coverage at all in 1960—and it results from a long and continuing effort by writers and lobbying architects. Reasonable attention is now the rule in the national news weeklies, too. The legion of city and regional magazines that sprang up in the 1970s has proved to be an appropriate outlet for writing about architecture, sometimes thoughtfully relating it to government and real estate issues.

Within the field of architecture, there has been a striking growth in little magazines, pragmatic ones put out by AIA components and academic ones associated with schools. A blizzard of books on architecture has been augmented by catalogs for a greatly increased number of exhibitions. And the foreign architectural magazines from Western Europe—also relatively stable over these 25 years—have been supplemented by a number of new ones out of Japan, with text in English and an enthusiasm for American building.

To date, the most modern of media, television, has been little used to communicate about architecture. For decades, the processes of televising and broadcasting have been too expensive for specialized areas such as this, but given today's world of handy television cameras, VCRs, and computer graphics, we should soon be seeing substantial electronic communication on the subject of architecture. ■

John Morris Dixon

During the years I have worked in architectural journalism, it has changed only moderately and maintained its role in the profession it serves.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Views

Gehry: accretion ennobled

When presented with such delightful architecture as Frank Gehry's Loyola Law School (P/A, Feb. 1985, pp. 67–77), I hesitate to analyze too much, but the work is so tightly woven and provocative, who can resist?

Pilar Viladas's discussion of precedents found in Gehry's architecture was insightful. To emphasize one, the roots of Gehry's spectacular visions are deeply American. Gehry notes this. As much as this work resembles the Acropolis, the relationship of its organizational structure to Los Angeles (or any other city, for that matter) is as compelling. Accretion pervades. Historically, and not so strangely, this development in the American city has been looked upon with distaste. By God, it is ironic that the great man himself, Daniel Burnham, looked to European precedents (of all places, Rome!, among others) to sustain order, but what different results!

Turning to particulars, I am also struck by the teetering abandon Gehry shares with (talk about American) Frank Furness. Consider, for example, Furness' Undine Barge Club, the Philadelphia and Reading Railroad Depot or the Baltimore and Ohio Passenger Station (illustrated in O'Gorman, J.F., *The Architecture of Frank Furness,* Copyright 1973 by the Philadelphia Museum of Art, Philadelphia, The Falcon Press). The great quote on this sort of stuff (best known because Venturi cites it in the last pages of *Complexity and Contradiction in Architecture)* is from August Heckscher. "Chaos is very near; its nearness, but its avoidance, gives . . . force."

James O. Phelps
Minneapolis, Minn.

Cladding for quakes

I was pleased to see in the January issue a recognition of the importance of research focusing on the performance of exterior building cladding in earthquakes (see "Seismic Performance of Curtain Walls," P/A, Jan. 1985, pp. 164–165). As the engineering consultant for this project, I feel that the results of the research clearly demonstrated some of the basic difficulties inherent in enclosing a relatively flexible steel frame with rigid precast concrete cladding panels. The flexibility of the steel frame presents the major difficulty in the design of building cladding and its connections.

The project showed that, even if cladding connections are properly designed according to current practice in the U.S., the cladding in the vicinity of building corners does not accommodate the movements of the building frame. This is because the joints between panels are limited in width to ¾″ to 1″ for weatherproofing, while seismic interstory movements are expected to be larger than that by a factor of 3 to 4.

Experience in non-seismic areas has shown that cladding properly designed and connected can actually be used to reduce interstory movement and help control the cost of the building frame (see "Thinking Tall," P/A, Dec. 1980). The use of energy-absorbent cladding connections to help limit building drift under seismic loading is therefore suggested as an area worthy of future research.

The seismic performance of building cladding is a field in which design professionals could direct their attention and talent to produce real improvements. Too often, however, present practice defers the engineering design of the cladding and its connections to the cladding subcontractor, and the consultants do not pay sufficient attention to the engineering details. Alternatively, more attention on the behavior of the cladding by the primary design consultants would improve performance, promote innovation, and trim costs overall.

James Caid
Kardon/Caid, Structural Engineers
Oakland, Calif.

More light on McKim, Mead & White

I was pleased to see a review of the recent books on McKim, Mead & White by Brett Donham (P/A, Jan. 1985, p. 173), for it helps raise the level of discussion concerning the issue of transforming an architectural style of the past to the needs and taste of the present. It is a hot issue, but as Donham suggests, it is too frequently oversimplified (e.g., "tacking paper-thin and grotesque 'Doric' columns on a waterfront cottage").

I feel, however, that Donham has engaged in a bit of oversimplification himself. Although historical complexities are difficult to suggest in a brief review, there are questionable assumptions and assertions underlying his commentary and, by implication, the books he is discussing.

"The early period of the firm," Donham writes, "was characterized by . . ." and he goes on to talk about a conflict of styles in which, among others, Ruskin's "Gothic or some variation of that" is seen as less appropriate to the situation in America than "the Colonial and Federal styles with their Renaissance roots." I feel certain that Donham is aware that there is more to the interest in Gothic of Ruskin and his followers than he suggests in this review, and that there is more to draping a classical mantle over the Columbian Exposition of 1892–93 than an urge to be "democratic yet uplifting."

The struggle between the architects of what he calls the "American Renaissance," on the one hand, and those of the Arts and Crafts Movement, on the other, was and is important. After all these years, I think it is time that we stopped exaggerating their stylistic differences and blurring or, worse, utterly ignoring the opposing economic and political forces that underlie their contrasting architectural principles. Despite Donham's casual dismissal of Louis Sullivan's oft-quoted cry of despair over the choice of style for the Columbian Exposition, Sullivan really was defeated in a very real, ongoing struggle.

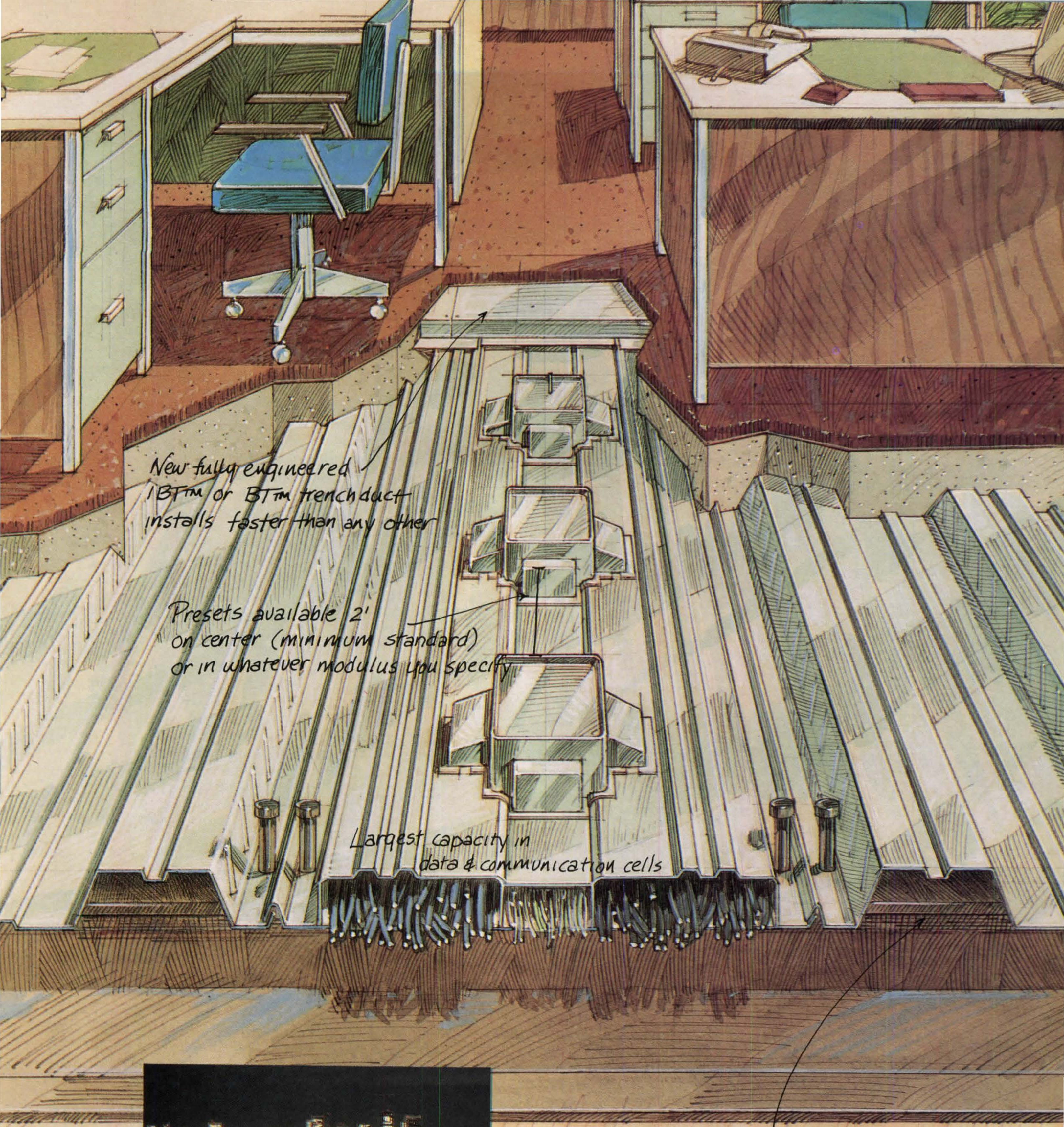
"To produce such an enormous amount of work of such high quality," Donham asserts that McKim, Mead & White "took the practice of architecture out of the atelier and developed the prototype of the modern office practice, employing over 100 persons at times in a well-organized system." Again, I am sure Donham knows more about the battles that were and are being fought over this issue than he suggests here. The chapters on the transformation of the architect into a professional and businessman in Andrew Saint's *Image of the Architect* (New Haven: Yale University Press, 1983) present, I believe, an intriguing sketch of the battlefield. I also think the "necessary companion" (to use Donham's expression) to the formalist view of architectural history represented by his review and the books he discusses is *The American City* (Cambridge: MIT Press, 1979), especially its analysis of the Columbian Exposition and the City Beautiful and Parks Movement it introduced.

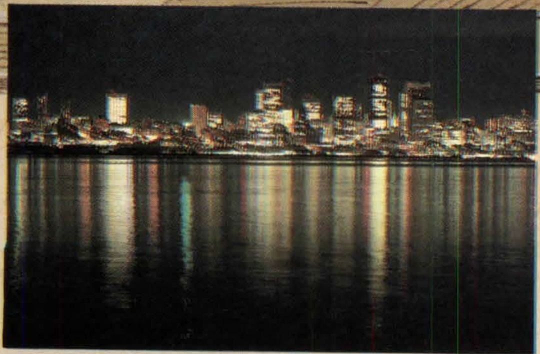
Although I disagree with Donham's ideas concerning the historical significance of McKim, Mead & White, I am grateful for the opportunity he offers to think about their work.

Harris Stone
School of Architecture and Urban Design
The University of Kansas
Lawrence, Kans.

Photo credit correction

Photos of the Damascus Gate and the plaza in front of the Damascus Gate (P/A, Jan. 1985, p. 132) were taken by Deborah Brownstein.





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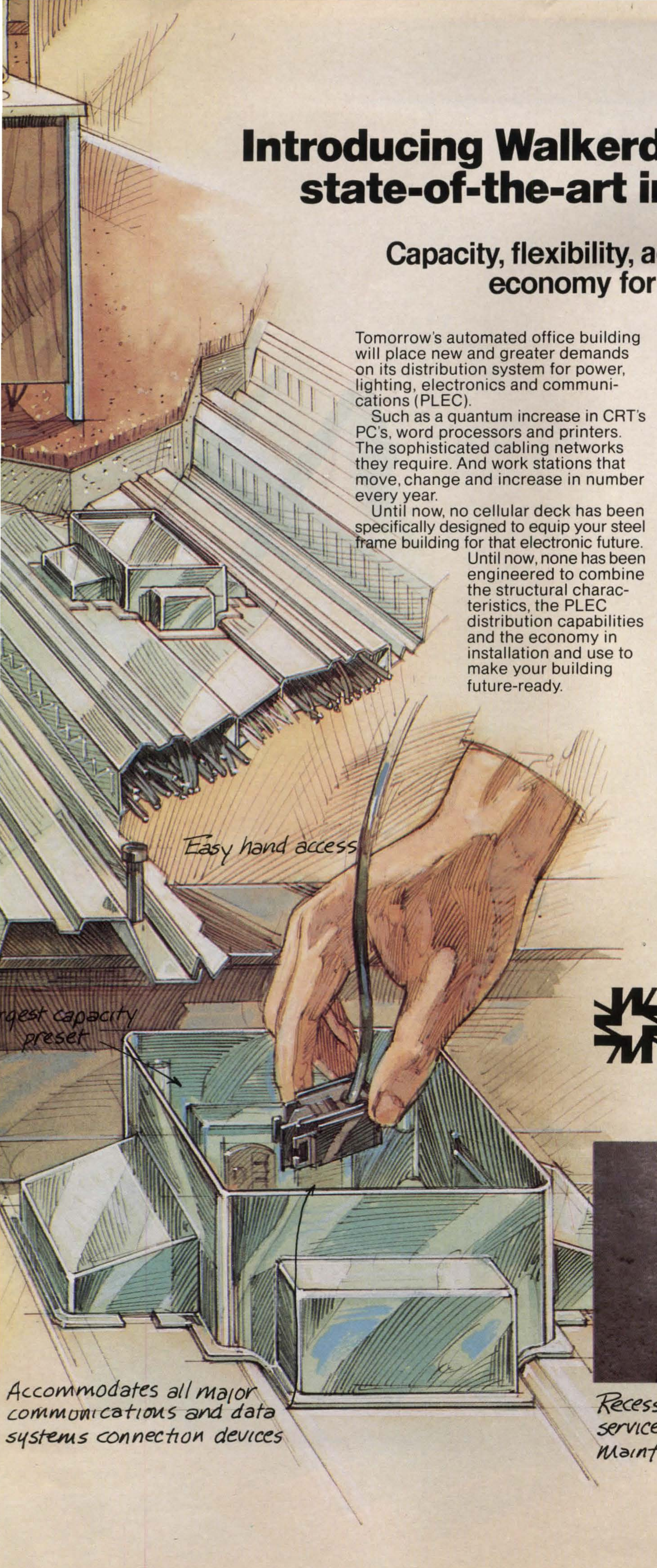

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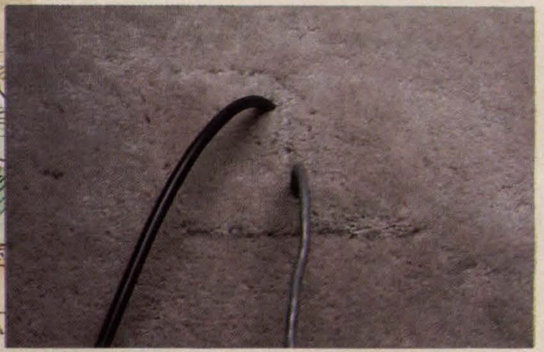

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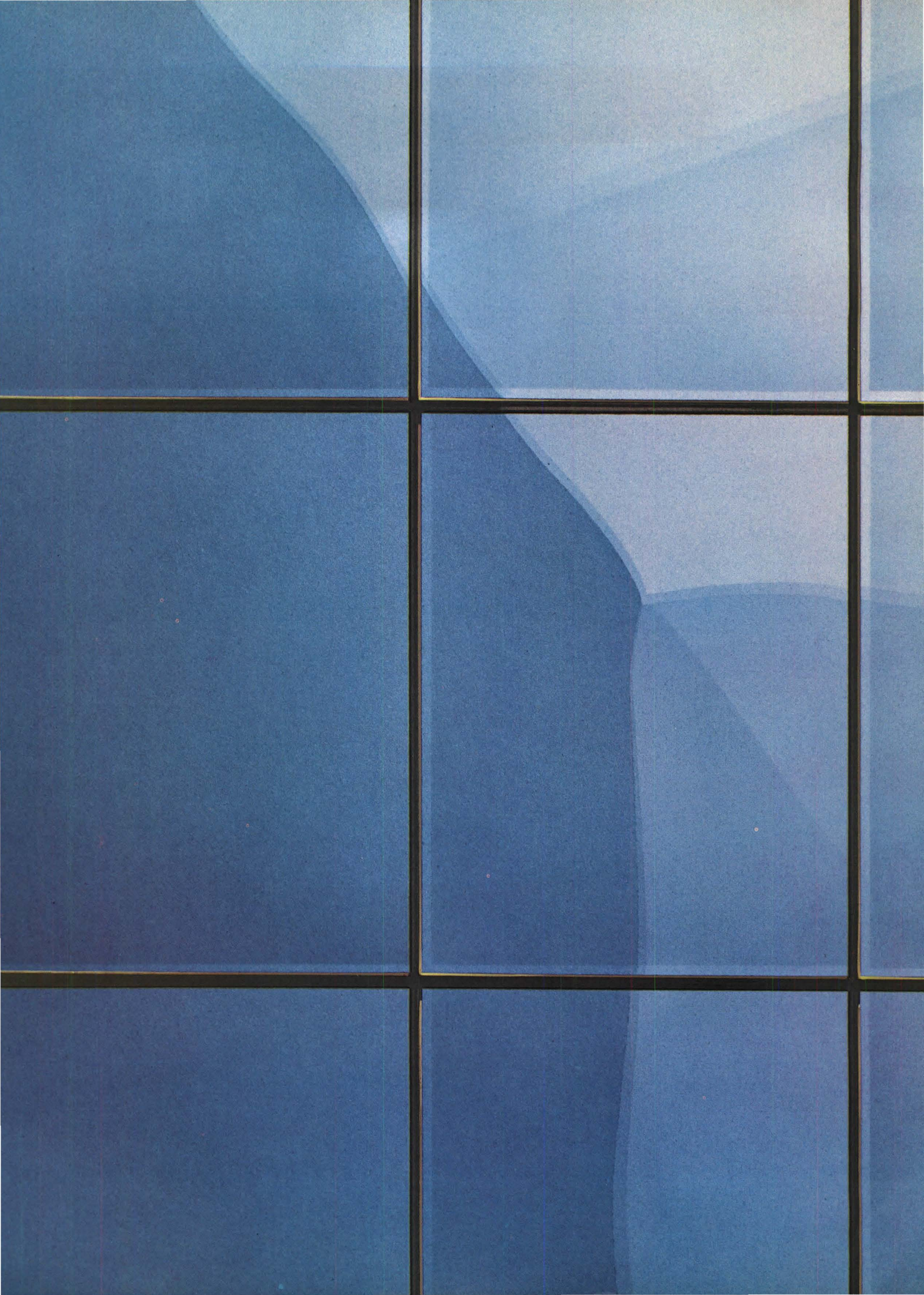


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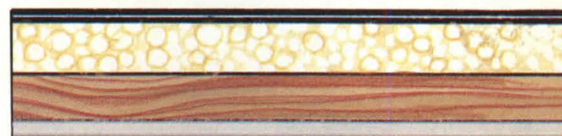

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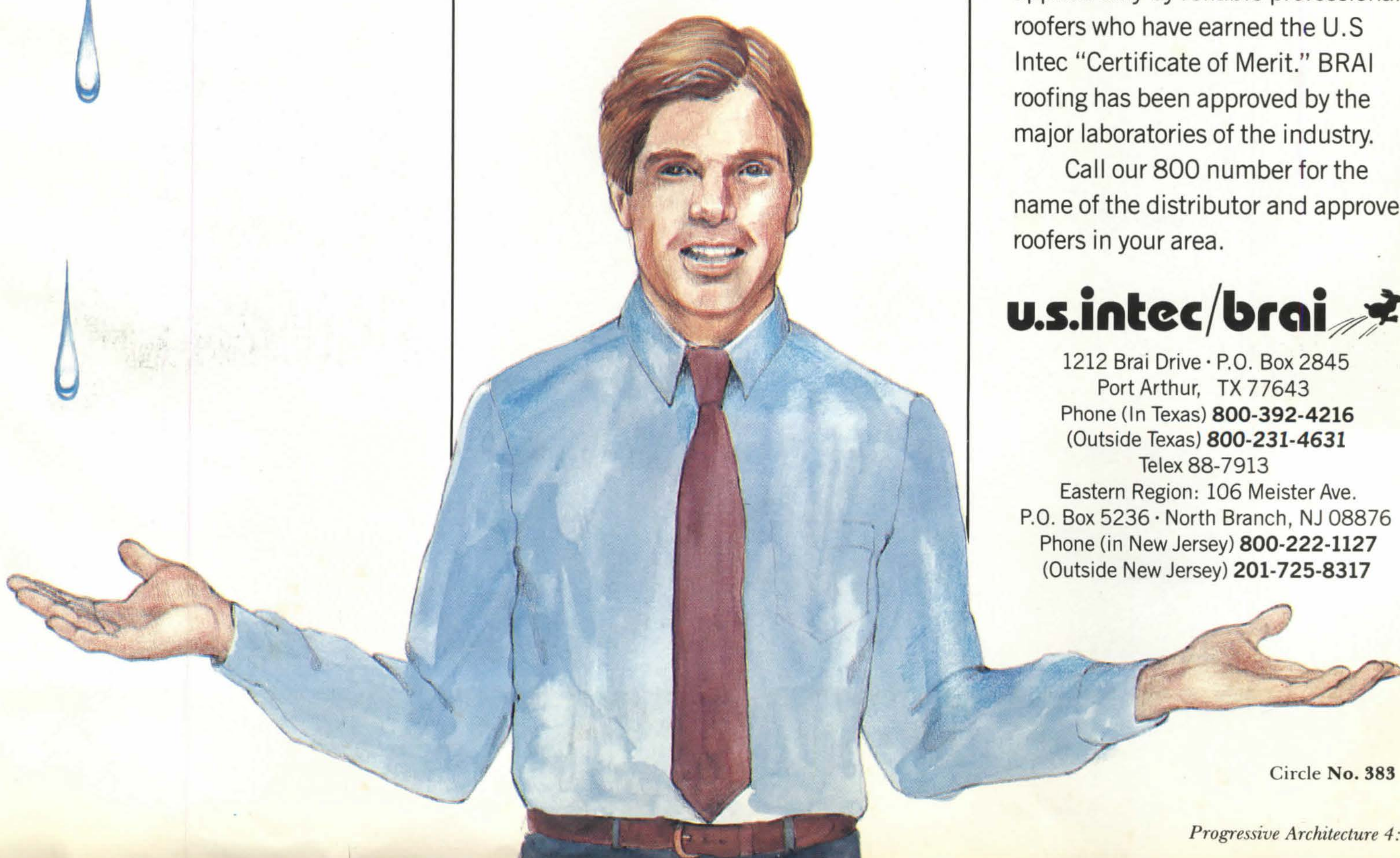

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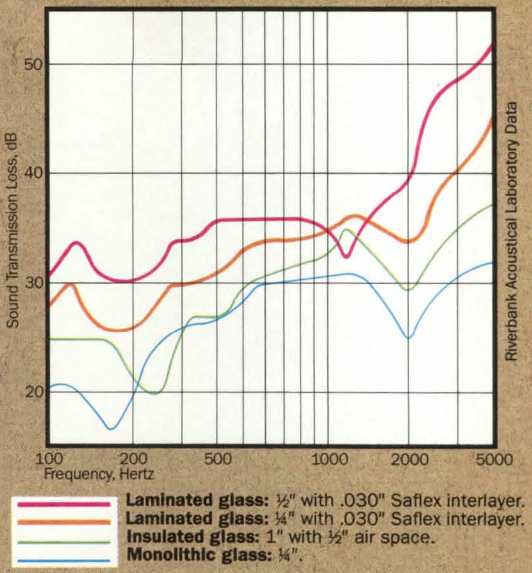

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P/A News report

Exploring the Iceberg

The European Iceberg: Creativity in Germany and Italy Today (through April 7th) is the largest and most ambitious exhibition ever mounted by the Art Gallery of Ontario. Organized at a cost of nearly $400,000 (double the original estimate), it promises a continent but delivers three floors of signposts—objects, images, inklings—in search of a map.

Guest curator of the Iceberg is Germano Celant, the Italian critic and art historian whose innumerable credits include curating the 1976 Venice Biennale and codirecting Documenta 7 in Kassel in 1982.

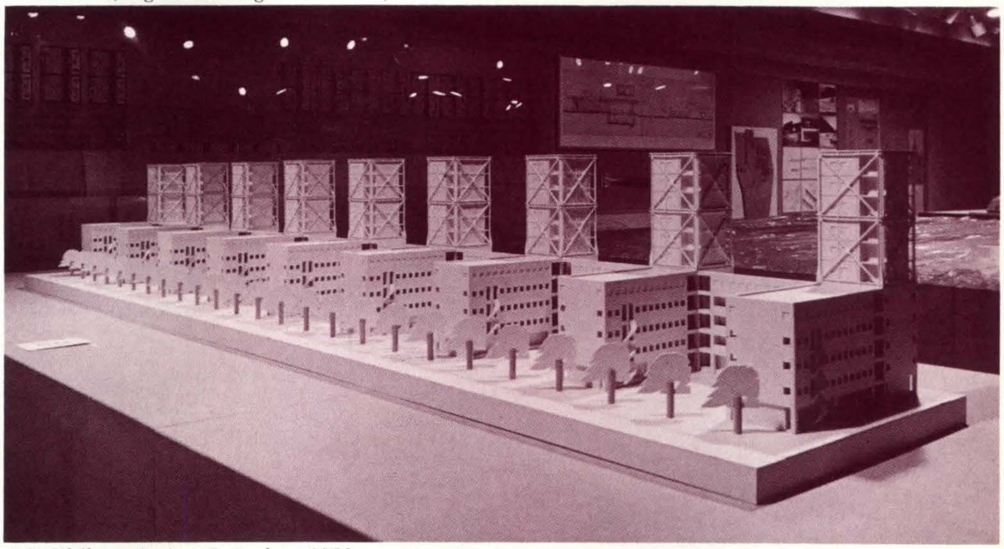
The Iceberg surfaced in response to the wave of German and Italian art that swept across the Atlantic during the 1980s, challenging the right of New York—or any city—to call itself the center of the art world. There are no centers anymore, argues Celant: pluralism, "massification," and the rediscovery of cultural roots are the order of the day. "Contrary to our more Platonic internationalist assumptions during the puristic years of Minimal and Conceptual Art," writes chief curator Roald Nasgaard, "the achievements of contemporary European art seem increasingly to be outcomes of specific geographical and historical contexts."

The exhibition, then, is an invitation to North Americans to cast themselves as Columbuses in reverse and rediscover European culture (the iceberg) by concentrating on Italy and Germany (a couple of prominent tips) from the multiple perspectives provided by painting and sculpture, mainly, as well as such "parallel systems" as architecture, film, theater, industrial design, and photography.

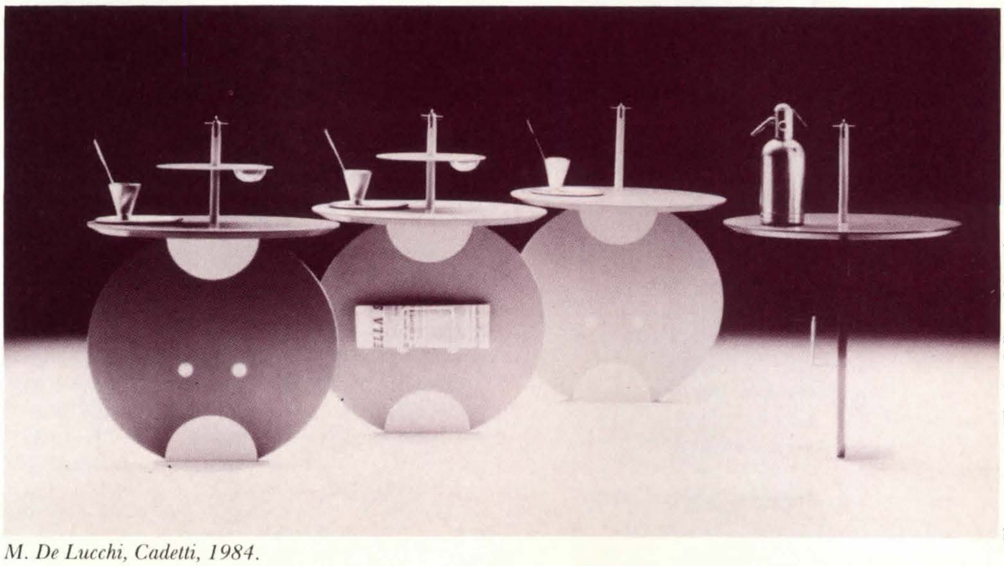
Although the exhibition concentrates on work of the 1980s, many of the artists in the show have substantial careers behind them—the iceberg again. Roughly, the visual artists fall into three generations: golden oldies like Joseph Beuys, Emilio Vedova, and Mario Merz; a group in their forties and early fifties, including Jannis Kounellis, Lothar Baumgarten, Pier Paolo Calzolari, Hanne Darboven, Jorg Immendorff, Anselm Kiefer, Georg Baselitz, and Rebecca Horn; and babyboomers like Mimmo Paladino, Enzo Cucchi, Giuseppe Penone, and Salome (Wolfgang Cilarz).

Why were these artists chosen and others, like Francesco Clemente and Sandro Chia, snubbed? No reply. Nonetheless, there are a number of wonderful and worthwhile pieces in the show, many executed on site, which represent a broad spectrum of styles and ap-

M. Pistoletto, Figures Looking Down a Well, 1983.



J.P. Kleihues, Project, Rotterdam, 1982.



M. De Lucchi, Cadetti, 1984.

Photos courtesy The Art Gallery of Ontario

Pencil points

Hans Hollein *of Vienna, Austria, has been named 1985 Laureate for the annual Pritzker Architecture Prize.*

The Guggenheim Museum *in New York plans to expand. Gwathmey Seigel have been commissioned to add six stories to the annex, housing 25,000 square feet of permanent gallery space, offices, and a top-floor restaurant. Budget is $9 million, completion date 1987, when the Guggenheim turns 50.*

The City of Philadelphia *has initiated a major, three-year renovation and reconstruction of the infamous Schuylkill Expressway. Estimated cost is $160 million, or $9 million per mile.*

Cornell's Colin Rowe *received the 10th Award for Excellence in Architectural Education from the AIA and the ACSA. The educator and critic was honored at the annual meeting of the Association of Collegiate Schools of Architecture in Vancouver.*

New York's Coliseum site *is up for grabs. The MTA mailed out over two thousand RFPs for the blocks at the southwest corner of Central Park. The choice of developer is to be made on the basis of best design—and highest bid—for the parcel, which may be the biggest and best site left in Midtown.*

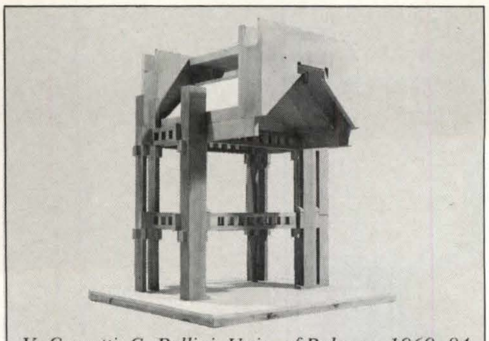
- *Among those reportedly entering the MTA sweepstakes are Olympia & York (Kohn Pedersen Fox, architects), The New York Land Co. (Swanke Hayden Connell), and F.D. Rich (Cesar Pelli). Bids are due May 1, decision 60 days later.*

Eero Saarinen's *General Motors Technical Center in Warren, Mich., will receive the AIA's 25-Year Award.*

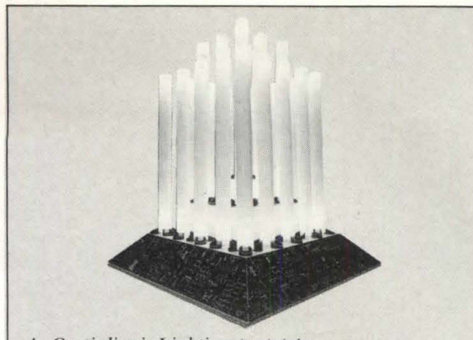
Perkins & Will *of Chicago celebrated the firm's fiftieth anniversary in March with an exhibition and lecture series.*

Toronto plans to build *the world's largest retractable roof over a domed stadium proposed for a downtown site adjacent to CN Tower. The actual design has not yet been determined by project architects Crang and Boake who are considering an air truss solution, a rotating model, and a fan system for the 710-foot-diameter roof.*

[Pencil points continued on p. 38]



V. Gregotti, G. Pollini, Univ. of Palermo, 1969–84.



A. Castiglioni, Lighting prototype.

Photos courtesy AGO

proaches from old-fashioned Minimalism to the latest figurative modes. As far as the Art Gallery of Ontario is concerned, the Iceberg symbolizes a great leap forward into the present tense.

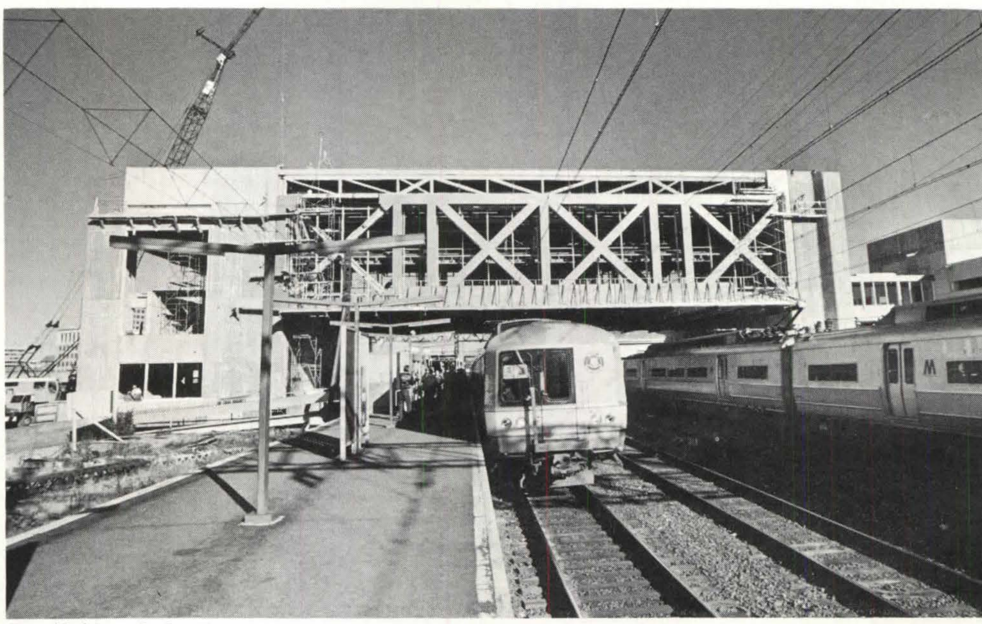
But it isn't the "jam session of the arts" Celant promised. The scope of the show is so vast and incoherent, the exhibition so dispersed, that Celant's ebullient goal of indicating "several presences and languages, passing from the specific to the general, from Art to the arts, from Culture to cultures" is never realized. The Iceberg is really a collection of solos. That's the way it's been designed; that's the way the catalog reads.

Overall designer Massimo Vignelli appears to have taken one look at the architecture of the AGO (monotonous Modern) and collapsed; he tried to whip the berg into shape with a system of signs—a bold striped logo, a plethora of beige plinths and platforms—but without success: The exhibition has no center, no focus.

Industrial design receives pathetic tribute. Banished to a basement room that looks like storage for a church bazaar, the section contains a large tire of German design, a little pastel table of Italian "new" design, and a collection of Braun products. Only two objects triumph over circumstance—a suave cabinet in the Memphis style by Ettore Sottsass, Jr., and a monument to lighting and his own career by Achille Castiglioni.

Architecture fares much better. Celant invited eight architects—Aldo Rossi, Gae Aulenti, Renzo Piano, Hans Hollein, Gino Valle, Josef Kleihues, Gottfried Bohm, and Vittorio Gregotti—to submit a model and drawings for a project that could stand as a self-portrait. Vignelli had the models elevated high on plinths, with the relevant drawings in proximity. The projects, ranging from Aulenti's scheme for the Musée d'Orsay in Paris to Kleihues' plan for the Rotterdam harbor, give a good cross-section of contemporary issues, including the recovery of cultural memory, renewed respect for the urban fabric, the release of fantasy and color. And the glorious model of Rossi's Teatro del Mondo, the floating theater constructed for the 1980 Venice Biennale, is a welcome relief after all that ice. ***Adele Freedman*** ■

The author is architecture critic for The Toronto Globe and Mail.



Troubled Stamford station.

Glenn Osmundson

Trouble by the trains

Every construction project has its troubles. But few projects have troubles like those encountered in building the new railroad station in Stamford, Conn. Eighty percent complete, the $40 million station has so many structural flaws that large sections of it must be reinforced or torn apart and rebuilt.

Designed by Skidmore, Owings & Merrill, with DeLeuw Cather/Parsons as program managers and Wilbur Smith & Associates as the architects and engineers of record, the structure looks—and functions—like a truss bridge. Two concrete towers, containing stairs, escalators, and elevators, connect the train platforms to a below-grade lobby and tunnel and to a concourse that spans 123 feet over the train tracks, supported by two 32-foot-deep steel trusses. A pedestrian bridge connects the elevated concourse to an adjacent five-story parking garage.

A portent of the station's troubles occurred in January 1984, when city officials halted construction on the parking garage because of cracks in three concrete beams. Workers apparently had not installed the proper number of reinforcing rods, so the contractor installed additional columns and steel brackets to relieve the beams of much of their load.

Then city officials halted the construction of the station itself in November 1984. That followed a discovery made by the project's engineers when checking their drawings to ensure that the lobby roof would support a 15-ton sculpture donated to the city. They found that a 55-foot section of the roof not only had too little reinforcing steel to support the statue but could not support the live load of vehicles on an overhead roadway. Further evaluation by a design review task force revealed that the concourse and pedestrian bridge lacked sufficient wind bracing, that the concrete-encased steel columns supporting the trusses had no room for thermal movement, that some of the concrete walls and beams in the north and south towers had too little flexure and shear resistance, and that some parapet walls had an inadequate connection to the rest of the structure.

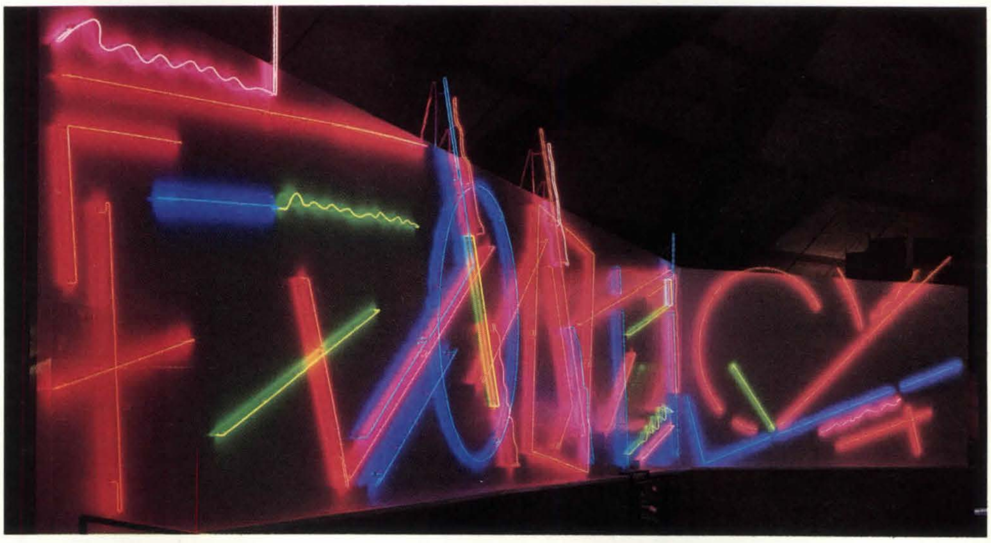
The task force has not decided upon the necessary remedial work (although some solutions have been suggested, such as jacking up the concourse and welding steel plates to its floor beams to increase stiffness or demolishing and rebuilding the lobby roof to increase its loading capacity). And, of course, no one has accepted blame for the problems. That may take years if, as is almost certain, the case goes to court.

The question remains: how could so many problems have eluded discovery for so long? Code officials and others responsible for design review have argued that they cannot rethink every decision or recheck every calculation in a project. The same might be said by those people responsible for construction supervision; they cannot observe everything that goes on at a building site. Yet how much longer can we accept those arguments as the claims filed against architects and engineers increase at record rates? What's disturbing about the situation at Stamford's station is not just that it occurred, but that, without better design review and construction supervision, it won't be the last project with such troubles. ***Thomas Fisher*** ■

Art for whose sake?

Even before it was completed last July, Stephen Antonakos's neon sculpture for the Tacoma Dome was the center of a heated controversy in this Puget Sound city. The $272,000 sculpture, commissioned with 1%-for-art public funds, was lambasted by a local group that called itself the No-Neons, and which felt that neon was more appropriate to beer signs than civic arenas. The group even attempted a recall of Tacoma Mayor Doug Sutherland and the two city council members who supported the commission of the sculpture. At one point, Mayor Charles Royer of Seattle, a city known for its progressive patronage of public art, offered to buy the piece from Tacoma. Public sentiment initially ran strongly against the piece, but the Tacoma City Council voted in December to keep Antonakos's work. Opponents vow to keep up the fight, but for the present, the piece stays put.

In another public-art flap, the U.S. General Services Administration is currently deciding the fate of Richard Serra's *Tilted Arc,*



Photos: Jonathan Nesvig

Stephen Antonakos, neon sculpture, 1984.

Glenn Steigelman

Richard Serra, Tilted Arc, 1981.

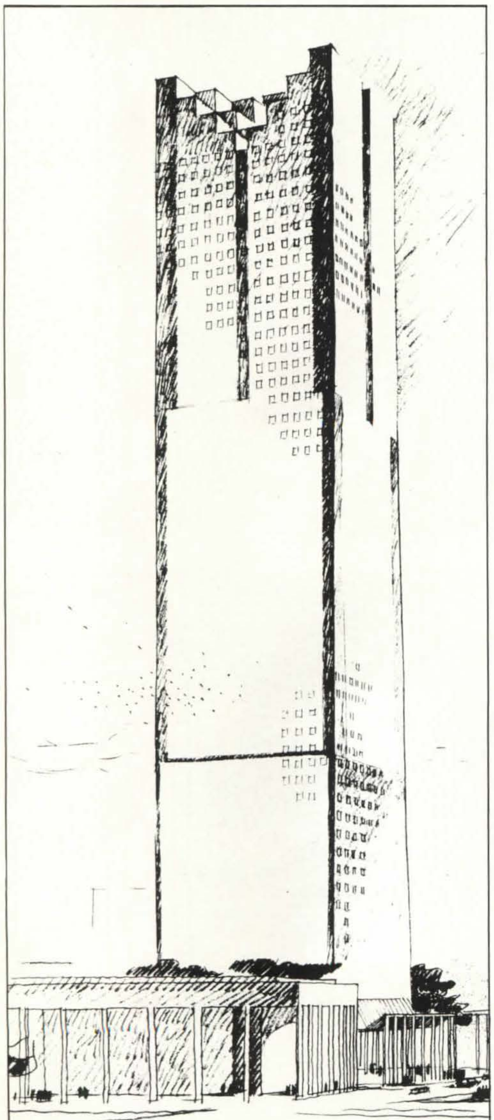
a 120-foot-long, 12-foot-high steel sculpture that was installed in the plaza of the Jacob K. Javits Federal Building in New York in 1981. Those who want it removed argue that it completely destroys the plaza, rendering it unsuitable for any public use, while the work's defenders counter that its removal would set a dangerous precedent for public art programs. Both the New York City Parks Department and the Storm King Art Center upstate have offered to take the piece should the GSA decide to remove it from the Foley Square plaza. But Serra argues that *Tilted Arc* is a site-specific sculpture, which means that relocating it would be tantamount to destroying it. Stay tuned. ***Pilar Viladas*** ■

ASR auction

The Architects for Social Responsibility plan a week-long benefit auction of over 200 original architectural drawings in New York beginning May 30. The national organization, founded in 1982 to promote professional and public awareness of the catastrophic consequences of nuclear war, now numbers 2500 in 10 chapters nationwide. A major drive this year optimistically aims at 10,000 members.

While last year's auction was handled by Christie's auction house, this year's will be run by architectural impresario Max Protetch, whose gallery is accepting silent bids throughout the week. The global roster of contributors includes Kisho Kurokawa (Japan); Gustav Peichl (Austria); Renzo Piano and Gino Valle (Italy); James Freed, Eric Moss, Stanley Tigerman, and Bernard Tschumi (U.S.A.). Designer Massimo Vignelli has also produced a signed, limited edition poster which incorporates four of the auctioned works.

Prices range from $400 to $35,000. If these figures seem out of sight, don't despair: the works will be on public view at the Protetch Gallery May 30–June 7 (except Monday), with the "auction" on the 8th. Proceeds will benefit ASR programs. ■



Mitchell Giurgola, Texas Commerce Bank.

John Engstead

Olgivanna Lloyd Wright 1900–1985

Taliesin matriarch Olgivanna Lloyd Wright died March 1 of a heart attack at Scottsdale (Ariz.) Memorial Hospital. The former Olga Ivanovna Lazovich of Yugoslavia met Frank Lloyd Wright in Chicago and married him in 1928 when his divorce from his second wife was made final.

After Wright's death in 1959, his widow assumed the presidency of the Frank Lloyd Wright Foundation, a position she relinquished only in February of this year. She was succeeded by the architect William Wesley Peters, a Taliesin associate and Wright's former son-in-law. (Peters' second wife, Svetlana Alliluyeva, Stalin's daughter, made headlines when she returned with their daughter to the Soviet Union last year.)

In the years following Wright's death, Mrs. Wright worked to keep his legend alive, through such encomiastic works as *Our Home* and *The Shining Brow*. Although not herself a trained architect, Mrs. Wright also maintained an ironclad control over all activities at Taliesin, reportedly interviewing all applicants to the architectural school herself. Both the Foundation and its School have come under increasing scrutiny over the past eighteen months, the former for its controversial decision to raise money by selling original Wright drawings, and the latter for its bid to become an accredited school of architecture, a step that would necessarily alter the independence that Mrs. Wright fought so long to preserve. She is survived by a daughter and two grandchildren. ■

Six architects show: but is it art?

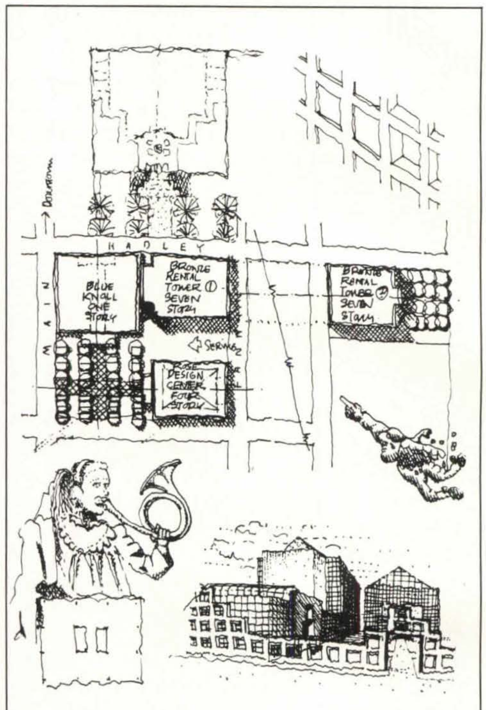
The gallery in the School of Architecture at the University of Maryland recently displayed drawings, sketches, photographs, and other items purporting to show the progression of work by six noted architects on six buildings. One assumes that each architect took more or less seriously the charge from exhibit curator Roger K. Lewis to "select a project and then retrieve and edit those documents (no matter what they are) which illustrate how [you] conceived and developed the design."

Yet the show reflected very wide interpretations of the charge, and wildly divergent attitudes about the gallery audience. Some installations were evidently done with great care, and these earned the greatest respect. Gunnar Birkerts, Alan Chimacoff, William Turnbull, and Cesar Pelli all seem less casual than Robert A.M. Stern and Stanley Tigerman in selecting what to show and how to show it.

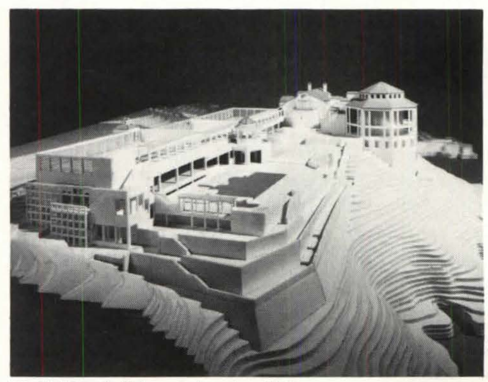
Wittingly or no, the show emphasizes the difference between an "art" audience and an architecture one. For the former, the objects on display are primarily of intrinsic interest. Architects, however, and especially students of architecture, are more inclined to want to study the course and the means of design formulation.

At the "art" end of the spectrum, even the simplest of sketches, made with crude felt markers on flimsy yellow trace, were treated reverentially. Each of Robert A.M. Stern's rough façade studies for an office building in Framingham, Mass., bears a signature and date. These studies, although clearly created by a facile and determined hand, look more like calculated products than throwaway musings, designed to draw an audience and a stature beyond that normally accorded the mere "design sketch."

Pelli, Turnbull, and Birkerts, especially, seemed to have exercised real care and judgment in tracing the progress of their work, stressing the importance of site and program in directing formal investigations. They also revealed design as a continuum of effort,



Stanley Tigerman, Knoll, Houston, 1982.



David Wakely

MLTW/Turnbull Assoc., American Club.

some of it involving freehand sketches, but much of it involving hardcore construction documents and investigations that must be concerned with more than form and composition alone.

Overall, the show imparted a clear sense that some architects allow a building and its site to dictate to them, while others do all the dictating. And it showed that some architects see every—or any—aspect of the design process as intrinsically interesting and worthwhile, beyond the limits of the building problem at hand. ***Thomas Vonier*** ■

Joseph Giovannini

Esther McCoy with Cesar Pelli.

Tinseltown honors doyenne of architectural writing

On Saturday, November 18, a cast of about fifty friends and colleagues gathered to wish writer Esther McCoy a happy 80th birthday. The party, produced by Randall Mackinson, curator of the Gamble House, and directed by *New York Times* "Home" Section writer Joseph Giovannini, was a critical success.

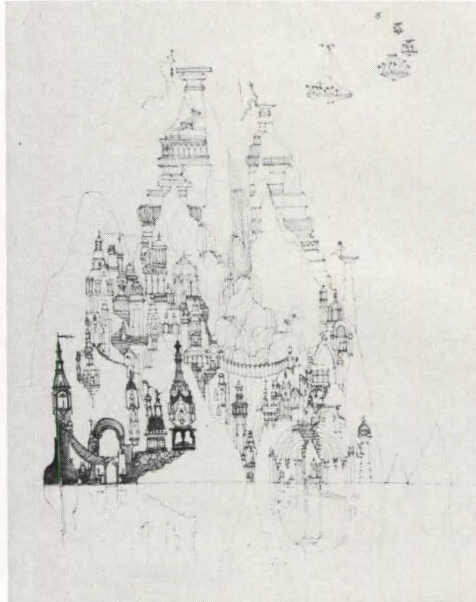
Festivities began with cocktails and hors d'oeuvres at Greene and Greene's Gamble House, then segued gracefully to the Museum of Contemporary Art, where diners were served, surrounded by the *Automobile and Culture* exhibition. Special effects, in the form of Nouveau Beaujolais and a birthday cake depicting the cover of McCoy's recent *Vienna to Los Angeles: Two Journeys,* were provided by architectural historian Kathryn Smith and lawyer Randy Kennon.

Some of the more memorable toasts were delivered by critics Allen Temko and Michael Sorkin, whose "Ode to Esther McCoy" was delivered as a tongue-in-cheek epic in blank verse. The primary supporting role was played by a Queen Anne chair, designed and given by Robert Venturi (see P/A, June 1984, p. 24). Among those staging cameo appearances were Cesar Pelli, Charles Moore, Frank Gehry, Ray Eames, Dolores Hayden, Deborah Sussman, John Pastier, Robert Winter, and Reyner Banham.

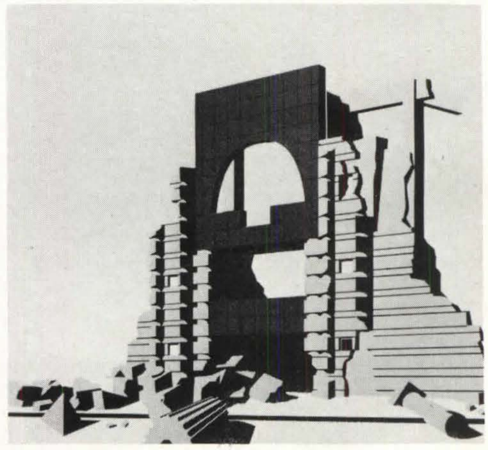
The festivities will no doubt continue in June when McCoy will receive Institute Honors for criticism from the AIA, to be presented at the annual convention in San Francisco. ***Barbara Goldstein*** ■

A + A portfolio

In an effort to raise its endowment, *Arts + Architecture* magazine is introducing a limited edition portfolio of work by ten artists and architects. The portfolio, limited to a very small edition of 50 copies, priced in the neighborhood of $6000 each, includes silkscreen prints by artists Ron Davis, Michael C. McMillen, Alexis Smith, and architects Arata Isozaki and Charles Moore, a polacolor print by Barbara Kasten, a wood block by Tom Holland, etchings by architects Frank



Charles Moore, The Spaniards, 1985.



Arata Isosaki, Untitled, 1985.

O. Gehry and Michael Graves, and an anodized aluminum vase by Peter Shire.

Copies of the portfolio will be on view through May at Asher/Faure Gallery in L.A.; Paule Anglim Gallery, San Francisco; John Weber Gallery, New York; and Gallery Two Nine One, Atlanta; and at the PDC, L.A., through August.

"Sources" in Monterey: Is ambition enough?

As state organization-sponsored conferences go, the annual Monterey Design Conference, California Council, AIA, is by far the most ambitious. While it does not take the place of a state convention, it is certainly more lofty in its goals, and it combines purpose with a

certain amiability that is uniquely Californian in spirit.

From its origins in Newport Beach as a gathering for design discussion, the conference has grown to nearly 700 registrants for this sixth edition. In the past few years it has been held in a commercial conference center in Monterey (the town), but this year it took place at Asilomar Conference Center—designed by Julia Morgan—in Pacific Grove, Monterey (the peninsula). Administered as a unit of the California State Park System, Asilomar was chosen to provide a less institutional, more rustic setting. This it did, together with mess hall lines at the hours of 7:30, 12:00 and 6:00.

Following a theme, "Sources: The Origins of Inspiration," the opening featured remarks by James Adams, Ph.D., Professor of Engineering at Stanford, on overcoming blocks to conceptual thinking. This was followed by four concurrent presentation sequences by California architects, deserving mixed reviews. Varying from straight "This is our (my) work," to flights of more or less successful fancy and humor, the talks were understandably spotty. During a talk at the CCAIA Honor Awards ceremony, the San Francisco *Chronicle*'s Allan Temko was effusive about the potential of the young, while taking somewhat milder than usual potshots at architectural sacred cows and press.

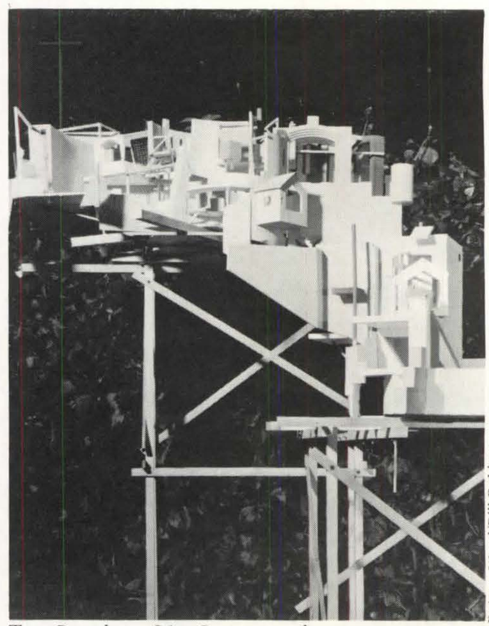
Sessions the second day began with a smoothly choreographed look at architectural photography, an accomplished and low-key presentation by Sandra Williams. An appropriate and knowledgeable closer look at Asilomar and Julia Morgan was presented by historian Sara Holmes Boutelle. Then, as if to refute what Williams had said (a coincidence, to be sure), *The Boston Globe*'s Robert Campbell spoke of photography as "the removal of content." Speaking as replacement for James Marston Fitch, Campbell—less the obligatory East Coast elitist than usual—attributed the current rebirth of color in architecture to four-color reproduction in print. Like Temko, he put less emphasis on outrage and more on content than in past appearances.

There was much reslaying of the famed Post-Modernism dragon, some vehement, some implied. Invoking Le Corbusier as an exorcising icon, Peter Blake then inferred his own architectural work from that of the master. In compliance with the conference theme, Paul Rudolph presented his ideas over the course of his practice. Anthony Lumsden gave what was perhaps the most studied of dissertations, pointing out the many origins of his inspiration, while eschewing stylistic labels. Rob Quigley held his own, as always, in this field of national figures, filling in for the absent Charles Moore. Presentations of the Escondido Civic Center and Domaine Clos Pegase competitions rounded out the program.

While the turnout (in numbers) was good, and the spirit embodied in the conference commendable, the affair has declined over its six-year lifespan. Perhaps it is impossible to maintain the vitality that characterized its beginnings; perhaps it misses the fresh eye of Richard Saul Wurman; or perhaps its zeal to be self-supporting—even conference *presenters* must pay their own registration and lodging—has diminished its draw. For a

fleeting year or two, the Monterey gathering promised a West-of-the-Rockies design dialogue that reached far beyond California borders.

Even though some of California's talented architects have been loyal supporters, an extremely significant amount of that talent now stays home. Some are angry, some don't care, and some find it economically difficult, if not insulting, to attend. Because of its unique ambitions, this conference *should* thrive. We've come to expect that from California.
Jim Murphy ■



Robert Ward/Bill Robinson

Tom Grondona, 21st-Century castle.

Young bloods at the Architectural League

Now in its fourth year, the Young Architects Forum remains a unique competition of increasing renown. This year over 900 architects and artists, all no more than 10 years out of school, answered a call for entries issued by the Architectural League of New York. Of these, 16 were selected to present their work publicly in May.

Chosen not on the basis of general portfolio but for particular projects, the "winners" are by state: Frederick Biehle, Dan Coma, Wes Jones & Peter Pfau, Taeg Yoshinobu Nishimoto, Mary Pepchinski, Mark Robbins, Frederic Schwartz, and Joseph M. Walter, all of New York; Caroline Constant, Ben Ledbetter and Wellington Reiter, Massachusetts; Douglas Darden, New Jersey; Tom Grondona and Richard Maxon, California; and Mark West, Kentucky.

Eight additional architects and firms fill a second lecture series at the League in April. These "emerging voices" include Diane Legge Lohan of SOM and Himmel/Bonner Architects of Chicago; Rob Wellington Quigley, San Diego; Laura Hartman and Richard Fernau, Berkeley, Calif.; Wayne Berg and McDonough, Rainey Architects, New York; Cass & Pinnell, Washington, D.C.; and Lawrence W. Speck, Austin, Texas. The series, sponsored by Krueger, begins April 9. ■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Pencil points

***Designer Ward Bennett,** critics Kenneth Frampton and Esther McCoy, photographers Norman McGrath and Nick Wheeler, engineers Weidlinger Associates, the Cranbrook Academy of Art, the Central Park Conservancy and the New York City Department of Parks and Recreation and the Summer Games of Olympiad XXIII—all have been selected to receive Institute Honors from the AIA this June.*

***An eight-foot crack** was discovered in a steel beam supporting the roof of Filene Center, at the Wolf Trap performing arts center, Vienna, Va. The Wolf Trap Foundation maintains that the hasty reconstruction of its amphitheater after a 1982 fire is not the cause of the current crisis, but a National Park Service report claims that the Foundation ignored reports of shoddy workmanship and faulty design in its push for an early reopening. Emergency repairs are now underway with an eye on this summer's season.*

***L.A.'s Biltmore Hotel** is to undergo a major restoration at the hands of Seattle architect Barnett Schorr. The hotel's new owners—Westgroup Inc. in partnership with First Boston—also plan a new 24-story office tower on an adjacent parking lot, to be designed by Landau Partnership.*

***Arby's,** purveyor of the roast beef sandwich, has made Post-Modernism its New Look. The fast-food chain owes all to Atlanta architectural firm FABRAP Inc., whose pilot facilities, complete with mauve-striped curved wall and "cranked" entrance pavilion, open this spring in Atlanta and Louisville, Ky.*

***Plans for a major new tower** in downtown Minneapolis designed by Cesar Pelli & Associates (P/A, July 1984, p. 37) have been scrapped by the Norwest Corporation because of "changes" in the city's office market.*

The Harvard Architecture Review IV: Monumentality and the City, *edited by Paul Louis Bentel and Howard Lynn Hopffgarten and published by the MIT Press, has been named this year's most outstanding single issue of a journal by the Association of American Publishers.*

***PEOPLExpress** plans a $175 million makeover of its crowded terminal at Newark International Airport. Architects are The Grad Partnership.*

***Haines Lundberg Waehler** of New York celebrates 100 years of continuous practice this year; the firm was formerly known as Voorhees, Gmelin & Walker.*


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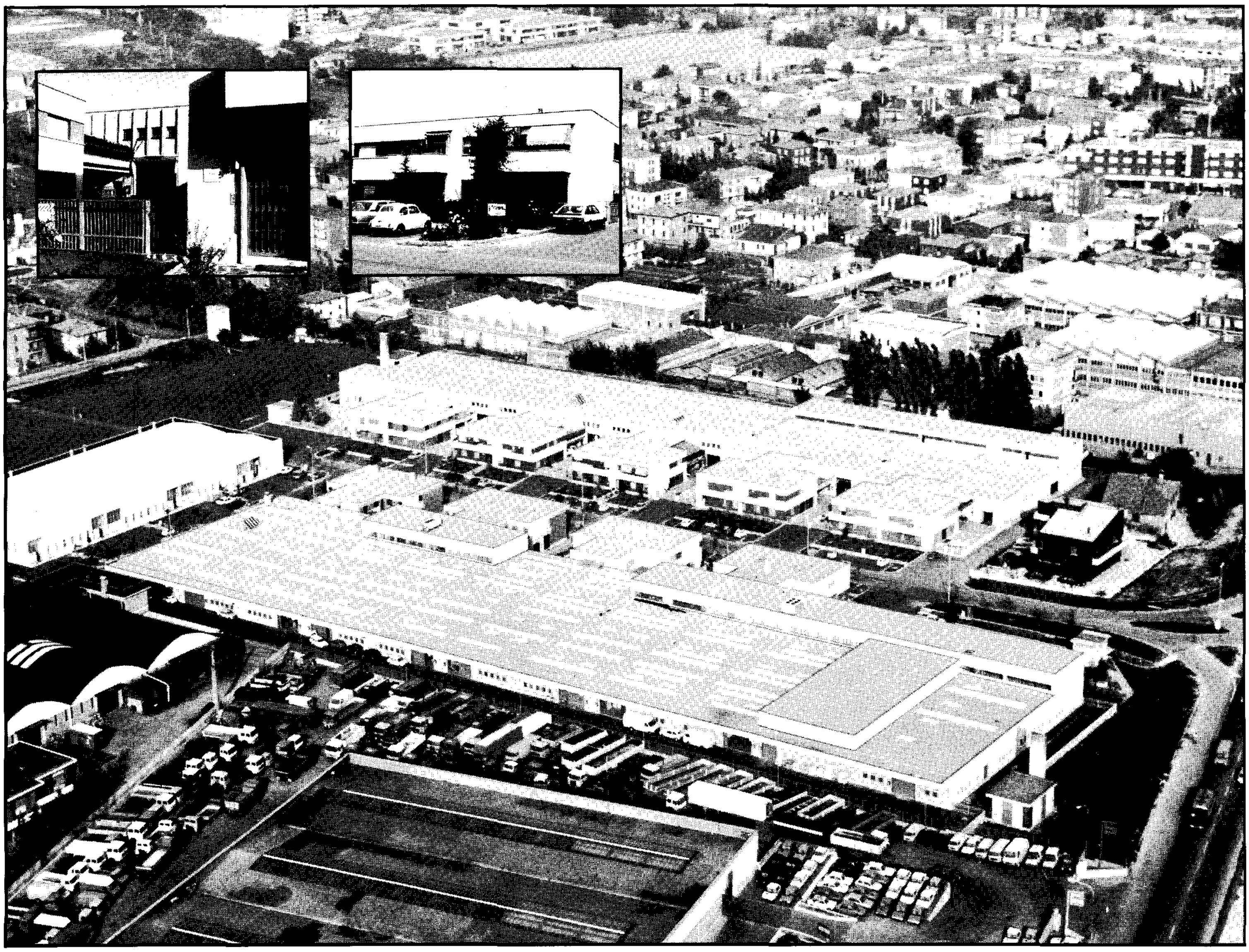
Perspectives

A new type of manufacturing district that combines living and working space has revitalized cities in northeast and central Italy. The author argues that these artisan villages suggest strategies for strengthening American cities.



Commune di Modena; insets, C.R. Hatch

Italy today: urban working quarters

Over the years Italy more than any other nation has taught the world about urban form and urban life. It is once again in the forefront. Over the past few years thousands of tiny manufacturing enterprises have emerged in lively mixed-use neighborhoods that integrate life and work. These new firms utilize the latest technologies to combine flexibility and innovation. Essentially intermediate producers, they link together in changing networks to create sophisticated products for national and world markets.

The largest concentration of these small firms is in the northeast and central (NEC) region of Italy. This area is now commonly called "the third Italy" to differentiate its economic system and urban culture from that of the traditional industrial triangle (Milan, Turin, Genoa) and the still agricultural south. In the NEC region, over 50 percent of all employment today is in manufacturing, mostly in shops of five or six workers. The standard of living there is recorded as the highest in the nation.

These high-technology networks did not come about without conscious planning, municipal investment, and architectural direction. In the cities of Reggio-Emilia particularly, a comprehensive set of strategies has been perfected to encourage this form of economic growth. Specialization is common. Bologna, for example, focuses on computer applications and machine tools. Sassuolo, as architects know, exports high quality ceramic tiles and tile-making equipment. Carpi means knitwear.

Modena, a major metalworking center, was one of the earliest of the NEC cities to recognize the potential of this new industrial model. Starting in the late 1950s, Modena responded to the steady decline of its major manufacturers by building "artisan villages" and coordinating loans to enable unemployed workers to set up on their own. The program expanded greatly after the 1973 energy crisis. Today, this small city of

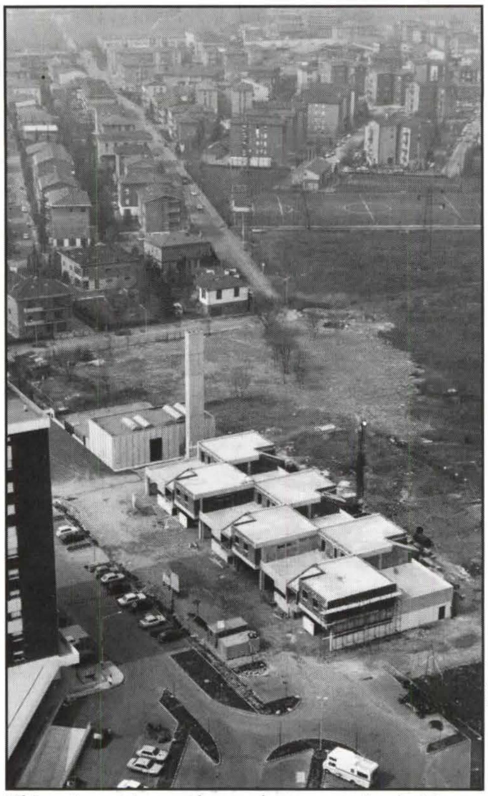
The Madonnina superblock (above and insets) in Modena provides two-family houses attached to flexible factory space.

180,000 has planned and built 27 working quarters for more than 500 firms employing nearly 7000 workers. Space for hundreds of additional firms has been privately developed following this successful public initiative.

Many of the artisan villages take their spatial form from the preindustrial city. Prefabricated concrete workshops, averaging about 5000 square feet each, line the streets. Bars and small shops take up the corner sites; a larger restaurant sits on the central square, usually filled with amateur soccer players. Spacious apartments with terraces occupy a band of second-story space along the major roads. These workplace/homes are municipally financed and sold to new entrepreneurs on lease-purchase terms. The local artisans' organizations and labor unions work closely with the city's planning and architectural departments in the design and allocation of new villages.

In these working quarters knowledge of markets and processes is widely diffused. Information spreads quickly over espressos at the bar or a congenial lunch. As firms are small, often consisting of only one or two machines, initial capital requirements are not great. This pattern, combined with a desire for independence, creates a constant mitosis as workers move up to become their own masters.

Modena uses its transportation and public housing programs to support the new economic model. Workers' housing is located to minimize commuting and is built with the stated intention of using shelter subsidies to free capital for the creation of new firms and products. The city built a ring of highways linking the artisan villages, placing warehouses and truck depots along them to speed shipments while eliminating traffic from the historic core.



Commune di Modena

This artisanauto complex, under construction in Modena, is a one-stop auto service center comprising six independent shops with apartments above.

Two recent projects demonstrate the range of Modena's program. It was found that automobile repair shops were unable to find affordable land zoned for their activities. At the same time firms and workers were having difficulty maintaining the vehicles needed on the job. The city responded by building a series of *artisanauto* complexes. Each consists of a block of workshops with space for six related trades (tire dealer, body repair, engine mechanic, etc.). Above the workshops, set in roof gardens, are apartments for the owners. Each group of shops is sited to attract trade from a major road, but is, on its other sides, integrated into a residential neighborhood.

A stone's throw from Aldo Rossi's well-known cemetery lies the recently completed Madonnina project, a superblock of closely connected homes and factories. A truck loop keeps heavy traffic off the central spine that ties Madonnina to the city center. On either side of this quiet, tree-lined street are handsome two-family houses. Behind them, off cobblestoned courts, are continuous bands of modern manufacturing space. Fully occupied from the moment of its completion, this working quarter is a valuable alternative to the familiar industrial park.

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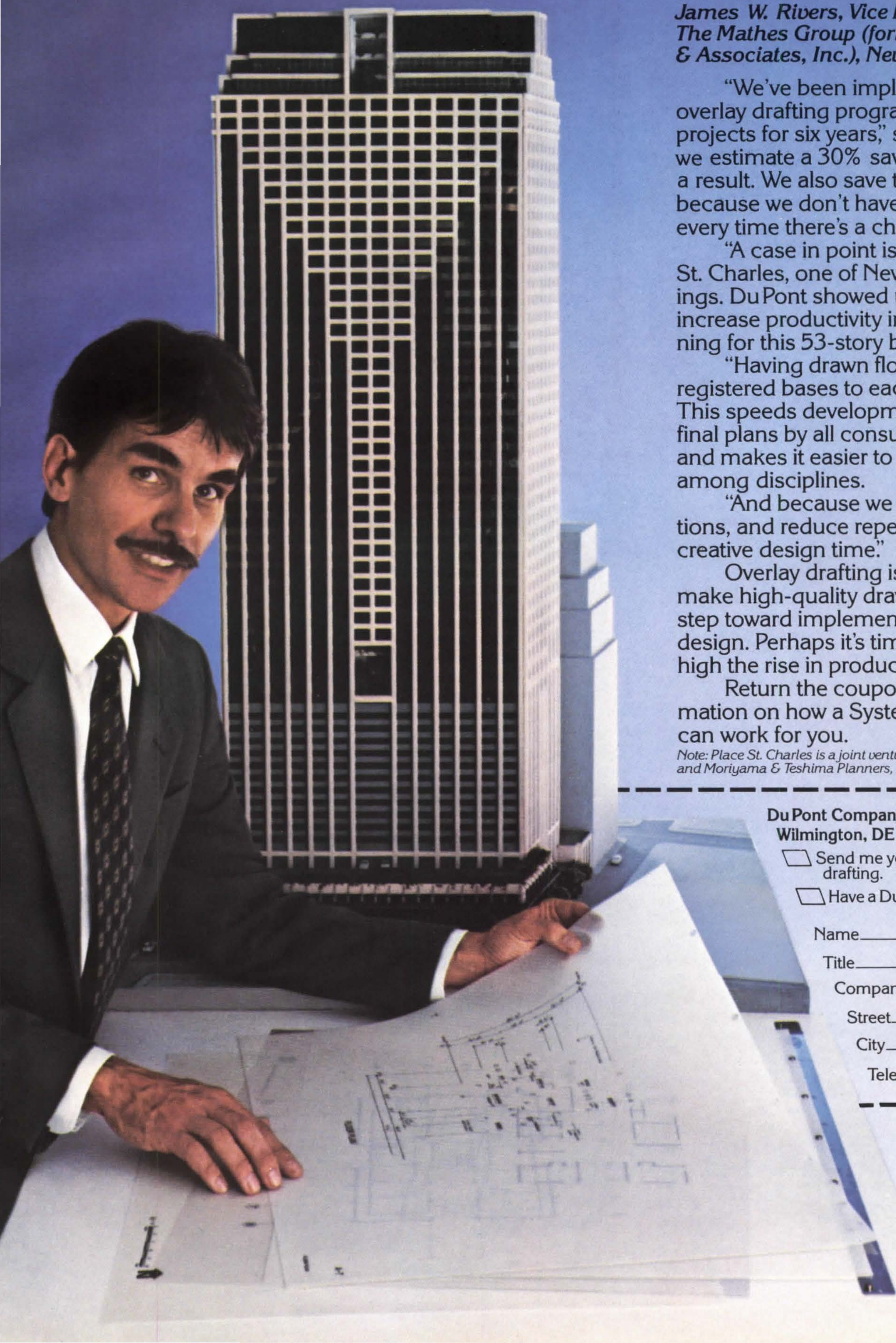

James W. Rivers, Vice President
The Mathes Group (formerly Mathes, Bergman & Associates, Inc.), New Orleans, Louisiana

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Note: Place St. Charles is a joint venture of Mathes, Bergman & Associates, Inc. and Moriyama & Teshima Planners, Ltd.

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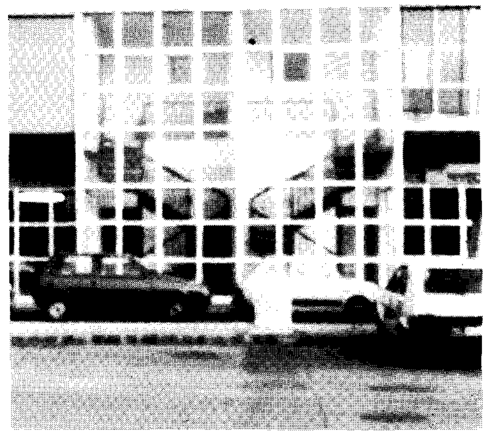

Above, left: Bologna's Morana factory was abandoned by its owners who needed single-story space for assembly-line production. Today it houses 14 firms at the heart of a revitalized neighborhood. Right: In a typical workshop/home in the Villagio Artigiano Torazzi (Modena), apartments and offices alternate above modular factory space.

American cities experiencing the flight of industry have both the need and the potential to realize a version of Italy's successful approach to economic revitalization. Outside the busy cores of our cities lie bands of depressed neighborhoods whose street patterns and building stocks no longer interest large-scale manufacturing or commercial enterprises. An adaptation of the NEC model with its emphasis on high quality and small scale could make these underutilized urban districts sought after once again. Redevelopment on the basis of urban working quarters would not only make efficient use of existing and costly infrastructure; it would also bring economic opportunity to the heart of the city where it is most needed. ■

C. Richard Hatch, AIA

The author is a Professor in the School of Architecture at New Jersey Institute of Technology. An architect in private practice in New York, he is currently adapting the Italian model to a depressed area of Queens.


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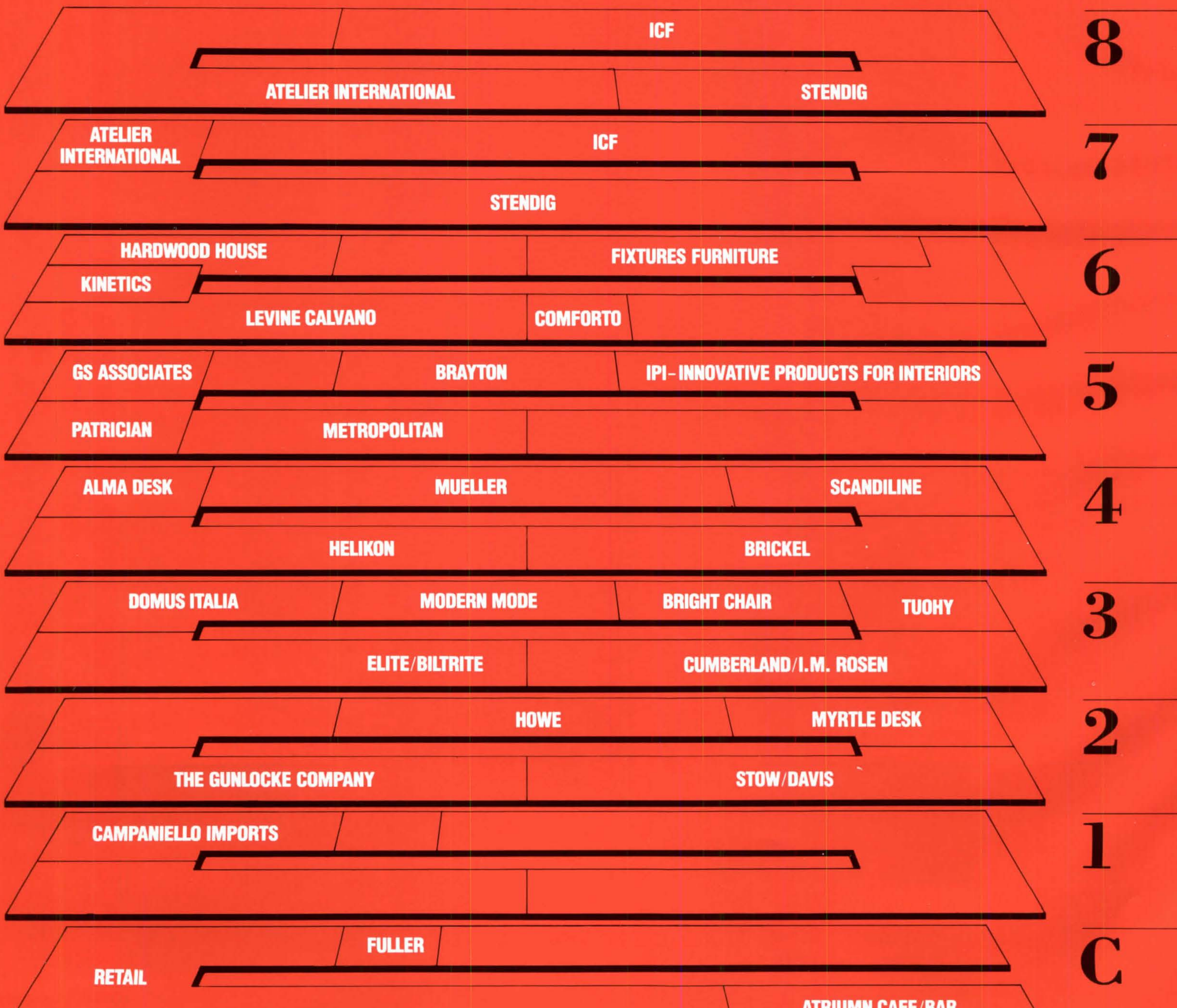

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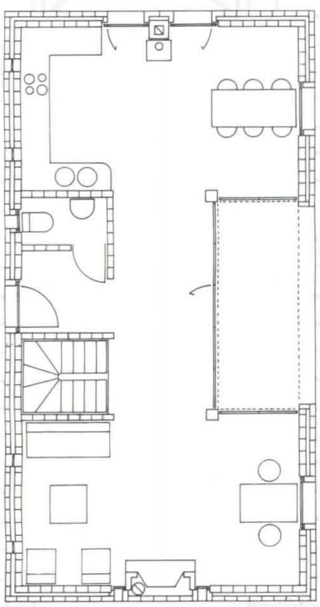
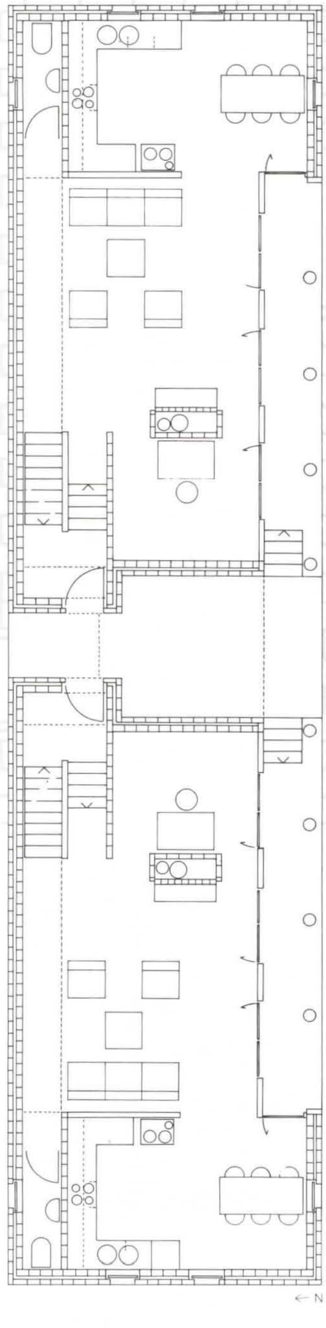
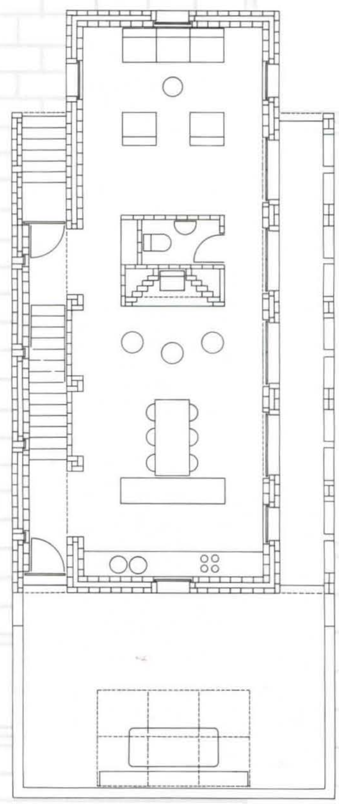
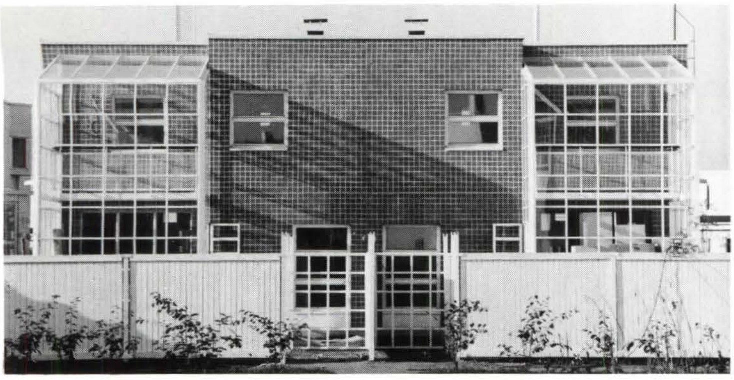


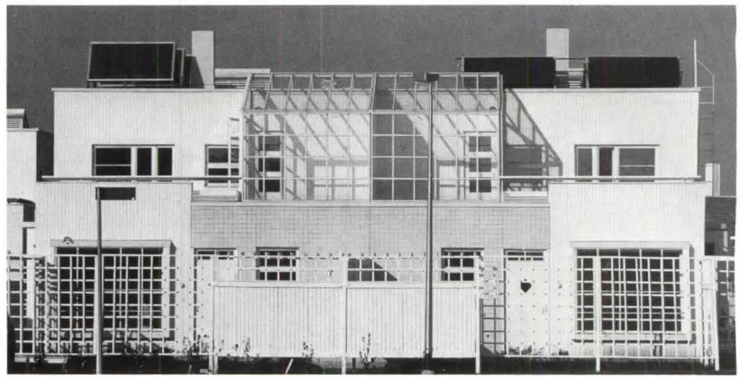




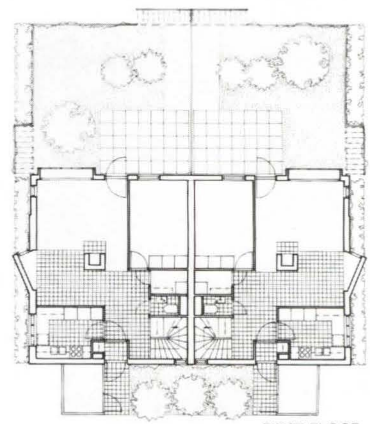
South elevations and plans for House at Cavigliano, 1981–1982 (above, left); two-family house at Verscio, 1982–1983 (middle); and house at Mezzovico, 1982–1983 (right).

Three Houses, Switzerland. *Architects: Franco and Paolo Moro, Locarno, Switzerland.* These three houses demonstrate the architects' main concerns: site placement and vernacular architecture. The Moros have chosen to formalize the vernacular housing of the Locarno area without undue abstraction. The houses have in common a southern orientation with high or no windows on the north façade, sparse fenestration on east and west, and sheltered terraces. While energy use is not their primary concern, the Moros' work is innately energy-efficient as a consequence of their adherence to vernacular models.





Ylätuvanpolku Housing Company, Torpporinmäki, Helsinki, Finland. *Architects: Helin & Siitonen Architects Office, Helsinki, Finland.* Built as part of a housing exhibition, this project employs standard techniques to emphasize energy conservation. Eight semidetached houses have terraces and greenhouses, with tiled walls to absorb heat, facing south, and separate terraces for saunas at the rear. East and west windows are angled to face south. Double-insulated walls separate paired dwelling units, making each an independent energy-consumption unit.



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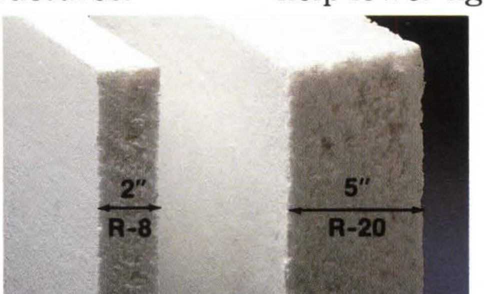

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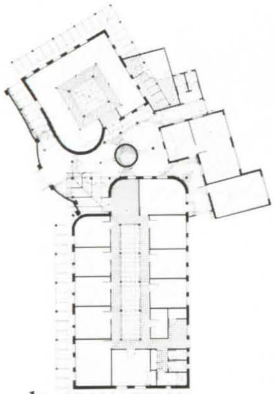
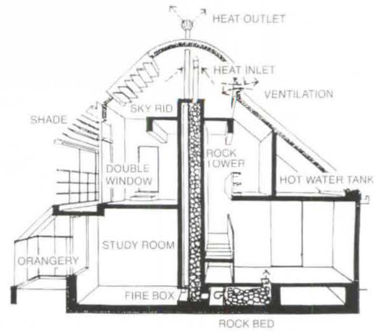


1a

1b

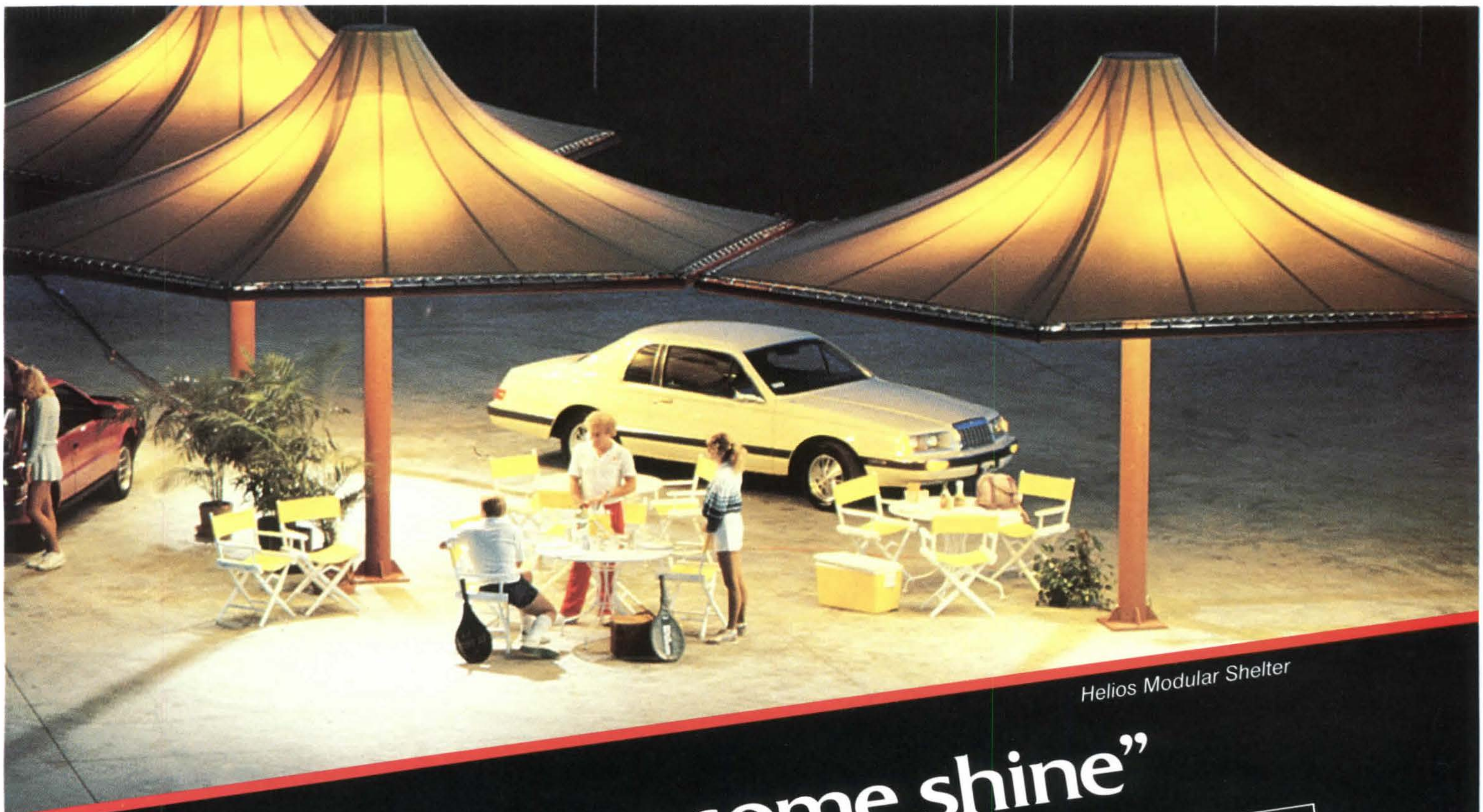
1a, b Botswana Technology Center, Gaborone, Botswana. *Architect: Davidson Norris, New York.* The main buildings of this complex—library, administration center, and workshop—are oriented so that windows face either south, where they receive little direct sunlight (in the Southern Hemisphere) or north, where they are shaded by the roof overhang. In addition, a combination of thick walls, light-colored roofs with nighttime ventilation at eaves and peak, louvers, and operable rooftop windows facilitates heating and cooling in winter and summer.



2b

2a

2a, b Miki Residence, Japan. *Architect: Yoshio Kato Atelier, Tokyo.* This solar house project combines a number of energy strategies. The main slope of the roof, with its louvered skylights and solar panels, faces south, and its overhang shelters a terrace. Inside, a rock tower, tile floors, and a rockbed provide thermal mass. The open interior and greenhouse spaces contribute to the free circulation of air, with the rock tower radiating heat like a central chimney. Vents and a blower under the floor bring warm air up into the living spaces from the rockbed; a roof-peak vent pulls warm air out for summer cooling.



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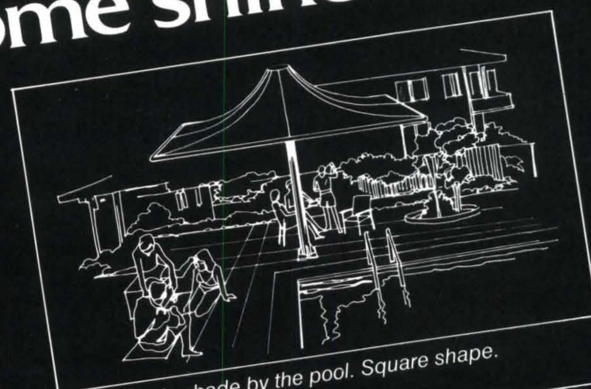
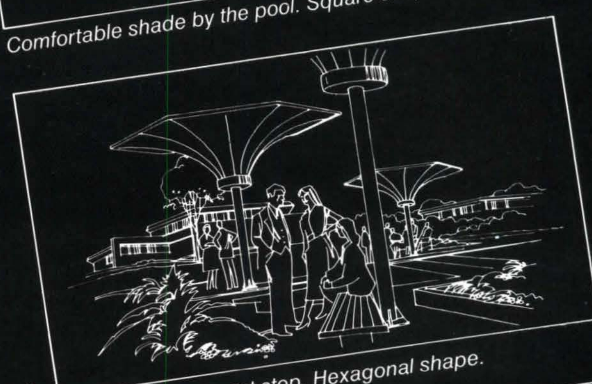
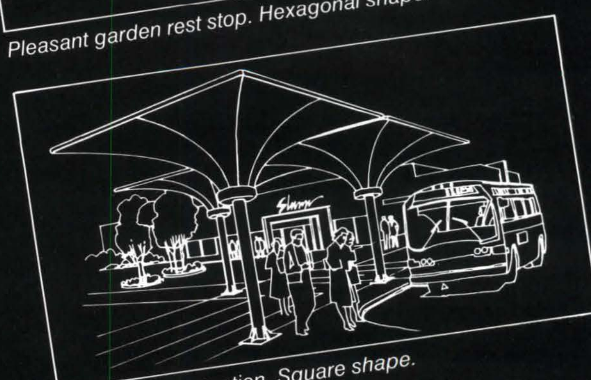


Comfortable shade by the pool. Square shape.



Pleasant garden rest stop. Hexagonal shape.



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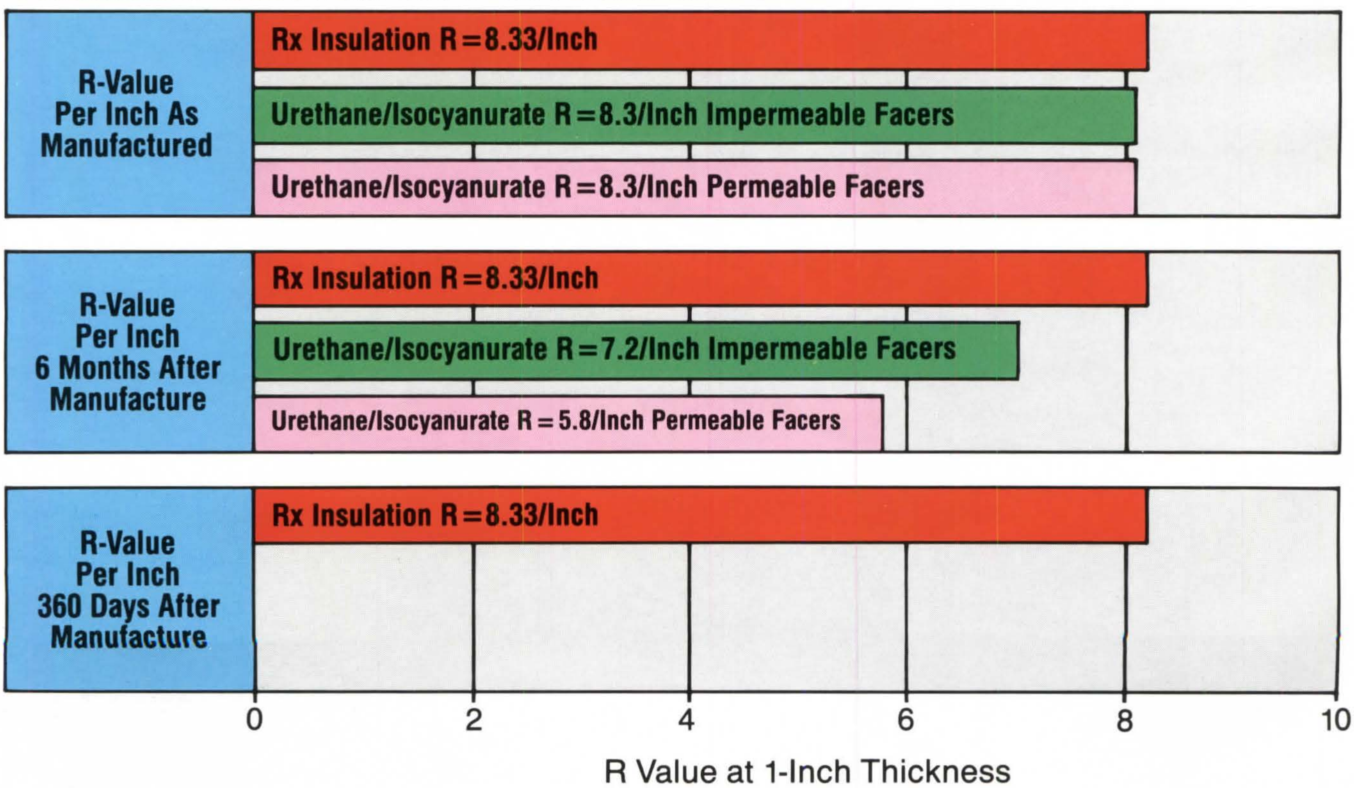

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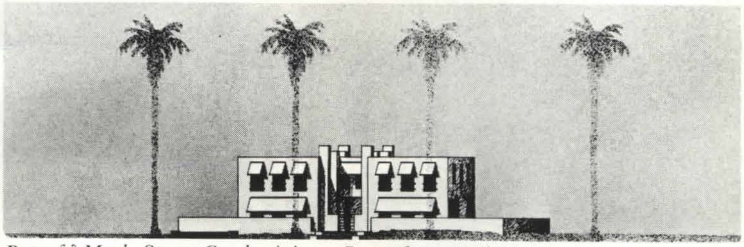
P/A Calendar



Batey & Mack, Stuart Condominiums, Bonnafont, April 24.

Exhibits

Through April 26
The Making of Architecture as a Material Art: Making Shelter. Gund Hall, Harvard University, Cambridge, Mass.

Through April 28
Toward a Regional Architecture for the Northeast: The Work of Kelbaugh & Lee, Stephen Lasar and Daniel Scully. Washington Art Gallery, Washington Depot, Conn.

Through May 1
Jorge Silvetti: Two Projects for Sicily. NYC/AIA, 457 Madison Ave., N.Y.

Through May 11
For the Floor: Contemporary Artists' Rugs. American Craft Museum II, New York.

Through May 19
Aldo van Eyck. Museum of Finnish Architecture, Helsinki, Finland.

Through May 26
Hockney Paints the Stage. San Francisco Museum of Modern Art, San Francisco.

Through June 2
New England Furniture: The Colonial Era. DeCordova and Dana Museum and Park, Lincoln, Mass.

Through June 9
The Critical Edge: Controversy in Recent American Architecture. The Jane Voorhees Zimmerli Art Museum, New Brunswick, N.J.

April 16–May 10
Modernistic Architecture in Long Beach, 1928–1937. University Art Gallery, California State University Dominguez Hills, Carson, Calif.

April 24–May 25
Batey & Mack: New Drawings. Philippe Bonnafont Gallery, San Francisco.

April 26–September 22
Material Evidence: New Color Techniques in Handmade Furniture. Renwick Gallery, National Museum of American Art, Washington, D.C.

May 3–July 29
Architecture in Silver. Renwick Gallery, National Museum of American Art, Washington, D.C.

May 21–August 25
Chicago Furniture: Art, Craft and Industry, 1833–1983. Cooper-Hewitt Museum, New York.

June 5–July 20
The City of Frankfurt: New Buildings in a Historical Context. Gensler Associates, San Francisco. Also **September 15–October 22,** Crown Hall, IIT, Chicago; **November 2–16,** University of Ontario, Toronto; **December 15–January 15,** University of British Columbia, Vancouver, B.C.

June 6–August 4
Art + Architecture + Landscape. San Francisco Museum of Modern Art, San Francisco.

July 6–September 8
Arquitectonica: Yesterday, Today and Tomorrow. Walker Art Gallery, Minneapolis, Minn.

Competitions

April 30
Registration deadline, The Homeless at Home. Contact Glenn Weiss/Kyong Park, Storefront for Art and Architecture, 51 Prince St., New York, N.Y. 10012 (212) 431-5795.

May 1
Entry deadline, IDEA85, Industrial Design Excellence Awards Program. Contact IDEA85, IDSA, 1360 Beverly Rd., Suite 303, McLean, Va. 22101 (703) 556-0919.

May 2
Application deadline, AIA-*Sunset* Magazine Western Home Awards Program. Contact AIA-*Sunset* Magazine, Box 2345, Menlo Park, Calif. 94025.

May 2
Deadline for submissions, RIBA International Student Competition. Contact RIBA Education Dept., 66 Portland Place, London W1N 4AD, England.

May 15
Deadline, QUEST competition to develop new uses for cement. Contact Fuller International, Inc., 2040 Avenue C, P.O. Box 2040, Bethlehem, Pa. 18001.

June 3
Entry deadline, Ninth Annual Lighting Design Competition, Halo Lighting Division, McGraw-Edison Co. Entries postmarked on or before May 17 are eligible for cash bonus. Contact The Hanlen Organization, 401 N. Michigan Ave., Chicago, Ill. 60611 (312) 222-1060.

June 10
Entry deadline, Kallista National Bath Design Competition. Contact Kallista, Inc., 200 Kansas St., Showplace Square, San Francisco, Calif. 94103 (415) 552-2500.

June 15
Application deadline, Designed and Made for Use. Contact American Craft Museum Offices, 45 W. 45th St., New York, N.Y. 10036.

Conferences

April 18–20
Canexus 85: By Design. Harbour Castle Hilton Convention Centre, Toronto, Ontario. Contact George Nutter, 211 Consumers Rd., Suite 300, Willowdale, Ont. M2J 4G8 (416) 493-8710.

April 20–24
1985 International Planning Conference. Queen Elizabeth Hotel and Bonaventure Hilton Hotel, Montreal, Canada. Contact Virginia Gill, 1313 E. 60th St., Chicago, Ill. 60637 (312) 955-9100, ext. 262.

May 3–19
Philadelphia Open House 1985, Philadelphia. Contact POH, 313 Walnut St., Philadelphia, Pa. 19106 (215) 928-1188.

May 8–12
Scandinavian Furniture Fair '85. Bella Center, Copenhagen, Denmark. Contact Scandinavian Furniture Fair, Center Boulevard 5, DK-2300 Copenhagen S, Denmark. (011) 45 1 51 80 00.

May 12–16
Interior Design International. Olympia, London. Contact British Information Services, 845 Third Ave., New York, N.Y. 10022 (212) 752-8400.

June 3–7
A/E Systems '85, Sixth International Conference on Automation and Reprographics in Design Firms. Anaheim Convention Center, Anaheim, Calif. Contact Conference Director, A/E Systems '85, P.O. Box 11318, Newington, Conn. 06111 (203) 666-6097.

June 9–12
AIA National Convention. Moscone Center, San Francisco. Contact AIA, 1735 New York Ave., N.W., Washington, D.C. 20006 (202) 626-7300.

June 10–13
EDRA16/1985: Environmental Design Research Association Conference, New York. Contact Madeline Goss, EDRA 1985, Environmental Psychology Program, The Graduate School and University Center of the City University of New York, 33 West 42nd St., New York, N.Y. 10036 (212) 790-4553.

June 11–14
NEOCON 17. Merchandise Mart, Chicago. Contact Merchandise Mart (312) 527-4141.

June 16–21
Thirty-fifth Annual International Design Conference in Aspen. Aspen, Colo. Contact Alexia Lalli, IDCA, Lalli & Moore Associates, 126 Fifth Ave., New York, N.Y. 10011 (212) 206-8816.

June 21–23
Construction Specifications Institute Convention. Orange County Convention/Civic Center, Orlando, Fla. Contact Katherine V. Bates, CSI, 601 Madison St., Alexandria, Va.

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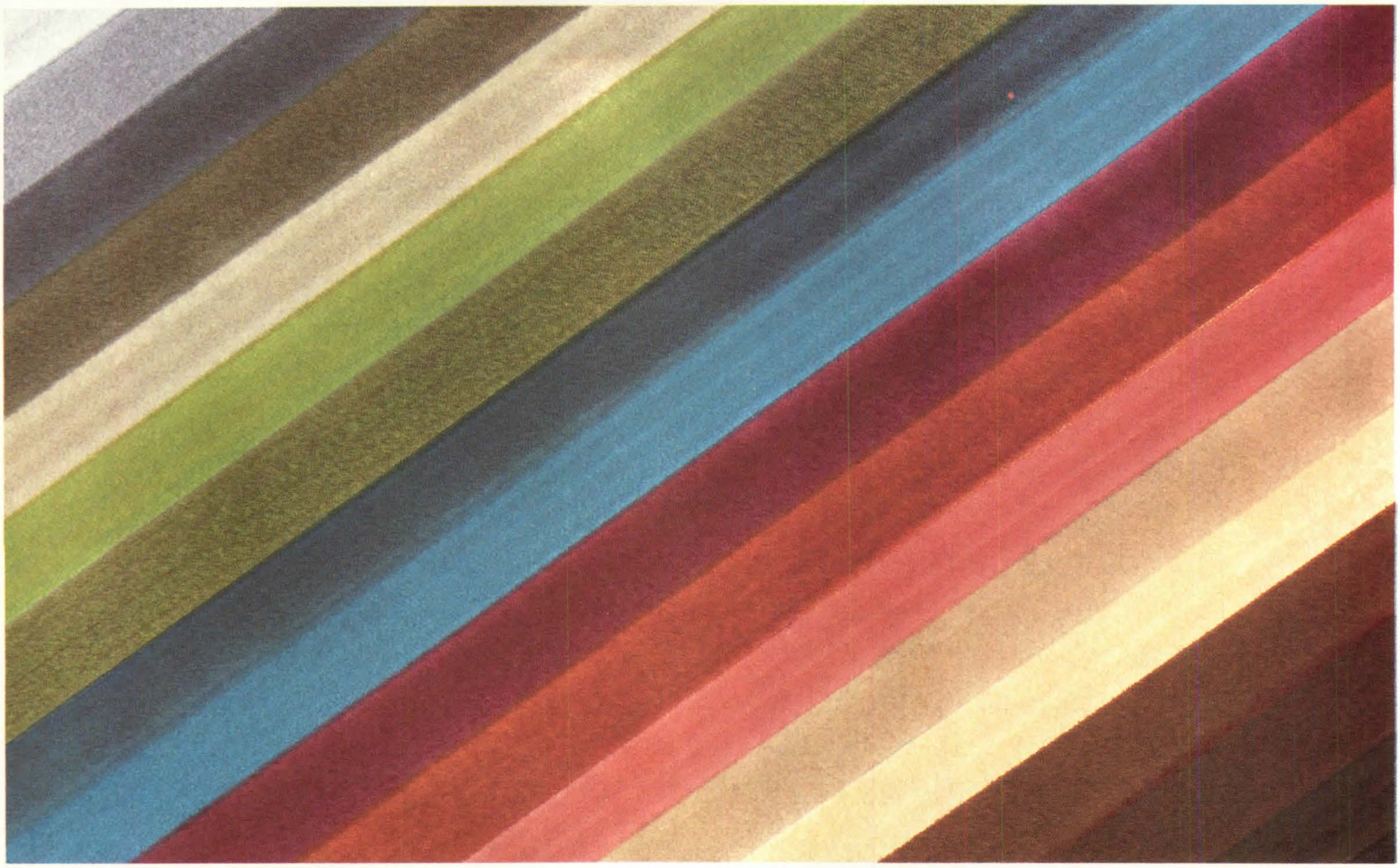

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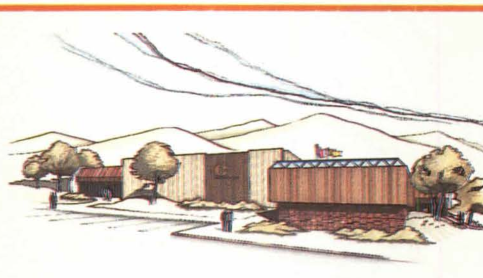

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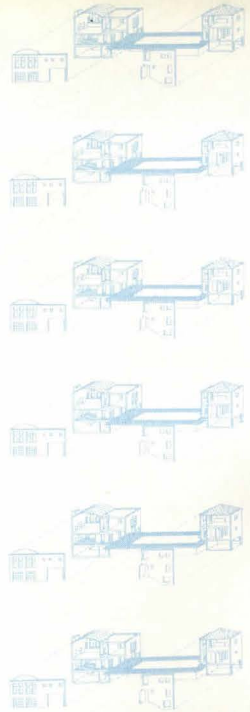
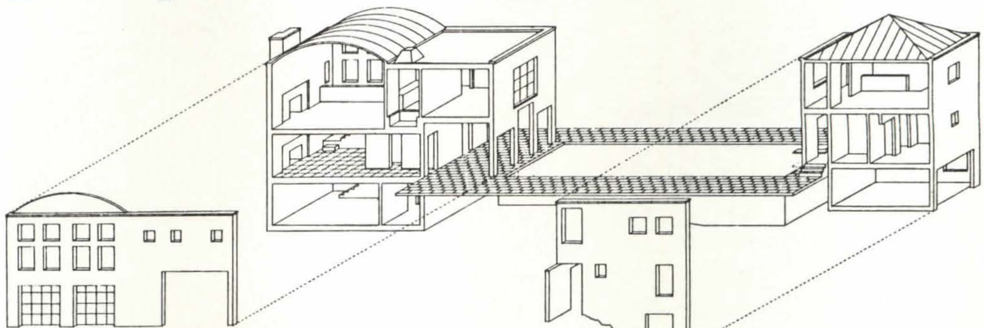
P/A Practice



Law: Who really owns your design?

"After reading reports of many such cases, one is forced to the conclusion that with few exceptions, those who find themselves at law are the stupid, the negligent, the dishonest and the unreasonable. The average Architect, endowed with honesty and a fair degree of skill . . . is not likely to become involved in litigation."

This quotation, taken from the American Institute of Architects Handbook of Architectural Practice, may provide the reader with a reassuring perspective on the relationship between architecture and the law. Unfortunately, it was printed in the second edition of the book, published in 1923; the situation today provides a somewhat less attractive picture.



Van Zandt residence by Steven Holl.

A review of law suits involving architects over the past two decades indicates a noticeable increase, both in volume[1] and in the range of practice-related areas where legal conflict may be generated. This range has now extended so far into hitherto unconsidered realms of potential malpractice that basic stupidity, incompetence, or dishonesty may no longer be the sole prerequisites for a successful claim—simple involvement may be sufficient. For example, beyond the more conventional areas of claim derived from inadequate design and inspection duties, recent cases show a growing expectation of responsibility for the specification of inherently faulty materials or components,[2] the approval of contractor-generated shop drawings,[3] and the potential for virtually unlimited liability in the future under the "discovery" rule whereby a claimant may have a statutory period to file suit (six years in some states) starting from the time the fault was, or should have been, discovered, rather than at the end of the construction period as previously understood.[4]

In addition, there have been claims generated from seemingly ludicrous sources. Recently, an insurance company gave accounts of two such cases. In one, following a crime in a suburban mall, the architectural practice was sued for designing a space "conducive to kidnapping." In the other, an engineer who visited the Hyatt Regency in Kansas City prior to the skywalk collapse was injoined in one of the 200 legal actions that ensued—even though his inspection was solely concerned with the roof of the building.[5] Such claims may have little chance of success in the courts, but legal defense is expensive, and with few opportunities to reclaim expenses from the losing side,[6] *any* form of legal action is likely to find the architect a financial loser.

Despite such gloomy evidence, however, there has traditionally existed one aspect of architecture that has, to some extent, been considered rather sacrosanct: the originality of the design concept as the fundamental right and property of the architect. After all, it is the individuality and freedom of stylistic expression that enables architecture to be conceived as an artistic as well as a technological phenomenon. Contract documentation and statute have attempted to address this issue,[7] their intention being primarily to prevent the use or reuse of the architect's original work, and to ensure that clients do not reuse a set of drawings without adequate compensation to the designer. Such protection is predicated on the basis that drawings and specifications are generated as "instruments of service," the provision of services to a client, rather than the development and sale of a tangible asset that can subsequently be used or sold independent of the architect's wishes or knowledge.

To date, the protection afforded would appear to be relatively successful, but the occurrence in the past year of three unrelated incidents has given rise to doubts as to the continued status of design ownership, and fears of further erosion of the architect's rights within the design field.

The first incident was not a legal case, but a curious series of circumstances that was considered sufficiently newsworthy to report.[8] An architect, Steven Holl, designed a holiday house on Long Island which subsequently won a Progressive Architecture Award in 1984 while still in the design stage. Unfortunately the client, Pamela Van Zandt, chose not to build the final design, and advertised the plans for sale in the *New York Times,* highlighting the architect's name and the award. The asking price was set at $25,000, the approximate cost of the architect's fees. As this was the first recorded time that anyone had attempted to sell a design in this way, eyebrows were raised in the profession, but Ms. Van Zandt talked repeatedly of "her investment," and had indeed included in her contract with Holl (upon her attorney's advice) a provision specifically stating that the completed design would be her property.

No legal claim has arisen from this issue—in fact, Holl is hoping that someone will buy the plans and hire him to supervise construction—but it tends to reflect an attitude that the architect provided a product for his fees rather than the provision of a service which ended when the client decided not to proceed with construction.

This attitude is more pronounced in a law suit involving Arquitectonica, the prominent Florida-based practice. In 1978, they designed a high-rise condominium project for Hugo Zamorano, who decided eventually not to proceed with the building, paying the architects their $50,000 fee and selling the site. Several owners later, a Canadian company took over the site and commissioned Arquitectonica to design a building similar in requirements to their previous one. The final product, the Atlantis Building, was considered by Zamorano to be so similar to the building designed for him that he filed suit against the architects for recovery of his fees and damages for reselling the "work of art" which he claimed to have purchased.[9] As in the Holl case, this raises the question of whether the architect provides a service to clients in the same way as, say, a plumber or electrician, or sells a tangible product that passes to the client upon payment, to be disposed of at the latter's discretion. Furthermore, having "sold" the design, can the architect reuse elements of the original in subsequent designs, or will this breach the *client's* newly acquired rights? The Arquitectonica case begins to raise this new and disturbing issue, although more specific indicators can be drawn from the latest case recently reported in New York.[10]

The Trump Plaza on Third Avenue was designed by Philip Birnbaum and completed in 1983. The owner of the site opposite then asked the same architect to design a building near the Trump Plaza. When designed and exhibited, the proposed structure looked similar to its neighbor, causing Donald Trump to file suit to prevent its construction, claiming loss of originality on his building.[11]

Disputes over ownership to this point have been largely concerned with clients or opportunists reusing or plagiarizing architects' work. Now, however, two unrelated cases are questioning *architects'* rights to reuse their own ideas in subsequent design schemes. In the Trump case, despite previously held concepts of design ownership, an out-of-court settlement was negotiated largely in favor of the claimant by the judge, who dictated changes in the proposed appearance of the new building to decrease the similarity between the two schemes. In addition to the somewhat surreal idea of a judge dictating design changes to a major project (albeit quite sensitive ones, reportedly), the profession is suddenly faced with an altogether new threat hitherto unenvisaged in the already broad net of architectural malpractice.

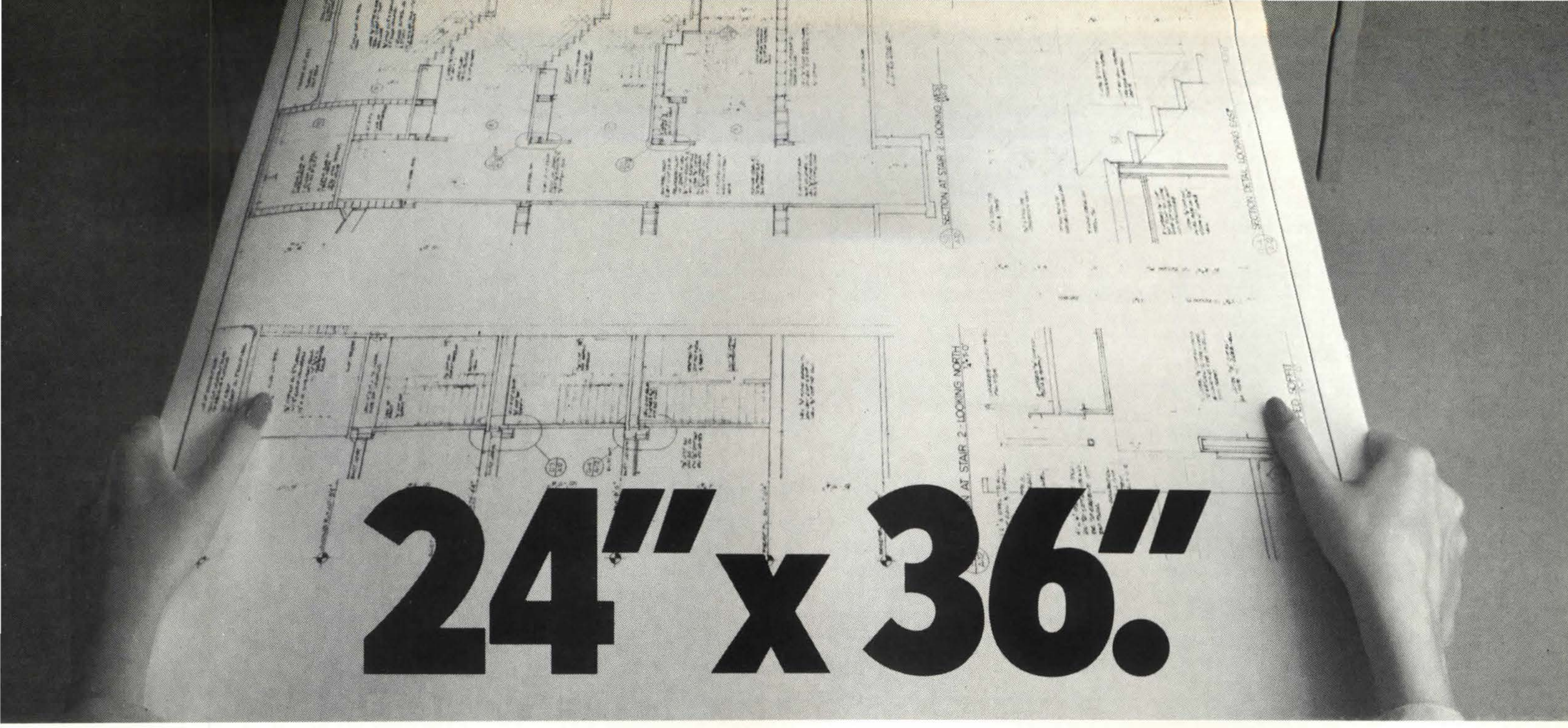
The cases to date are admittedly not necessarily typical. In two of the three cases discussed, contract clauses were included and agreed to by the architects that explicitly limited or waived certain of their rights in regard to ownership. If cases of this nature continue to arise, however, the fundamental premise of the architect's right to design ownership is likely to be threatened. This is disturbing for two reasons, the first being legal. Although architects bear a high degree of responsibility for their work, it is still very difficult to argue successfully that they should warrant perfection, so that building failure would automatically imply liability without the establishment of fault.[12] If designs become conceived of as products rather than services, however, the rules of product liability implying warranties of performance, well established in other fields, may begin to play a greater part in future litigation. This line of attack has already been used in several cases involving building elements such as roofs.[13] Yet another vehicle with which to continue this argument will merely add to the range of possible legal action and continue the erosion of remaining protection available to the profession.

The second concern relates more to the nature of architecture itself. Many architects work within style-related parameters that may be personal or collective, and are likely to provide certain similarities between their various schemes. Arquitectonica, for example, uses certain forms and recurring motifs that make their work unmistakable. In the event that a design is conceived as the client's property, taking with it the rights of ownership suggested by the Trump case, should all subsequent design work therefore consciously eschew any elements of similarity for fear of breach of copyright? The impact on designers and indeed on the environment[14] can only be surmised, and perhaps the perceived fear, based as it is on fairly limited evidence, may be insufficient to generate too much concern. Nevertheless, the increase in legal action against the architectural profession and the subsequent deterioration of protection exhibited in a wide range of cases has made other areas of concern, possibly laughable a few years ago, today's sobering realities. Perhaps the issue of design ownership will become one further problem to be faced by the profession in future.

Bob Greenstreet ■

The author is an architect currently teaching at the University of Wisconsin-Milwaukee. He is author of Legal and Contractual Procedures for Architects, *Second Edition (Architectural Press 1984) and coauthor of* The Architect's Guide to Law and Practice *(Van Nostrand Reinhold 1984).*

1. An increase in the rate of claims for malpractice against architects is claimed to be approximately 20% per year (*New York Times* 2/12/78), from Berman, T., "What is my Liability to Third Parties?" Chapter 1. *Avoiding Liability in Architecture, Design and Construction,* edited by R. Cushman (Wiley Interscience, New York, 1983).
2. Scott v. Potomac Ins. Co. of D.C., 217 or 323, 341 P2d 1083 (1959). Bloomsburg Mills v. Sor-



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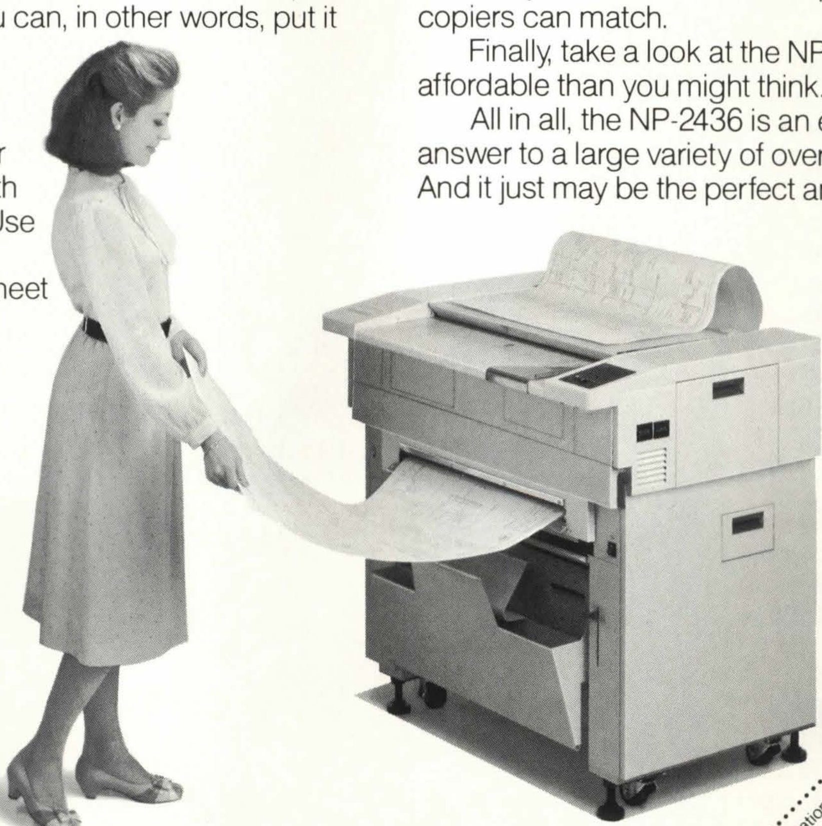

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donic Const. Co., 401 Pa 358, 164 A2d 201 (1960).
3. John Grace & Company v. State University Construction Fund, 472 N.Y.S. 2d 757 (N.Y. App. Div. 1984).
4. Hartford Fire Insurance Co. v. Osborne Plumbing and Heating Inc., 66 Wis., 2d 454, 225 N.W.2d 628 (1975).
5. *The Wall Street Journal*, 6 December 1983, p. 21.
6. Parties to legal action in the United States usually have to pay their own fees, unless allowed for in specific statutes or made an exception by the judge in certain circumstances.
7. AIA Document B141 Article 8.1. states:
   "Drawings and Specifications as instruments of service are and shall remain the property of the Architect whether the Project for which they are made is executed or not."
   Furthermore, the 1978 Copyright Act seeks to provide protection for designers wanting to register their work for the prime intention of preventing others from blatantly plagiarizing their new or innovative ideas.
8. *The New York Times*, 18 October 1984.
9. *Milwaukee Journal*, 16 October 1983, pp. 7, 8.
10. *The New York Times*, 25 October 1984, p. 24.
11. Trump had, upon the advice of his lawyer, included a provision in the owner/architect contract stating that, although the architect retained ownership of the drawings, he would not use them on any other project.
12. Kornblut, A., *Architectural Record*, November 1984, p. 47.
13. Chicago Heights Venture v. Dynamit Nobel of America Inc., 575 F. Supp. 214 (N.D. L11. 1983).
    Boddie v. Litton Unit Handling Systems, 455 N.E. 2d 142 (Ill. App. 1983).
14. Goldberger, P. "Look-Alike Buildings: The Third Avenue Case," *New York Times*, 25 October 1984, p. 24: ". . . it would turn it into a desperate rush to make every building look different from all others, and could turn the cityscape into something, hard as this is to belive, even more chaotic than it is now."

Computers: The cost of automation

Most design firms plan to purchase some kind of computer equipment in the next year. Budgets have been established and applications identified. Unfortunately, most firms have not budgeted or planned to recover the soft costs of automation. The prices quoted by the software and hardware sales people are only a fraction of the real costs of computerization.

When preparing to buy a computer, most firms focus on the hardware and software costs. Since the performance of the system is their primary concern, the shipping, installation, initial and ongoing training, space, utilities, and supply costs seem small in comparison. Added together, however, those costs form a major part of the purchase price—and a basis for negotiating savings.

Initial costs

Most design firms use computers for word processing, computer-aided design and drafting (CADD), and/or data processing/accounting (DP). Each application has its own costs. The following table lists first-year cost considerations for each of the basic uses.

	PERCENT OF TOTAL COST OF APPLICATION		
Cost Consideration	Word Processing	Accounting	CADD*
Applications software	7	20	10
Operating system software	1	1	1
Hardware-computer	29	37	54
Hardware-printer	29	2	5
Annual software maintenance	5	2	6
Annual hardware maintenance	3	3	1
Freight/shipping	2	2	1
Cables	1	1	1
Shipping insurance	1	1	1
Tax	4	4	4
Installation by vendor	1	1	1
Installation time/labor	1	1	1
Training time	5	20	11
Start-up supplies	7	1	1
Back-up media	1	3	1
Occupancy costs	3	1	1
Total	100	100	100

*These figures are based on a mini-computer-based CADD system with two terminals. Micro-based systems have similar cost considerations but the training time cost will be closer to 50 percent of the total cost. Time and programming costs for customizing off-the-shelf software are not included in this list. These costs vary based on the firm, application, and chosen software. If a good software is initially selected, in most cases little or no modification will be required.

All of these costs are negotiable and vary from vendor to vendor. While you can combine the three applications on the same piece of hardware, the above table was made assuming that each application runs on separate equipment.

The costs of freight/shipping, shipping insurance, and installation will vary based on the location of the vendor's factory and the buyer's ability to pick up the hardware and software and install it without the vendor's help. Many firms install micro-based systems themselves because of its relative ease. Almost no firms install mini systems themselves because of the level of knowledge required and the chance of voiding the warranty in case of a mishap.

Annual costs
Annual costs include all but the initial installation costs unless even those are financed. For the firm that plans to charge for CADD computer time, consider the following:
1 Training costs will run 20–25 percent of the total costs each year. This includes training time for staff and the trainer's own time.
2 Maintenance costs will be in the 15 percent range, including software and hardware maintenance and internal staff time at payroll rates.
3 The cost of the hardware and software, over its three- to five-year useful life, is about 25 percent of the actual cost of operations.
4 The cost of capital is another 10 percent of the annual operating costs, a low percentage due to improved interest rates this year.
5 The remaining 25 percent of the annual operating costs will be in systems management labor, insurance, supplies, occupancy expenses, and the cost of capital to finance this 25 percent of the costs.

Cost recovery
To recover the actual cost of a system, most firms now calculate cost recovery on an hourly basis. They charge computer terminal time to projects based on their use of the terminal, arriving at the number of available terminal hours by figuring the amount of ongoing training time, down time, hardware maintenance, and system maintenance time for each terminal. Many firms find that, on an eight-hour-day schedule, they can charge only 30 percent of terminal time to projects.

Considering the costs, an eight-hour-day schedule makes it difficult to purchase and maintain a mini-based system and recover the costs at billing rates less than $90 per hour, plus operator hourly rates. By expanding the computer's day to twelve hours, the rate drops to $40–$50 per hour—a reasonable billing rate for CADD terminal time in today's market.

When budgeting for a system, hardware and software costs are usually 50–60 percent of the first year's costs. The initial hardware and software investment, though, is only 20–25 percent of the cost of the system over its three- to five-year useful life. It seems wise, then, before considering the purchase of computer equipment, to be fully aware of all the costs and to have as clear an idea as possible about how and when the equipment will be used. ***Gregory B. Putnam, AIA*** ■

The author is an architect and the founder and president of Putnam Management Consultants, Piedmont, Calif.

Research review: Case studies at MIT

MIT's Laboratory of Architecture and Planning has developed, with funding from the National Endowment for the Arts, a dozen case studies similar to those used in most business schools. Unlike the design problems given in architecture schools, which have as their goal the generation of a final building design from a given program and site, the MIT case studies examine the *process* of designing and constructing actual buildings.

That focus on real buildings not only enables the reader to learn from the experiences of others; it underscores the importance of managing the building process, which requires as much attention, judgment, and creativity as the design of a building itself. Says William Ronco, "We suggest that readers view the cases as verbal design problems."

Written in story form, the cases do not provide solutions. Rather, they are intended to provoke discussion and thought among readers. MIT has used the cases in two summer programs and at AIA and ACSA workshops. The Laboratory of Architecture and Planning encourages practitioners, educators, and students to send for copies of the cases and discuss the problems they raise. Information on the case studies is available by writing: Cases, MIT Laboratory of Architecture and Planning, Room 4209, Cambridge, Mass. 02139.

Some cases will be in William Ronco's forthcoming book *Collaboration in Management* (New York, Oxford University Press).
Thomas Fisher ■

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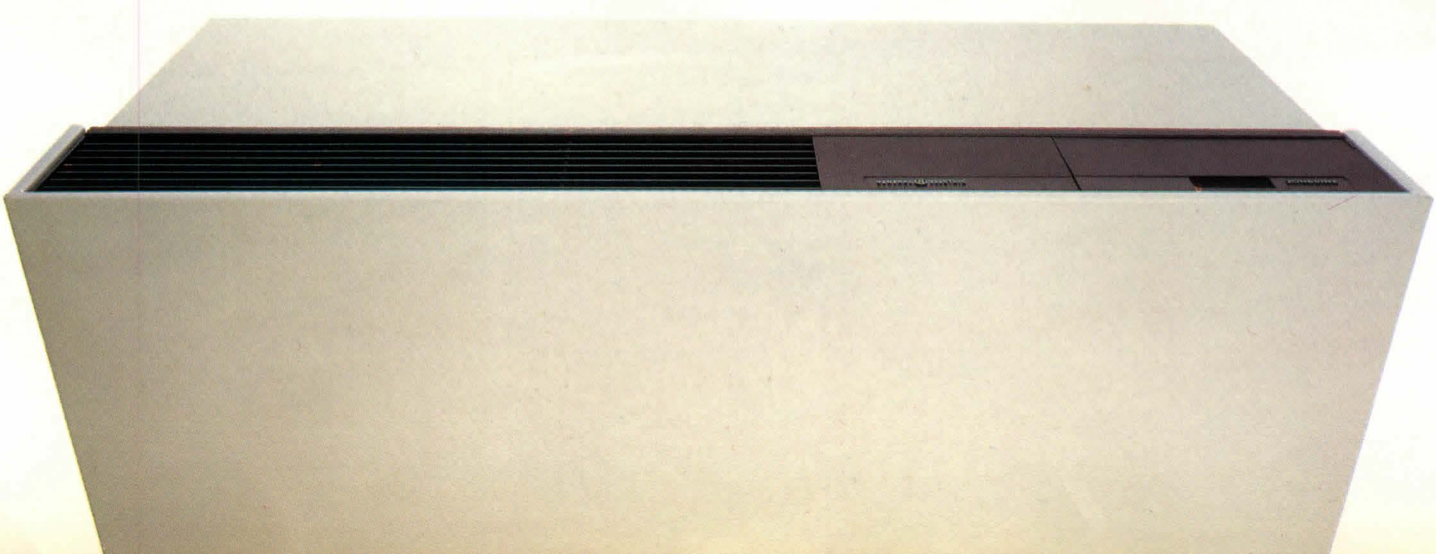

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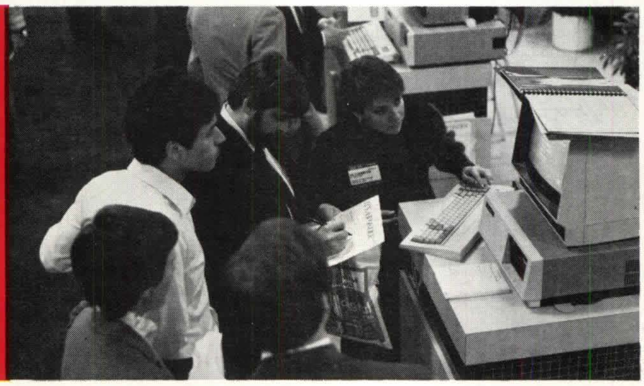

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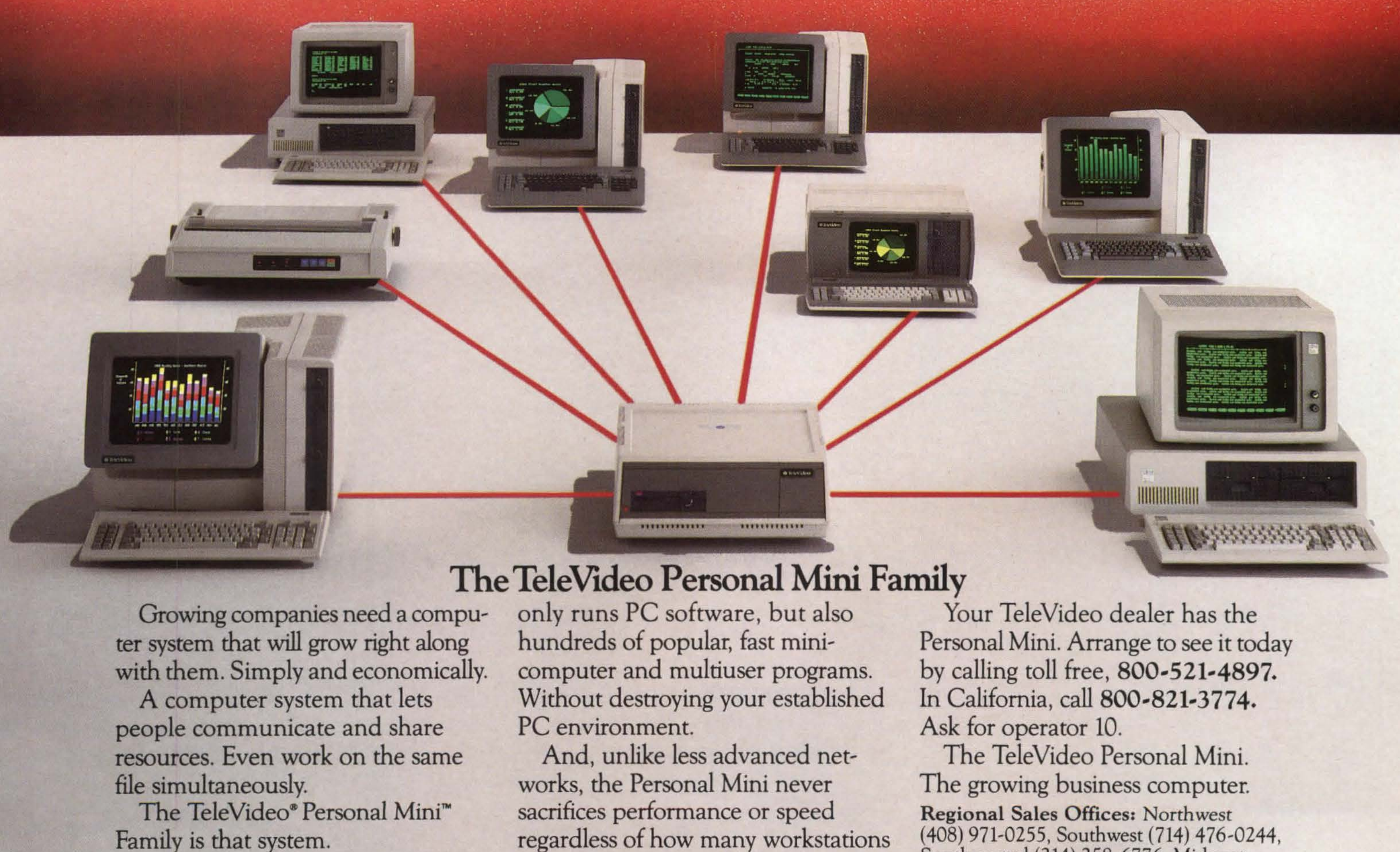

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Bursts of energy

As energy costs have eased, so has public attention to the subject. But that hasn't stopped development of energy-saving products or the refinement of energy-conserving design.

However much the energy crisis has faded from the media's eye, conservation efforts continue—as vigorously as ever. Some architects have pioneered new conservation techniques, such as the passive solar optics systems developed by BRW and used in their Thresher Building (p. 83). Others have applied known strategies at scales never tried before, such as the heat recovery system used in the new Massachusetts Department of Transportation Building by Goody, Clancy & Associates. Still others have sought the integration of—and appropriate architectural expression for—a variety of approaches; the Liberty Elementary School by CSHQA (p. 78) and the competition-winning architecture school at Florida A&M by Clements/Rumpel Associates (p. 74) are but two examples.

The home-building and construction-products industries have pursued energy conservation with equally dramatic results. The efforts of builders to increase the thermal performance of housing have spurred the development of new construction methods, many of which reduce initial costs as well as improve energy efficiency (p. 110). Manufacturers have found much the same: that energy conservation can often lead to much better products.

So, despite the media's relative silence on the subject recently, energy conservation remains a major force in the marketplace, bringing fundamental changes to the products and processes of building. That it no longer has the same effect it once had on the appearance of buildings is not a sign of weakness, but of strength. We have seen energy conservation for what it is: one of several factors to consider in the design process. And we have made energy conservation what it always should have been: a factor in the creation of architectural amenities as much as in the saving of BTU's. ***Thomas Fisher*** ■

Florida A&M Architecture School, Tallahassee

An energy education

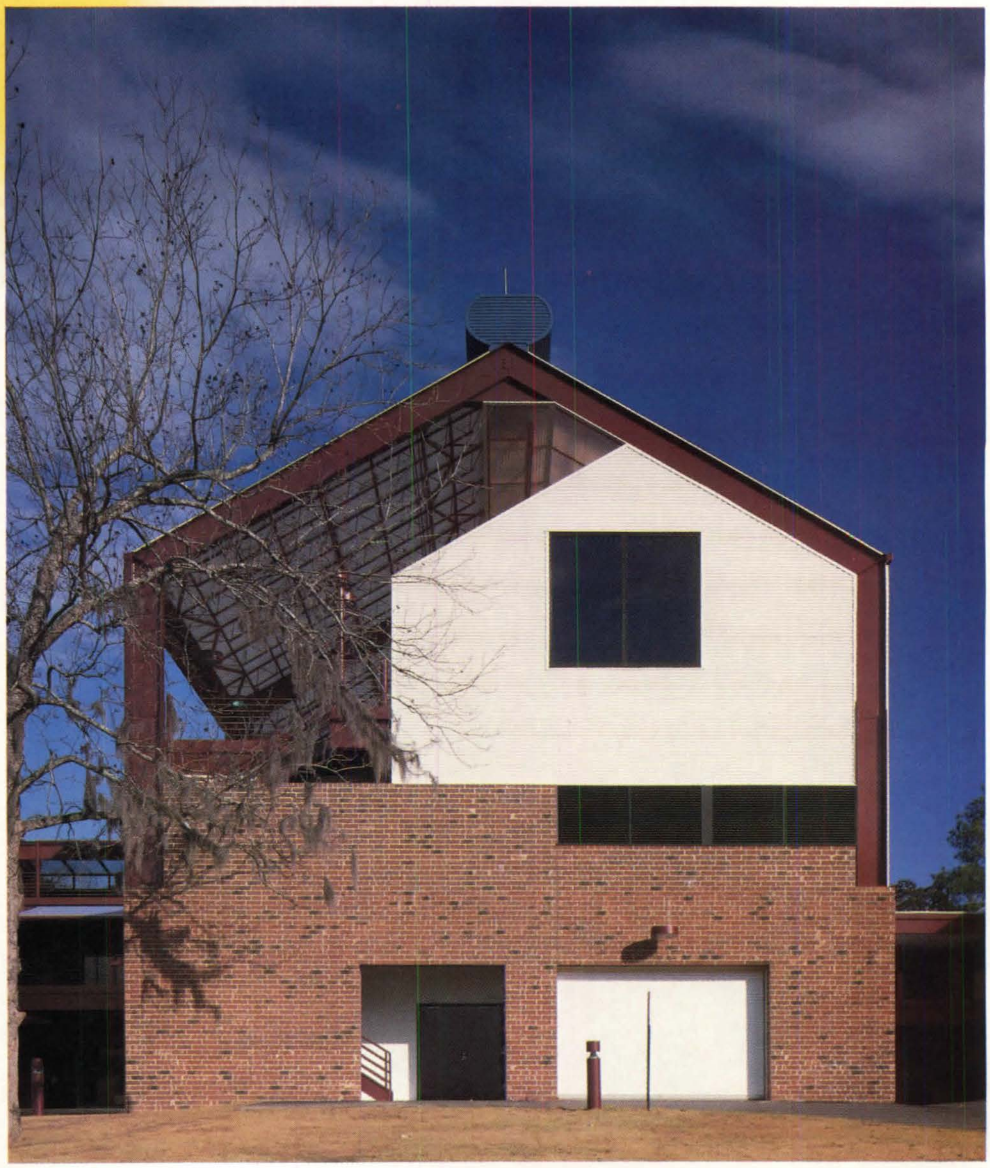
The sponsors of the design competition for a new school of architecture at Florida A&M wanted a structure that "pushed the limits of current definitions of architecture," one that emphasized economical construction, programmatic flexibility, community accessibility, and energy conservation. They got more than they asked for in the winning scheme by Clements/Rumpel/Associates.

The building stands on a sloping site along a major campus road. Spaces requiring full climate control, such as the library, computer lab, and lecture hall, sit within a front block that is brick clad and partly buried into the slope to relate, in scale and material, to the houses across the street. Perpendicular to this front block stand four wings containing offices, labs, and studios. Those wings clearly address the competition goals with low-cost steel framing and corrugated steel and fiberglass cladding; flexible studio spaces under open shading structures; and accessible outdoor walkways and courtyards.

They may even exceed the competition's goal of energy conservation. Each wing has a glazed thermal chimney that covers most of its south-facing wall. Two feet wide, each thermal chimney has operable vents along its bottom and inside face and a wind-assisted ventilator along its peak.

In the hottest summer months, a central chiller cools the fully enclosed spaces while the thermal chimneys just ventilate the courtyards. South-facing lightshelves and skylights reduce the artificial lighting, and thus the building's cooling load. In more moderate temperatures, computers automatically open the thermal chimney vents (and shut down the air conditioning, prompting students to open the windows manually). Temperature differentials, as well as the ridge ventilator and ceiling fans, pull air through the thermal chimneys. In the coldest winter months, the thermal chimneys, with their interior vents open, heat and recirculate room air through the air-handling system using return ducts in the roof peaks. Steam heat from the campus system provides additional space heating.

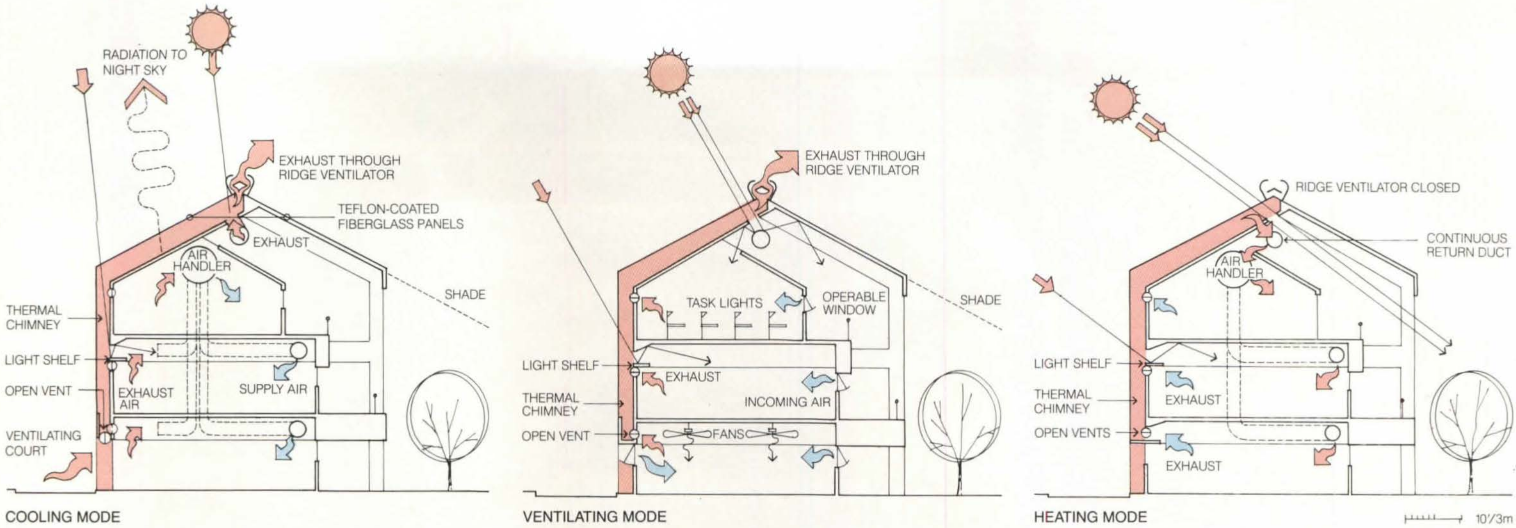
The architects wanted their architecture building to be "a hands-on laboratory, providing an operating system . . . for students who will be designing buildings and energy systems in the New Energy Age." In the process of achieving that, they also produced a formally coherent and visually expressive work of architecture. The students couldn't ask for a better lesson. ***Thomas Fisher*** ■



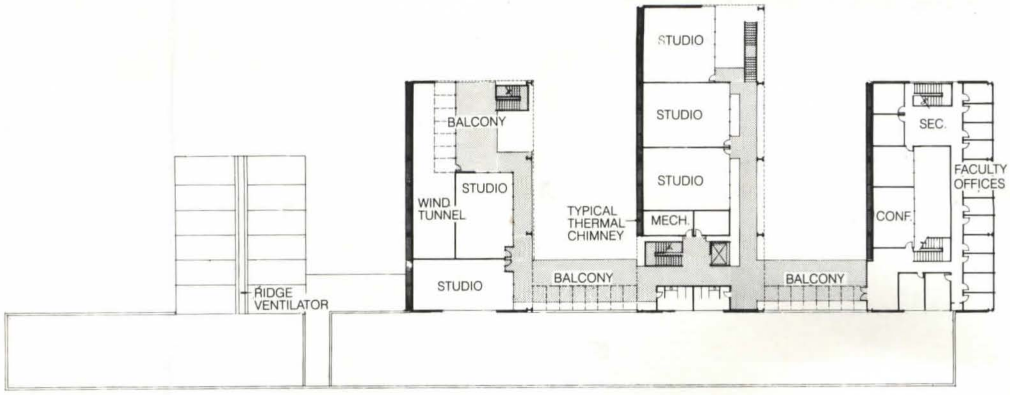
The end of a studio wing at Florida A&M's School of Architecture (above) indicates the clear distinction between the enclosed spaces, clad in metal panels and brick, and the unenclosed circulation areas, shaded by the open metal structure. In addition to those functional distinctions, the architects have made a formal distinction between the brick base and the gabled metal building above. The south-facing thermal chimney (right) also begs multiple interpretations.

The chimney, with its Teflon-coated fiberglass skin, bar joist supports, dark metal back-panels, and continuous ridge ventilator, recalls both low-cost, utilitarian buildings and articulated, high-tech structures. It also sets up a visual contradiction by appearing to be both a flat surface and a transparent, three-dimensional volume.

Florida A&M Architecture School



The sections (top) show how the building's mechanical systems work in various seasons. In the hottest months, the enclosed spaces are artificially cooled; in temperate seasons, the thermal chimney pulls air through operable windows and vents and exhausts it through the ridge ventilator; in the coldest months, air heated in the thermal chimney is recycled through the mechanical system, supplemented by a campus-wide steam-heating system. With their glazed thermal chimneys, the rear wings (above) recall the nearby greenhouses, and with their gabled ends and single square windows, the houses that face the school. The plans (opposite) are clearly organized, with shared, fully enclosed spaces, such as the library and lecture hall, in a front, two-story block and seasonally air-conditioned studios, labs, and offices in a series of two- and three-story wings perpendicular to it. The thermal chimneys cover the south elevations, while open walkways and stairs along the north elevations overlook garden courts.



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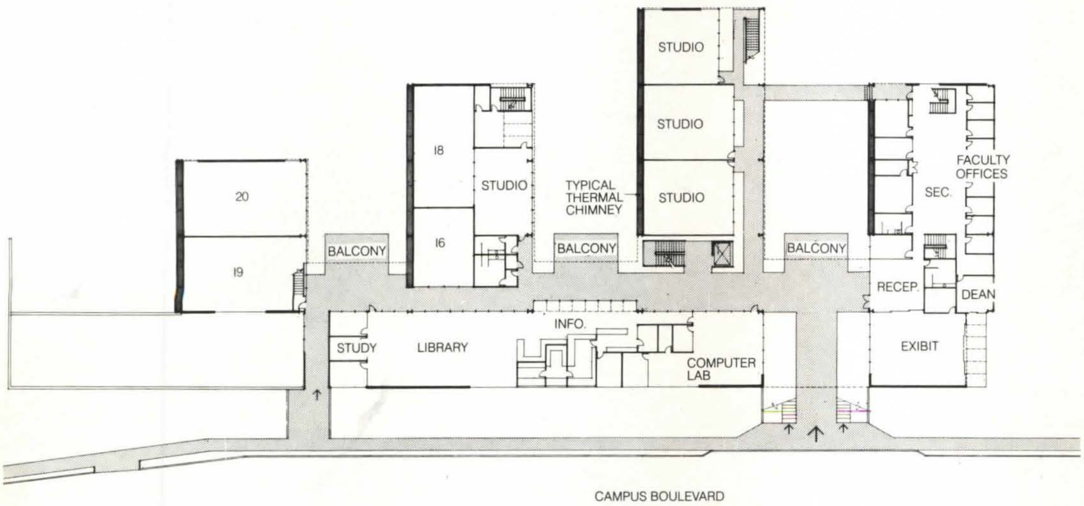

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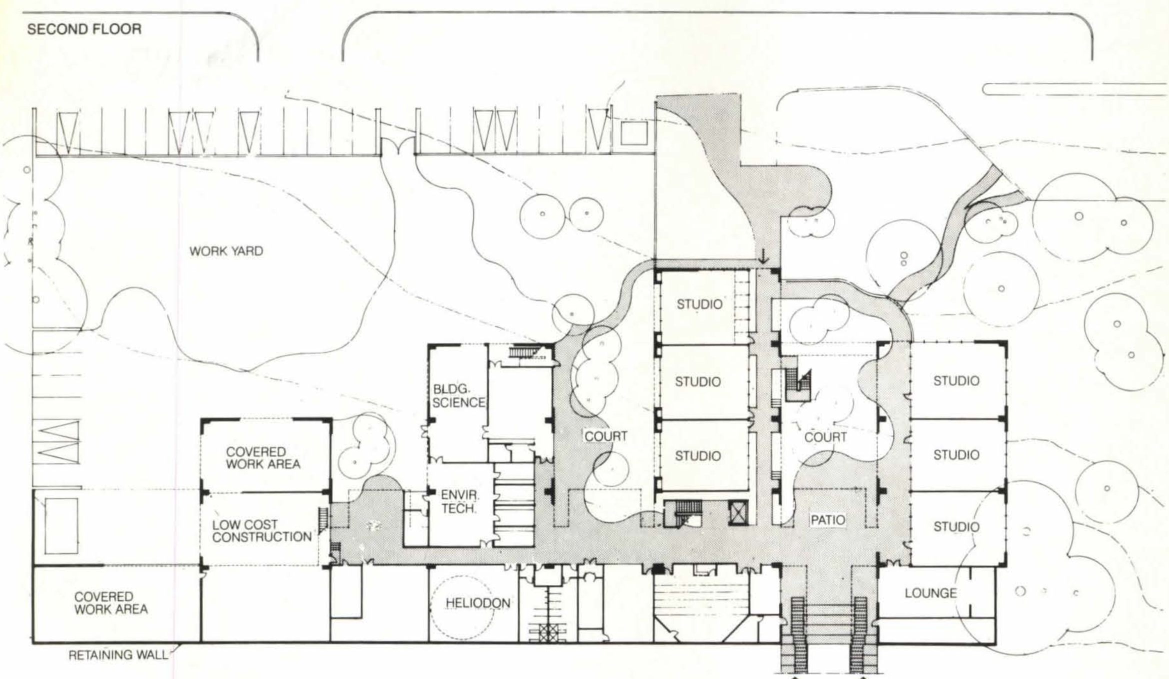


FIRST FLOOR

Project: *School of Architecture Building, Florida A&M University, Tallahassee, Fla.*
Architects: *Clements/Rumpel/Associates, Architects/Planners, Incorporated (Peter Rumpel, designer; Harleston Parkes, project manager).*
Client: *Board of Regents, State of Florida.*
Site: *2.3-acre site on main campus traffic artery, sloping 20 ft from front to back.*
Program: *Provide a new architecture school including offices, instructional areas, a library, and auxiliary spaces (61,580 gross square feet).*
Structural system: *steel frame on pad footings, bar joist floor, metal deck, sloped bar joist roof structure.*
Major materials: *brick veneer, metal panels, carpet, stained concrete floors (see Building materials, p. 148).*
Mechanical system: *passive cooling through thermal chimney, variable volume system with campus steam heat, on-site chiller.*
Consultants: *Tilden, Lobnitz, Cooper, Inc., structural and mechanical; Dubin-Bloome Associates, passive design.*
General contractor: *Winchester/CRS Sirrine, A Joint Venture*
Cost: *$5,052,152 ($82 per sq ft).*
Photos: *Steven Brooke.*

A solar schooling

It's an old problem, the daylighting of schools. Sixty years ago, classrooms were narrow with tall windows; thirty years ago, the classrooms were widened, the windows lowered, and clerestories or glass block transoms added. Today, after an interlude of many windowless classrooms, daylighting has returned, affecting the form of the schoolhouse as much as its quality of light.

Liberty Elementary School in Boise, Idaho, by CSHQA Architects represents the best of the new daylighted schools. The architects have used daylight appropriately, without flooding rooms with light or wasting heat with expansive areas of glass. Each classroom has two walls of clerestories with light shelves reflecting daylight into the rooms; the clerestories provide a view outdoors without the glare or lost wall space that comes with the traditional classroom window. Photocell controls switch the perimeter lights on or off depending upon daylight levels.

Skylights illuminate the corridors and media center. Fixed fabric shades stretched beneath the skylights transmit about 10 percent of the light and reflect the rest through clerestories into adjacent rooms. Interior rooms without clerestories receive diffused light through glass block walls. Where view windows occur, as in the north-facing media center, the mechanical system passes heated air, recycled from the skylight peak, through the two-foot space between the inner and outer sheets of glass.

The skylight wells extend the mechanical system in other ways. They terminate supply ducts that bring in fresh air and return ducts that exhaust heated air to the outside in summer. Those same return ducts, in winter, recycle the skylights' heated air through the mechanical system.

The design of the Liberty Elementary School responds just as thoughtfully to its environment. On the exterior, the light shelves and earth berms, which rise about halfway up the outside wall, reduce the scale and apparent height of the building—a response to the children that use it and the single-family houses that surround it. To further reduce the building's scale, the architects have given each classroom an outside entrance and interior vestibule that serves as an airlock and mud room. The tentlike fabric in the corridors also reduce the apparent height of those spaces.

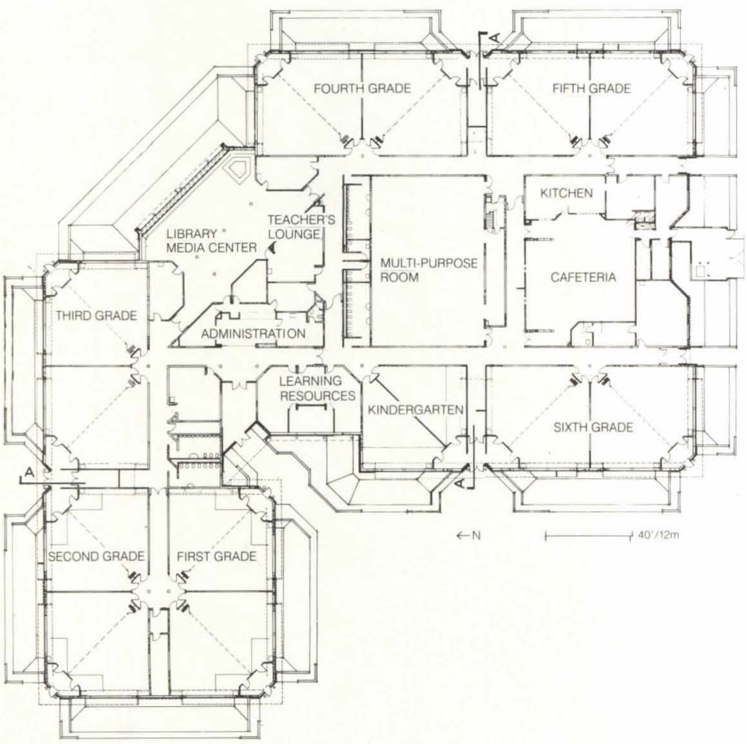
As the number of children approaching schooling age increases, so should the demand for classroom space. How well lighted and energy efficient those classrooms are depends upon how well we learn the lessons of buildings such as the Liberty Elementary School. ***Thomas Fisher*** ■

Liberty Elementary School (above) has a stepped, fabric-covered metal frame announcing the building's entrance. The classrooms also have outside entrances leading to vestibules that double as airlocks and mudrooms. The earth berms, which help insulate the building, and the clerestories and lightshelves, which help reduce its electric lighting and cooling requirements, all help reduce the school's apparent height.

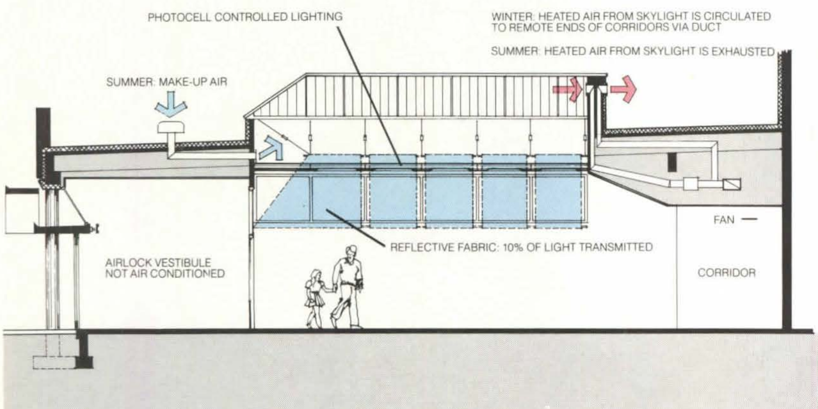
The media center (right), like the corridors, has a gabled skylight with tentlike fabric stretched beneath it. The fabric reduces the room's scale, diffuses the light directly below the skylight, and reflects most of daylight onto adjacent ceilings or, through glass block walls, into interior rooms.

Liberty Elementary School

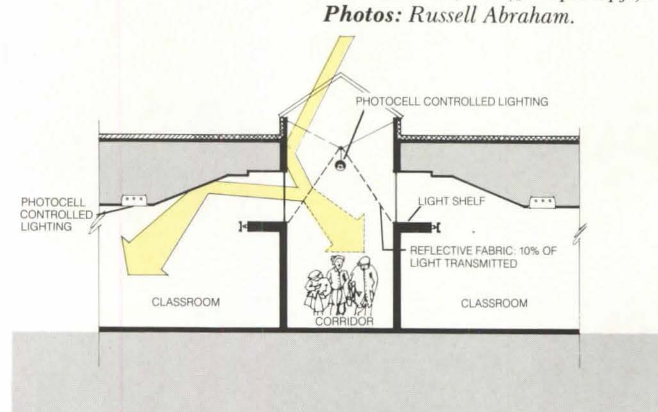
The school's L-shaped plan (below) has classrooms with doorways clustered along corridors and around vestibules and outside entrances. That clustering reduces the length and monotony of hallways. Shared spaces, such as the gym, cafeteria, and media center, occupy the center of one wing. The building sections (bottom) illustrate how daylight enters the building and how fabrics and lightshelves reflect the light into various spaces. The efficient use of reflective surfaces allows a relatively small amount of glass to bring daylight to large areas of the building. By using the mechanical system to recover warm air in the skylight wells or supply warm air to space between the two sheets of glass in the media center's north-facing window, the architects have made the building's glazed areas a thermal asset rather than a liability.



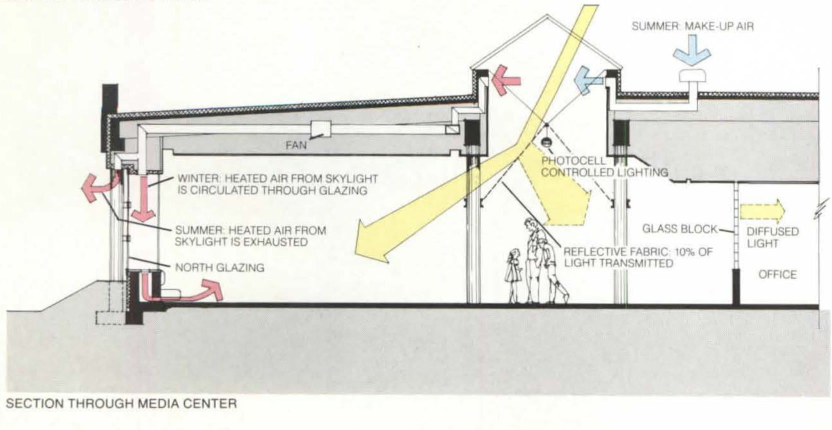
Project: *Liberty Elementary School, Boise, Idaho.*
Architects: *CSHQA Architects/ Planners, Boise, Idaho (Neil Smull, Otis Lemmon, Jeffrey Shneider, Jeffrey Gale).*
Client: *Independent School District of Boise.*
Site: *ten-acre, flat, suburban site.*
Program: *26 classrooms with gymnasium, media center, and cafeteria (57,000 gross square feet).*
Structural system: *reinforced concrete columns, precast concrete double-tee roof, concrete foundation.*
Major materials: *brick veneer, porcelain panel and glass window walls, single-ply roofing, concrete masonry units (see Building materials, p. 148).*
Mechanical systems: *gas-fired boilers, variable air volume ventilation system, hot water heating coils.*
Consultants: *Rex Harrison, structural; Engineering Incorporated, mechanical, Willmorth Engineering, electrical.*
General contractor: *C.M. Company, Incorporated.*
Cost: *$3,213,310 ($56 per sq ft).*
Photos: *Russell Abraham.*



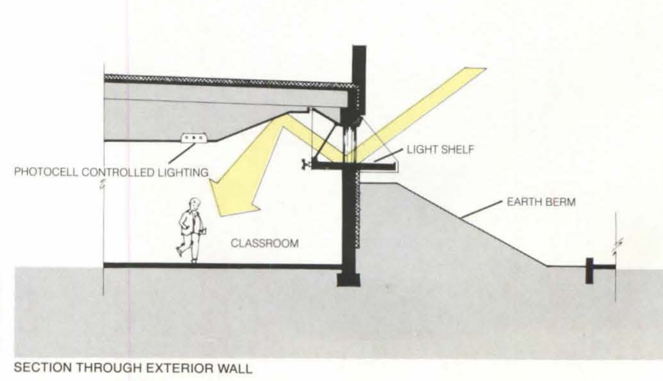
SECTION THROUGH CORRIDOR



SECTION THROUGH CORRIDOR



SECTION THROUGH MEDIA CENTER



SECTION THROUGH EXTERIOR WALL

Waste not, want not

The new Massachusetts Department of Transportation Building in Boston, by Goody, Clancy & Associates, is a case study in contextualism. Its form, appearance, and very operation respond to its physical and social surroundings.

The building's eight-story height, irregular perimeter, and brick cladding all reflect the scale and materials of neighboring structures. In a similar manner, the L-shaped office floors, cradling a service core and mid-block atrium, tie the building to its surroundings by maintaining the curving street line.

The building responds just as strongly to its social context. The ground-floor retail space, although it has been slow to rent, is an effort at revitalizing the neighborhood and creating more street-level activity. Catering to the needs of the community, the building also has an atrium that is available for community meetings or cultural events and an adjoining, cleaned-up alley that provides a shortcut for people walking between the theater district and the Boston Common. The community also can use the building's garage after hours.

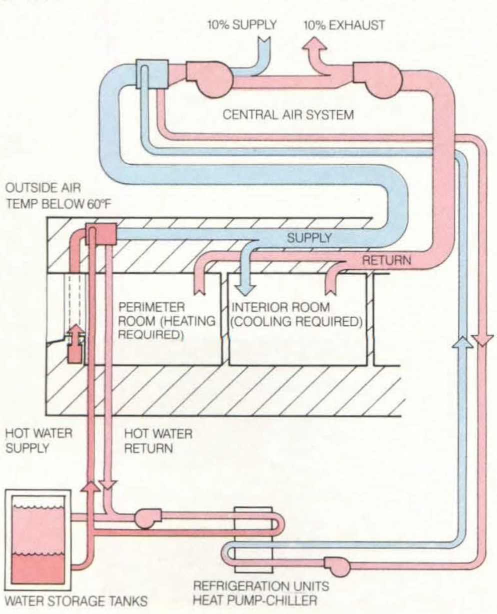
What sets the building apart from its neighborhood—indeed, from any office building—is its method of conserving energy, a contextualism of a political and economic kind. Of greatest significance is the building's ability to heat itself. Centralized variable air volume heat pumps reuse waste heat from people, lights, and equipment to heat perimeter offices during winter office hours, storing excess heat in three 250,000-gallon water storage tanks in the basement for use during peak heating periods or during nonworking hours. At the same time, active solar panels mounted on the roof provide about 82 percent of the building's domestic hot water needs. For cooling, the basement water tanks also store chilled water to reduce chiller operation during daytime peaks. Those strategies let the engineers reduce the amount of mechanical refrigeration from 2000 to 1200 tons and eliminate a backup heating system altogether—something almost unheard of in a building of this size.

In the end, contextualism might have gotten the better of the Transportation Building. It responds so well to its surroundings that the building itself is too self-effacing; its fenestration and projecting bays, in particular, too awkward and unresolved. But what the building accomplishes more than compensates for what it lacks in aesthetics. It demonstrates, in its form and material, how a building can be a good neighbor, and in its ability to heat and partly cool itself, how it can be a good citizen. ***Thomas Fisher*** ■

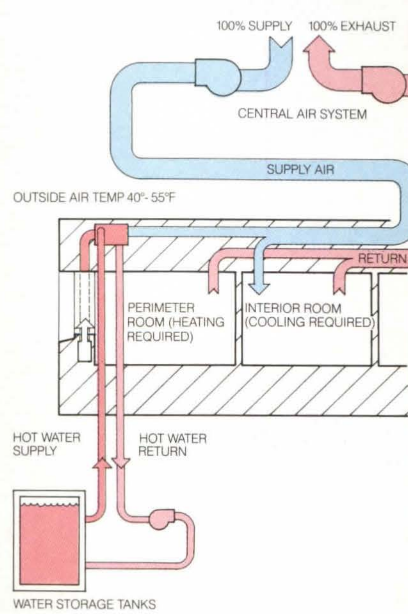
The atrium in the Department of Transportation Building (above) has two main levels. The ground floor serves as a community meeting space, an employee seating area, and a pedestrian link between Boston's theater district and Common. Retail spaces line the ground-floor public spaces. The entrance to the state offices occurs on an easily segregated second floor, allowing the public to use the atrium after hours.

The building's exterior (left) maintains the cornice height, brick cladding, and window spacing of adjacent buildings. The ground floor (below) has mostly public or retail spaces, while the offices above (shaded area) contain mostly double-loaded corridors and open offices. The mechanical system (bottom) features a method of heat recovery that uses water storage tanks without a backup heating system.

FIRST FLOOR



REDUCED HEAT MODE



HEAT RECOVERY MODE

Project: *The Massachusetts Transportation Building, Boston, Mass.*
Architects: *Goody, Clancy & Associates, Incorporated, Boston, Mass. (John Clancy, the late Marvin Goody, co-principals in charge; Leigh Smith, Spiros Pantazi).*
Client: *Commonwealth of Massachusetts, Division of Capital Planning and Operations.*
Site: *2.5-acre site in downtown Boston, adjacent to the Theater District, with architecturally significant buildings nearby.*
Program: *offices with street-level retail and enclosed parking (901,259 gross sq ft).*
Structural system: *3-foot-deep concrete mat foundation, steel frame with cellular metal deck, triangular pipe-framed atrium trusses.*
Major materials: *exterior brick veneer on metal framing; insulated bronze glass in operational windows; membrane roof with stone ballast on metal deck (see Building materials, p. 148).*
Mechanical system: *double-bundle heat pumps with central fans and terminal heat coils, three 250,000-gallon water storage tanks, 4000 sq ft of solar collectors for domestic hot water.*
Consultants: *City Gardens, Inc., landscape; LeMessurier Associates/SCI, structural; Shooshanian Engineering Associates, mechanical/electrical; Falk Associates, specifications and estimating; Haley & Aldrich, Inc., geotechnical; H.W. Moore Associates, utilities; Herman Protze, Inc., testing; Donald Bliss, lighting; Michaels & Colburn Associates, food service; Cavanaugh Tocci Associates, acoustical; Cullinan Engineering Co., surveys; John Van Deusen & Associates, elevators/escalators; Thompson Company, hardware; VWR Scientific Inc., laboratory furniture/photography; Antronics, Inc., video surveillance.*
General contractor: *Volpe, Dimeo, O'Connell & Gutierrez, A Joint Venture.*
Cost: *$74,104,000 (78.50 per sq ft).*
Photos: *Steve Rosenthal.*

Thresher Building
Minneapolis, Minn.

Harvesting light

How do you get sunlight and daylight into the interior of deep, multistory buildings, especially if economics or physical constraints preclude an atrium? The answer: passive solar optics or PSO for short. Developed by architects David Bennett and David Eijadi with the firm BRW Incorporated, a PSO system uses faceted, reflective surfaces to beam sunlight (and diffuse daylight) through narrow light-slots to targeted areas in buildings. The light-slots increase the net rentable square footage over the same size atrium building; the daylight reduces the building's lighting and cooling load; and the sunlight can increase user satisfaction with, and the desirability for, interior leased space. The PSO system also costs less than most skylights while providing a more even level of illumination.

Should you need more convincing, only look at BRW's recent rehabilitation of the historic Thresher Building into offices. It has six floors 180 feet long and 122 feet wide without any interior court or lightwell—a configuration too large for a double-loaded corridor and too small for an atrium. BRW Incorporated, part owner and largest tenant in the rehabilitated building, thus had an ideal opportunity to test the commercial viability of their PSO system.

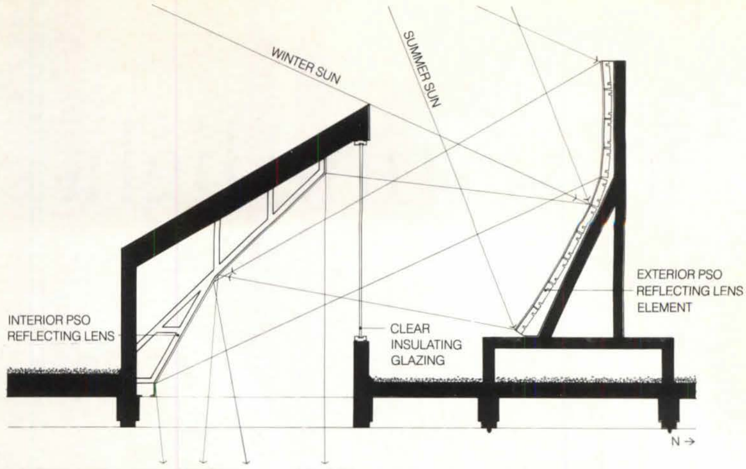
Targeting a rectangular area on the first floor for sunlighting, the architects removed sections of the building's heavy timber structure and deck on the upper floors to coincide with the spread of the light's beam. That resulted in L-shaped slots that get longer and narrower as the floors rise. At the top of the L-shaped slots stands a rectangular clerestory with opposed reflective surfaces (called a collector and reflector) facing each other through the clerestory's vertical glazing. Both surfaces have four horizontal facets corresponding to four different areas in the southern sky, with one-foot-square acrylic Fresnel lenses providing the surface reflection. Grooves within the lenses give the flat-backed tiles their optical properties. When set perpendicular to each other in the collector and reflector, the grooves also eliminate the mottled effect of sunlight reflected off flat surfaces.

Architects Bennett and Eijadi continue to develop passive solar optics. They are conducting research into active beam daylight tracking systems (P/A Practice, March 1985, p. 59) and are seeking funding to optimize the PSO system and develop design tools and instructional materials for it. Even in its present state, though, "Passive solar optics has performed very well," says David Eijadi. "It's a forgiving system." Forgiving, yes, but not soon forgotten. ***Thomas Fisher*** ■

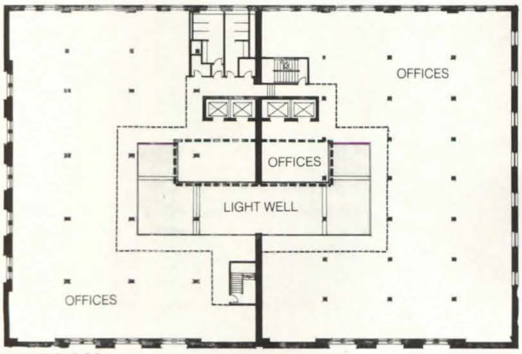
The Thresher Building (above) is listed on the National Register. Formerly a warehouse, its large floors made its conversion into offices difficult, for they were too wide for a double-loaded corridor yet too narrow for an atrium. The passive solar optics system allowed the architects to light the interior through narrow light slots, without altering the size or appearance of the exterior windows.

Thresher Building

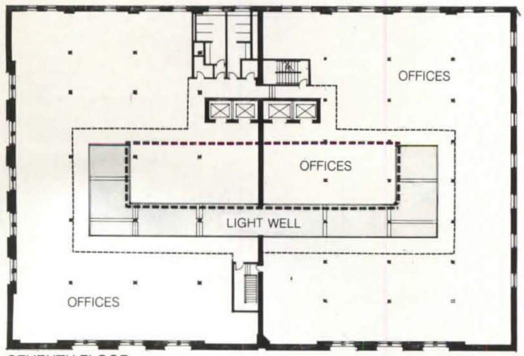
The building's section and plans (below) illustrate how the passive solar optics system directs light in a fairly narrow beam, permitting the upper floors to project into the light well for a gain in net rentable square footage. The optics system itself (right) is quite simple. Fresnel lenses, attached to fixed metal frames, reflect sunlight through a vertical clerestory toward a targeted area in the building. The angled reflective surfaces are adjusted to the sun angles at various times of the year. A view of the building's interior (opposite) shows the clerestory window, the interior reflecting surface, the narrow light slot, and the offices projecting into what would otherwise have been atrium space. To create the light slot, the architects simply removed the building's wood plank floor and left exposed its heavy timber frame and brick fire walls. The new offices appear to float within their timber frame.



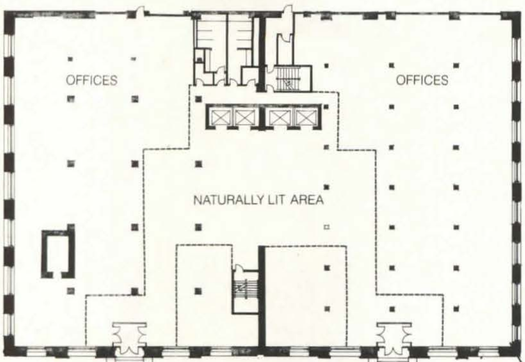
SECTION THROUGH PSO SYSTEM



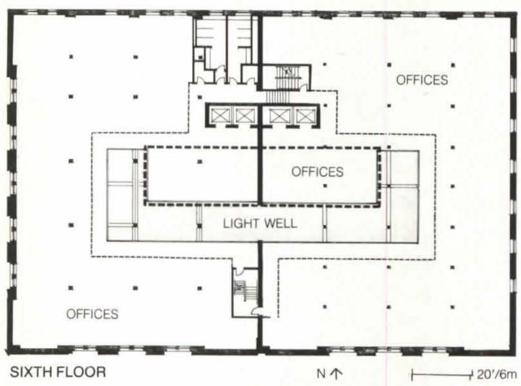
THIRD FLOOR



SEVENTH FLOOR

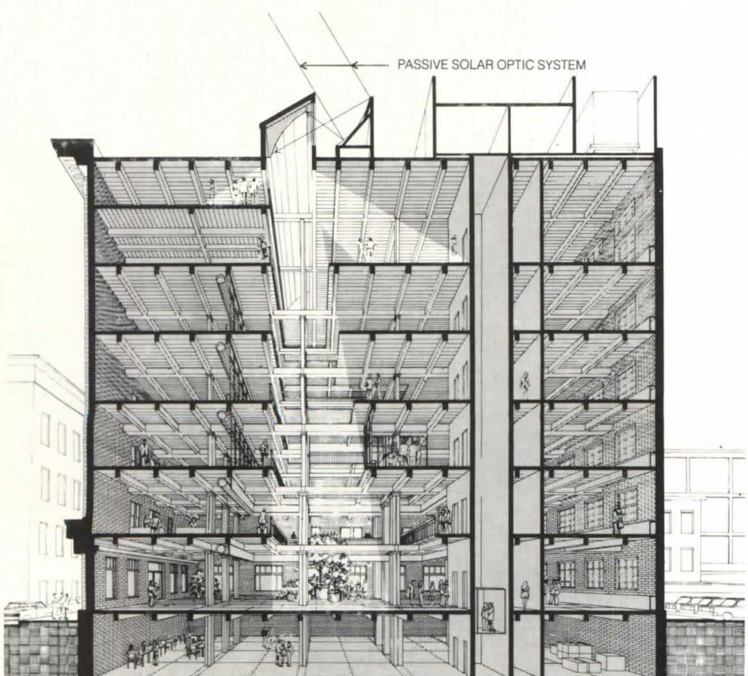


FIRST FLOOR



SIXTH FLOOR

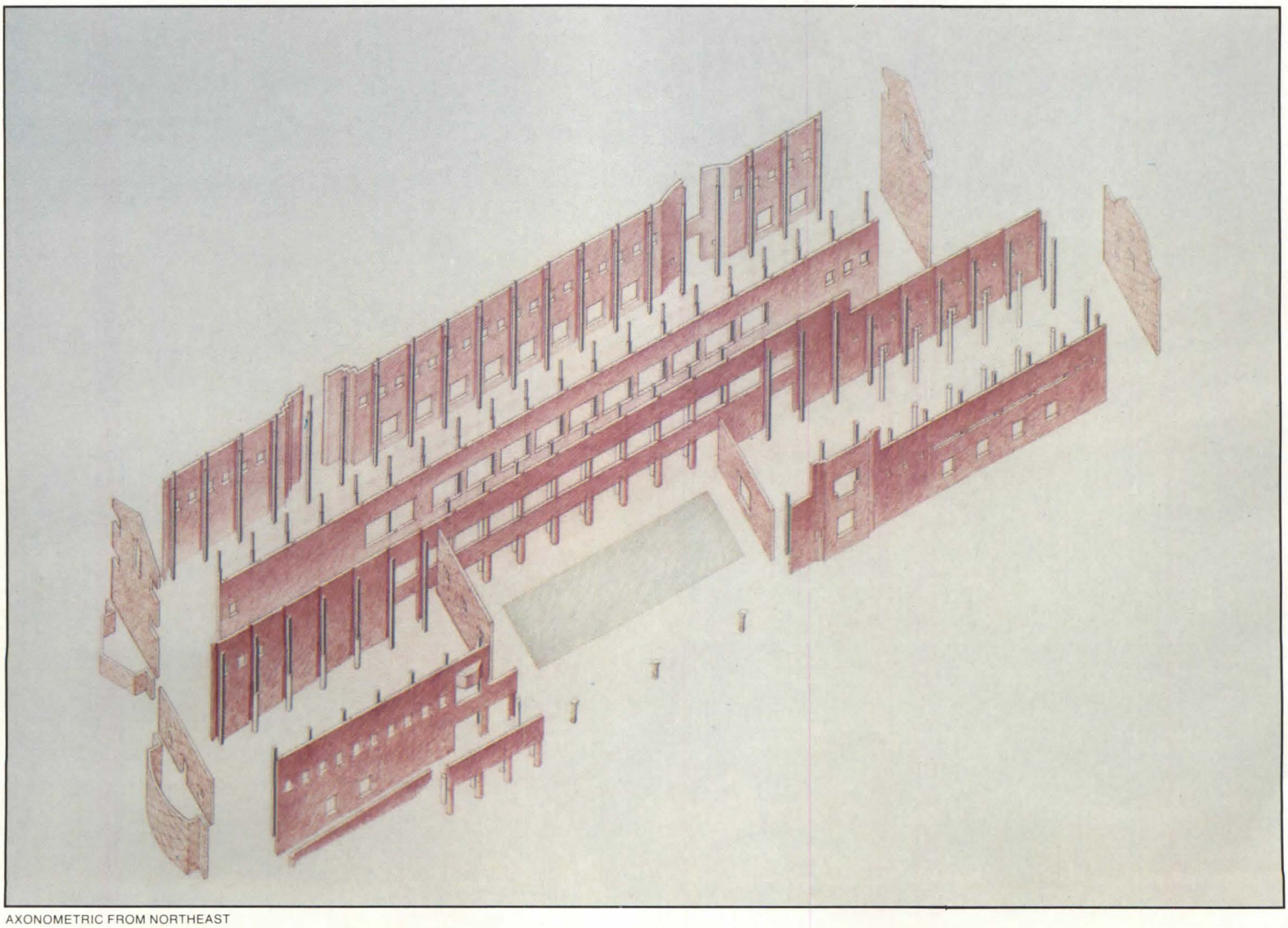
***Project:** Thresher Square, Minneapolis, Minn.*
***Architects:** BRW Incorporated, Minneapolis, Minn. (David Bennett, principal architect; Arthur Weeks, Ellen Olson, Khosrow Rezai, project architects; Peter Jarvis, Faye LeDoux, Ellen Olson, interior systems; David Eijadi, solar optics designer).*
***Client:** Thresher Square Partners.*
***Site:** one half of a city block in downtown Minneapolis.*
***Program:** former warehouse building, listed on the National Register, rehabilitated into a speculative office building.*
***Structural system:** heavy timber columns and beams, exterior load-bearing masonry walls.*
***Major materials:** exterior brick walls with decorative terra cotta, exposed Douglas Fir splined deck, carpet over concrete-topped wood floor (see Building materials, p. 148).*
***Mechanical system:** high-pressure hot water system with perimeter fin-tube baseboard radiation, cooling via a variable air volume system with roof-top air handling units.*
***Consultants:** Meyer, Borgman & Johnson, structural; Howard-Osmera Associates, mechanical; Arvid Elnes Architects, historic preservation consultants.*
***General contractor:** Hoyt Construction.*
***Cost:** $2,494,400 ($36.44 per sq ft).*
***Photos:** George Heinrich.*



BUILDING SECTION

Pattern and principle

On a campus with strong architectural character, Cesar Pelli's new building reinterprets that tradition and reveals richer aspects of his design vocabulary.



AXONOMETRIC FROM NORTHEAST

To date, *much of* Cesar Pelli's work has been bounded by the context of essentially commercial commissions. Although Pelli has interpreted these design limitations as positive determinants, they have nevertheless been there. In many of his buildings, the programs have involved mainly undifferentiated office space or apartments laid out by others. Among the works from his years as a partner at Gruen Associates, commissions such as the several shopping malls and the Pacific Design Center (P/A, Oct. 1976, pp. 78–83) had major architect-designed interior spaces, but much volume left to tenants to finish. Of the recent Cesar Pelli & Associates work, even the Museum of Modern Art expansion (P/A, Sept. 1984, pp. 27–28) involved collaborating architects for the apartment layouts, and the gallery spaces had to be patterned closely after the museum's earlier ones.

Now, the new Herring Hall, housing Rice University's Graduate School of Administration, shows what Pelli is able to do when an entire building is under his design control. Here, the program and site have provided sufficient "meat" for him to demonstrate an evolving richness, both in sheer design resolution and in development of a theoretical framework. At the same time, constraints of context, a client desire for a specific formal vocabulary, and construction costs set familiar boundaries within which he had to operate.

Pelli acknowledges that the project is a response to the *genius loci*, requiring a creative reinterpretation and extension of its place, as well as exemplifying in itself the making of architecture. The primary "given" was a 75-year-old planning and stylistic tradition established in 1910 by Ralph Adams Cram in his "General Plan for the William March Rice Institute." The Rice campus never suffered such radical abandonment of planning principles as many other campuses that had to accommodate unforeseen growth and changes in needs, particularly after World War II. Instead, by virtue of remaining relatively small and private, this campus underwent a more orderly transformation as the school evolved from an institute, primarily of the sciences, into a university. While campus additions here have suffered from the lessening intensity generally exhibited wherever American architecture of the 1950s and 1960s attempted to respect an earlier tradition, there still persisted a "Rice style" even though individual buildings self-consciously shied away from Cram's original eclecticism. The Rice campus, moreover, sustained a degree of cohesion by extending certain planning fundamentals of Cram's scheme.

A recent shift toward more sensitive response to underlying issues of style and plan was exhibited in the renovations and additions to Anderson Hall by James Stirling/Michael Wilford & Associates (P/A, Dec. 1981, pp. 53–61). This project provocatively affirmed a turnabout in attitude toward the old campus and constituted a tough act for Pelli to follow.

There are essential differences, however, between the problems presented by these two commissions. The Stirling/Wilford project was grafted onto an existing building with established elements that bounded its formal expression (at least on the exterior); it was located as a part of a clearly defined ensemble, close to a number of Cram-designed buildings and connected to the main campus quadrangle. Pelli's charge, by contrast, was to design a new building from scratch, in a secondary part of the campus that was at once a highly visible location and lacking in clear relationship to existing buildings.

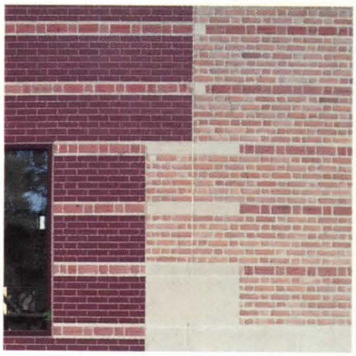
The commission began with site selection, and this decision ultimately informed the building's *parti* and its stylistic development. Given an open area to the west of the Fondren Library, which closes one end of the main academic court, Pelli recommended placing this new building to one side of the main campus axis, rather than on it, so that axial locations could be reserved for all-campus facilities. By locating Herring Hall along the south side of this space, opposite the existing student center and comparably sited, Pelli established a symmetrical set of buildings that begin to define a major new open space along the main campus axis. The siting and configuration of his building, moreover, conform fairly closely to a building shape indicated on Cram's 1910 plan.

The site selected was already densely covered by a triple row of mature live oak trees, planted in 1910. While construction of the student center on the corresponding site across the open space de-

On end walls (drawing opposite) Pelli has used a pattern of traditional Rice brick with blocks of limestone.

A south entrance (top in drawing) is framed by facets of glazed and unglazed brick, limestone, and tile.

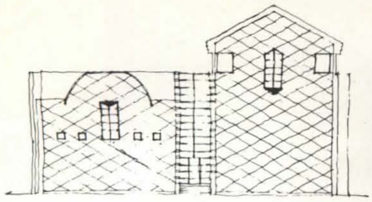
A window in east end wall is linked by a painted metal strip to a band of dark brick on abutting long wall.

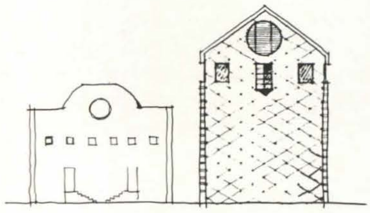


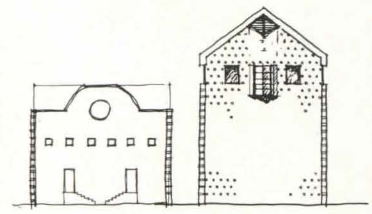
Where dark glazed brick meets unglazed masonry, shifts in width and color of mortar joints are apparent.

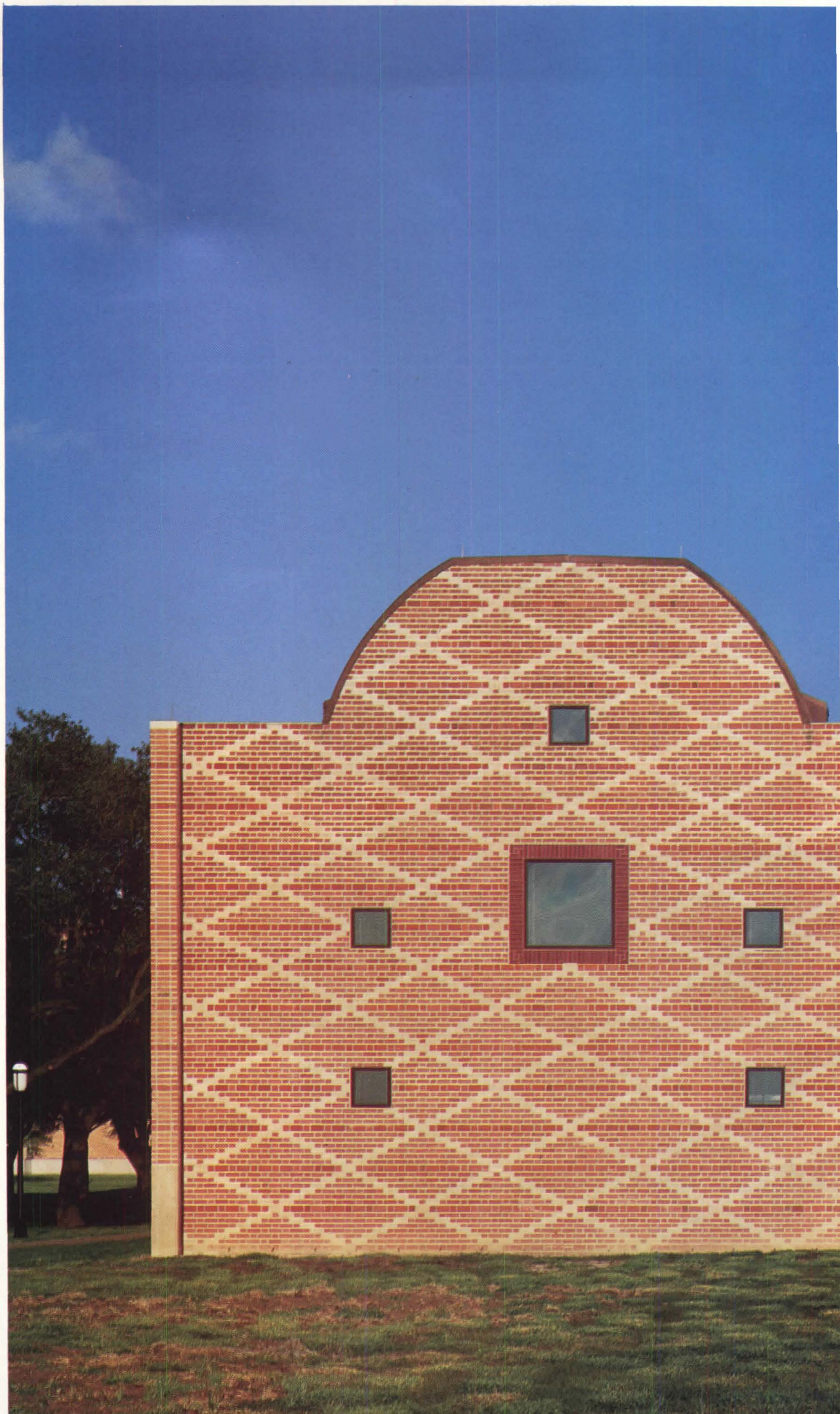
Paul Chapman

On handicapped ramp parapet (bottom left in drawing) a tile inset reconciles levels of limestone slabs.

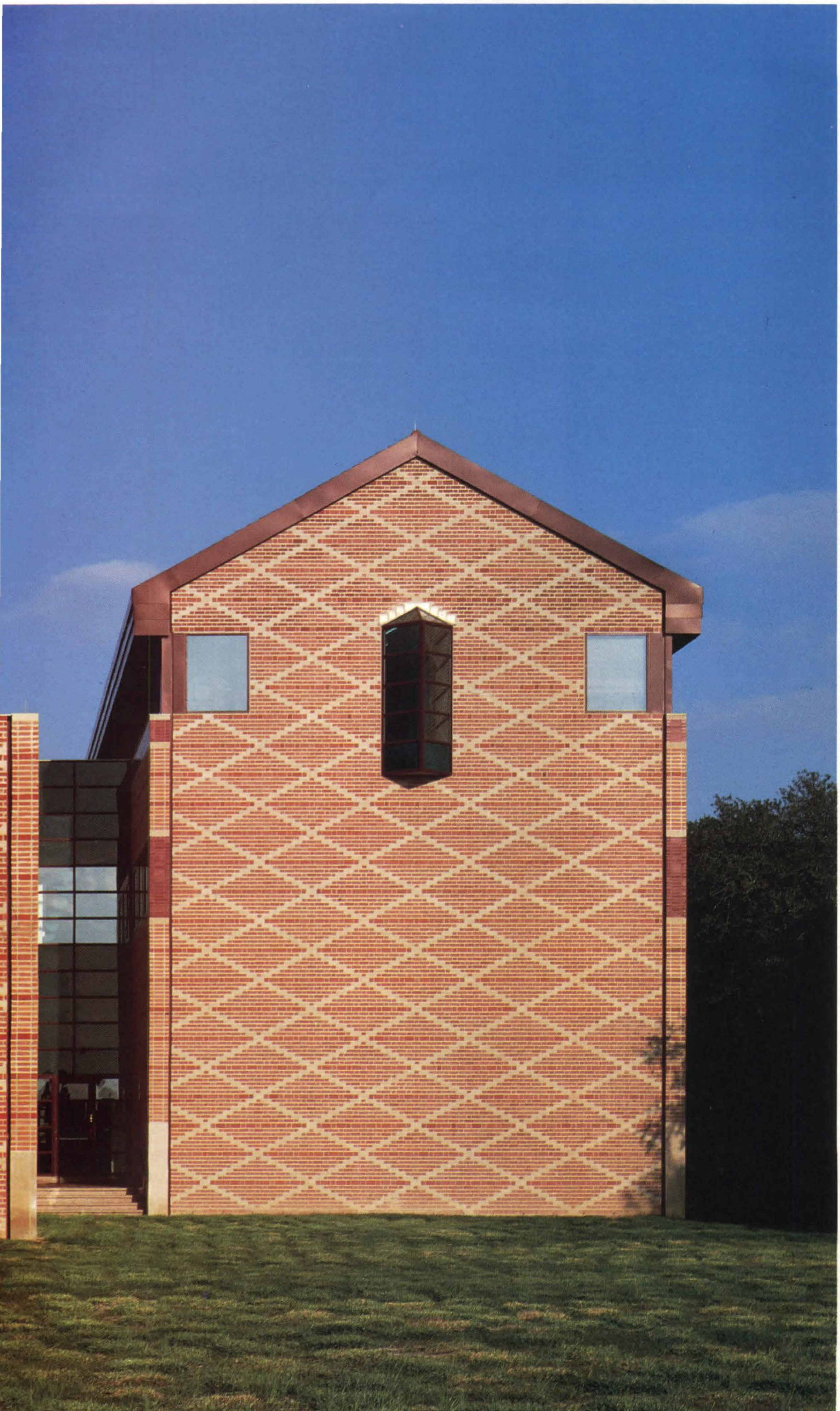


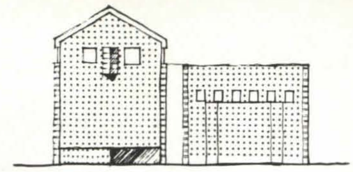


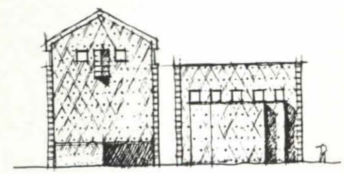


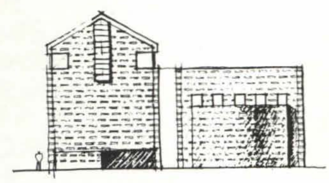


From the west end of Herring Hall, the only exposure not enveloped in live oaks, its two-part organzation is apparent. To the south (right in photo) is the three-story linear spine housing classrooms and offices; to the north are the lower, specialized appendages, at this end the reading room. Between them, deeply recessed and metal-clad, is the connecting layer of arcade and corridor. The primacy of the long east-west walls is emphasized in the way they are articulated at the ends, projecting slightly and isolated by reveals. The thin, infill character of the end walls is expressed in the fabriclike crisscross pattern, which is trimmed and punctured without regard to its structural order. For the end of the read-









ing room, Pelli has developed a distinctive silhouette, reflecting the vault-and-aisles form of its interior (p. 94); the profile of its raised central section is read as a truncated semicircle, even though the arcs to either side would meet at a point if extended upward. With this profile, Pelli was able to avoid awkward cropping of the end wall masonry pattern and to expose effective flanks of copper-clad roof, as seen from lateral vantage points. Although this silhouette has no precedent, it seems at home among the vaguely Venetian forms of Cram's earlier campus buildings. Studies for this west end (left page) and for the east end of the building (above) show alternative treatments for the adopted scheme.

stroyed many existing oaks, Pelli developed a building form that could slip in among them. The elements of the program were organized into a linear, three-story block comprising the classrooms and offices, abutted at either end by two-story blocks, one containing a reading room with social spaces above it, the other housing the main lecture hall, with administration and faculty common rooms above it. This form fit so well into the trees that only six of them had to be removed; an obvious benefit was "instant landscaping" with prized examples of the slow-growing live oaks. This fitting into the greenery, along with the choice of formal vocabulary, has made the building look, even when it first opened, as if it had been there for years.

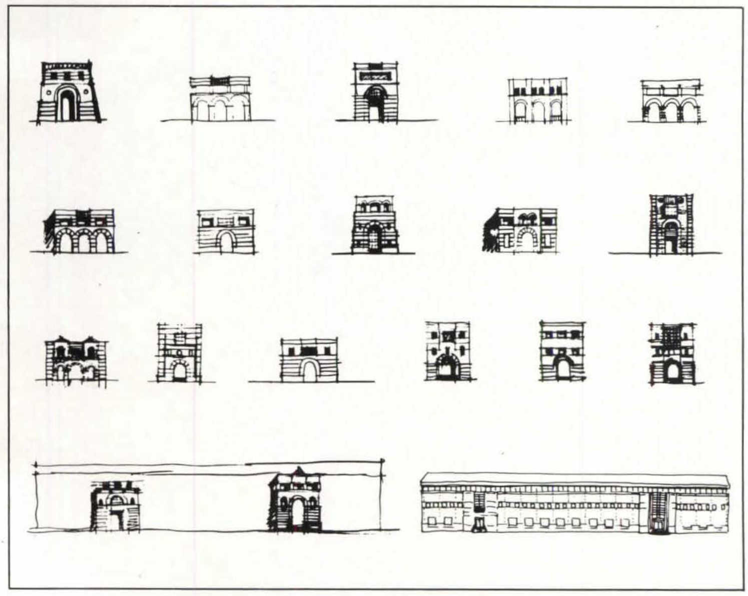
There were some special conditions raised by the location of the building. One was the need to move a main 18-inch sewer line that ran down the center of the plan, and reroute it without ravaging the tree roots. Another effect of the linear plan was to require 113 drilled footings for foundations, more than many high-rise office buildings would have. And construction had to be organized to proceed from the tree-bounded end of the long structure to the open end, literally backing out of the cleared area.

The approach to the building across the axial open space passes through layers of landscaping. The open space extending to the student center is characterized by Pelli as more like a quadrangle than the nearby Academic Court; in other words, given to frisbees rather than formality. Dense rows of trees form a buffer between this quadrangle and the new building, the lower blocks of which define a slightly raised courtyard.

The building's layout is keyed into axial lines crossing the main axis, the principal one being the one that connects the main entrance to the lecture hall to the centerline of the arcade of the university chapel across the way, which in turn continues through a group of science buildings to the north. A secondary alignment is the centering of an articulated view window (internally on major axes of the reading room and a student lounge above it) with the centerline of the student center's Grand Hall, which it faces. Finally, the long south flank of the classroom-office block has been placed hard against the outer pedestrian pathway and campus loop road, aligning with a corresponding portion of Sewall Hall, at the opposite (east) end of the academic core. While the Pelli design maintains the theme of campus buildings organized as series of parallel blocks on east-west axes, it begins to establish a new relationship of these blocks to the overall plan, namely as major blocks along the outer road, with secondary extensions defining courtyards on the side toward the main axial open spaces. The pattern thus established differs from that around the Academic Court, which is defined by monolithic blocks, with appendages and secondary spaces toward the outer edges, a pattern observed in the Stirling/Wilford solution.

Pelli's designs generally exhibit a clear organizational *parti,* and at Herring Hall there is a vertical hierarchy of functions, along with a circulation scheme that reinforces the physical fabric with a social dimension. Common areas of greatest use are on the ground floor (reading room at one end, lecture hall at the other, seminar and caserooms in the linear block), administrative spaces on the middle level, and faculty offices in the upper story of the main block. On the lower floors, single-loaded corridors forming a U around the courtyard emphasize its presence. Functionally and physically dissociated, the private offices on the top floor line a double-loaded corridor. The ground-level corridors, on the cross axes of the entrances, are anchored by vertical stair wells of ample dimension, which lead to other socializing spaces on the middle level (with toilets located nearby at each level). The only real departure from the pure *parti* is in the provision of a caseroom at the west end of the second level, immediately above a corresponding room on the ground level. This came about only after the contractor advised raising the proposed basement-level mechanical room to ground level to avoid flood hazards, and the caseroom was thus "bumped" up and across. (As a further compromise, this caseroom had to be flat-floored, rather than banked, as all were originally planned to be.) Even here, the balance is redressed somewhat by the placing of other special functions at the opposite end of the middle level (admissions office and computer lab), thus "bookending" the offices on this floor with exceptional elements. The way Pelli has accommodated the design to these reasonable constraints offers some insight into his view of the architect's role.

These functional shifts took place in the context of a continuous process of design evolution. The main design issue that Pelli had to deal with was how to reconcile this building with the "Rice Style" invented by Cram, yet remain true to the technology of the present. Cram's style, created out of elements borrowed from the Greek Byzantine along with the Italian Romanesque and Gothic, was meant to embody a regional appropriateness while it imbued the new institution with a built-in sense of tradition. Pelli's response to this stylistic context is respectful, yet conditioned by Modernist moral



imperatives. In his recent article in *VIA 7,* he states: ". . . We are left without a common yardstick for evaluating our buildings and without a solid base for architectural legitimacy. . . . Its need can be perceived in the yearning of many architects to return to the forms of the past. . . . The hope is that by repeating their forms, somehow the value of the monuments of the past will rub off on the new building. . . . This cannot be a lasting condition or give a firm enough support for a new generation of architects. . . . For me the solid ground, free of rhetoric, is given by the basic relationship between the art of our buildings and their system of construction."

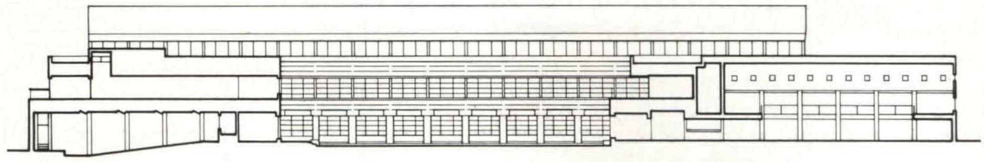
Cram's forms were rooted in handcraft tradition, constructed by obsolete methods; photos of 1910 show complex scaffolds, centering for arches, carved columns, and wet construction. For Pelli, the dilemma of expression was how to deal with a thin, multilayered curtainwall system hung onto a separate structural frame, finished in dry construction.

It was clear from the outset that Pelli would deny any reference to the traditional masonry box enclosure, choosing instead to conceive of Herring Hall as a series of parallel, layered planes running east-west, penetrated perpendicularly by articulated entries and closed at the ends by infill walls with a "knock-out" aesthetic. The initial design studies were based on a concrete structural system laid out on a 14-foot module. Early elevation studies from June 1982 showed regularized, curtain-walled building blocks combined with decorative, referential pieces at the main entrances on the north and south fronts. These appear as actual load-bearing masonry elements, which would have the legitimate embellishment of stonework. The main three-story block exhibited a horizontal continuity by virtue, particularly, of a banded stripe on the top floor combining windows with infill panels, which were noted as painted aluminum. In these studies, the end elevations also recall the treatment of Pelli's U.S. Embassy Building in Tokyo (1972), with painted aluminum infill panels set into an articulated concrete frame.

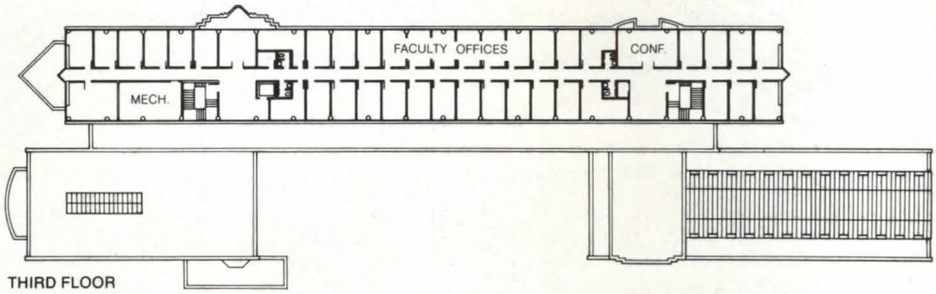
Then two basic changes occurred that required a new synthesis: The economics of construction suggested a steel frame, and the client

Photos: Kevin Hart

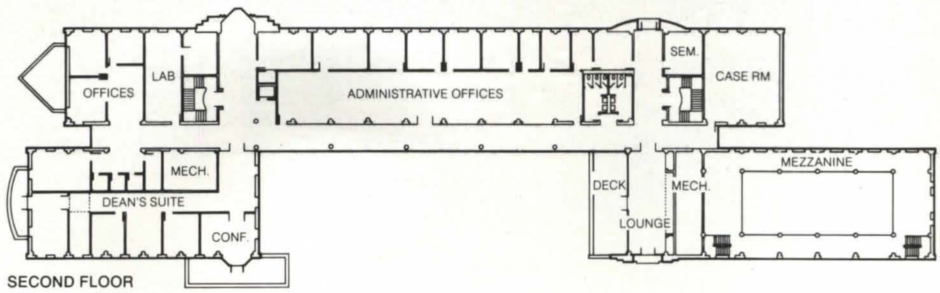
In both its overall form and its surface ornament, Pelli's new building acknowledges precedents set by Ralph Adams Cram in 1910. The long walls of Cram's physics building (above), facing the Academic Court, typify his use of brick and limestone, with insets of marble, and his rhythmic interruption of modular bay systems with distinctive entry pavilions in low relief. Note in Cram's details a tendency toward geometrically abstract patterns, ambiguous figure-ground relationships, and variation of ornament depending on position (as in the two different pier treatments above). Pelli's building is planned to begin a new quadrangle to the west of the old Academic Court (site plan); he has adopted Cram's model of linear structures with short parallel appendages, but faces the long block outward, along the ring roadway, rather than toward the central open space. Some of Pelli's early sketches (facing page) show main building masses clad in unassertive, repetitive curtain walls, with bold entry pavilions of structural masonry. In the actual building, all walls are nonstructural masonry.



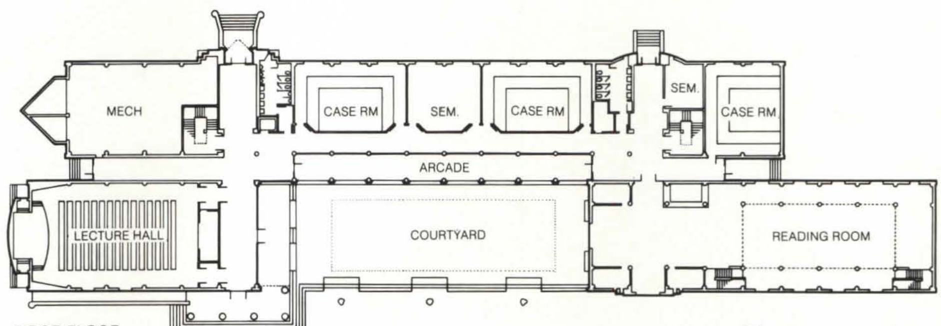
SECTION LOOKING SOUTH



THIRD FLOOR

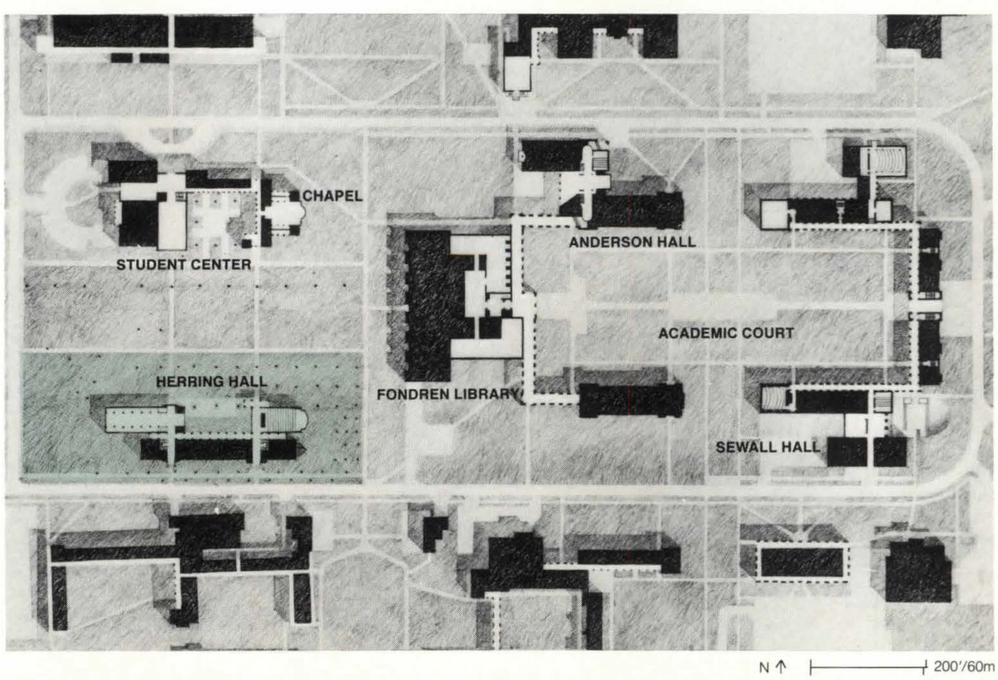


SECOND FLOOR

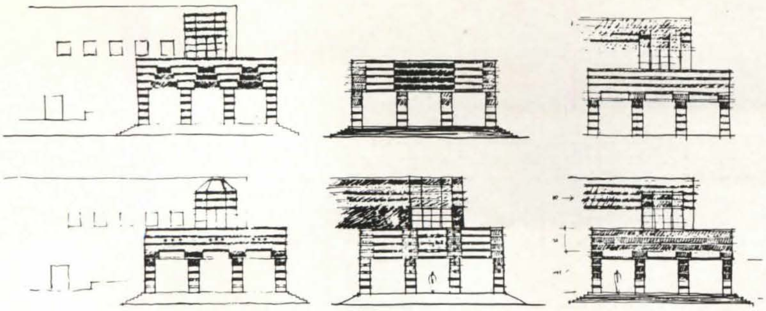


FIRST FLOOR

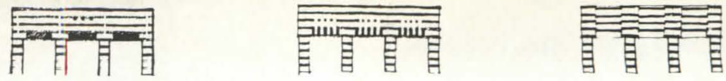
N ↓ 40'/12

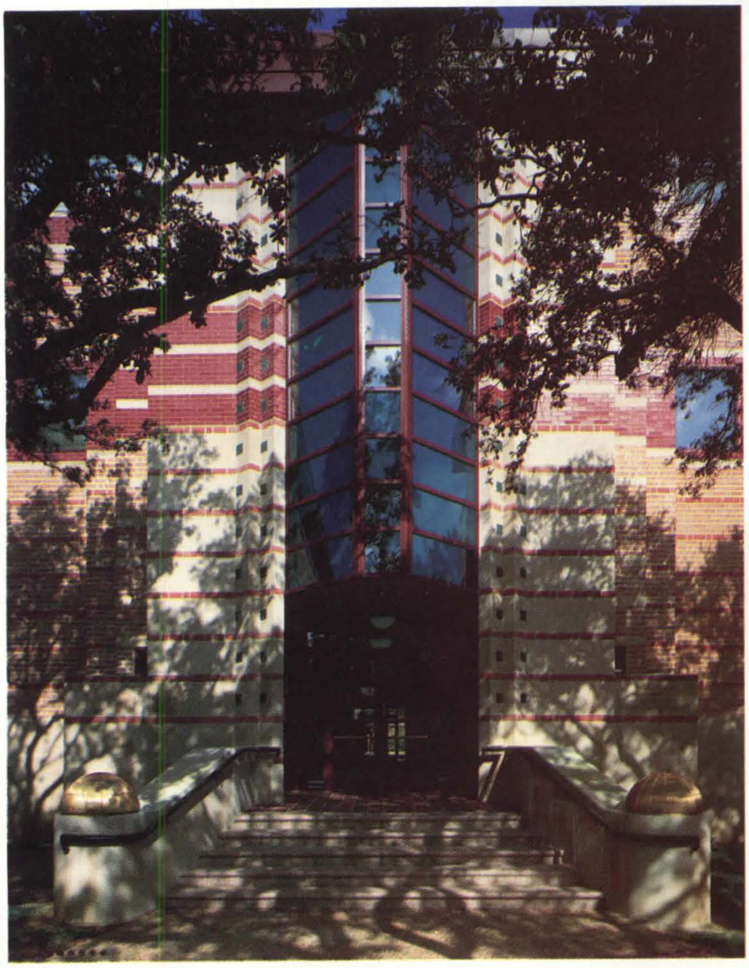


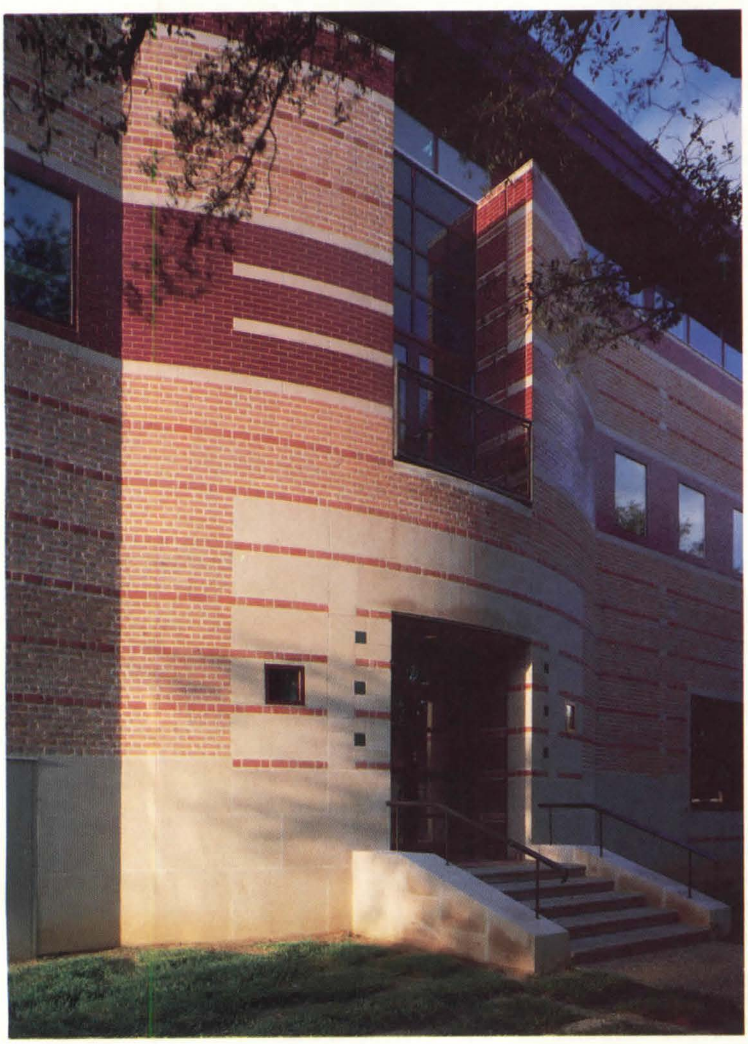
N ↑ 200'/60m



Ornament underlines modular order and emphasizes entry points. Photos on this page (clockwise, starting above) show: entry porch on north side, with dean's suite and terrace above it (design sketches are at top of page); second-floor corridor along court, with modules marked on tile floor; ground-level arcade along court, with striped plaster vault and columns clad half in masonry, half in metal; and arcaded courtyard wall. Shown on facing page are the two south entrances, vertical against horizontally banded walls; above doorways, corridors terminate in a bay and a balcony.







specifically mandated masonry as the exterior surface. By September 1982, the end elevations had changed and were noted on sketches as "decorative brickwork" of "molded, patterned, colored, or glazed brick" (in fact, *all* types were eventually used in the building), and the infill on the window bands was indicated as "similar to physics building" (one of Cram's original designs). By November, the end walls began to show the crisscross "diapering" pattern, which satisfied a desire to introduce stone and was ideologically acceptable in that it derived from a traditional technique for laying up non-load-bearing masonry walls. This pattern also appears on two infill walls facing the courtyard, suggesting a connection to Pelli's long evident aesthetic interest in extruded forms.

While the steel structural system established a new 28-foot planning module, the scale of the earlier concrete version was retained in the visible expression of the building. The 14-foot dimension, for example, yields a better proportion for the spacing of columns in the arcade along the south edge of the courtyard, although every second column is nonstructural. The fact that none of these columns is true masonry is expressed by facing the outer half with half cylinders of stone and curved brick, the inner half with sleeves of metal painted dark green. Given the actual change in the construction module, this detail expresses only a half-truth. The deletion of the false columns along the second-floor corridor just above is another attempt to rectify what is obviously regarded as a formal problem. The structural frame is also treated differently in the three parts of the building, with 14-foot spacing over the volume of the reading room and 28-foot spacing elsewhere, except that an odd 14-foot module reappears near the east end of the main linear block to reconcile dimensions. The net result is a somewhat impure conjugation of modules, which is only partially revealed.

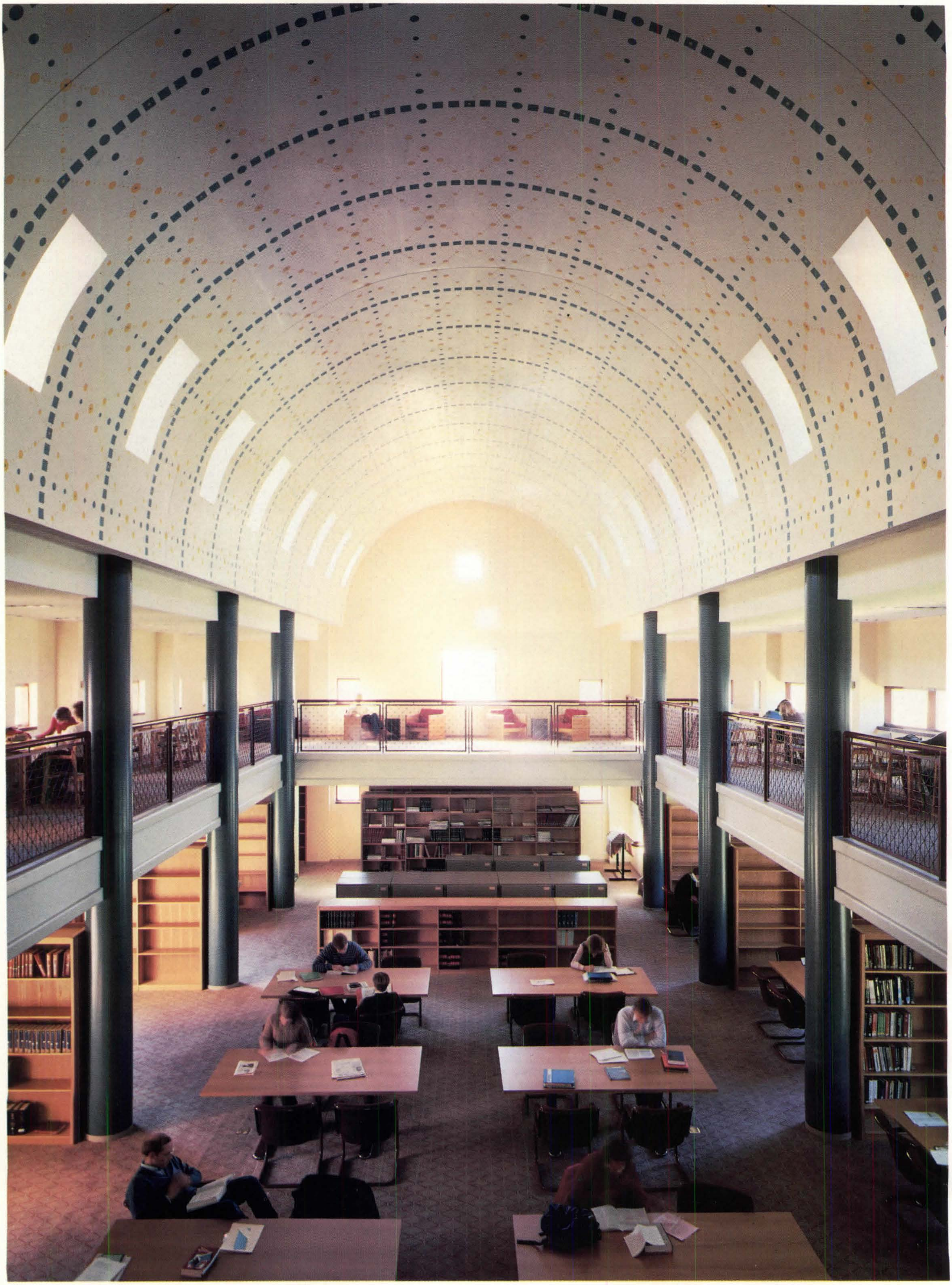
The 14-foot module also informs the building's ornamental program—a comfortable strategy for Pelli because it is implicitly based on structure. On the long walls, vertical series of square limestone shiners mark the modules; at the main entrance porch, they are replaced by square dark green tiles. This same module is marked off by light-colored stripes across the corridor floors at the ground level, with dotted lines at the corresponding locations on the second floor. On both levels, a painted molding that establishes a wainscot band along the corridors is interrupted at 14-foot intervals to render a "ghost" reading of the modules.

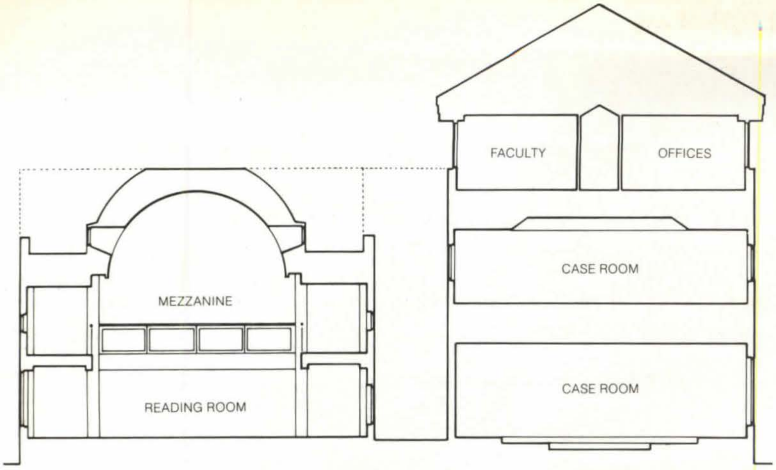
Whereas Stirling and Wilford in their Anderson Hall chose to create a blunt contrast between a "Rice" exterior and a Modern interior, Pelli has instead pushed for a refined unity, not only relating inside to outside, but basing his scheme of ornamental detail on fundamental aspects of the building, thus imbuing them with a sense of integrity through consistency.

The Pelli office clearly adopted elements of the Rice style selectively, using them generally for background pattern rather than for dominant motifs. If Cram transformed his sources in inventing the ornamental expression of the original Rice buildings, then the Pelli office has made a further transformation of these elements, pushing them further in the direction of abstraction, a state that is therefore more "modern." Pelli not only recognized that craft-oriented detailing was too labor-intensive, but that by reducing ornament to surface pattern, he could distance himself from handcraft traditions.

The basic, background exterior material is the pink St. Joseph brick that is prevalent on the campus, laid up with the characteristic thick, struck "Rice joint." (Though it does not look painstaking, this technique permits fewer courses to be laid per day, because of extra time required for the mortar to set.) Use of this material with the struck joint detail creates an overall texture associated with existing buildings. Yet, by its lack of relief, this adopted detail becomes part of a dialectic between allusions to a vocabulary of "real" materials and a denial of that substance by its reduction to surface.

The end walls are expressed as incidental infill by the diaper pattern and by a variation in the color of brick used, a subtle but effective articulation. Where the long wall planes running in the other direction meet these ends, they project a few inches beyond, with a reveal left in between, thus denying a sense of mass and expressing both sets of walls as planar surfaces.





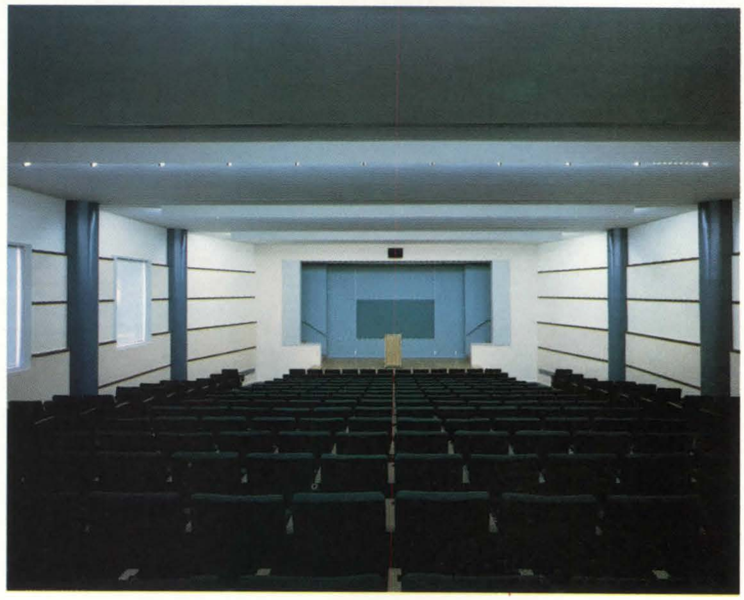
SECTION AT READING ROOM LOOKING EAST

On the long walls, the classroom windows are framed in limestone, but strung along a continuous limestone base. At the east end of the south front, where the windowless mechanical room displaced one caseroom, pieces of limestone trim float in the brick field and evoke a ghost image of the "missing" windows. Windows on the north walls of the lecture room and reading room are clustered together by fields of burgundy glazed brick, much as Aalto might have used a splotch of special material to mark a special element; here Pelli is denoting the significance of these exceptional rooms and the primacy of the north façade as an edge of the quadrangle. Where the glazed bricks are used, they have a colored grout and are on a different module from the regular St. Joseph brickwork. They are inevitably used, moreover, to produce positive/negative, figure/ground readings of surfaces, a more complex reading than is seen on Cram-designed buildings.

There are some details that suggest a recollection of substantial material, among them a lovely series of stair handrails, emphatically three-dimensional in form. Also, a pair of bronze finials (fabricated by a less-than-busy-these-days oilfield equipment manufacturer) has been placed on the cheek walls at the main roadside (south) entry, and a single one on the end of the handicapped ramp at the quadrangle entry, to announce the principal cross axis. There are also several tricky custom bricks, hand-formed in wooden molds, used to turn corners at odd angles. By contrast, there is care taken in both the courtyard arcade and the reading room to assert that the vaults over them are decorative and false, by denying their springing points and patterning them as curved planes. The most joyful details are concentrated at the entrances, which display senses of both substance and delight, though they show a sometimes jarring mix of handmade and high-tech, as where a projecting window of green spandrel glass framed in metal extrusions abuts masonry with recollections of Romanesque and Art Deco.

The building repeatedly reasserts its Modernity, as against its imitation of the Rice style, maintaining Pelli's dialectic tension as if he were saying, "Yes, but . . . ." The use of the burgundy glazed bricks in the striped banding between third-floor windows not only produces a kind of supercornice and an ambiguity of solid/void, but also evokes the horizontal strip windows of iconic Modernism. In fact, one dominant characteristic of Herring Hall is its essentially horizontal rendering, as a series of extrusions; by contrast, most Rice buildings show an interplay of verticals and horizontals, with bays rendered as giant orders and volumes interrupted by articulated pavilions. Even though Pelli's entrances are emphatically vertical elements, they can be read as the effects of the horizontal circulation system as they burst through the bounding walls; similarly, the third-floor corridors penetrate the apparently more permeable end walls to terminate in triangular bays. (One notable Rice element is missing: gutters and downspouts, which appear on the other buildings as secondary vertical emphases. Pelli developed instead a system of concealed gutters and interior drains, suggesting that his pragmatism is combined with a will to defend an aesthetic program.)

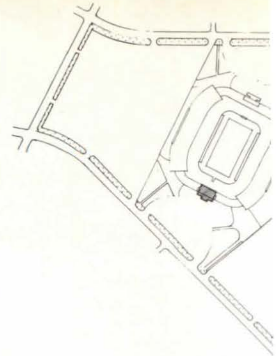
In summary, Herring Hall picks up on the patterns of its campus context, but asserts its own principles in their transformation into a visual system particular to this building. Pelli has succeeded, moreover, in adding a social dimension: in the generous scale of mundane elements; in the positioning of balconies and bays to relate levels, inside and outside; in the most aesthetically pleasing firestairs



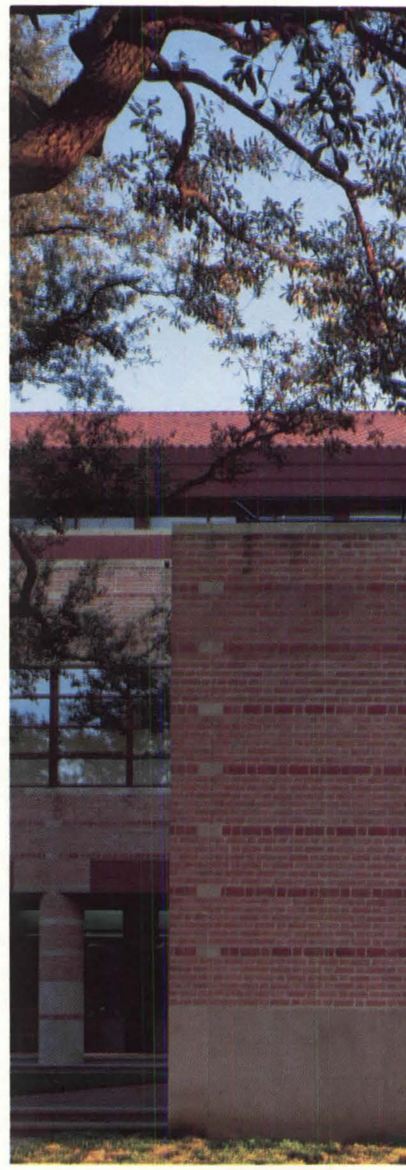
A buoyant plaster vault spans the navelike center of the reading room (facing page). To give the vault distinction and modular order, Pelli has applied a custom-designed wallpaper, with spots of vivid yellow and turquoise that are muted visually by the scale of the space. The pattern recalls the masonry of the end walls, as does the custom carpet. Column treatment and design of balcony railings—with two layers of steel mesh overlapped diagonally—are matched on portions of the exterior. Section (top left) shows relation of reading room to typical floors; note also peaked ceiling of third-floor corridor, which relates to triangular bays at either end. Lecture Hall (top photo) has horizontally banded walls between the familiar columns and lighting fitted into layered ceiling. Typical caseroom (above) has a terraced floor and shows details such as wall moldings that relate even the most prosaic spaces to Pelli's overall design intent.

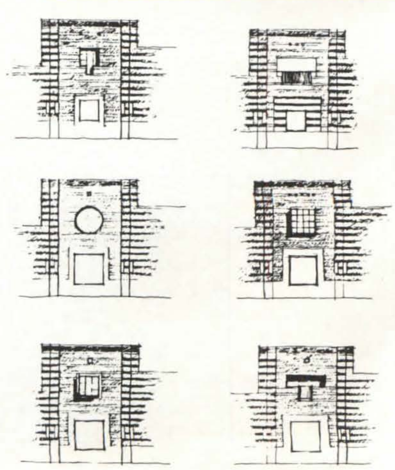
The design of stairs as public circulation areas was carefully considered. The typical fire-code stairwell (far left and below left) is generously dimensioned, with room for conversations at landings. Glazed tile walls, reminiscent of 1930s public schools, recall the modular masonry patterns of the exterior walls. Railings show how steel pipe can lend itself to sinuous curves and welcoming flourishes; two different diameters of steel are deftly interwoven to deal with differing height requirements of stair and landing railings. Related stair rails for the steps up to the reading room balcony (near left) have the same mesh infilling used elsewhere in that room.

Pelli's master plan for Rice (right; dark tint represents proposed construction) would develop new quadrangles to the west of existing construction, maintaining the traditional linear east-west building masses, with all-campus functions in structures that cross the main campus axis at right angles. New buildings and additions in the northeast portion of the campus would increase density there and form better defined open spaces. Pelli's next building commission at Rice is an expansion of the student center, directly across the campus axis from Herring Hall *(see plan on p. 91).*



MASTER PLAN





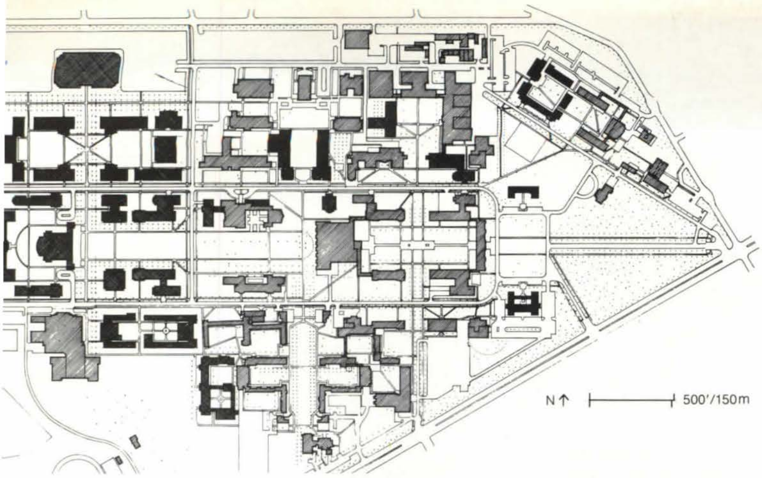
on the campus; in small-scaled, personal spaces as anecdotes within a larger whole; and in details such as using crushed pink granite on flat roofs that may be viewed from inside and returning finish brickwork on the insides of parapets at the same locations.

From the outset of the commission, the Pelli office worked closely with the construction managers, the Mayan Company. In fact, the university had actually awarded the construction contract, based on fee proposals in relation to a building budget, before confirming the contract with the Pelli office. Design and production were tracked in accordance with a series of established "in-progress" dates, at which times everything on the boards was pulled out to update estimates. Thus the design evolution was monitored in relation to costs, so that total cost was kept well in line with budget, and it was possible to provide a number of custom features with no economic penalty. The period of a little more than a year allotted to construction (May 1983 to July 1984) resulted in frantic activity in the last months, but Mayan tried to have two crews from each subcontractor working simultaneously, a feature facilitated by the linear nature of the building itself. The whole process has left the architects and the construction manager with a degree of mutual admiration that is rarely encountered.

Just as the Herring Hall design was being completed (April 1983), the university showed its confidence in Pelli by asking him to prepare a master plan for potential growth. The suggestions in his proposal illustrate a strategy of extending existing patterns, as well as a series of interventions that could draw unformed situations into larger, clarified ensembles.

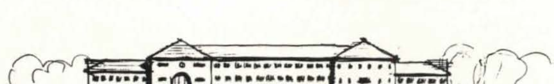
More recently, Pelli has been retained by Rice to become his own neighbor, by designing additions to the west end of the student center, across the quadrangle from Herring Hall. The future, then, will bring further transformations and interpretations of Rice's formal tradition and, one hopes, further rich opportunities for Cesar Pelli to search for architectural legibility. ***Peter Papademetriou*** ■

The author is P/A's Houston-based correspondent, a practicing architect, and associate professor of architecture at Rice.



Project: *Robert R. Herring Hall, Jesse H. Jones Graduate School of Administration, Rice University, Houston, Texas.*
Architect: *Cesar Pelli & Associates, New Haven, Conn. (Cesar Pelli, partner; Diana Balmori, partner; Frederick Clarke, partner; Kevin Hart, design team leader; Howard R. Howes, project architect; William Butler, designer). Brooks/Collier, Associated Architects for Contract Administration, Houston.*
Client: *Rice University (Dr. William W. Akers, Vice President, Administration).*
Site: *two acres, flat, adjacent to major campus open space; formerly used for parking; 50 established live oak trees in parallel rows.*
Program: *academic facilities, including lecture hall, reading room, various teaching spaces, and computer lab; adminstrative offices; 40 faculty offices; lounges. Total enclosed: 48,350 sq ft.*
Structural system: *cast-in-place concrete footings and floor slabs; steel frame.*
Major materials: *brick and limestone walls; painted aluminum windows, clear insulating and ceramic frit spandrel glass; Spanish clay tile and standing seam copper roofs. Gypsum board interior walls on metal studs; quarry tile and carpet (see Building materials, p. 148).*
Mechanical system: *variable volume, double-duct HVAC system, with economizer cycle. Chilled water and steam from campus central plant.*
Consultants: *Walter P. Moore & Associates, structural; Ray S. Burns & Associates, mechanical; Jules Fisher and Paul Marantz, lighting; Mark Roos, acoustics. Interior and landscape design by architects.*
Construction manager: *Mayan Construction Co. (Paul Chapman, project manager; James Penland, project engineer; R.L. Robbins, superintendent).*
Costs: *\$5,440,000 (bid, 1982, and actual, 1984); \$110 per sq ft (counting 1/2 covered area) including landscaping and interior finshes.*
Photos: *Paul Hester, except as noted.*

The two cross-axes of Herring Hall penetrate the long outside walls at three entrances, seen on previous pages. The fourth intersection is marked by a projecting pavilion with no actual doors (above). Large openings align with interior doors to the reading room (ground floor) and student lounge (upper floor). Appropriately, this no-entry pavilion faces another closed one, across the quadrangle on the student center. Studies for this façade are at left, early sketch for building at right.



Wine in a manger

Hermann J. Wiemer Vineyard
Dundee, N.Y.

The white structure (opposite page) that contains office, laboratory, tasting room, and bottle storage is in, but spiritually apart from, an existing wood barn (below). The temple form's pitched roof is parallel to the barn's scissor trusses, but apart from that the languages are separate. The barn's south wall (below) has been pierced with small square windows admitting controlled beams of light.

UKZ Architects of Ithaca, N.Y., insert a templelike structure in a barn to provide facilities for a winery.

Hermann Wiemer grows grapes and makes wine in upstate New York, but his methods are tied to the Old Country: His family has been producing wine for generations in Germany, and he brought their lessons with him when he decided to establish his own business in America, about a dozen years ago.

When he approached UKZ to design offices, laboratory, and tasting room for his boutique winery, the architects proposed using an existing barn on Wiemer's isolated vineyard property, and played on the winery's "in America but not of it" nature. The scissor-trussed barn, 35′ x 55′ in plan, is all-American, while the 20′ x 35′ insert was given a rationalized temple form, abstractly reflecting the owner's European roots.

The Wiemer Winery is the third and final project in a series of temple forms designed by UKZ, the first being the Hobbs Residence (P/A, July 1982, p. 88), and the second, the unbuilt Courtside Racquet and Fitness Club (P/A, April 1983, p. 50). The first was an assemblage of primal architectonic parts, like Laugier's primitive hut, while at the winery the columns and pitched roofs become integral with the white-stained body of the temple, as if carved from a single white block. UKZ's subsequent work, such as the Knee Residence (P/A, Jan. 1984, p. 124), now under construction, takes a modern Constructivist tack relating more, in its assemblage of parts, to the Hobbs house than to the simpler winery.

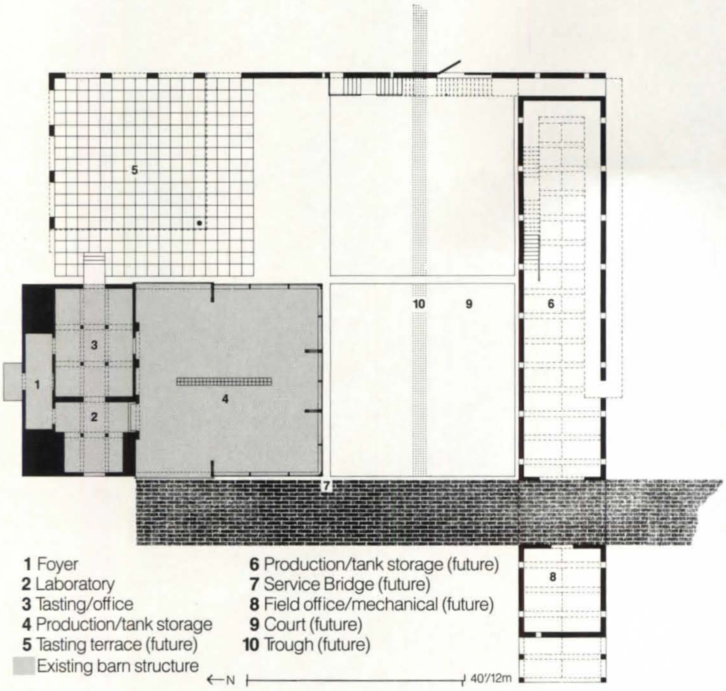
An unmistakable resemblance must be noted between the winery and the German Architectural Museum in Frankfurt (P/A, Aug. 1983, p. 97), designed by O.M. Ungers, the father of UKZ principal Simon Ungers. Both have abstract white temple forms within an existing structure.

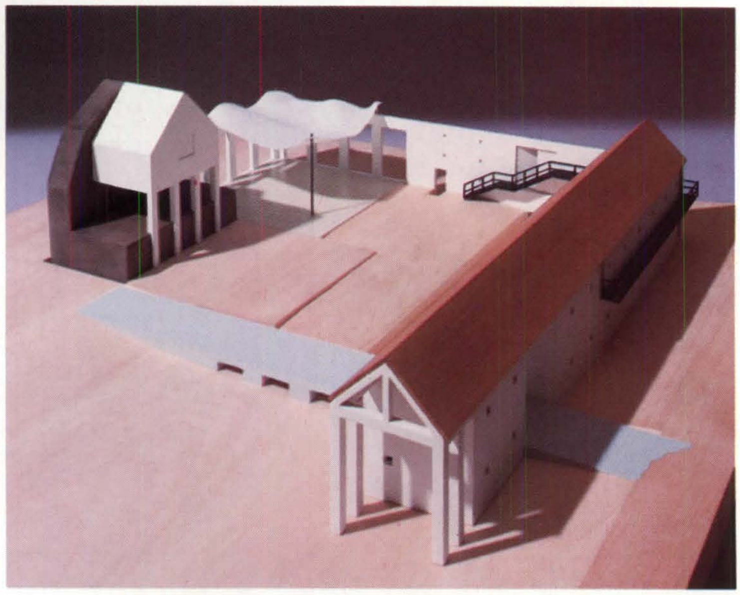
UKZ's treatment of the barn's south wall reveals their ability to handle scale and light in a sophisticated way. Tiny square windows contrast effectively with the large temple looming to the north, while the light that filters in, Ronchamp-like, causes the white form to glow as if it were an altar rising above a flock of wood casks and metal vats.

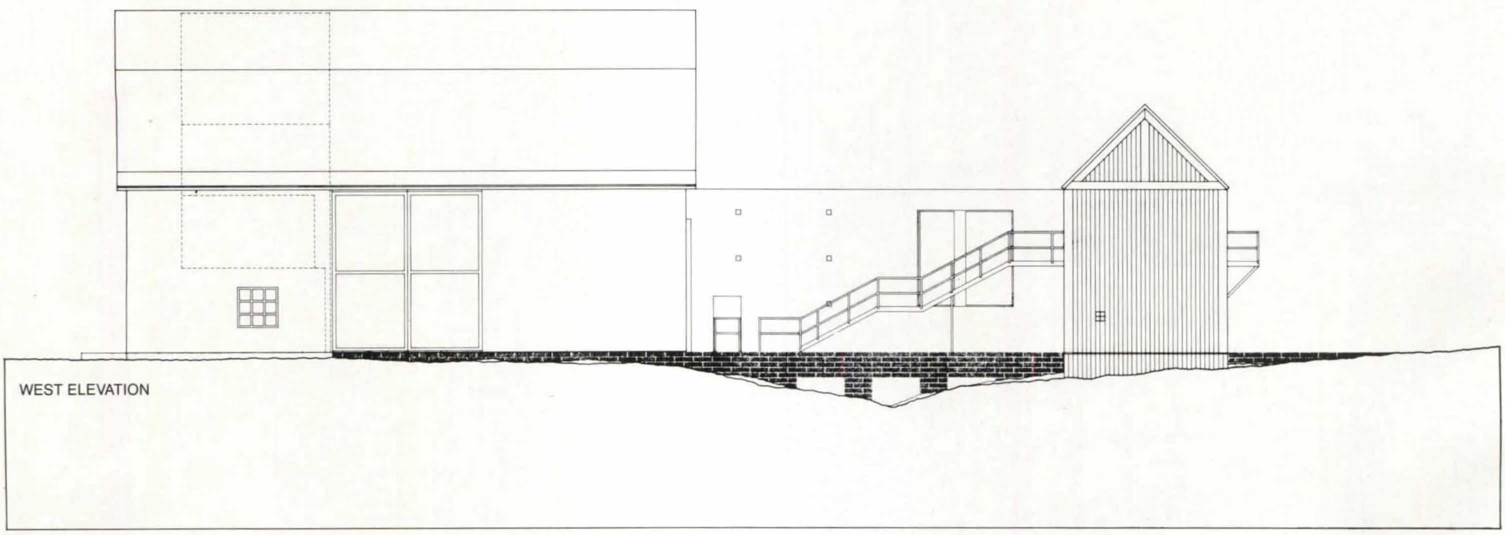
The first floor of the new structure contains tasting room, office, and laboratory; the second floor accommodates storage for bottled champagne, and the top floor was to contain more office space. The owner, however, liked the building so much that he decided to use the third floor for his own residential quarters.

UKZ is preparing plans that will allow the winery to increase from under 10,000 cases to about 20,000. The design, as shown overleaf, will enclose a court with a covered café/wine-tasting terrace. ***Susan Doubilet*** ■

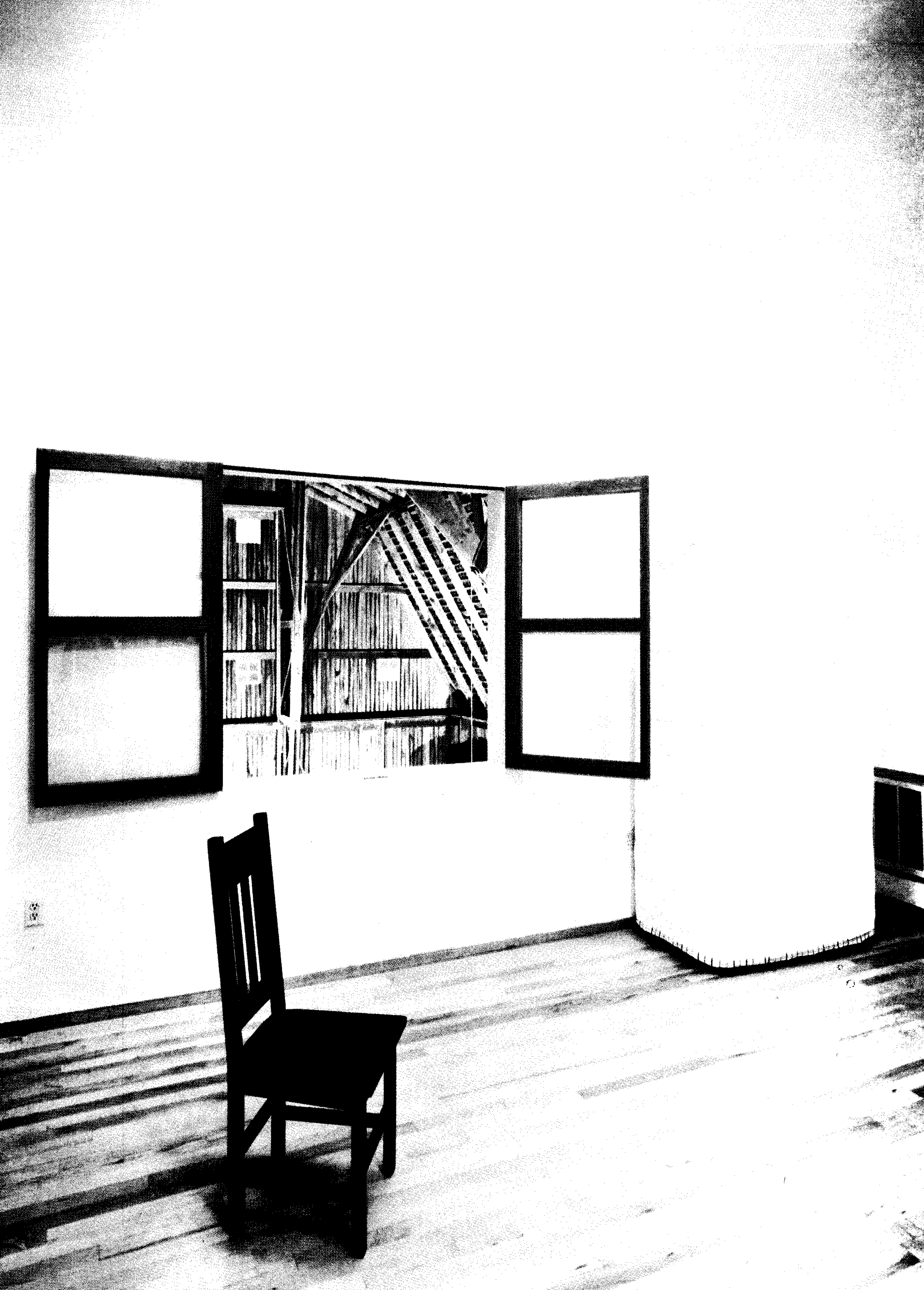
The top story of the white insertion (opposite) has a large square window looking out upon the large barn space. Planned as office space, the room has been taken over by the owner for use as his own apartment. UKZ's recent drawings and model (below) show their proposal for an extension to the winery, with the existing barn, cut away in the model, and a new structure in the northwest corner. The design encloses a court and a café/wine-tasting terrace covered by an evanescent awning.





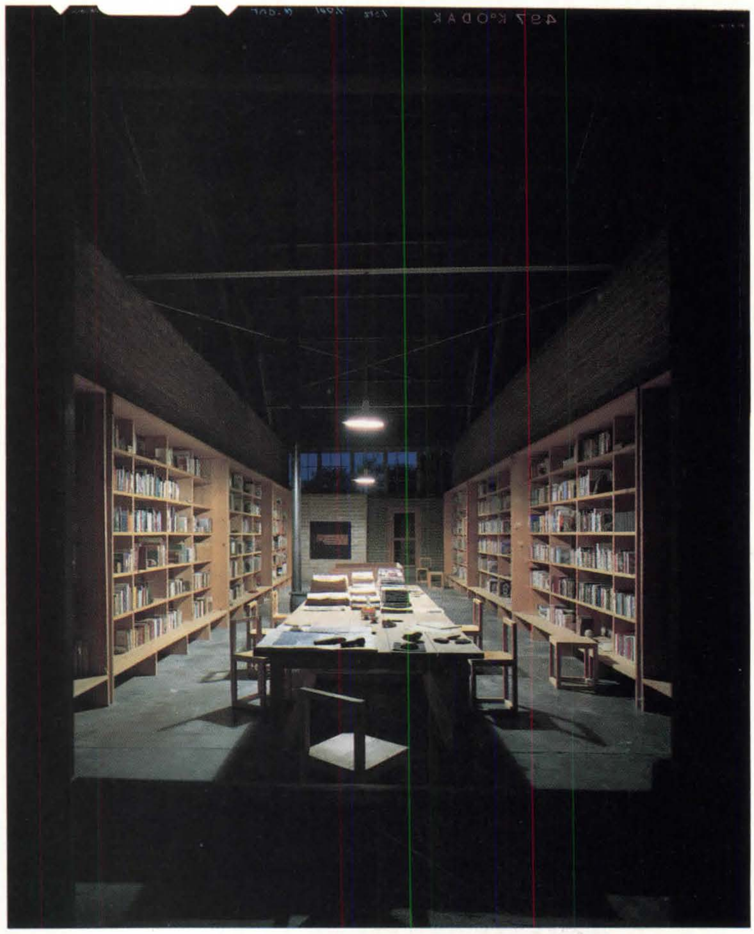


Project: *Hermann J. Wiemer Vineyard, Dundee, N.Y.*
Architects: *UKZ (Simon Ungers, Laszlo Kiss, Tod Zwigard, principals; Tom Kinslow, Michael Whitmore, collaborators; Rob Adler, modelmaker).*
Client: *Hermann J. Wiemer.*
Site: *existing barn on isolated vineyard overlooking Seneca Lake.*
Program: *tasting room, laboratory, champagne loft, and main office, 1240 sq ft total.*
Structural system: *independent wood frame construction.*
Major materials: *yellow pine tongue-and-groove sheathing, maple flooring, cherry window and door frames, gypsum board interior walls and ceiling (see Building materials, p. 148).*
Mechanical system: *new electric heating.*
Consultants: *Ray DiPasquale Associates, structural.*
General contractor: *UKZ; David Burke, Peter Cooke.*
Photos: *Eduard Hueber.*



A sense of proportion

A walled compound in West Texas embodies sculptor Donald Judd's ideas about design.



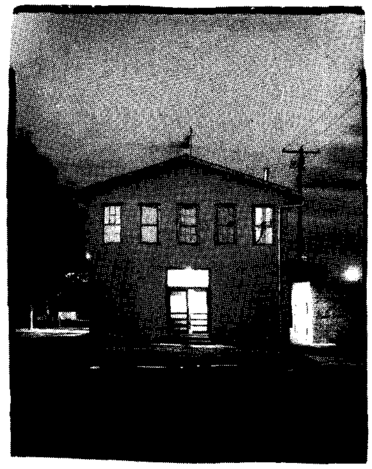
Proportion, said Donald Judd, in a Yale University lecture in 1983, "could almost be the definition of art and architecture." One of the key figures of Minimalist art (a term he disdains) and an outspoken critic of contemporary art and architecture, Judd has been proving his point in the renovation of a series of buildings in the small West Texas town of Marfa. Looking for a place to settle, and to house permanent collections of his own and other artists' large-scale works, Judd, in the early 1970s, moved to Marfa and transformed a city block into an adobe-walled compound for himself and his two children. He is also involved in the rehabilitation of Fort D.A. Russell, a former Army base on the edge of town, in a project of the Dia Art Foundation, to house works by himself, John Chamberlain, and others.

These renovated buildings are marked by an economy of means that renders the standard-issue industrial buildings sparer than ever, yet unimaginably luxurious. On the following pages, Judd discusses the issues that shaped the Block (as his compound is known), the Dia project, and his own ideas for new building designs. ***Pilar Viladas*** ■

Donald Judd's library (above) and studio (facing page) are both housed in the west building of the Block (site plan, overleaf). The 20-foot-wide library contains the artist's large collection of books and journals covering a broad variety of subject matter. All the furniture was designed by Judd and made by his foreman, Celedonio Mediano, whom he credits with having "built everything here." Celedonio's brother Alfredo is responsible for the upkeep of the artworks, including the fluorescent light sculpture by Dan Flavin (facing page) in the studio. Flavin's work is one of the few exceptions to Judd's edict that "art and electricity don't mix," which is the reason that none of the spaces that house artwork have artificial light.

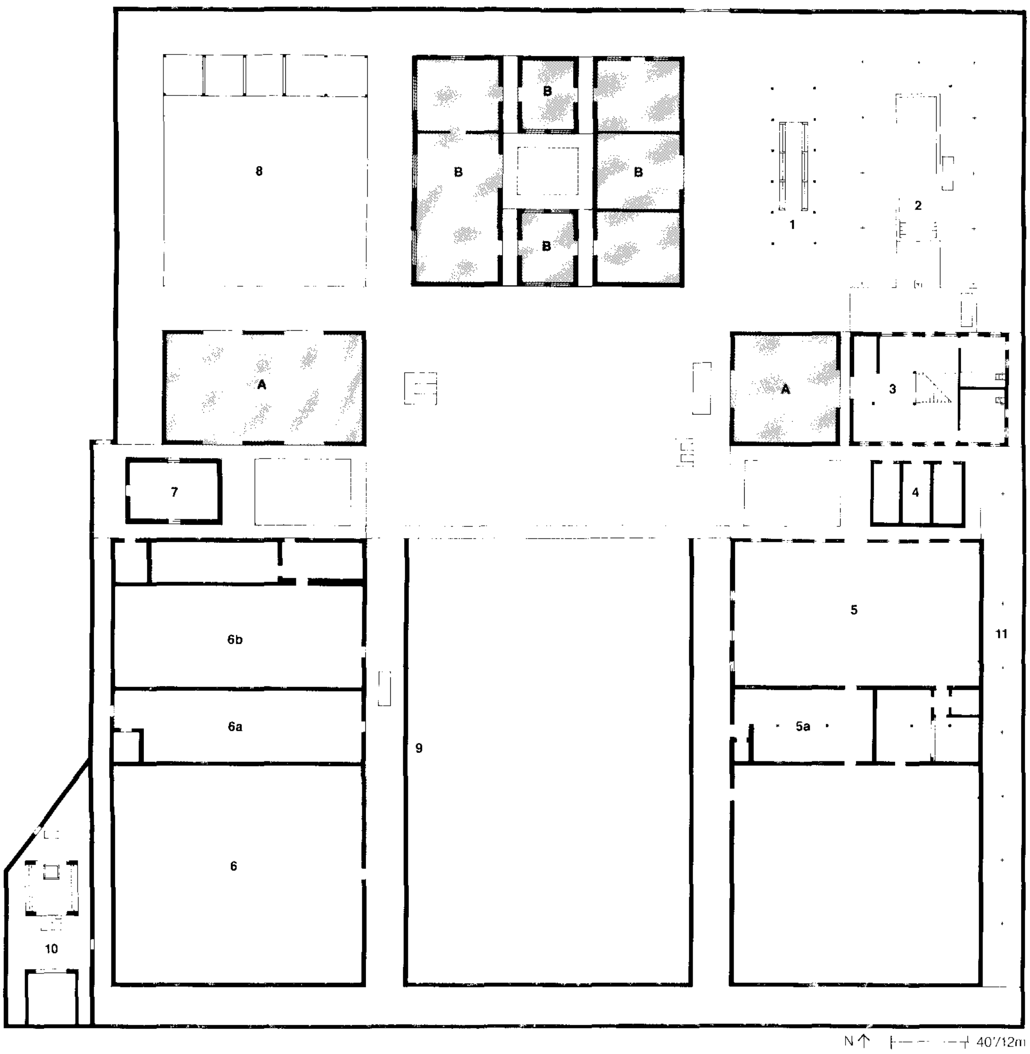
All photos: R. Greg Hursley

The Block
Marfa, Texas



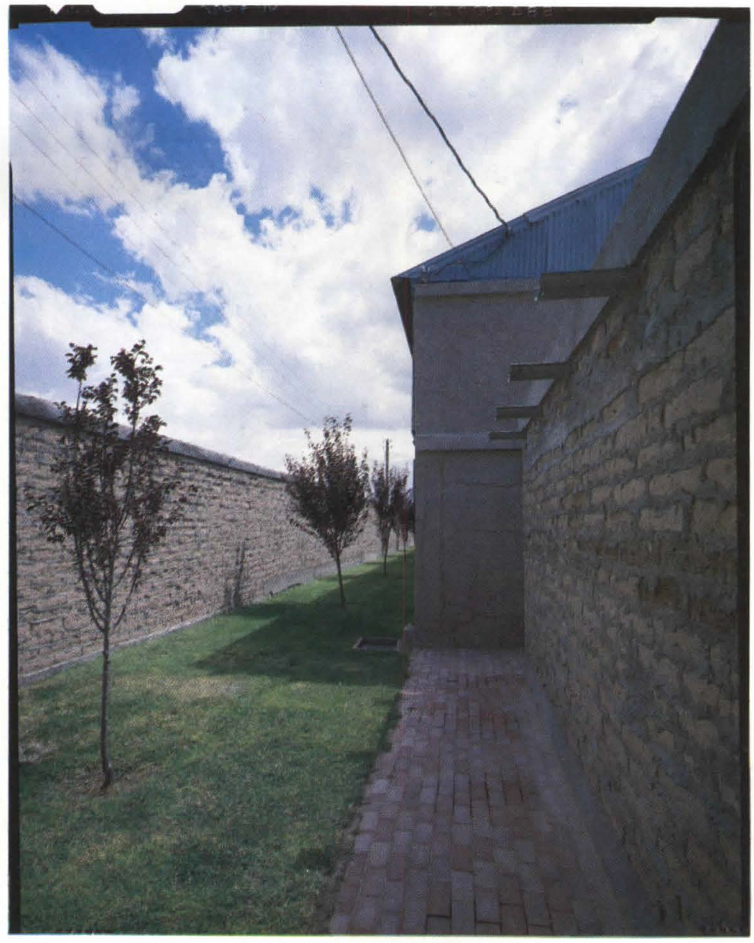
Judd purchased the Block in 1973 and 1974 for a total of $48,000. What he got were two former airplane hangars and a two-story wood-frame building (above), all of which were, he explains, "a mess." He enclosed the block with a nine-foot-high adobe wall, to screen it from Highway 90 to the south and Godbold's Feed Mill to the north, and added two small adobe buildings: one for bathrooms to the east and one for an office to the west. The hangars, now called the east and west buildings, were cleaned up, and now house artworks, a library, studio, living areas, and a print/storage room. The two-story building, Judd's "concession to domesticity," contains the main kitchen and children's rooms. In the Block's northwest corner, he added a garden and a doghouse/chicken coop (not shown here) that is, by his own description, "Miesian." The entire site is organized on a 12-foot module.

Judd is now in the process of building a second adobe wall, between the east and west buildings, which tilts, in contrast to the exterior wall, according to the slope of the yard. Inspired by some of his earlier sculpture, Judd calls this "the one big piece of art that ties the whole thing together." He has also designed (but not yet built) six new buildings for the Block: two in steel and concrete; and four in adobe, grouped around a pond. They are his first new building designs, and he discusses them on p. 107.



EXISTING
- **1** Pergola
- **2** Pool
- **3** Two-story building
- **4** Bathrooms/utility
- **5** East building
- **5a** Bedroom
- **6** West building
- **6a** Library
- **6b** Studio
- **7** Office
- **8** Garden/chicken coop
- **9** Tilted adobe wall
- **10** Winter garden
- **11** Plum tree yard

PROPOSED
- **A** Concrete and steel buildings
- **B** Adobe buildings

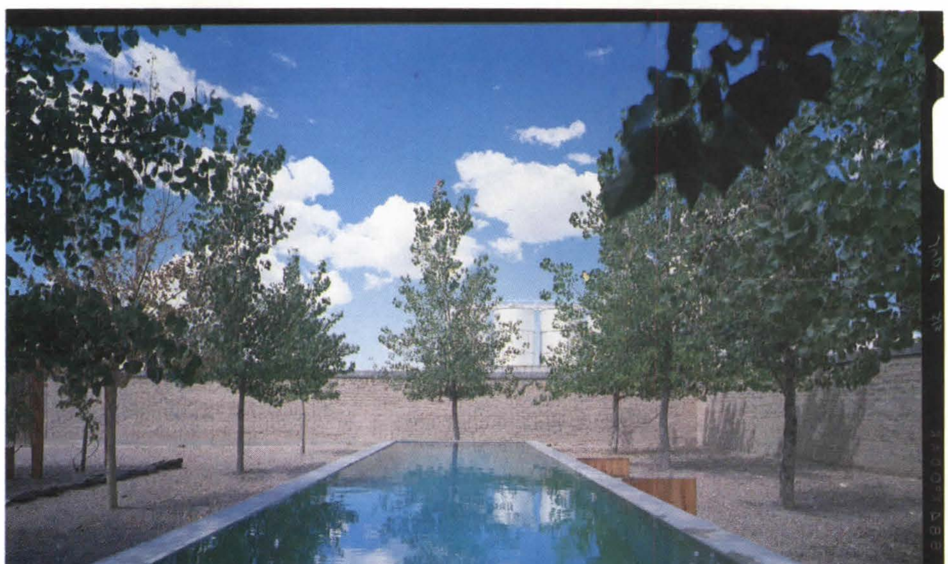


On livability

Spaces should be pretty large, and for me, they certainly should have art. I recommend it to the rest of the world as well. . . . In order to live with art, you have to be relatively comfortable. And also, I like for the rooms that have art to have some sort of function. It doesn't have to be so great, but if you can sit there and have a drink, or lie down and read, then you can look at the work. Because you can't look at art, as we're supposed to in museums or galleries: You walk in, you look at it, you walk out, and that's it. I can't see anything that way. I think you look at it, think about it, do something else, then look at it again, or you talk and look at it. . . . It becomes a normal thing. And you don't want to have to stand up all the time—it's ridiculous.

On industrial architecture

Doing good architecture for less money is the main idea. It's possible; it should happen. I have nothing against an industrial situation; I'm all for it. The nature of it has to be faced; you can misuse it. Just as you can schmaltzify natural materials, you can schmaltzify industrial materials. You can have good plastic and bad plastic; good corrugated metal and bad corrugated metal. You could take cities like Midland and Odessa, and with the same amount of money, make something really nice out of them, which they aren't now. . . . The skyscraper is really a prefab building, just as standardized as the corrugated aluminum building. . . . The International Style—without spending any more money—could have had the variations in surface that would have made it more defined, much nicer. It could have



Judd's ideas about enclosure produced several "outdoor rooms" in the Block, each of them 12 feet wide. The pergola (top left) shelters a long, Judd-designed table and chairs. It is adjacent to a concrete pool (above) that is 30 inches above ground and 30 inches below; its "room" is defined by the 12 cottonwood trees surrounding it. Another "room" is the yard (top right) with seven plum trees, which stretches from the south window of daughter Rainer's room, along the Block's east wall to its southern edge. (The east building and small adobe building that houses the bathrooms are visible at right.) An outdoor room not shown here is the winter garden in the Block's southwest corner.

been like Agnes Martin's paintings: grids, proportions, forward/backward, all become series, and it wouldn't have cost anyone a nickel.

The standard of what's really nice is the Seagram Building. . . . The actual grid is fabulous. . . . I'm not promoting a universal design; it's not going to happen and I don't particularly believe in it. Our problem is to make something really serious with the industrial situation. Obviously, American architects are just playing around with it. You could almost say that Mies was the only architect to deal with the industrial possibilities. Everybody since Mies wants to conceal how it's made. It's dishonest as architecture and as art.

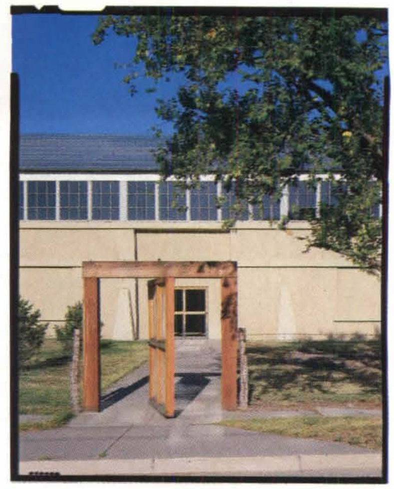
On order in art and architecture

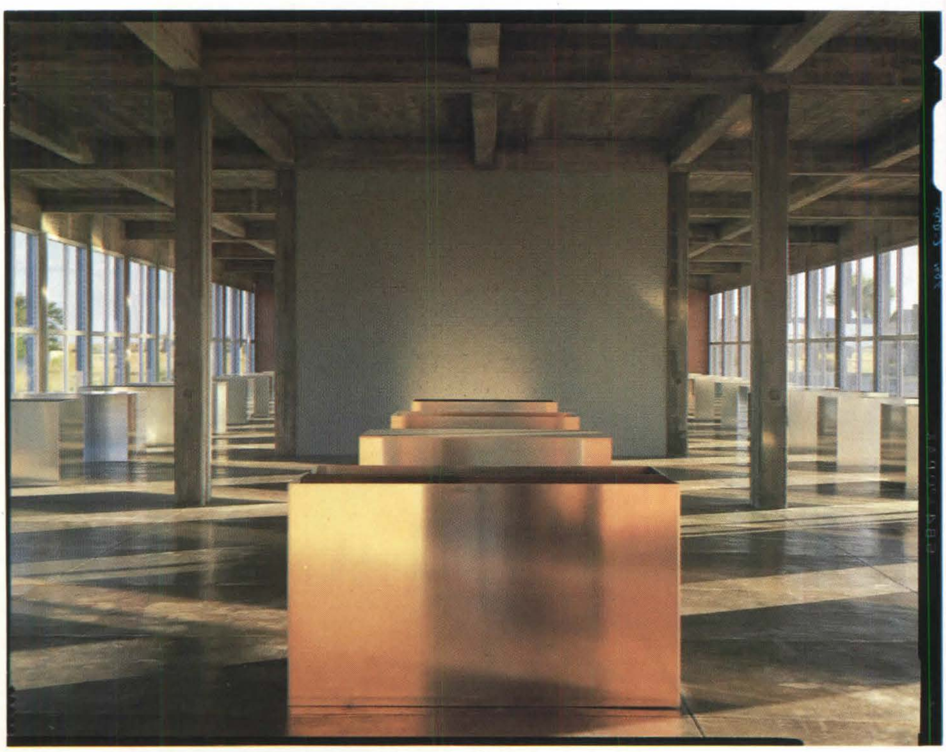
I don't understand why things *shouldn't* be ordered. If people can do it, then why put the windows every which way? If you don't maintain the long view, or the view across the width, you're denying the space inside—you're just losing one of the dimensions of space. . . . I understand buildings if they're strong, or somewhat assertive. . . . But I don't understand when they're very quaint, when they're very complicated, or produce a lot of commotion, which most of the buildings do now. Everything is every which way, and I don't really see the point of that. Everything is every which way anyway—why not have something that's easier to deal with?

On new buildings for the Block

Two of the new buildings will be for paintings. They're to be fireproof: They'll have either no electricity or very little, and it will be easy to switch off. And they'll be made of steel beams and prefab concrete slabs, and a curved Quonset-hut-type roof. And the axes will be crossed . . . if you see through the ground floor one way, on the floor above the [doors and] windows will be through the other way. I really like them, and I wouldn't be fixing up somebody's old buildings, for a change. . . . There will also be a group of four adobe buildings to the north [of the concrete buildings], and they will have roofs that slope to one corner, echoing the slope of the yard. They're all the same height as the wall. The one toward the west will be a really big kitchen, because I don't think the one in the two-story building is sufficient. There will be a room for prints and drawings, because the light's so strong, you need someplace to put them. It'll only have a door and artificial light. Another room will have a piece of mine, and will be open to the outside, and there may be an apartment, too. They'll all be around a small pond, which will have catfish, frogs, ducks. . . . Mostly, they have to accommodate art, one way or the other. But they also have to be livable, pleasant. The spaces will be, when I'm finished, rather different from one another, which will be nice—very big rooms, really small rooms, spaces half outdoors, spaces really outdoors, spaces underneath something, like a pergola, or enclosed but open to the sky, like the winter garden.

The east building was the first of the Block's two former airplane hangars that Judd renovated, rebuilding the walls in adobe and restoring clerestories. An enclosed central area (above, through doors) houses an Oriental kitchen, and living/sleeping room (through left door) filled with Navajo rugs, Indian pottery, and antique furniture (a 19th-Century English chaise, top). The large spaces at either end of the building (south room, above, and north room, facing page) contain Judd's own work from the 1960s. While he likes the sweep of an uninterrupted vista, the artist also relishes the contradiction of a window that looks at nothing but an adobe wall (facing page).





At Ft. Russell, Judd's work to date on the Dia Foundation's Marfa project includes the renovation of two former artillery sheds (photos left) to house a series of 100 of his aluminum sculptures, and the renovation of the Arena (facing page), as well as the installation of a series of the artist's outdoor concrete sculptures (not shown here). Judd gutted the concrete and brick artillery sheds, and replaced the original garage doors with windows that he designed, and which are made from custom four-inch aluminum sections. One window on each side of each building slides open for ventilation, and Judd is in the process of adding Quonset-hut-style corrugated metal roofs to both buildings.

The Arena (above and facing page), originally the fort's gymnasium, was later used as a riding ring, its floor covered with sand. When Judd removed the sand, he liked the look of the concrete grade beams, and left them uncovered, except for the dining (foreground) and work (background) areas, which are paved with concrete for practical reasons. The ratio of paved to unpaved floor is 1:1. Judd also restored the clerestories, replastered the walls, and centered the doors and windows, for which he uses the pivoting foursquare form he originally designed for the former Wool and Mohair Building in downtown Marfa, which houses John Chamberlain's sculptures (not shown here), and which he also used in the Block. This form is also used for two gates (one of them above), which are placed on axis with their corresponding door or window.

The Arena is meant to display art on its walls (one reason that Judd didn't see any need for paving the entire floor), and as a place for large gatherings, for which he designed the long table (a portion of which is visible, facing page) and chairs.

Bundling up

Superinsulation not only reduces consumption of energy. It leads to better quality, and on occasion, lower cost construction.

This is a story, not about insulation, but about changes insulation has wrought in the construction of housing. The story begins in the early 1970s, when researchers working for the U.S. and Canadian governments, as well as for groups such as the Small Homes Council at the University of Illinois, Urbana-Champaign, constructed a series of test houses with high levels of insulation and a minimum of air leakage. They achieved considerable energy savings, with many of the houses needing little more than the waste heat given off by people, lights, and appliances. The houses also proved to be quieter and less drafty than conventionally built houses, and less dependent upon climate and orientation than passive solar houses.

Those first "superinsulated" houses used fairly conventional framing techniques to accommodate the added insulation. Some had single 2x6 or 2x8 stud walls; others utilized double-wall construction originally developed for sound isolation. As more people built superinsulated houses, though, innovative new construction methods emerged: interior strapped walls, exterior site-built trusses hung from the roof rafters, gasketed joints replacing the vapor retarder, tilt-up wood or metal trusses, and insulated stressed-skin panels used for walls, floors, and roofs. Besides saving energy, most of those systems reduced the cost of constructing housing.

Fiber or foam

Before looking at how those various systems differ, let's look at what they have in common. They all, of course, have high levels of insulation, typically R-20–30 in foundations, R-42 in walls, and R-60–70 in ceilings. The wood stud or truss systems, although they take up more floor space and have higher labor costs, use the generally less expensive fiber insulation such as rock wool, fiberglass, or cellulose. The panel systems, thinner and generally easier to erect, use the more expensive foam insulations such as polystyrene, polyurethane, and polyisocyanurate.

While increasing insulation levels remains one of the most cost effective energy-saving strategies, beyond a certain point, it brings a diminishing return. That point varies considerably, depending upon such factors as climate and fuel cost. Nevertheless, as a rule of thumb, this can be easily calculated by multiplying the heating degree days by .004 to determine the optimum R-value in a given location.

Determining the amount of insulation is one thing; insuring its proper placement is another. At foundation walls, most superinsulation systems use exterior foam insulation, protected by rigid panels or a cementitious coating. (Interior walls in a basement can trap moisture between the vapor retarder and the dampproofing.) The systems that use platform framing recess the band joists to allow the installation of rigid insulation along their face. Insulating sheathing also helps prevent thermal bridging at the band joists and the studs, which occupy anywhere from 12 to 20 percent of the wall area. To prevent heat loss at the top of the exterior wall, most systems employ either roof trusses or extended top plates to accommodate added insulation.

Airtight

Calling these systems superinsulation may be a misnomer, for their energy efficiency depends less upon high levels of insulation than upon airtightness. Even a few air leaks can greatly increase energy consumption, and by introducing moisture into the wall cavity, destroy the insulation and rot the structure. The more insulation in the wall, the more severe the problem.

Since even the most carefully installed vapor retarder can rip from such things as picture-hanger nails, almost every superinsulation system recesses the vapor retarder within the wall cavity. Most pull it back at least an inch, although all leave at least two-thirds of the wall's total R-value to the outside of the vapor retarder to prevent condensation at its inside face.

Insuring a continuous vapor retarder demands that its installation be carefully staged, that all seams be caulked over solid backing, that all tears or breaks be thoroughly taped and caulked, and that adequate overlaps be provided. At doors and windows, the vapor retarder should be double folded at each corner to prevent its tearing when folded back and caulked.

The time and care it takes to install a vapor retarder properly, as well as concern about the long-term durability of polyethylene, have led a group of Canadian researchers to develop an "airtight drywall approach" that does away with the vapor retarder altogether. Since most moisture enters a wall cavity at its joints rather than through the finish materials themselves, this approach uses foam gaskets or sealants at every joint and depends upon the low permeability of assemblies such as painted drywall or tile to stop moisture migration through the wall. While relatively new, the airtight drywall approach should greatly reduce the cost and difficulty of insulating.

A vapor retarder on the outside of a wall can trap moisture. Air barriers, though, when placed under the siding and made of highly permeable spun-bonded polyethylene, will reduce air infiltration without inducing condensation. Radiant barriers of unsealed foil sheets, when facing an air space under the roof and siding, also will reduce cooling loads in hot, humid climates without trapping moisture.

Pulling out pollutants

With air leaks eliminated, superinsulated houses must have air-to-air heat exchangers. (Changing about half of the air in a house every hour, or 67 cubic feet per minute for every thousand square feet of floor space, is considered a minimum ventilation rate.) Air-to-air heat exchangers transfer the heat from the exhaust air to the supply air. Some pass the exhaust and supply air through alternating flat or concentric metal plates; some pass the opposite air streams through a rotating wheel containing small air passages; and some pass the air over metal pipes that contain a heat-transferring liquid. While simple enough in conception, many air-to-air heat exchangers require careful installation and maintenance.

Air-to-air heat exchangers also require ducting separate from that of the heating system. But because superinsulated houses require so little heat, most use electric baseboard or radiant heating rather than central systems, thus eliminating the need for a second set of ducts or a chimney.

Those savings aside, superinsulated houses, especially those of stick-built construction, still cost more: anywhere from $5000 to $10,000 over the same house conventionally built. Justifying that added expense, in a period of stable energy prices, may become increasingly difficult. But it needs little justification in the midst of a housing crisis, as many people seek better quality and lower cost shelter. Superinsulated construction is really just better quality construction, with fewer flaws. Superinsulated panel construction also offers lower cost construction, offsetting higher material costs with greatly reduced labor. In that light, it's hard to refute the claim of Ned Nisson, author of a new book on the subject, that "superinsulated houses may well be the ordinary houses of tomorrow." ***Thomas Fisher*** ■

Further reading

The newest and probably most thorough book on the subject is *The Superinsulated House Book* by J.D. Ned Nisson and Gautam Dutt (John Wiley & Sons, New York, N.Y.). The newsletter *Energy Design Update* (Cahners Publishing Co., Boston, Mass.) and "Progressive Builder," a part of *Solar Age* magazine (SolarVision Inc., Harrisville, N.H.) both have frequent articles on the subject. See also Technics-related products and literature, p. 116.

Acknowledgments

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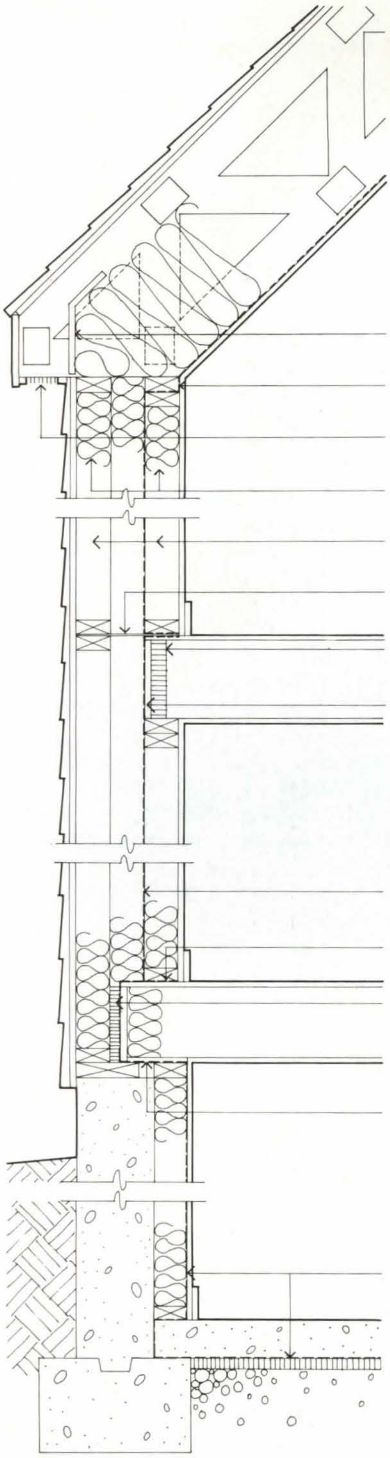
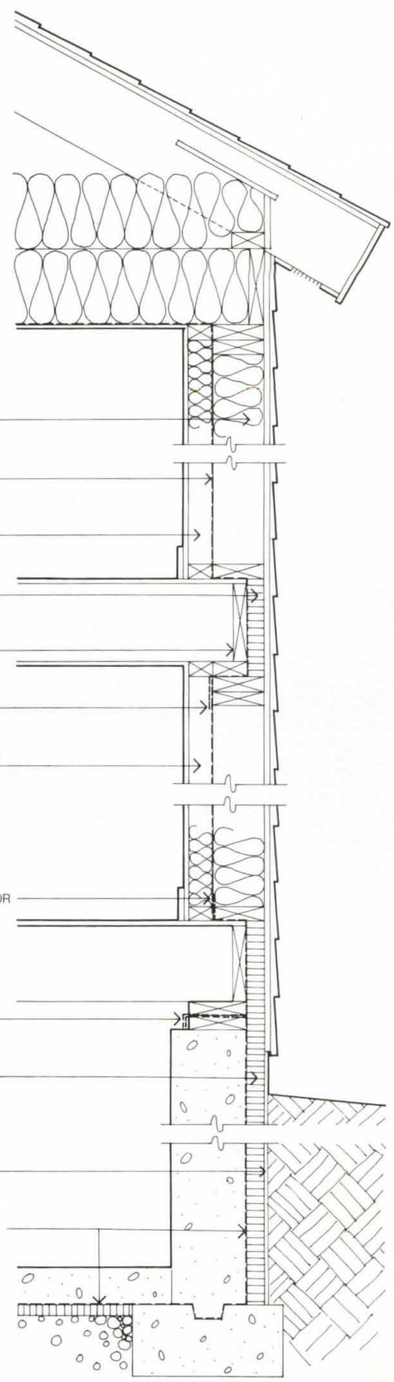


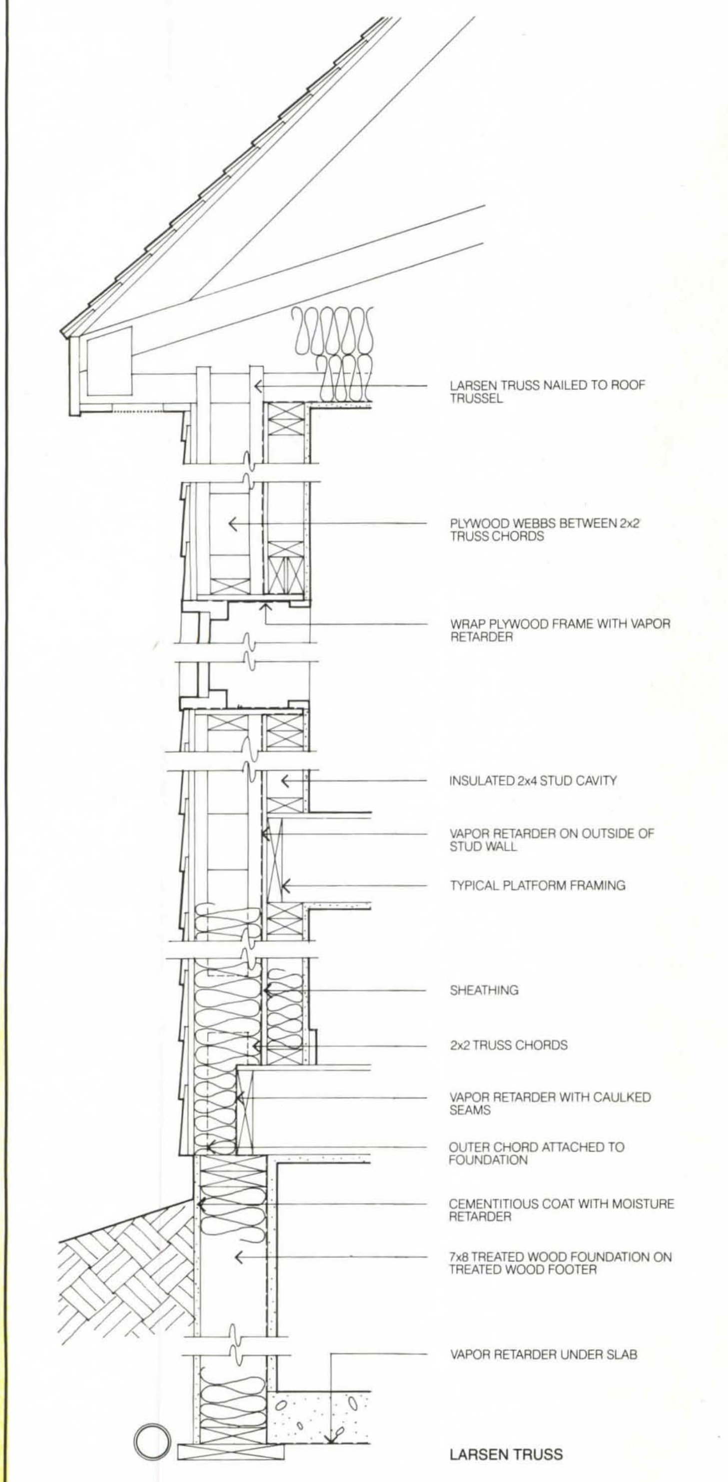
DOUBLE-WALL

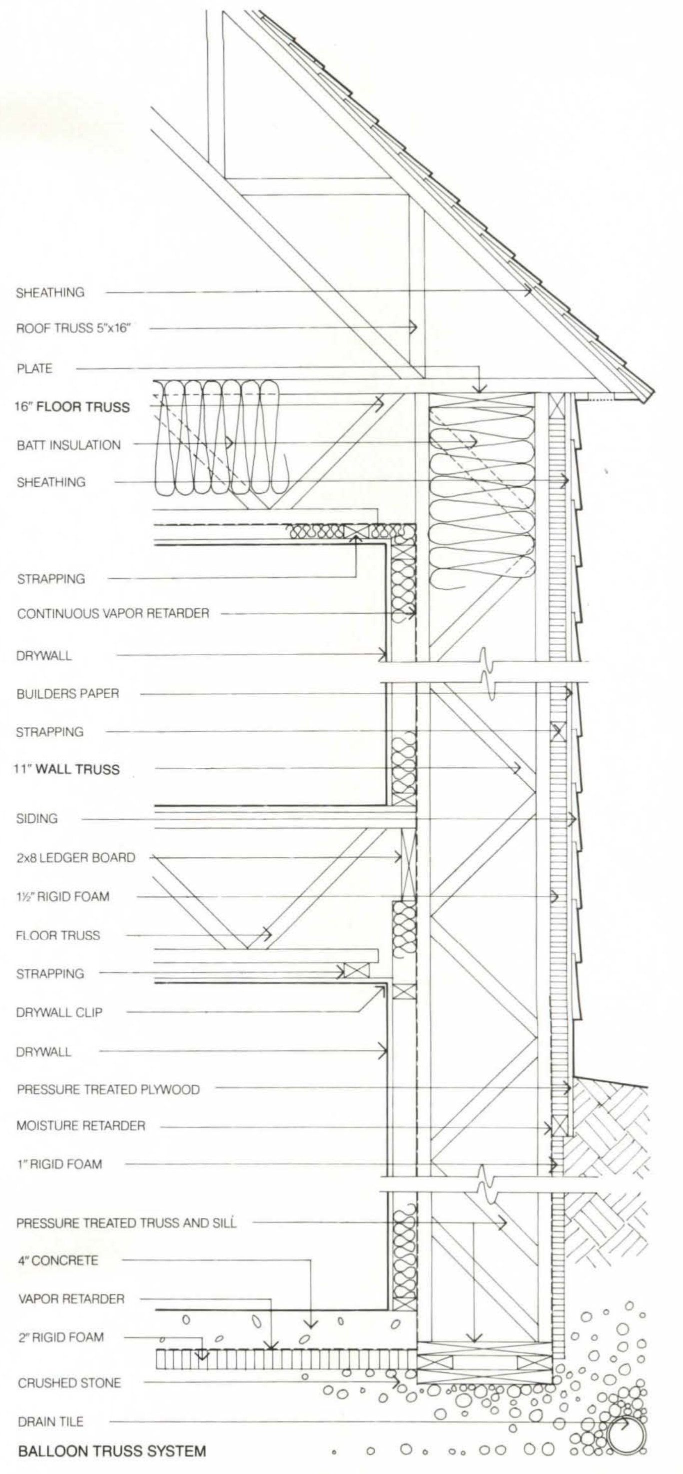


STRAPPED WALL SYSTEM

First developed at the University of Saskatchewan, the double wall system is platform framed, with the inner structural wall and outer curtain wall built, sheathed, and insulated before being lifted into place. The vapor retarder, fastened and sealed to the outside of the structural wall, must have ample tabs left to cover the band joists and to connect to the vapor retarder of the floor or ceiling above. The vapor retarder's location protects it from plumbing and electrical penetrations or from accidental tearing from nails through the drywall. The roof trusses shown are a patented system called "Super-Truss" developed by RoKi Associates in Standish, Maine. It can accommodate up to 20 inches of insulation for an R-value of 70. Double wall construction makes building complex forms difficult and requires a rethinking of platform framing methods. Its advantages lie in its easily varied wall thickness, allowing a wide range of R-values, and in its discontinuous stud walls, preventing thermal bridging.

Strapped wall construction lets the contractor use ordinary platform framing, making it an easier method for building complex forms. The floors should be wrapped with a polyethylene vapor retarder as they are installed and the band joists should be slightly recessed to allow the placement of rigid insulation along their entire face. Once framed, the structural wall is insulated, and a continuous vapor retarder installed and sealed. The contractor then fastens horizontal strapping, insulates the cavities, and attaches the interior drywall. As in the double wall system, that location of the vapor barrier protects it from punctures. The plate on top of the ceiling joists allows the raising of the roof rafters and the accommodation of more insulation over the exterior wall. While strapped construction is easier to build than double wall construction, it often requires more labor. It is also prone to more thermal bridging through the abutting framing and strapping. The insulated foundation shown here reduces the thermal bridging and condensation possible with an interior insulated foundation.

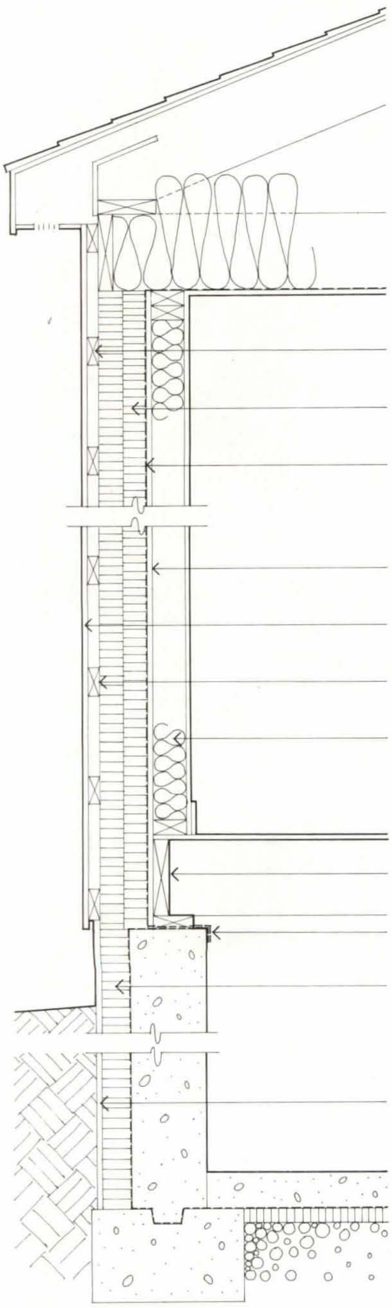




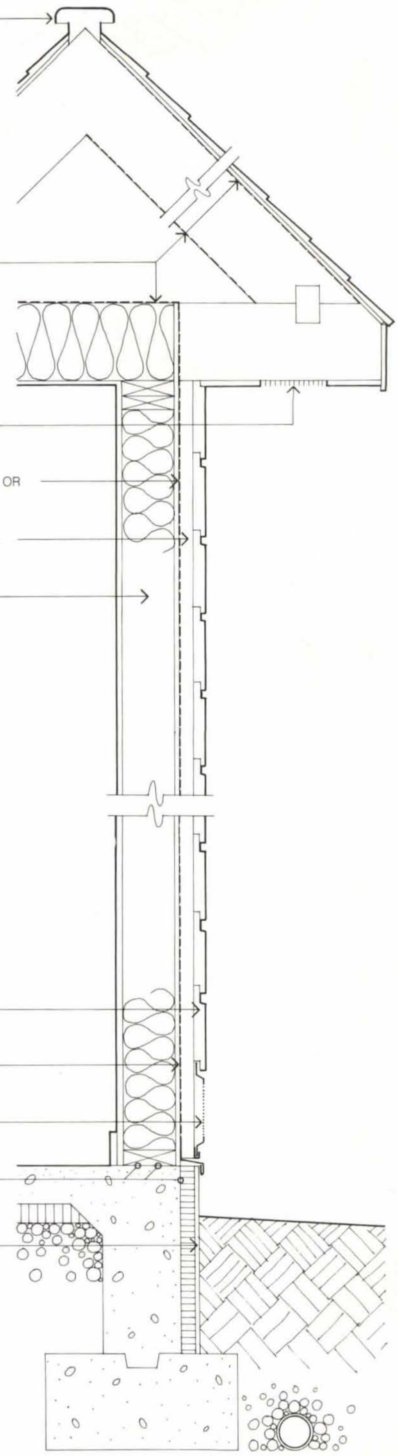
The Larsen truss system, developed by Canadian builder John Larsen, works like a curtain wall; the vertical trusses, made of 2x2's with plywood webs, hang from the roof rafters. The trusses are installed and insulated after the structure is framed; the sheathing is applied; and the vapor retarder is fastened and sealed to the outside of the sheathing. Siding then can be fastened to the trusses and drywall fastened to the insulated structural wall.

Most people use such systems when retrofitting buildings since they can apply the vapor barrier and trusses without disturbing the existing exterior walls. The trusses, with varied web dimensions, can accommodate almost any depth of insulation. But with this system, as with any superinsulation system, at least two thirds of the wall's R-value must lie outside the vapor retarder to prevent moisture in wall from reaching its dew point and condensing. Details of the system are available from Passive Solar Designs Ltd., in Edmonton, Alberta, Canada.

John Amos, a builder in Nova Scotia, has developed what he calls a "balloon-truss system." The reference to balloon framing comes from the system's vertical members running from the footers to the roof. (The below-grade lumber is pressure-treated.) The use of wood trusses rather than studs marks this as a superinsulation system, for their eleven-inch depth can produce R-values as high as 55. Amos uses interior horizontal strapping to protect the vapor retarder and to increase insulation levels. Floor trusses rest on 2x8 ribbon boards attached to the vertical trusses, allowing the vapor retarder to run up the wall without a break at each floor. Sixteen-inch wood trusses, with interior strapping, allow Amos to attain an R-70 ceiling. The advantage of this system is the ease and familiarity of its erection; the disadvantage rests with the amount of square footage it requires. Lighter metal truss systems are also available for both residential and low-rise commercial construction.



THE "STYRO HOUSE" SYSTEM

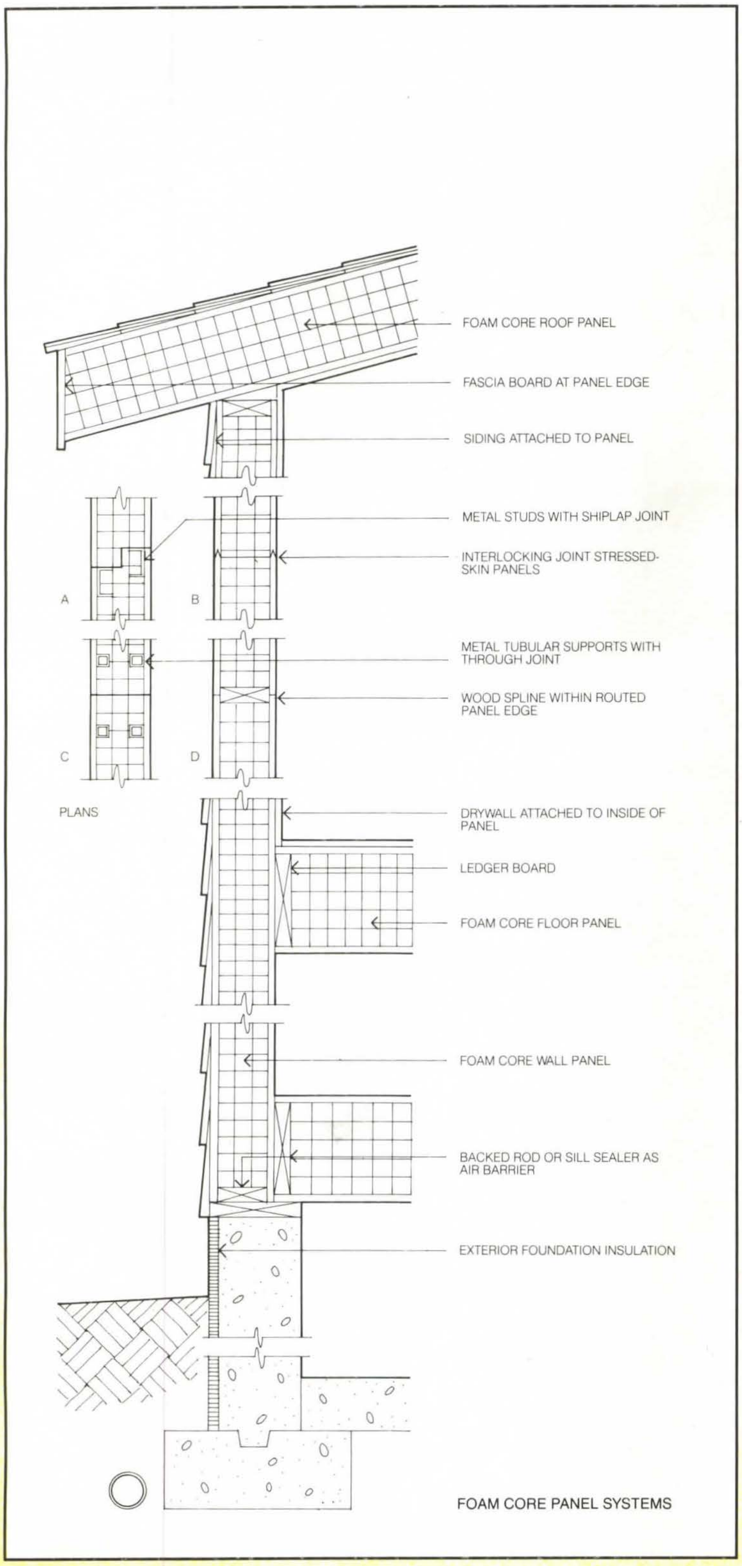


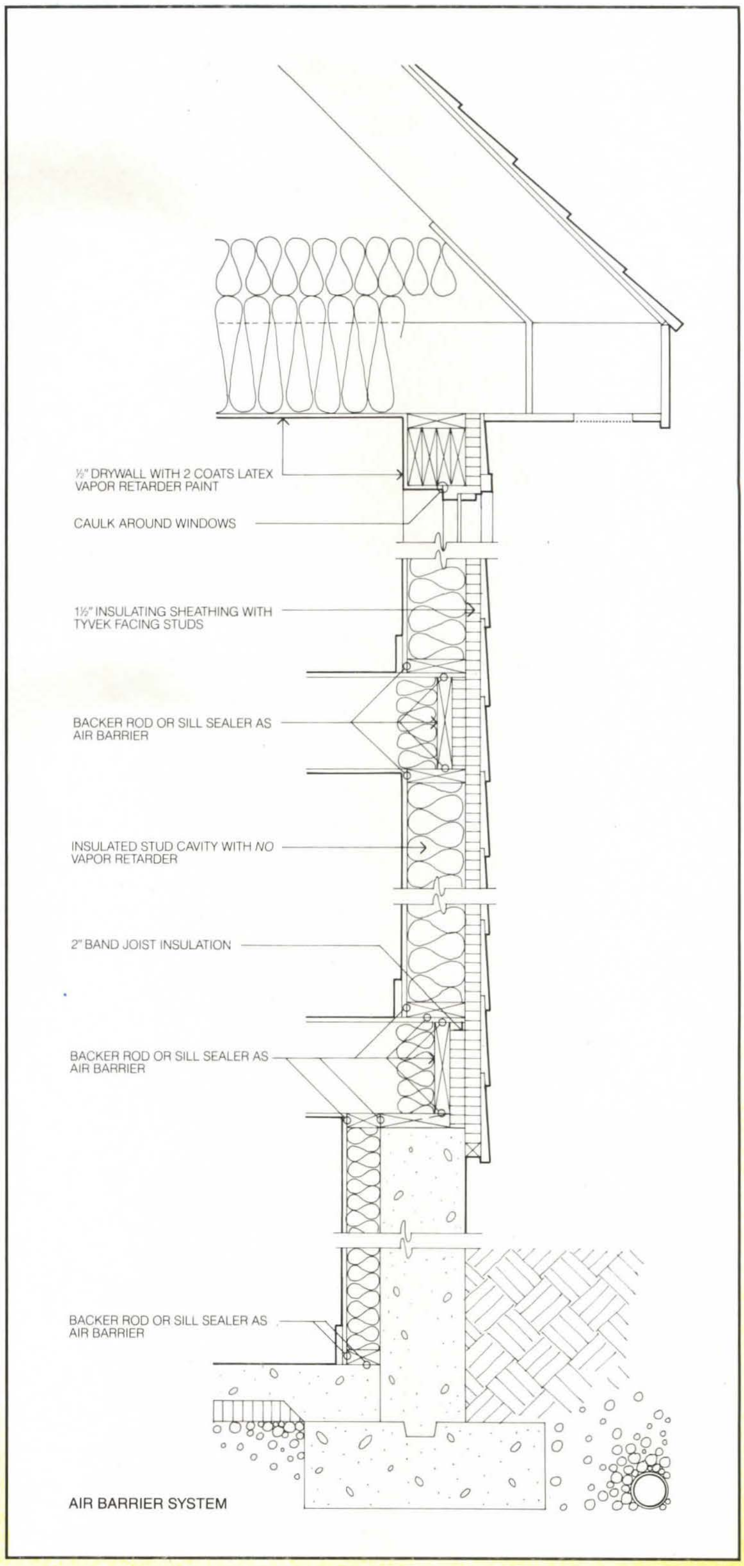
RADIANT BARRIER SYSTEM

Rigid foam insulation is usually more expensive than fibrous insulation, but it offers more thermal resistance per inch. Because of that, Buffalo Homes, a construction company in Riegelsville, Pa., has developed a superinsulation system that places 5¼ inches of polystyrene foam over platform framed wall. The vapor retarder goes over the wall's sheathing and strapping goes on the outside of the polystyrene for the attachment of exterior siding. Spikes fasten the strapping to the wood stud wall.

This system uses familiar framing methods, has a relatively low cost, and eases the superinsulation of complex forms or existing structures. It also simplifies the insulation of the foundation wall. The placement of rigid insulation on the outside of a foundation wall reduces the wall's expansion and contraction and avoids the entrapment of moisture between exterior waterproofing and an interior vapor retarder.

Superinsulation is, primarily, a cold-climate construction technique. In hot, humid climates, increasing a building's thermal resistance involves not adding more insulation but adding radiant barriers. Since much of the heat gain in hot, humid climates comes from exterior surfaces radiating heat to the interior, a radiant barrier, made of a reflective foil or sheet, can greatly reduce that heat transfer by reflecting the radiant energy. For that reflection to occur, though, the radiant barrier must face an air space. Researchers at the Florida Solar Energy Center suggest placing the radiant barrier on the outside of the wall sheathing, facing an air space under the siding; above the ceiling joists, or under the roof rafters. It also can go under the roof sheathing, facing the attic. The radiant barrier's seams should not be taped or otherwise sealed, since it would then act as a vapor retarder and lead to condensation within the wall. The use of light-colored roofing and siding also helps in reducing cooling loads.





The use of superinsulated foam panels promises to reduce the cost of housing construction. Many companies produce panel systems. Some use metal studs or tubes to give the panels structural stability; others use fully adhered wafer board or other sheathing materials with interlocking joints to form a continuous stressed skin. Some use inexpensive polystyrene foam; others use polyurethane or the more fire-retardant polyisocyanurate foams. Some use through-joints between panels; others use shiplap or splined joints. Most of the manufacturers recommend using sealants or adhesives in the panel joints to ensure airtightness.

The advantage of superinsulated panels lies in their factory manufacture, interchangeability, and speedy erection. A disadvantage is the difficulty installing wiring and plumbing in the panels. Also, building codes and some trade unions present obstacles to their full use.

Polyethylene vapor retarders can deteriorate through oxidation, ultraviolet exposure, or chemical attack. Because of that, some contractors have begun using higher priced, UV-resistant polyethylene. Others have begun using the "airtight drywall approach"—a system, largely developed by Joseph Lstiburek and James Lischkoff at the Building Engineering Design Corporation, that does away with polyethylene vapor retarders altogether. Its advocates argue that most moisture enters a wall cavity not through vapor migration but through the movement of moisture-laden air—not through relatively impervious finish materials such as painted drywall, plywood, or tile, but through the cracks and joints where various materials and surfaces meet. The system uses ordinary finish materials to retard vapor migration. And it achieves airtightness through the placement of gaskets or sealants at all joints. The airtight drywall approach promises to reduce the cost of building, although it demands care on the contractor's—and homeowner's—part to seal all holes and open joints.

Technics-related products

Outsulation® panels consist of exterior grade gypsum board with an expanded polystyrene insulation board, reinforcing mesh embedded in plaster/Portland cement, and a finish coat of synthetic plaster. The panels are framed in light-gauge steel. The finish coat comes in 21 colors and a choice of textures. It is also available in an acrylic-base brick veneer in six colors. Dryvit System, Inc.
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Thermal-Impac™ Panels have a core of 14-gauge steel wire cage around 2¼-inch-thick expanded polystyrene or polyurethane. Portland cement plaster in a minimum ⅞-inch-thick layer is gun- or hand-applied to both sides, either on site or precast, providing strength, durability, acoustic, and fire-resistive qualities. Conduits, switch boxes, door and window openings, and mechanical chases can be preinstalled in precast panels. Covington Technologies.
Circle 102 on reader service card

The Alply® insulated wall panel system has either expanded polystyrene or expanded isocyanurate insulation. Exterior skins are aluminum or stainless steel; interior skins are aluminum or other materials. The panels are available one to eight inches thick, depending on designed U-value. The Snug Seam® joining system is made from silicone and creates a virtually vapor-tight, weather-resistant joint. Panels can be up to 5 feet wide and 18 feet long and are offered in a variety of color coatings with joining system to match or complement panel color. Bally Engineered Structures, Inc.
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R-Matte™ insulated sheathing has a rigid polyisocyanurate foam core wrapped in and bonded to a polyethylene-coated kraft paper facer. An alternative to foil-faced insulation, it is especially suited to use under vinyl or aluminum siding. Used over old siding and sheathing, it creates an air infiltration barrier and increases total R-value. In new construction, R-Matte can be used under aluminum, vinyl, or wood siding. R-Max.
Circle 104 on reader service card

Foamglas® tapered roof insulation provides built-in positive drainage of flat roofs. Since moisture in liquid or vapor form cannot penetrate it, Foamglas retains its energy efficiency. It is dimensionally stable, lightweight, and has high compressive strength. Pittsburgh Corning Corp.
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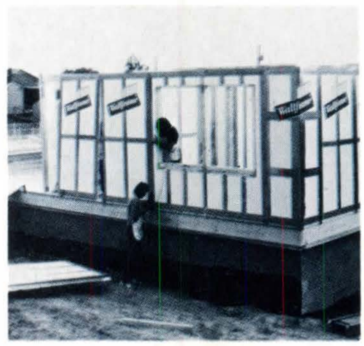
Thermo-Stud® wall insulation for the interior of concrete and masonry walls consists of styrene foam insulation board, Thermo-Stud furring channel, and an optional T-clip. The channel permits insulation to be fastened to the substrate and provides a base for drywall attachment. Thermo-Stud covers the entire wall with high R-value insulation. An eight-page brochure discusses benefits and code acceptance, and provides thermal performance data, physical properties, and specifications. W.R. Grace, Construction Products Div.
Circle 106 on reader service card



Wallframe™ panels combine a galvanized steel frame and Dylite® expanded polystyrene insulation to form a load-bearing panel. Although its cost is comparable to traditional building methods, construction time is cut substantially and energy efficiency is improved. Exterior finish can be any conventional material, which can be fastened directly to Wallframe. Interior drywall attaches with conventional screws. Each panel has an R-value of 15, and overlapping joints eliminate air infiltration. Wallframe Building Systems Group, ALSCO ARCO Building Products.
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All-weather Crete® consists of expanded volcanic glass rock with a thermoplastic binder, combined at the work site to produce a roof deck fill with thermal efficiency greater than poured roof deck insulation. It can be sloped to provide roof drainage. There are no seams or joints to affect its efficiency. It covers irregular surfaces and insulates from the time it is applied. Silbrico Corp.
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Thermasote® R-20 plus sidewall system consists of exterior grade composite Homasote® building board, rigid polyurethane foam, and backer sheet. It contains neither urea formaldehyde nor asbestos additives. The board provides both insulation and a structural nailbase sheathing for finish siding. Homasote Co.
Circle 109 on reader service card

SprayDon® Type II thermal insulation is made from spray-applied mineral fibers and inorganic binders, usually in thicknesses from ¾ inch to 1½ inches. Added benefits are acoustical absorption and incombustibility. It can be used on metal buildings, concrete, and the underside of weather-exposed floors. American Energy Products.
Circle 110 on reader service card

Ensolite EPC closed-cell insulating foam, based on Uniroyal's Royalene® EPDM, resists weather and low temperatures, remaining soft at temperatures to −65 F and flexible at temperatures as low as −100 F. Among its several applications are pipe covering, building closures, and insulation. It resists ozone, UV radiation, acids, alkalis, salt solutions, and synthetic hydraulic fluids. Uniroyal, Inc.
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The Super-Truss™ roof system facilitates high R-factors in sloped ceilings. It will accommodate up to 20 inches of fiberglass insulation for a value of R-60. There are six stock models; custom designs are available to meet specifications. Super-Truss Building Systems, Inc.
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Thorowall® insulating plaster for exterior walls combines plaster with polystyrene bead aggregate and is applied directly to masonry and concrete. Foam boards can be added for increased insulation. It is noncombustible and does not add to smoke contributed, fuel added, or flame spread. With positive attachment of metal lath, Thorowall insulating plaster can be applied to most wall construction. Thoro System Products.
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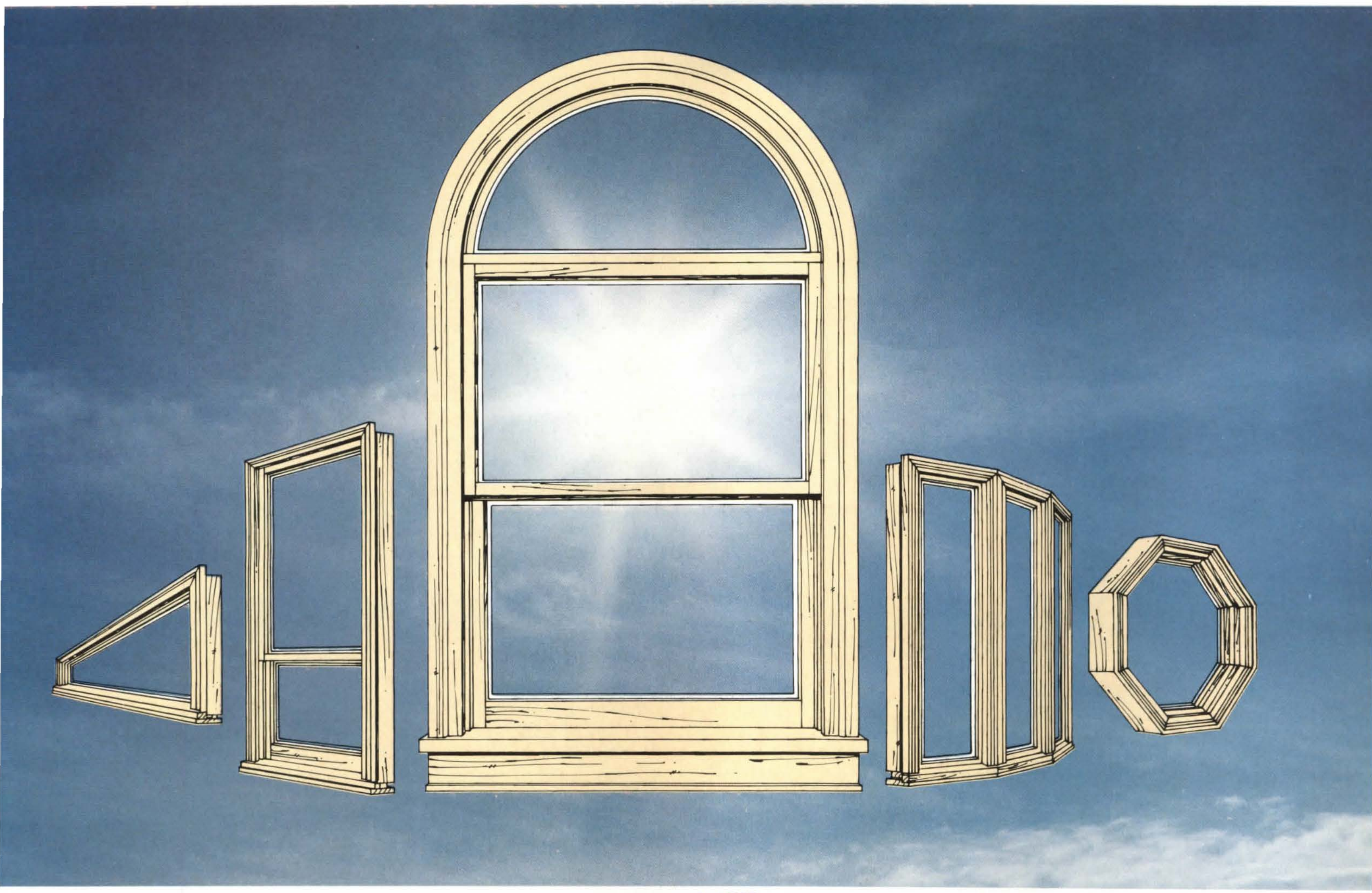

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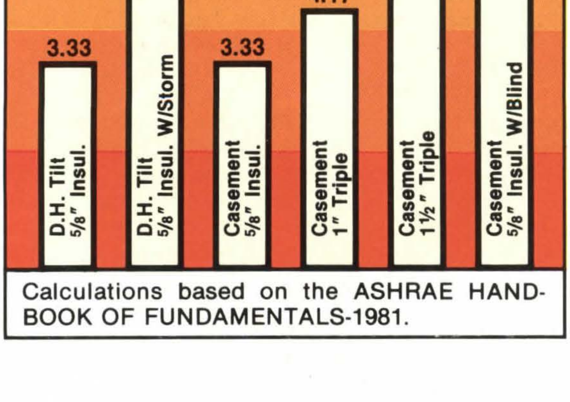

Calculations based on the ASHRAE HANDBOOK OF FUNDAMENTALS-1981.

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Foamular® insulating sheathing is extruded polystyrene rigid foam insulation for commercial and residential use in new or retrofit applications. The insulation has an R-value of 3.125 in ⅝-inch thickness and offers outstanding resistance to water. It also resists impact and has a minimum compressive strength of 25 psi. The lightweight panels are 4' x 8' or 4' x 9' and are easy to handle, cut, and install. UC Industries, Inc.
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Spray-Tec® cellulosic insulation serves as thermal barrier over flammable substrates and as air infiltration barrier. It can be applied to glass, wood, metal, concrete, brick, urethane, styrene foam, and fiberglass. It is also effective to control noises in buildings such as gymnasiums and factories and in wall cavities to control sound transmission between apartments and motel rooms, for example. Spray-Tec Corp.
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Tu-Tuf® vapor barrier of cross-laminated poly film can be used on outside foundation walls, inside between wallboard and exterior wall insulation, under concrete slabs, or as ground cover in crawl spaces. It is pinhole-free, resists snags and punctures, and will not crack on folds. Sto-Cote Products, Inc.
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Thermo-Brite® air infiltration barriers are available in several forms to meet specific problems. Airtight White™ is applied to exterior walls. Thermo-Brite® tape seals seams around windows and doors, plumbing and electrical conduits. Radiant Barrier is used in roofing systems and exterior walls. Vapo-Brite™ keeps interior moisture from penetrating the wall cavity. Retroflect panels are installed between rafters in existing homes. Parsec, Inc.
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Tyvek® housewrap, placed over sheathing, seals out air infiltration and reduces heat transfer through walls, keeping warm air inside in the winter and outside in the summer. Since moisture vapor passes through Tyvek, it does not cause in-wall condensation. Made from spun-bonded olefin, it resists tearing and punctures and will not shrink or rot. Du Pont Company, Textile Fibers Dept.
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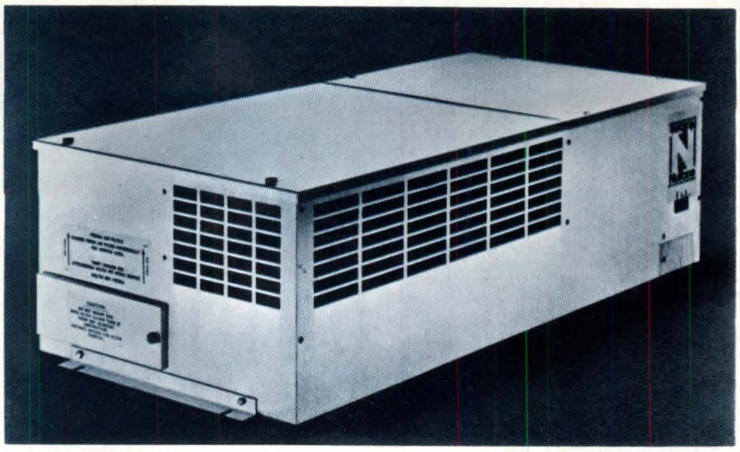

Air-to-air heat exchanger A-200 helps to remove interior air pollution sometimes present in homes that are tightly sealed for energy conservation. At high speed it is rated at 200 cfm; at low speed, 150 cfm, sufficient for ventilation of an 1100-square-foot home, while its rotary matrix wheel recovers up to 80 percent of the heating or cooling energy of air being exhausted. NuTone Housing Group, Scovill Inc.
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Bossaire air-to-air heat exchanger prevents pollution build-up inside homes. It introduces fresh air that is warmed by heat extracted from the air being exhausted, using right angle flat plates, recovering up to 80 percent of heating or cooling energy that would be lost through normal venting. Units are available in five sizes for proper air exchange. Bossaire.
Circle 120 on reader service card

Lifebreath™ air-to-air heat exchangers for energy-tight homes remove condensation, odors, and contaminants. Heating and cooling energy that would be lost through other types of ventilation is transferred to incoming air by means of parallel aluminum plates. Aluminum filters are easily removed for cleaning. Nutech Energy Systems, Inc.
Circle 122 on reader service card

MER-150 air-to-air heat exchanger controls humidity, eliminates stale, humid, or contaminated air, and provides combustion air for gas-fired appliances or fireplaces. It removes heating or cooling energy from air being exhausted and transfers it to fresh air being drawn from outside, using heat pipes as transfer mechanism, without excessive energy loss. It includes supply and exhaust fans, humidistat, automatic freeze protection, heat exchanger, and removable filters. Mountain Energy & Resources.
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Surewall® Products and Systems brochure includes information about two insulation systems: surface bonding cement (SBC) insulation, which is applied to rigid insulation boards that are mechanically attached to exterior wall surfaces; and fiber-reinforced plaster (FRP) consisting of polystyrene insulation boards, woven wire lath, and fiber-reinforced, weather-resistant polymer-modified Portland cement plaster. The 12-page brochure provides assembly and installation information, short form specifications, and typical performance data for each. Surewall Producers Council.
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Residential insulation products brochure describes Energy Shield™ insulating sheathing, ThermaCube™ blown fiberglass insulation, batts, and Super Batts. The eight-page brochure discusses the features of each type, and provides R-value charts for various thicknesses. Owens-Corning Fiberglas Corp., Insulation Operating Division.
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Styrofoam® insulation is extruded rigid polystyrene foam board. It is available with tongue-and-groove edges; with plastic film laminated to front and back for resistance to damage; square edged, especially suited to exterior foundation insulation; and scored for snapping into 16-inch and 24-inch boards. Also available is sill seal for insulation beneath the sill plate to block air infiltration. Product specifications and applications are provided in a 12-page brochure. Dow Chemical USA, Styrofoam Brand Products.
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Fiber glass building insulation products include unfaced, kraft-faced, and foil-faced insulation in rolls; flame-resistant foil-faced batts; sound-control batts; Insul-Safe® blowing wool; and Certa-Spray® for wet spray application. Specialty products are masonry wall batts, sill sealer, and Ultratherm for suspended ceilings. A 12-page brochure describes the products, including R-value tables, explains codes and standards, and provides fire and sound ratings for typical insulated construction assemblies. CertainTeed Corp.
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Thermo-ply® sheathing, structural grade, is approved for one-hour fire-rated wall systems. It is composed of long-fiber water- and weather-resistant plies that are pressure laminated. Thermo-ply's three grades are covered in a 12-page brochure. Charts compare R-values of several insulation materials. A technical summary of the three grades, code compliance information, and architectural specifications are included. Simplex Products Div.
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Thermalbar® exterior insulating wall panels offer R-values to 16.8. The impact-resistant panels can be customized with designs or patterns and can incorporate company colors or logos. There are eight standard aggregate facings. An eight-page brochure provides product specifications, assembly and installation information, and shows several projects and applications. Keystone Systems.
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Thermax® and Tuff-R™ insulating sheathing are compared in a 28-page brochure. Recommended uses for each are discussed and comparative data for different wall systems are provided. Drawings show details of insulation installation in different wall types, fire-resistive wall assemblies, and roof construction. The Celotex Corp., Building Products Div.
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Tripolymer® foam insulations are aromatic phenol-based compounds that are foamed in place using air as blowing agent. They are Class 1 fire-rated materials and do not develop hazardous gases when exposed to fire. A four-page brochure discusses applications, illustrates typical projects, and provides technical specifications. C.P. Chemical.
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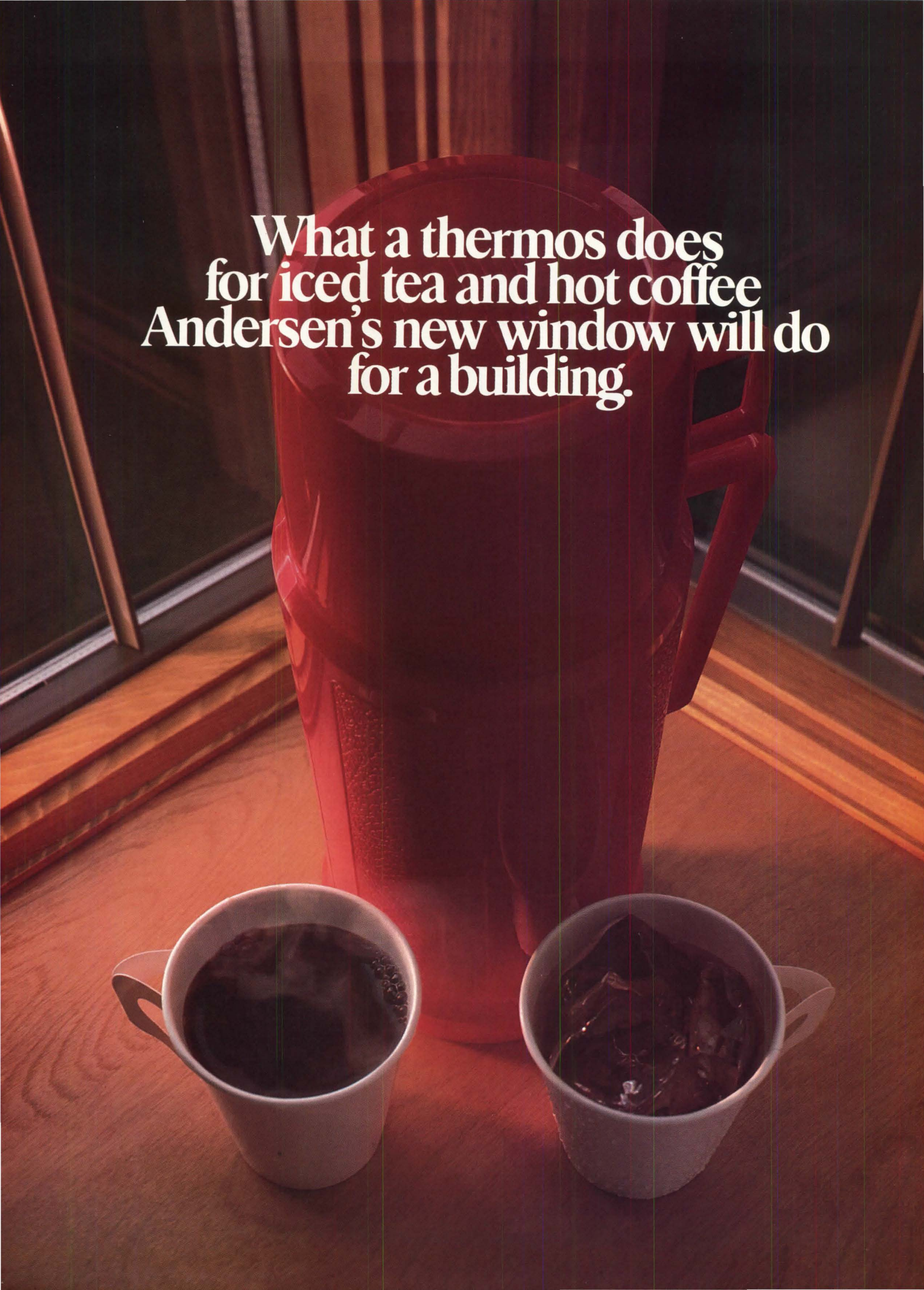
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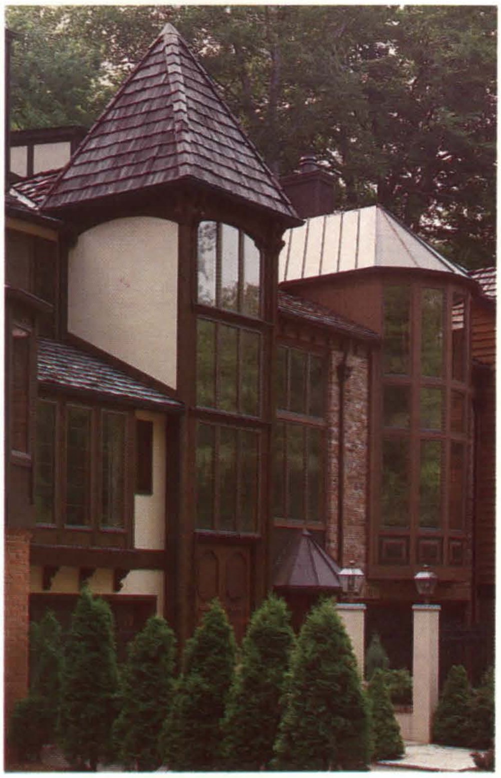

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Books

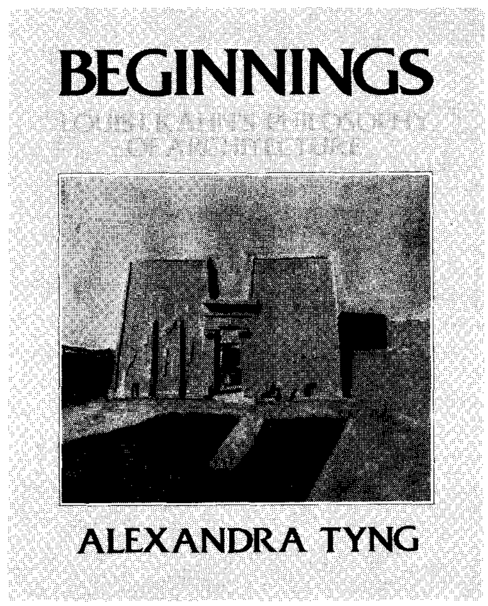
Beginnings: Louis I. Kahn's Philosophy of Architecture ***by Alexandra Tyng. New York, John Wiley & Sons, Inc., 1984. 198 pp., $29.95.***

Tyng's Kahn

More than a decade after his death, Louis Kahn remains a potent force in architecture both in the United States and abroad. His writings are required reading for educated architects and his buildings are now the goals of pilgrims from around the world. In an era concerned with assessing the legacy of Modernism and promoting a dialogue with tradition, Kahn's ability to reconcile a modernist's concern for new materials and technology with a Beaux-Arts predilection for architectural compositions based on the relationship of discrete spaces continues to exert a profound influence on designers young and old.

Alexandra Tyng offers fresh insights regarding the evolution of central themes in Kahn's architectural thought. More important, she clarifies the *way* Kahn thought about architecture. Although it is not without its flaws, *Beginnings* is an important contribution to the literature on Louis Kahn. The book is organized in four chapters. The first provides a biographical sketch. Succeeding chapters are devoted to a detailed examination of specific themes in Kahn's work. Chapter Two, entitled "Form, Order, Design: The Inspiration Process," discusses Kahn's interpretation of the nature of the genesis of architectural form. Chapter Three, "Renewal: Search for the Beginning," focuses on Kahn's response to the challenges of urban renewal and city planning. Chapter Four, "Silence and Light," describes Kahn's belief in the power of light to shape not just architectural form, but human consciousness. Each of the last three chapters concludes with a selection of writings by Kahn relevant to the particular theme of the chapter and arranged in chronological order.

Beginnings is a difficult book to characterize. The fact that the author is Kahn's daughter, the inclusion of snapshots of Kahn with family and friends, and the reproduction of pages from his notebooks and personal letters combine to convey an initial impression of the book as an intimate biography. Tyng's biographical sketch of Kahn is anecdotal rather than comprehensive in nature, however. The details of Kahn's life—his immigrant origins, his Beaux-Arts education at Penn under Paul Cret, his conversion to Modernism, and his eventual search for a richer formal language than that offered by the International Style—are recounted in a manner that often leaves the reader frustrated rather than enlightened. We learn, for example, that Kahn envied George Howe's "blue blooded American roots" and treasured the gift of a bow tie from Howe, but



little else of substance about a relationship Tyng describes as "one of the few truly equal exchanges that Kahn had with other people in his field." Although many of Kahn's buildings and projects are described, *Beginnings* is not, strictly speaking, a monograph on Kahn's work. Individual buildings and projects are discussed only to the extent that they serve as illustrations for various theoretical issues raised in the text.

Tyng's real subject is expressed in the book's subtitle, "Louis I. Kahn's Philosophy of Architecture." The author convincingly argues that Kahn's philosophy of architecture was essentially intuitive in origin and evolutionary in nature. Kahn "felt" or "sensed" an idea long before he could describe it precisely. He was fortunate in being associated with schools of architecture for so many years; the supportive yet demanding atmosphere of academe certainly aided Kahn to articulate his ideas. According to Tyng, "Lecturing, teaching, writing, and talking with students and colleagues were his ways of articulating ideas as they formed . . . His need for a verbal understanding of architecture led him to add to his repertoire of expressions words that formed the basis for themes. Form, order, silence, light, the measurable and the unmeasurable (sic), presence and existence, the psyche, commonality—these all began as isolated words around which Kahn built his interrelated ideas." The experience gained with each new building or project tempered and refined an initial idea. The presentation of Kahn's writings in chronological order allows the reader to observe his mind at work. As Tyng remarks in a particularly felicitous passage, "The joy of his discovery is contagious."

In her text, the author sets out to chart the course of that discovery. Kahn's concept of servant-served spaces, for example, began with his contemplation of the arterial systems of living organisms. His observations of an order inherent in living things coincided with his growing realization that traditional approaches to accommodating mechanical and other services in a building were outmoded because of advances in material and constructional systems. During the 1930s and 1940s, he participated in the design of a number of housing projects in Philadelphia. Economic considerations forced him to plan units around a central utility core. As late as 1948–49, with the Weiss house in Norristown, Pa., Kahn's conception of the servant-served relationship was still dictated largely by economic constraints. It was not until the early 1950s, with the design of the Yale Art Gallery, that Kahn was able to articulate his idea in a convincing architectural manner. Anne Tyng, the associate architect for the Yale Art Gallery, proposed the adoption of a concrete space frame composed of tetrahedral units for the long spans required for the gallery space. According to the author, the possibility of threading the mechanical systems through the space frame was discovered "by chance." Kahn called the result a "breathing ceiling" and realized, for the first time, the potential inherent in creating a distinct spatial zone reserved for services. In the Trenton Bath House (1955–56) Kahn integrated his evolving conception of service systems treated as spatial elements with his growing interest in utilizing hollow columns. The Richards Medical Research Building represented the next step in the development of the servant-served concept. Tyng concedes that the Richards Building is marred by functional problems and suffers, in places, from an unresolved hierarchy of spaces. With the design of the Salk Institute (1959) the author feels that Kahn finally demonstrated a sophisticated mastery of the servant-served concept. Just as his association with Anne Tyng led to an important step in the initial development of this idea, so too, according to Tyng, his association with Jonas Salk played a vital role in the crystallization of the servant-served concept of an architecturally differentiated yet functionally integrated hierarchy of spaces.

The author's approach to thematic development in the work of Louis Kahn raises two important issues. The first involves the apparently vital role certain individuals played in Kahn's life at various stages in his career. Tyng credits her mother, Anne Tyng, and Doctor Jonas Salk with stimulating Kahn at key moments in the evolution of certain designs. August Komendant certainly did not hesitate to claim a significant role in Kahn's career in his account of their relationship (August Komendant, *Eighteen Years with Louis Kahn,* N.Y.:1968). Based on Tyng's own account, it appears that Kahn benefited tremendously from a series of enriching personal relationships. But the brevity of Tyng's biographical sketch reminds us of the critical need for a more thorough biographical study of Kahn.

The second issue concerns the validity of using the term "philosophy" to describe Kahn's approach to architecture. Pursued to its logical conclusion, Tyng's thesis regarding the intuitive and evolutionary nature of Kahn's thought implies that a project such as the National Assembly Building in Dacca is not the definitive expression but only the latest expression of Kahn's thinking about a particular theme. For each of the themes Tyng discusses, one can see a growing sophistication in Kahn's ability to articulate his ideas in his writings and in his buildings. Yet it is difficult to extrapolate a clearly defined set of ideas from Kahn's work that could be described as constituting a philosophical system. One misses the essence of a phrase such as "Order Is" if one tries to analyze it according to the rigorous standards required by a system. "Order Is" is the expression of a poetic sensibility. The phrase is charged with implications rather than limited by definitions. It has the inspirational power of a poetic statement but not necessarily the substance of a philosophical system. The distinction between a system and a sensibility, between an ideological and a cultural position, is a subtle one, but in the case of Louis Kahn, it is a distinction that must be made in order to appreciate Kahn's contribution to American architecture after 1950. Unfortunately, to do so would require a longer and more sophisticated discussion of contemporary trends in American architecture than Tyng is able to provide in *Beginnings.*

In a 1968 passage describing his encounter with the Mexican architect Louis Barragán (reprinted in *Beginnings*) Kahn wrote, "Man's way through life and what he makes in his quest for expression reveals his nature, which falls as a golden dust eternal. Those who feel their desires through this dust gain the powers of anticipation which is the inheritance of tradition." Alexandra Tyng has done an admirable job of sifting through the "golden dust eternal" of Louis Kahn's philosophy of architecture. The result is a perceptive, though incomplete, interpretation of one of the most important personal legacies in contemporary architecture.

Dennis P. Doordan ■

The reviewer is assistant professor in the School of Architecture at Tulane University.

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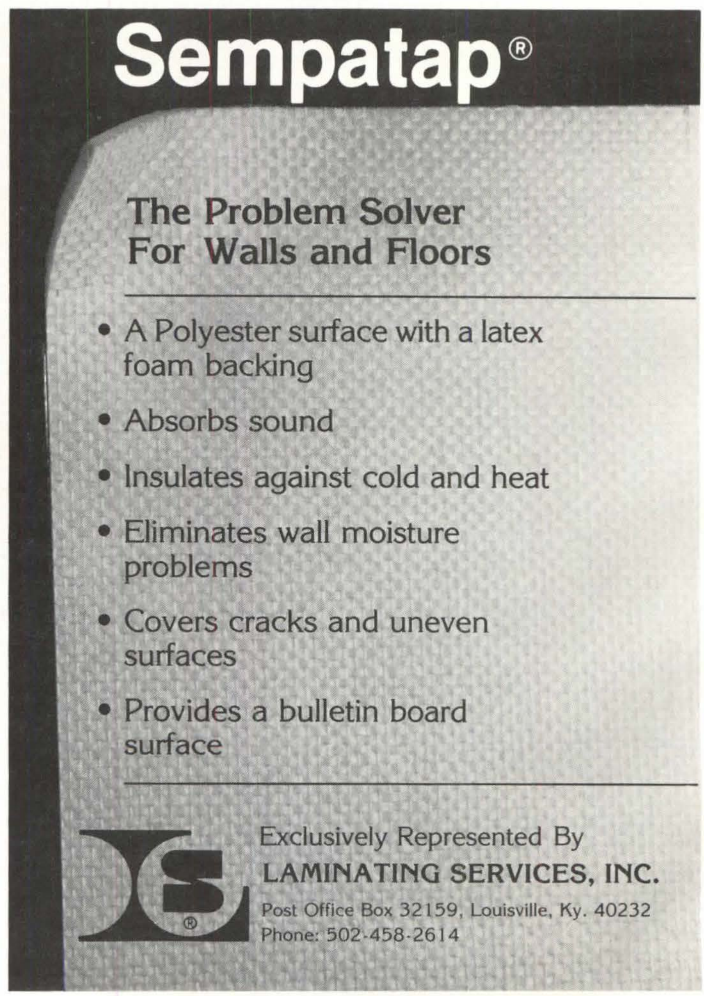

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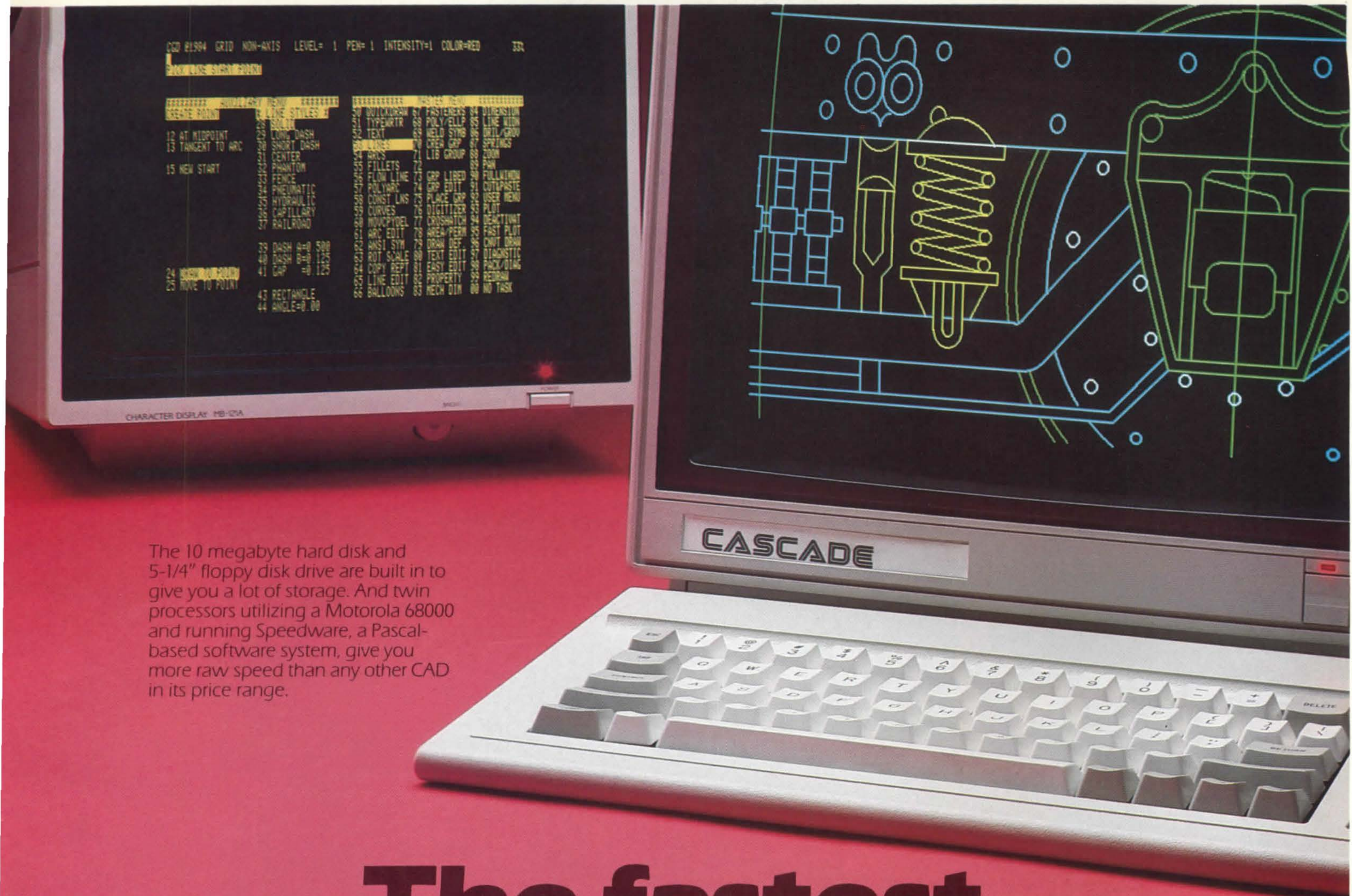

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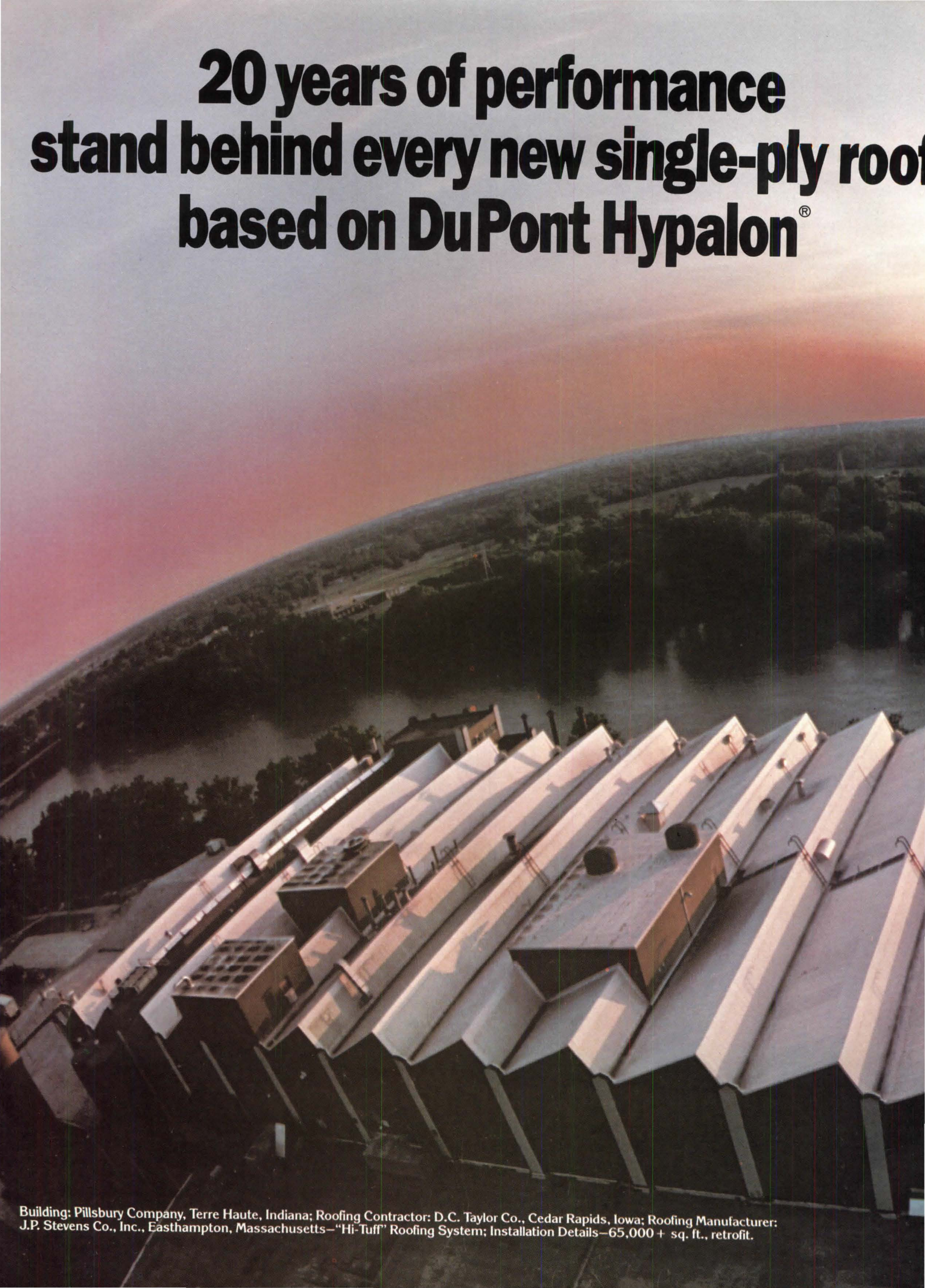

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Feature	Steel Craft	Competitor's Doors			
Beveled edges hinge and lock	√				
Heavy gage top and bottom end channels welded to both panels	14 ga.				
Positive full length mechanical interlock seam	√				
Structural epoxy adhesive in the interlock seam	√				
Sturdy hinge reinforcement	8 ga.				
Sanded, resin-impregnated continuous honeycomb core	√				
Full contact adhesive lamination	√				
Projection-welded hinge and lock reinforcements	√				
Phosphatized surface for paint and adhesives	√				
Baked-on prime paint	325°F				
Hot-dipped G-60 galvanized finish (when specified)	√				
Architecturally designed glass trim	√				
Meets or exceeds all ANSI performance tests	√				
Complete fire door ratings	√				
Unsurpassed uniform crushing strength	5000 psf				
Superior shear strength	3600 psf				
Stable, non-sagging sound-deadening core	√				
Unchanging temperature resistance	√				

The industry's original honeycomb door!

Finest name in steel doors and frames

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by American-Standard
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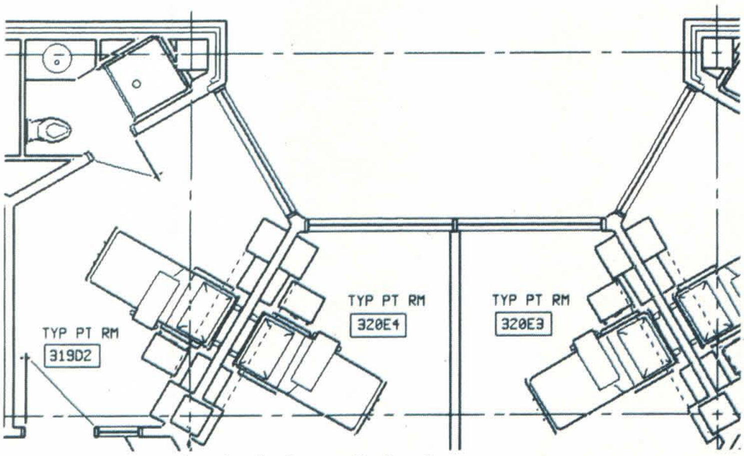
P/A in May



Part of a computer drawing by Stewart Design Group

Architects and computers

The professionals using the computer, rather than its output, will be the focus of this second annual May issue devoted largely to computer-related subjects. For architectural professionals, the computer must now be seen either as a threat or as an opportunity: a threat in that it can eliminate some entry-level jobs and direct some work to more technically oriented professionals; an opportunity in that it can open up new areas of practice, such as facilities management, to interested firms and generate many computer-related activities—marketing of software, various consulting services, employment by computer vendors, etc. For this issue, P/A's editors will report on professionals who are exploring a variety of computer-based opportunities.

P/A International Furniture Competition

The eleven winners of this year's competition will be illustrated and described, with enlightening jury commentary.

A/E Systems '85

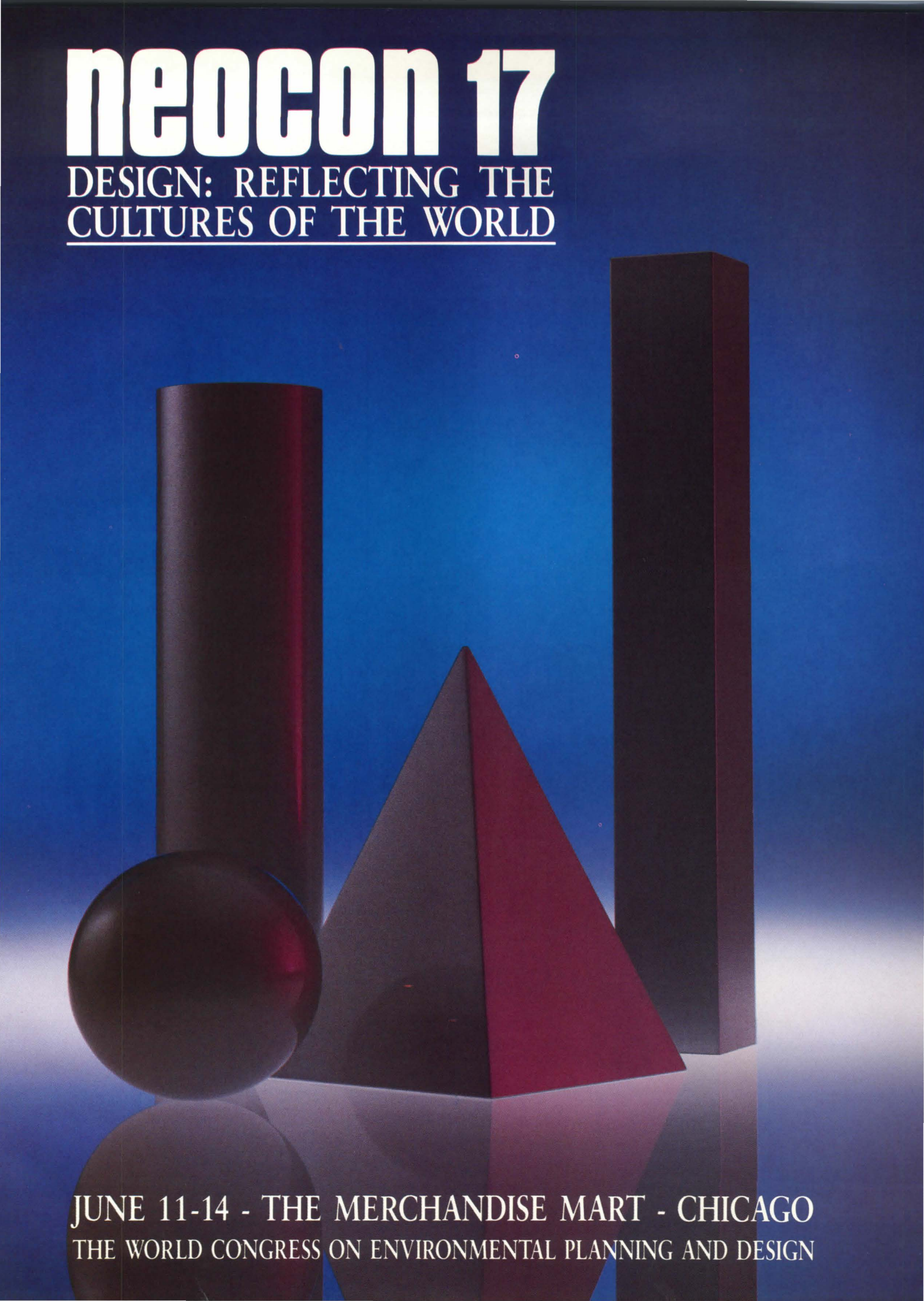
A special section on the annual computer/reprographics exhibition and conference, to be held in Anaheim, June 3–7, will include a program and other guidance for readers.

NEOCON 17

A preview of the annual contract furniture show and conference at Chicago's Merchandise Mart, June 11–14, will include a listing of events and a review of new products to be introduced there.

P/A in June: Buildings, interiors, glass

Noteworthy new buildings, a distinguished interior, and a Technics article on the latest developments in glass will appear in this diversified issue. Included will be a special supplement on telecommunications.


neocon 17
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CULTURES OF THE WORLD
JUNE 11-14 - THE MERCHANDISE MART - CHICAGO
THE WORLD CONGRESS ON ENVIRONMENTAL PLANNING AND DESIGN

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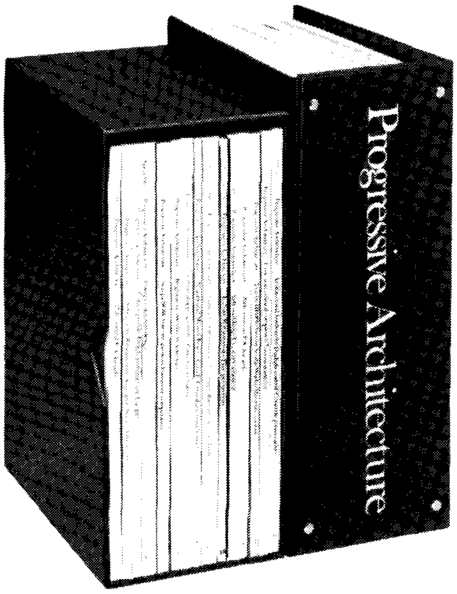

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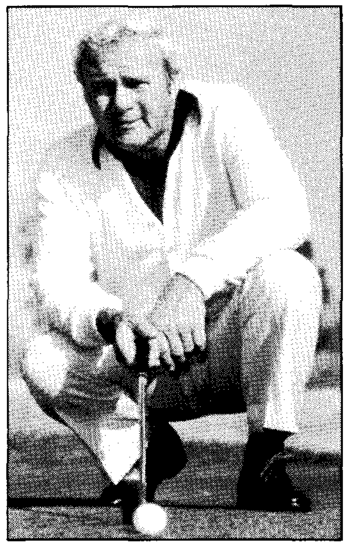

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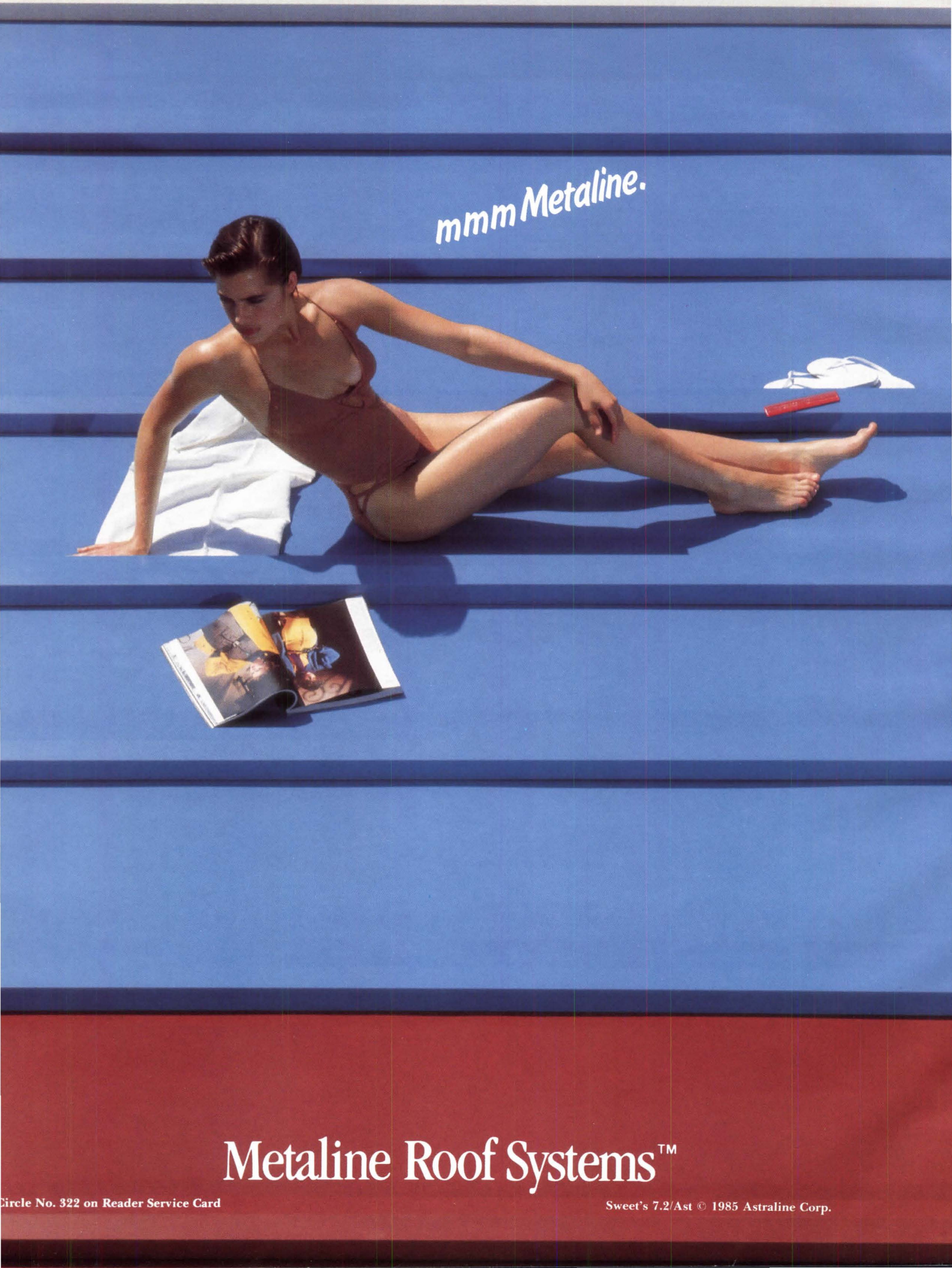
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New products and literature

Krupp space frame

The space frame, in the lightness of its form and the simplicity of its detail, epitomizes what David Billington has called the "structural art"—works of engineering that use the least amount of material at the least cost for the greatest aesthetic expression. Few space frames come as close to Billington's idea as Krupp's Montal system, recently introduced in this country by Krupp International, a division of the German company, Krupp Industrietechnik.

What contributes to the system's "art" is its economy of means; it has just three parts: a forged steel node, a steel tube, and a connecting bolt. The tubes come either round or square in section, and the nodes, either spherical or prismatic in form. A slot and curved guide within each tube eases the insertion of the bolt, conceals it from view, and protects it from the elements. The slot also simplifies the inspection of the bolt and allows the removal of damaged struts without destroying adjacent tubes. (It's important, in the erection of the space frame, that the slot face down or be covered to prevent water from collecting in the tube and potentially corroding the connection.) To guard against corrosion, Krupp hot-dip galvanizes the components and offers each in a range of paint or powder coating colors.

The multiple bolt connections and the simplicity of parts allow the creation of a variety of three-dimensional grids: tetrahedrons, octahedrons, semi-octahedrons, and semi-cubic octahedrons. Those grids, in turn, allow not only flat, but curved, folded, bent, prismatic, and domed shapes as well.

Space frames may not serve every need or appeal to every taste. But systems such as Krupp's Montal space frame are enough to make you want to find a need.

Thomas Fisher ■

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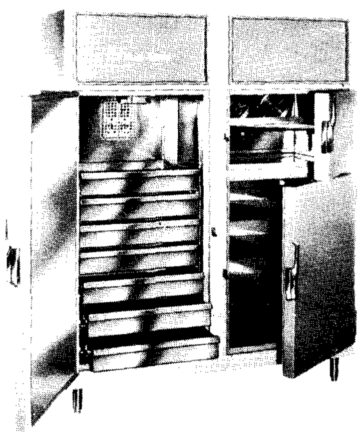
New products and literature



Dual-Temp pharmacy refrigerator/freezer with automatic defrost has a 4.5-cubic-foot top freezer compartment, with separate sealed door, and refrigerated section with optional triple-pane cloudproof doors for easy contents viewing. It has an automatic condensate evaporator, uniform cabinet temperatures, rapid temperature recovery, and interchangeable stainless steel drawers and shelves. Jewett Refrigerator Company, Inc.
Circle 124 on reader service card

Super Ceram unglazed vitreous tile is manufactured by a process that offers easy care and stain resistance. Exposed to several staining agents, the tile cleans without a trace of the material applied. Titan, the first in the new series, is available in six subtle colors in 8" x 8" tiles. The satin surface makes it suitable for a variety of applications in the home, business, and industry. Villeroy & Boch, Inc.
Circle 125 on reader service card

'High Rise Fire Alarm Systems—Recommendations for State and Local Codes' provides alarm requirements of major model codes, an overview of 50 state and 20 major city code applications, and code recommendations for high-rise fire alarm and communication systems. It includes the "Life Safety Code" of the National Fire Protection Association and covers specifications for smoke detectors, audible alarms, two-way communication systems, door unlocking devices, power systems, and manual fire alarms. Single copies of the book are $5, prepaid, from NEMA, 2101 L St., N.W., Washington, D.C. 20037.

Safetee® laminated glass products include Silentis® acoustic glass, burglar-resistant and detention Riotglas®, bullet-resistant glass, and glass-clad polycarbonate. Each product is described in an eight-page brochure that lists applications, colors, code compliance, and guide specifications. Falconer Glass Industries.
Circle 208 on reader service card

Aluminum windows and wall systems shown in a 16-page brochure include thermal-break and non-thermal-break windows, windows with between-glass Magneflex™ blinds by Hunter Douglas, special glazing, and wall systems. Special glazing incorporates Heat Mirror™, which is mounted between two lites and insulates by reflecting radiant heat back to the source. There are single-hung, double-hung, sliding, project-out, project-in, and fixed styles. Alenco Architectural Div., Subs. of Redman Industries, Inc.
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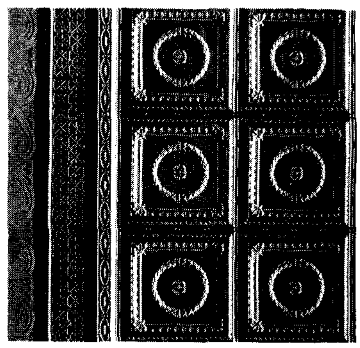

Hi-Art Steel Ceilings® catalog discusses the use of steel ceilings in new construction and restoration. Several panels, which are usually 2' x 4', are illustrated, with information provided about moldings, cornices, fillers, and decorative centers. Also shown in the eight-page catalog are metal shingles in Spanish and Mission tiles, Normandie and Victorian shingles, and pressed metal siding. W.F. Norman Corp.
Circle 210 on reader service card

Plumbing fixtures and fittings catalog for residential and light commercial use covers tubs, showers, lavatories, toilets, bidets, urinals, kitchen and laundry sinks, and fittings. Fixtures are made from enameled cast iron or steel and vitreous china, with some tubs and showers of gel-coated fiberglass. Photos and descriptions, including materials and dimensions, are provided. Eljer Plumbingware.
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