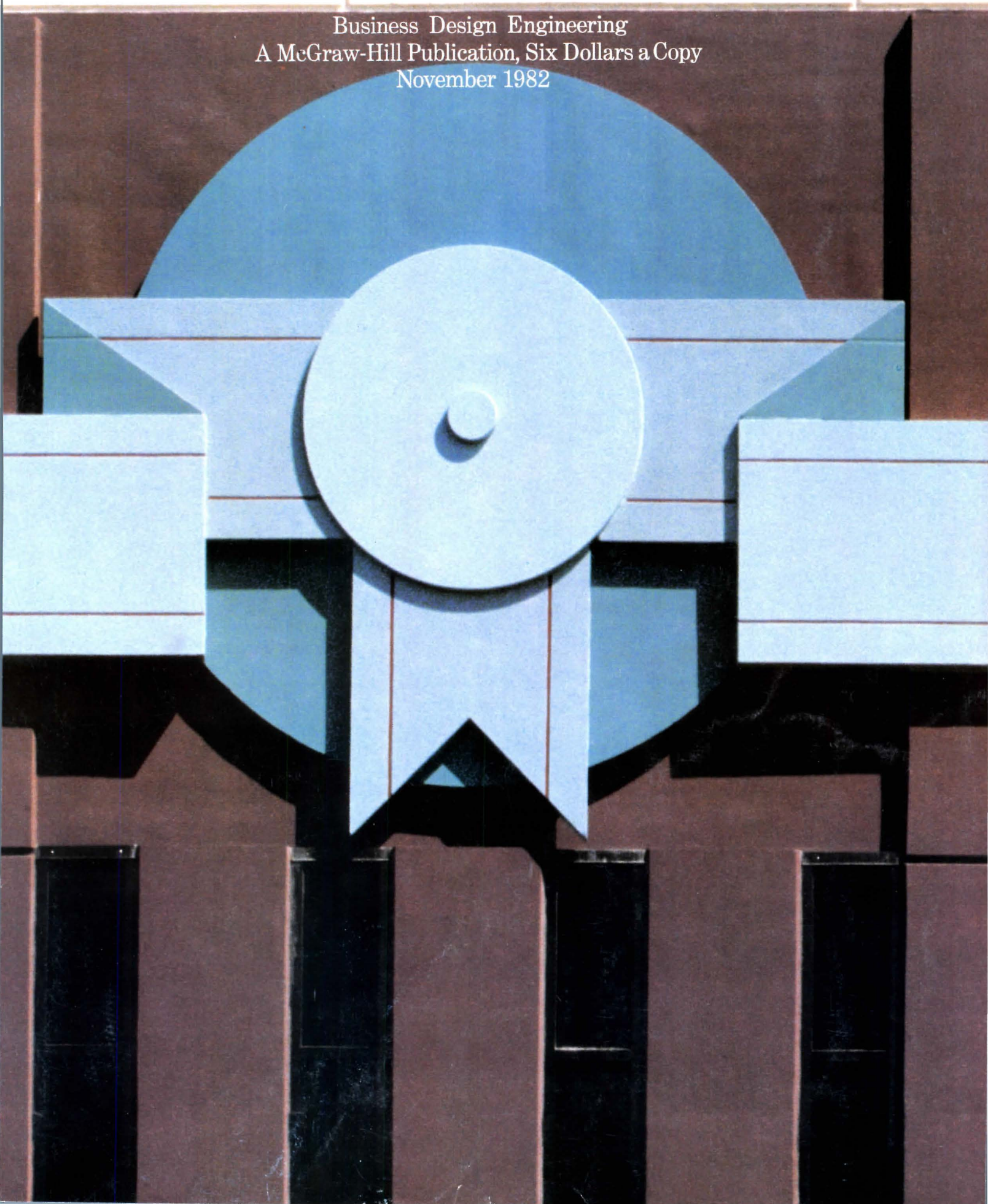
ARCHITECTURAL RECORD

Business Design Engineering
A McGraw-Hill Publication, Six Dollars a Copy
November 1982



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Circle 1 on inquiry card


lesign:: reception

Letters

I'm glad that, with all the hoo-hah about the new graphics, at least one other reader has voiced an appreciation of the new content of ARCHITECTURAL RECORD. Hats off to you for the recent articles about and interviews with Mumford, Rudolph, Stein, and especially Fitch. I hope this series is a new policy.
Kenneth Labs
Undercurrent, Design Research
New Haven, Connecticut

Dr. [James Marston] Fitch's article concerning the current state of architectural criticism was quite good [RECORD, July 1982, pages 114-119]. I believe his basic premise is valid—that architecture should be experienced and studied on site and in context, and that criticism and analysis based primarily on photographs is inherently unsound. In addition his guidelines for critics are very appropriate.

I was somewhat disappointed that Dr. Fitch, who opened his article with the statement "... the literature of architectural theory and criticism has never stood in a more confused and less productive state than it does today," did not follow up with any specific example of those critics, writers and academics who have "missed the point" with photographically based analyses of architecture. Perhaps the real problem of overreliance on building photographs is not so much with critics (most of whom probably do visit the site) but with the great body of practicing architects who rely on periodicals to garner insight on the state of the art. We read the articles and look at the pictures. The information is assimilated, compared and judged, and we go on with our work.

I believe that architects need to physically visit as much "architecture" as possible as part of their professional development. When traveling to other communities, it would be valuable to have a "list" of the buildings and public spaces that other professionals consider worthwhile. (Perhaps this is an appropriate undertaking for the AIA.) Though Dr. Fitch's article makes a valid point, I believe it essential that architects, even more than critics and writers, reduce their dependence on photographs of architecture in lieu of experiencing projects firsthand.
Ronald W. Wendle, AIA
Portland, Oregon

I read the article by Barry LePatner in the July 1982 RECORD [page 29 et seq.] with mixed emotions.

I used to negotiate my contracts by myself and hoped to come away with a reasonable deal. Then I met a super problem solver/negotiator and she put my practice into high gear. She negotiates all of my contracts (after I have established a solid mutual interest) and she also collects my fees. She is tough and shrewd but always courteous and respectful—an act you have to see to appreciate!

You don't do your own books or taxes or legal work, so why try to do something as crucial as contract negotiation with no training and limited experience?

Business has never been better.
John A. Weyl, Architect
Weyl-Pacific, Inc.
Los Angeles

The naiveté of your editorial in the July 1982 issue about architects' remuneration concerns me.

In the real world, a group of architects (or any other businesses) do not simply decide to raise their prices 13 per cent. Not only is this illegal, it is also suicide, because there are other suppliers of design services ready and willing to replace any architect who is foolish enough to do this. Yes—in most instances—an architect's fees *are* fungible.

That is not to say that entry-level architects' salaries cannot be increased, nor architects' low fees raised. Architects are low-paid because they are nothing but bad draftsmen when they get out of school.

A greatly increased demand for these entry-level architects will raise their salaries very quickly (supply and demand, you know). The question is how to create this demand. I do not have the answer.

Regarding raising fees, those architects who contribute more than they cost can charge what they will. For example, a design architect who permits a developer to get $10 per foot over the competition can charge a 9 per cent fee. An architect who saves a client 33 per cent in utility costs can also demand higher compensation. But no one can just announce a 13 per cent increase in fees.
Michael R. Hough, President
MRH Assoc., Inc.
Newington, Connecticut

MRH publishes Professional Services Management Journal, A/E Marketing Journal *and* A/E Systems Report.—*Ed.*
Continued on page 73

Calendar

Through April 10
Exhibition, *Chicago Architects Design: A Century of Architectural Drawings from The Art Institute of Chicago*, 90 drawings, largely contemporary, drawn from the Burnham Library of Architecture; at The Art Institute of Chicago, Michigan Ave. at Adams St.
November 4-7
37th annual convention, California Council, the American Institute of Architects; at the Hyatt Regency Hotel, San Francisco. Contact: CCAIA, 1414 K St., Sacramento, Calif. 95814 (916/448-9082).
November 10
Address by video artist Dara Birnbaum in series sponsored by Southern California Institute of Architecture; designer/planner Lawrence Halprin will speak November 17, architect/writer Kenneth Frampton on December 1; at SCI-ARC Studio/ Auditorium, Santa Monica, Calif.
November 11-13
Stained Glass International/ 1982, with seminars, workshops, lectures and exhibits; at the New York Statler, New York City. Contact: Dame Associates, Inc., 51 Church St., Boston, Mass. 02116 (617/482-0097).
November 13 to January 2
The California Condition, an exhibition of conceptual and presentation drawings and models; at La Jolla Museum of Contemporary Art, La Jolla, Calif.
November 16-17
Seminar, *Light and Color for Human Performance*, sponsored by the University of Alabama at Birmingham. Contact: Beth Moore, Conference Coordinator, The University of Alabama in Birmingham, 917 South St., Birmingham, Ala. 35294 (205/ 934-7410).
December 2-3
Passive Solar Workshop on the design, sizing calculation and construction of passive solar buildings; at Santa Fe, N. Mex. Contact: Passive Solar Associates, P. O. Box 6023, Santa Fe, N. Mex. 87501 (505/982-1506).
December 3-4
Site II: Place, Location, and Meaning, an interdisciplinary conference on art and architecture, co-sponsored by the Minneapolis College of Art and Design and the Center for Art and the Environment, in cooperation with The Cooper Union; at The Cooper Union for the Advancement of Science and Art, New York City. Contact: Extension, Minneapolis College of Art and Design, 133 E. 25th St., Minneapolis, Minn. 55404 (612/870-3065).

MPA BPA ABP

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Contents

Business

Design

Engineering

Cover:
The Portland Building
Portland, Oregon
Michael Graves, Architect
Photographer: ©Cervin Robinson

Consider roofing materials for a moment, along with the roof itself which is still the neglected step-child of contemporary architecture. There is a new concept here, and a material—terne metal—which permits this enormously important visual area to become an integral part of the total design concept. From the standpoint of FORM, terne makes available an almost unlimited range of linear effects, of subtle modulations in the interplay of light and shadow. From the standpoint of COLOR, it allows freedom of expression as broad as the artist's palette. From the standpoint of FUNCTION, it is virtually unmatched among roofing materials, as many century-old installations dramatically attest. Your inquiry is solicited. Call us toll-free 800-624-6906.

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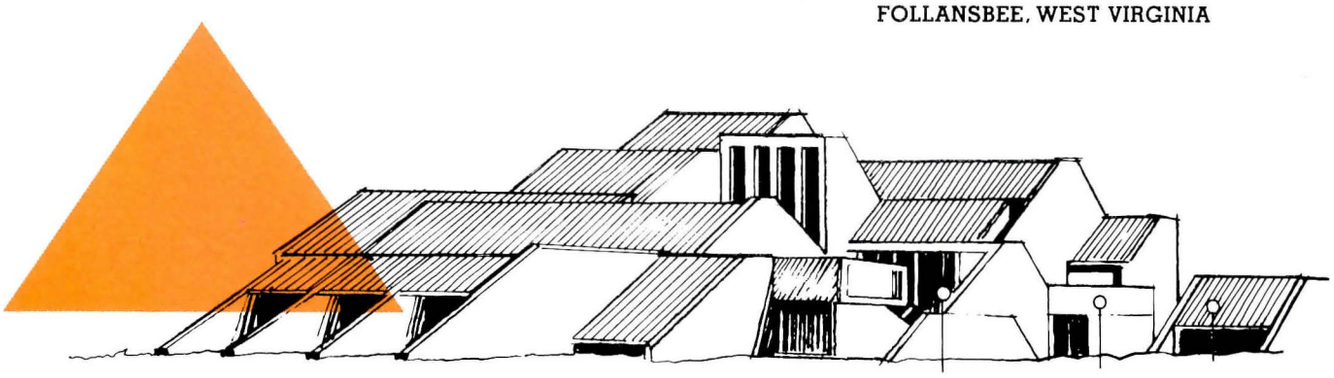

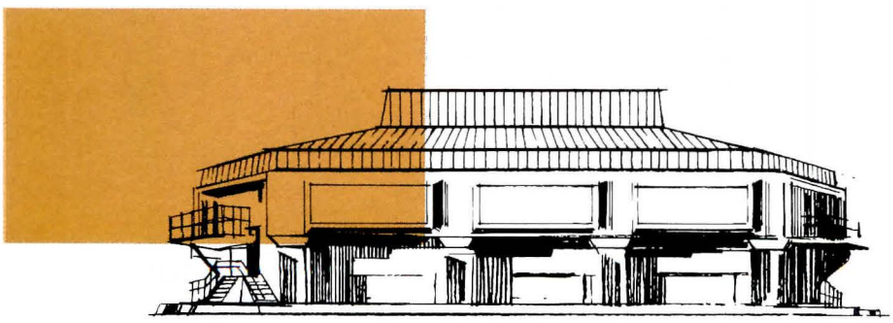

Huntsville-Madison Mental Health Center
Huntsville, Alabama
Architects: Rabun, Whatley & Hatch, Atlanta, Georgia
Roofer: Tip Top Roofing & Sheet Metal, Huntsville, Alabama

Citizens' Bank, NA., Readington, Township, New Jersey
Finne • Lyman • Finne • Reese, Architects-Engineers
Elizabeth, New Jersey
Roofer: J. Strober and Sons, Ringoes, New Jersey

Arena Stage, Washington, D.C.
Architects: Harry Weese and Associates
Chicago, Illinois, Washington, D.C.
Roofer: Mathy Company, Fairfax, Virginia

Circle 6 on inquiry card

One more time: Has there ever been a better time for architects to get involved in housing?

As I've said on this page before, no building type better deserves or more needs the design skill of good architects. Architects are, of course, deeply into the larger, higher-density housing projects. But when it comes to those thousands of smaller apartment projects, and when it comes to those (even in bad times like these) thousands and thousands and thousands of single-family houses, wouldn't it be wonderful if they were designed by good architects?

As we begin to emerge—and it does look like we are beginning to emerge—from the worst bust in housing in 35 years, that involvement of architects (and opportunity for architects) seems to me more important than ever. It's clear, for instance, that smaller units, houses and apartments alike, will be needed—not only to help hold down costs but because there are so many more single adults who wish to live alone, and so many more families without children. Further, the aspirations (and, alas the hopes) of young people have been scaled down both by recession and by changes in lifestyle.

The changes that will be required by this new market are changes that should be developed and polished by architects. These smaller units for new kinds of families (at probably, pretty high prices) will have to offer something special in design—smarter use of very expensive land, thoughtful massing of the units, careful development of both vertical and horizontal space, more built-ins, more use of skylights and better finishes and higher quality products. This is architect territory! We have nothing less than a new program for a new kind of housing, and that is architect territory.

Right now is a very good time for more architects to get involved in housing not just because of those new demands, but because the "old" homebuilding industry is in considerable disarray and because it really does look like the recovery is at hand. George Christie, vice president and chief economist for McGraw-Hill Information Systems Company, begins the residential section of his 1983 Forecast (see page 39, this issue,) with these words: "The 'concensus' housing outlook for 1983 currently clusters tightly around 1.35 million units, implying a 25 to 30 per cent improvement from this year's depressed volume . . . If all goes well, next year's prospective gain is likely to be only the first in a series of annual advances that would have the housing market operating in the 1.5- to 1.6-million-unit range in 1984, and still higher by 1985." "If all goes well," of course, means that mortgage rates have to follow interest rates down, say to 13 per cent, and stay down. But that, for the first time in a long time, begins to seem possible.

So it does seem to me that now is a very good time for all good architects to take the best local homebuilder out to lunch. After all these years of scoffing at each other's work ("Boy, are these houses ugly!") ("Boy, what he doesn't know about the marketplace and about cost!"), see if you don't have something to offer each other in this new market. Or think about doing a little built-for-sale building yourself. The public deserves something better—and a good architect ought to be able to offer something better. *Walter Wagner*

Real product innovation has just seemed to pass the washroom by. . . . until now!

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Circle 7 on inquiry card

SMPS annual awards winners show state of the art in marketing

Over 130 construction-related design firms submitted 270 entries to the Society of Marketing Professional Services in two divisions (printed matter and audio-visual), each with multiple categories and corresponding juries. The winners were announced at the organization's convention in San Diego in September.

Nadene Alexia Barna, director of marketing for the Falick/Klein Partnership, Inc. in Houston, developed the awards program for seven categories of printed material. Ernest Burden, co-chairperson of the program, set the standards for three audio-visual categories.

Barna sees the program as encouraging higher creative standards in marketing materials. "Some firms literally emptied their file cabinets into the 1981 program—the 1982 entries were far superior and represent the best of the industry."

Burden sees this year's audio-visual entries as showing a trend towards more media sophistication, with larger-scale projects, larger budgets and bigger productions. Budgets a year ago ranged from $500-$1,500—this year from $2,000-$20,000. All were produced with the assistance of outside audio-visual producers, and all used a multiple-image format.

Burden says: "Some of the weaknesses noticed were that few showed or identified the characters or people in the firm, and none used client testimonials to reinforce the intended message."

Most of the winning presentations focused on the architectural process, and showed the client the step-by-step features of their services and their benefits.

According to Burden: "Another winning characteristic was aiming the program at its particular audience. For example, a program on health care facilities used medical parallels: 'We diagnose your facility, and offer remedies.' "

The printed matter categories and winners are:

1. Company brochure
According to jury chairperson Marilyn Hennessy of CH2M Hill: "Extensive use of outside graphics consultants is evidenced in the 51 entries by lively designs and engaging text. The vast majority of firms continue to produce standard size brochures, measuring 8½ by 11 inches. They also show an innovative and creative use of new formats, such as album, magazine, hard cover books and brochures that fold out to a poster size.

"Over-all, the majority of brochures emphasize less text and more photographs. They make you want to know more about the firm. Many have appealing layouts and progressive designs.

"The entries show quite a variation of cost, ranging from $20 per copy for a four-color brochure to under $2.50 for a black and white brochure. Many brochures include pockets in the back for insertion of project sheets. Others have the capacity for including specific proposal material within the brochure." The use of color was commended. The first-prize winner in this category is Walter P. Moore & Associates Inc., second is Rehler Vaughn Beaty + Koone, Inc. and third is R. G. Vanderweil Engineers, Inc.

2. Specific market brochure
According to jury chairperson Nellie Arrington of Henry Adams, Inc.: "Some firms are doing an excellent job of targeting special market segments. Nonetheless, our jury decided after judging that many of the 47 brochures we appraised were created without careful planning and creative thinking.

"Picturing a typical client and writing a description to which you can refer periodically will take marketers a long way toward a successful brochure. Few entries reflected an understanding that the typical reader skims a mailer first and goes back to read thoroughly only if intrigued.

"The biggest single criticism was that entries cost too much for the end result. We saw few brochures which immediately impressed us by 'standing out from the crowd' and reinforcing the firm's philosophy of design.

"Writing was not terrible, but wordiness, undefined, highly-technical phrases, misspellings and empty generalities were commonplace. Passive voice was used far too often.

"The best entries were those by someone employed full-time by the firm; someone, we suspect, who has experience guiding and managing a publication effort." The first-prize winner is NAM Engineering, second is CH2M Hill, and third place is a tie between Ellerbe, Inc. and the Vitetta Group.

3. Newsletters
Jury chairperson Margaret Spaulding of Syska & Hennessy reports: "We received over 30 submittals, of which over one third had to be disqualified because entrants failed to follow directions. One can only wonder how indicative this response is of the responses made to client requests for proposals. The three winners are fairly sophisticated.

"The criteria used for judging was:

- Response to stated objectives
- Consistent quality of graphic design, writing and printing
- Creative approach
- Appropriateness for audience
- Newsworthy articles
- Descriptive graphics.

"Marketing documents must fit a marketing plan to justify the time and expense that go into them. Not many entrants talked about that.

"The art and science of effective communications still seem to elude many in the design professions. These people need to spend more time learning to whom they are talking, what an audience is interested in, and how to present information in an exciting, inviting manner. One difficulty may derive from the disinclination of designers to feel comfortable with words.

"Sometimes design firms hire professional writers to help solve this problem. But such writers seldom meet the intended client audience, so the correct voice is still hard to achieve. In other cases the writer's work gets edited to death by a non-writing technical person to avoid any inaccuracy or fuzziness. While such controls are necessary, they *can* make boring reading." First prize goes to the Sverdrup Corporation, second to RTKL Associates, Inc. and third to the A1 Cohen Construction Company.

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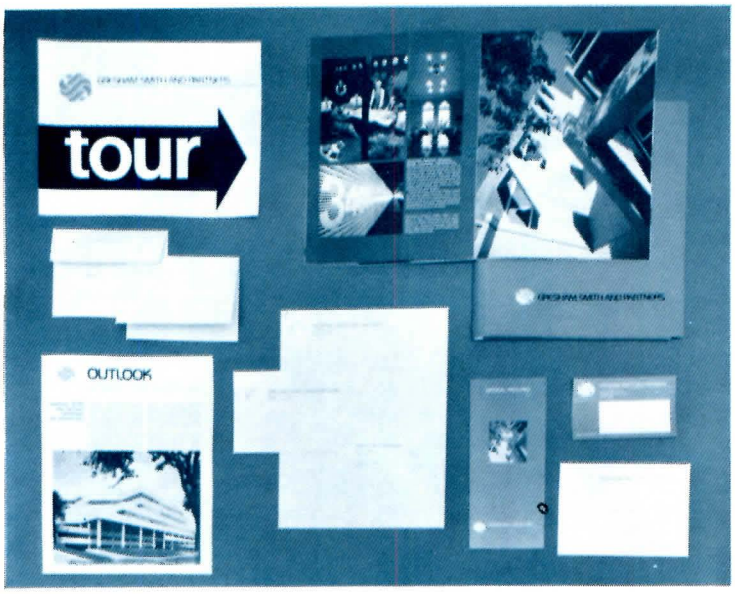


Figure 1 *(see previous page) shows the winning submission by the Sverdrup Corporation for the newsletter category.*
Figure 2 *(top) shows the comprehensive graphics that won first prize for Gresham, Smith and Partners in the corporate identity category.*
Figures 3 and 4 *(above) show advertisements that won first and second prize respectively for the Al Cohen Construction Company and Morris/Aubry in the corporate advertising category.*

4. Special events notices
According to jury chairperson Barry Gaston of Sverdrup Corporation: "Special events such as anniversaries, changing offices or holidays offer such an opportunity. The challenge is to be creative in using that event for a positive awareness of the firm.

"The submissions this year, on the whole, were very average. Several good ideas were presented, but failed to be fully thought through from a marketing or a communications standpoint. In many cases, the execution lacked the dynamics to achieve full potential.

"A firm may have spent considerable time developing graphics, but failed to promote their company, or may have had solid marketing concepts, but failed to communicate them.

"In many cases, firms have done the same special event over and over again, and don't stop to think about the objectives. Items such as Christmas cards are a classic example.

"This is one of the areas where professional service companies could take a hard look, and make some major strides to improve their communications and marketing effectiveness."
The first-prize winner is The Bullock Associates, the second is ADD Inc., and the third is ISD Incorporated.

5. Corporate identity program
Jury chairperson Heather Cundiff of 3D/International says: "A good corporate identity program must distinguish itself from the competition, and capture a potential client's attention.

"The jury reached the conclusion, based on the submittals, that the architectural/engineering professions may not be achieving the high level of creativity and excellence existing in the graphics and public relations fields, and they need to.

"As competition continues to grow in this field, design professionals cannot overlook anything in their contact with clients. Since many potential clients may see stationery or brochures before they ever meet the professional, the impression formed with marketing materials can be critical to winning or losing a job."
The first-prize winner is Gresham, Smith and Partners, second is Rehler Vaughn Beaty & Koone, Inc., and third is Architectural Research Consultants.

6. Direct mail
The direct mail category received 16 entries, representing 14 firms.

According to jury chairperson Mark Cameron of the NBBJ Group: "What became obvious to the jury was the general lack of precision and direction for the mailing programs. Even using the words 'mailing program' implies more cohesion and planning than was seen.

"Larger firms are more subject to criticism in this regard, since over the year they send corporate or annual reports, newsletters and greeting cards to their clients and colleagues. These mailing efforts, although perhaps useful in maintaining name familiarity, appear as a hodgepodge collection.

"Some firms however, have produced direct mail pieces which distinguish them from the 'ho-hum' industry standard."
First prize goes to The Office of Pierce, Goodwin & Alexander, and second to The Sidwell Company.

7. Corporate advertising
Jury chairperson Vilma Barr of Harza Engineering says: "Behind each entry, there is solid logic and thoughtful decision-making. Each of the 14 delivers a message. Not one, happily, is placed just to 'keep our name before the public,' a weak premise in today's specific markets.

"Messages are very visible, talking to the readership. In every case, the message and the supporting graphics could have been adapted to a brochure, direct mail or publicity piece."
The first-prize winner is the Al Cohen Construction Company, and second is a tie by Morris/Aubry Architects and SHWC, Inc.

TV advertising, corporate services presentations and project presentations
According to jury chairperson Barbera Lord of Lord & Welanetz: "The quality of this year's audio-visual submissions indicates that the audio-visual presentation may be finally taking its rightful place as a communication technique for professional design firms.

"Over half the submissions were originally prepared as video presentations, and most of the slide shows had been converted to video tape. This conversion works very well for shows that had been designed for single screen. However, shows that had been created for two or more adjacent screens lost their impact when reduced for the TV monitor. In general the technical quality level was much higher than we would have seen two or three years ago.

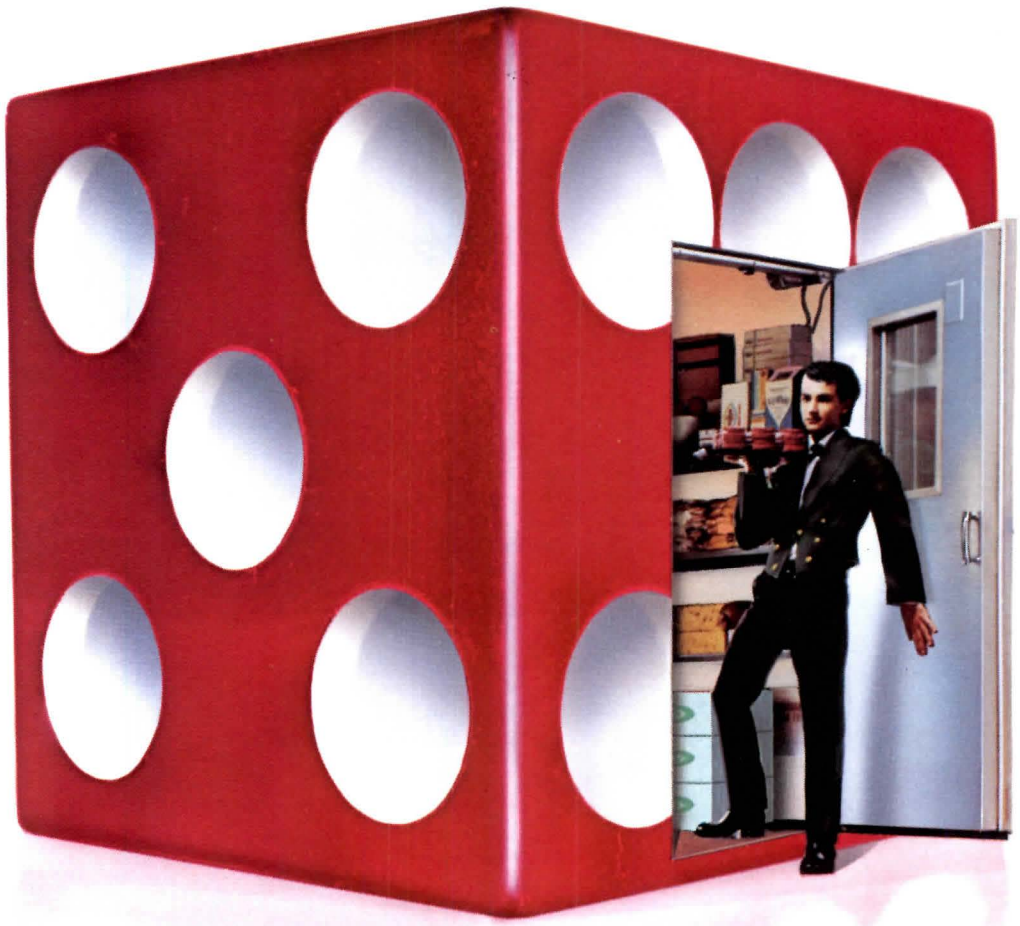
"The most significant fact in this year's competition is that the top three scores went to entries in the project communications categories. The highest score went to The Architects Collaborative for a video presentation submitted by the firm in an office building competition. Another was an excellent video presentation produced by Heery Program Management for the Cleveland Rapid Transit Authority. This presentation is a good demonstration of a new role more design firms are taking on as a communications agent for their client."
The first-place winner in the TV advertising category is the Michael Baker Corporation, and The Vitetta Group is second.

The first-place winner in corporate services presentation is Kirkham Michael & Associates, second is Heery/FABRAP, and third is the Sverdrup Corporation.

The first-place winner for project presentations is The Architects Collaborative, second is the Sverdrup Corporation, and third is Heery Program Management. *Ernest Burden*

This material will be fully covered and illustrated in Mr. Burden's publication The Advisor.

The Bally WINNER.



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Circle 18 on inquiry card

Dodge/Sweet's Construction Outlook: In 1983, more housing...but what else?

It would be hard to imagine a more oppressive environment than the one surrounding the construction and building materials industry through the spring of 1982. The sky-high mortgage rates of monetarism had reduced housing starts to half their potential. Successive rounds of budget-cutting had left programs for public works construction starved for funds. And to complete the dismal picture, deepening recession was pulling nonresidential building down to the depths of 1975.

The Dodge Index clearly shows the results of the steadily worsening market conditions over most of the past year and a half. As the three major submarkets retreated under the awesome combination of tight money, budget cuts and recession, total construction contracting declined by 20 per cent between the beginning of 1981 and the spring of 1982.

Since April, however, the Index has been showing signs of improvement. Over the summer months, contracting staged a partial recovery, regaining roughly a third of what had been lost. Has the construction market turned the corner? Will this recent improvement in contracting continue into 1983?

The aborted recovery of 1980 stands as a warning that upswings can be turned off as easily as they are turned on. In the summer of 1980 a strong recovery took hold soon after the Federal Reserve released its grip on the money market. Yet, recovery lasted only until the end of that year, when the Fed retightened credit. Is there something different about conditions in 1982 that could let this newest recovery develop into the real thing?

It isn't necessary to assume that the principles of monetarism and supply-side economics that have been the cornerstone of economic policy for the past couple of years have suddenly been abandoned. There is ample room within this framework for change to take place. And there is evidence that it is happening.

The Federal Reserve, which had continued to insist that interest rates aren't important, is now watching them as closely as it watches M-1. The Administration, which had been convinced that deficits resulting from tax cuts are soon self-correcting, recently took the lead in lobbying for a tax increase.

Monetarist and supply-side doctrines have been pushed to their limits. There is nowhere to go from recent extremism except back toward the center, which in this case implies movement in the direction of more traditional conservatism.

The Federal Reserve, having successfully reversed double-digit inflation by means of an overdose of recession, is finally ready and willing to provide a monetary climate that will encourage and support sustained recovery and growth of the economy. The Administration, facing the prospect of a $150-billion deficit in fiscal year 1983, is equally obliged to reverse the trend of ever-larger deficits, even if it means higher taxes and a less ambitious military buildup.

As a more pragmatic approach to economic policy displaces the rigidly dogmatic approach of the first year and a half of Reaganomics, change is taking place—without fanfare, to be sure, and within the boundaries of the Administration's broad economic program. The payoff, a better balance of monetary and fiscal policy, is bound to bring relief to the construction market.

If the fragile recovery of the construction market is to survive this time, a few more things must happen—and at least one thing must not *happen. The decline in short-term interest rates must carry over to the long-term credit market. The Administration's runaway budget deficit must be brought under control. Inflation must remain at least stable, now that it has subsided. And the Federal Reserve must* not *revert to monetary restraint at the first sign of economic expansion.*

Assuming that these conditions are fulfilled in 1983, the critical issues of the Dodge/Sweet's Construction Outlook are:

- The mortgage market: *How much will mortgage rates decline, and how much will housing recover?*
- The economy: *How strong will its next expansion be, and what are the prospects for commercial and industrial building in 1983?*
- The New Federalism: *Can local governments provide the necessary infrastructure as federal public works programs are trimmed back?*

Prepared October 1982 by the Economics Department, McGraw-Hill Information Systems Company; George A. Christie, vice president and chief economist.

Residential building

When the construction industry is ready to recover, the place to look for it to happen first is the housing market. The "consensus" housing outlook for 1983 currently clusters tightly around 1.35 million units, implying a 25- to 30-per cent improvement from this year's depressed volume of building. If all goes well, next year's prospective gain is likely to be only the first in a series of annual advances that would have the housing market operating in the 1.5- to 1.6-million-unit range in 1984, and still higher by 1985.

Does this sound familiar? It should—because this is almost the identical housing outlook that was in vogue at this time last year. That the prediction never materialized was only one of the many economic disappointments of the past year.

In the fall of 1982, the odds on realizing the long-awaited housing recovery are a good deal higher than they were a year ago. Both times, the key to housing's recovery was a break in interest rates. A year ago, falling interest rates were only a hope; now they are a reality. The mid-1982 decline of short-term interest rates has already begun to pull mortgage rates down, and the decline will continue into next year.

With that kind of head start, the 1983 housing outlook must address the next level of issues:

How far and how fast will mortgage rates decline?

Will they stay down?

How much improvement in housing is possible in 1983?

What about other barriers to recovery—especially housing cost?

If there is any substance to the concept of a "real" rate of interest, mortgages should be headed for a significant decline. At mid-1982, conventional mortgages—then still at 17 per cent or higher—carried an unrealistically high inflation-risk factor. A mortgage rate that high might have been justifiable when inflation was still in double digits, but it is hardly appropriate to the current inflationary expectation of 6 to 7 per cent. A 17-per cent mortgage in 1982's improved inflationary environment implies a "real" rate of interest in excess of 10 per cent.

If 5 per cent, and not 10 per cent, is an appropriate real rate of interest for mortgages in the early and middle 1980s (a high real rate by past standards), the addition of a 6- to 7-per cent inflation premium would put the equilibrium mortgage rate at about 12 per cent—a long way down from its present level.

Whether or not it is realistic to expect that 12-per cent mortgage money will be available at any time in 1983, this theoretical rate indicates the direction that the mortgage market will be heading as long as inflation is held within its current limits. As the gap between inflation and long-term interest rates gradually narrows, perhaps the best that can be expected is that the conventional mortgage rate will ease from 17 per cent at mid-1982 to between 15 and 16 per cent by year-end, getting down to 13 per cent by the end of 1983. As long as mortgage rates continue to move in this direction, there is every reason to anticipate steady improvement of housing starts—a development that has already begun.

Housing starts in 1983—like 1980?

There isn't much in the way of experience to serve as a guide to the strength of the next housing recovery. In the spring of 1980, the Fed's flip-flop—from severe monetary restraint to aggressive ease—revealed that the housing market was capable of a strong rebound under the right circumstances. Once the Federal Reserve relaxed its hold on the credit market, the conventional mortgage rate fell sharply—from 16.6 per cent in April 1980 to the range of 13 to 14 per cent through summer and fall. Housing output responded dramatically. In the nine months from May 1980 to January 1981, housing starts skyrocketed from a low rate of 938,000 units (not far from the 1982-second-quarter low) to a high of 1,660,000 before withering under the Fed's next round of monetary restraint.

In 1982 and 1983, the response of the housing market to falling interest rates is not likely to be as vigorous as it was in 1980. Neither the homebuilding industry nor the thrift institutions are in a position—after nearly three years of stress—to return to business as usual.

For 1982, another disaster year was inevitable. After half a year's building at below the 1-million-unit level (annual rate), the third quarter's reawakening lifted the market to a mere 1.1 million starts—and that only with the help of some strategically-timed HUD financing. A further advance to 1.15 million units in the final quarter will leave the current year's total close to 1,025,000 units. Thus 1982 displaces 1981

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1983 Regional Estimates
Dodge Construction Potentials

Nonresidential Buildings		1981 Actual	1982 Preliminary*	1983 Forecast	Percent Change 1983/82
Floor Area (millions of square feet)	Office Buildings	317	253	175	−31
	Stores & Other Commercial	404	302	340	+13
	Manufacturing Buildings	185	115	125	+ 9
	Total Commercial & Manufacturing	906	670	640	− 4
	Educational	74	74	75	+ 1
	Hospital & Health	60	63	65	+ 3
	Other Nonresidential Buildings	126	108	110	+ 2
	Total Institutional & Other	260	245	250	+ 2
	Total Nonresidential Buildings	1,166	915	890	− 3
Contract Value (millions of dollars)	Office Buildings	$ 19,268	$ 16,925	$ 12,800	−24
	Stores & Other Commercial	11,733	10,250	12,200	+19
	Manufacturing Buildings	7,530	8,900	6,750	−24
	Total Commercial & Manufacturing	$ 38,531	$ 36,075	$ 31,750	−12
	Educational	$ 5,819	$ 6,125	$ 6,650	+ 9
	Hospital & Health	6,218	6,850	7,575	+11
	Other Nonresidential Buildings	7,681	7,500	8,100	+ 8
	Total Institutional & Other	$ 19,718	$ 20,475	$ 22,325	+ 9
	Total Nonresidential Buildings	$ 58,249	$ 56,550	$ 54,075	− 4

Residential Buildings		1981 Actual	1982 Preliminary*	1983 Forecast	Percent Change 1983/82
Dwelling Units (thousands of units**)	One-Family Houses	674	615	825	+34
	Multifamily Housing	450	410	500	+22
	Total Housekeeping Residential	1,124	1,025	1,325	+29
Floor Area (millions of square feet)	One-Family Houses	1,079	970	1,300	+34
	Multifamily Housing	478	410	520	+27
	Nonhousekeeping Residential	60	60	55	− 8
	Total Residential Buildings	1,617	1,440	1,875	+30
Contract Value (millions of dollars)	One-Family Houses	$ 38,363	$ 36,850	$ 53,100	+44
	Multifamily Housing	17,821	16,800	22,900	+36
	Nonhousekeeping Residential	3,879	4,325	4,100	− 5
	Total Residential Buildings	$ 60,063	$ 57,975	$ 80,100	+38

Nonbuilding Construction					
Contract Value (millions of dollars)	Highways & Bridges	$ 11,126	$ 12,000	$ 12,000	—
	Sewer & Water	7,677	7,250	6,750	− 7
	Other Public Works	5,891	6,350	6,050	− 5
	Total Public Works	$ 24,694	$ 25,600	$ 24,800	− 3
	Utilities	$ 7,183	$ 9,000	$ 8,500	− 6
	Total Nonbuilding Construction	$ 31,877	$ 34,600	$ 33,300	− 4

All Construction					
Contract Value (millions of dollars)	**Total Construction**	$150,189	$149,125	$167,475	+12
	Dodge Index (1977 = 100)	107	107	120	

*Eight months actual; four months estimated **F.W. Dodge basis

for the dubious honor of being the worst housing year in the past 35.

The momentum of the final months of 1982 will set the pace for housing in 1983. A beginning rate of 1.2 million units or better should improve with each succeeding quarter as mortgage rates retreat. By 1983's final quarter, a rate of close to 1.5 million housing starts is within reach (things moved a lot faster than that in 1980), bringing next year's housing start total above 1.3 million units.

Cost and mix

Once the interest rate barrier to housing's recovery becomes less formidable, will the high cost of housing be the next obstacle?

Since 1979 (the last "normal" year for housing), the cost of the average new one-family house, excluding land and other nonconstruction costs, has increased by 25 per cent, from $46,700 to the current $59,000. Including land, the typical new one-family home now comes to something around $80,000—enough to discourage most young families (and more than a few older ones).

As a consideration in the decision to buy the $80,000 price tag is not as important as some other numbers, however. Perhaps the most critical one is the monthly payment (amortization, interest, insurance, etc.) in relation to present and prospective income. Simultaneous inflation in homebuilding and in housing finance have boosted the cost of home ownership from its traditional 25 per cent of family income to more than 40 per cent, according to one recent study. It can be expected that as incomes rise and mortgage rates decline, this ratio will fall in the years ahead.

Contrary to conventional wisdom, the 25 per cent increase in the price of new housing over the past three years has not resulted in more than token shrinkage in the size of newly-built one-family units. The most that can be said is that the steady trend of increased square-footage per unit stopped rising in 1979 when inflation hit double digits and has been holding more or less steady at an average of close to 1,600 square feet in the years since.

Over the same period, multi-family units began growing in size, taking on an additional 50 square feet since 1979. The reason: a rising proportion of condominiums in the total supply of multi-family units. The obvious implication: As cost rose sharply, first-time buyers substituted condos (bigger than rental apartments, but smaller and less expensive than even the cheapest one-family homes) for the traditional "starter house." Thus, one consequence of inflation has been an increase in the size of multi-family units rather than a shrinkage of one-family homes. For all shelter (houses, condos, and apartments) taken together, however, the tradeoff has meant a net loss of about 5 per cent since 1979.

Outlook 1983 residential building

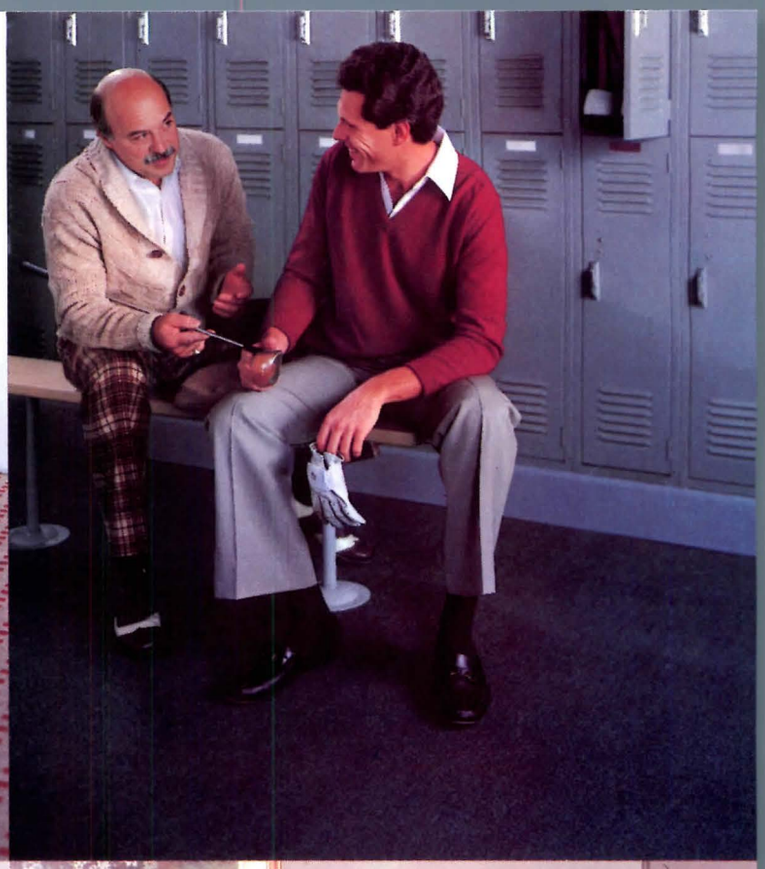
As the housing market begins its next cyclical advance, the factors that will govern the volume and mix of building in 1983 are:

- *Demographics:* In the first half of the 1980s, most growth of the population is concentrated among households headed by 35- to 44-year-olds. Home ownership typically takes a large jump at this age (from 50 per cent among 25- to 34-year-olds to over 70 per cent), provided credit conditions and affordability permit.
- *Mortgage Money:* Retreating interest rates will begin to be more supportive of underlying demographics in 1983, letting the market move back in the direction of home ownership (one-family homes and condos) relative to apartments.
- *Affordability:* For first-time buyers especially, the high cost of housing will sustain the recent popularity of condominiums as a substitute for the no-longer-available "no frills" one-family house.

While it is difficult to quantify these crosscurrents in the housing market, the directions that the mix of homebuilding will be taking are reasonably clear. Condominiums and one-family houses should show the strongest gains in 1983 (in that order), as falling mortgage rates let more of the demographic potential of the 1980s be realized. Apartment construction is estimated to gain also, but only by half as much.

When classified on the basis of occupancy (owner versus renter), the combined total of condos and one-family houses is expected to advance by as much as 40 per cent next year—twice as fast as apartments. However, when the market is grouped according to structure type (one family versus multi-family, including condos with multi-family structures), the potential for gain in 1983 is more balanced: 30 to 35 per cent for one-family homes; 20 to 25 per cent for multi-family units.

At 1983 costs, next year's 1.875



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1983 National Estimates
Dodge Construction Potentials

Northeast
Connecticut, District of Columbia, Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Eastern Pennsylvania, Rhode Island, Virginia, Vermont

		1981 Actual	1982 Preliminary*	1983 Forecast	Percent Change 1983/82
Contract Value (millions of dollars)	**Nonresidential Buildings**				
	Commercial and Manufacturing	$ 7,489	$ 6,350	$ 6,000	− 6
	Institutional and Other	4,406	3,975	4,400	+11
	Total	$11,895	$10,325	$10,400	+ 1
	Residential Buildings				
	One-Family Houses	$ 5,791	$ 5,225	$ 7,675	+47
	Multifamily Housing	3,242	3,025	4,250	+40
	Nonhousekeeping Residential	726	1,050	825	−21
	Total	$ 9,759	$ 9,300	$12,750	+37
	Nonbuilding Construction				
	Highways and Bridges	$ 1,897	$ 2,225	$ 2,125	− 4
	Other Public Works	2,775	2,875	2,600	−10
	Utilities	441	1,200	500	−58
	Total	$ 5,113	$ 6,300	$ 5,225	−17
	Total Construction	$26,767	$25,925	$28,375	+ 9

Midwest
Northern Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, North Dakota, Ohio, Western Pennsylvania, South Dakota, Wisconsin, West Virginia

Contract Value (millions of dollars)	**Nonresidential Buildings**				
	Commercial and Manufacturing	$ 6,658	$ 6,800	$ 5,100	−25
	Institutional and Other	4,281	4,325	4,500	+ 4
	Total	$10,939	$11,125	$ 9,600	−14
	Residential Buildings				
	One-Family Houses	$ 5,956	$ 5,300	$ 7,475	+41
	Multifamily Housing	2,773	2,400	3,175	+32
	Nonhousekeeping Residential	549	550	525	− 5
	Total	$ 9,278	$ 8,250	$11,175	+35
	Nonbuilding Construction				
	Highways and Bridges	$ 2,854	$ 3,025	$ 2,875	− 5
	Other Public Works	2,699	2,750	2,425	−12
	Utilities	1,475	2,500	1,200	−52
	Total	$ 7,028	$ 8,275	$ 6,500	−21
	Total Construction	$27,245	$27,650	$27,275	− 1

*Eight months actual, four months estimated

South
Alabama, Arkansas, Florida, Georgia, Southern Illinois, Kansas, Louisiana, Mississippi, Missouri, North Carolina, Nebraska, Oklahoma, South Carolina, Tennessee, Texas

		1981 Actual	1982 Preliminary*	1983 Forecast	Percent Change 1983/82
Contract Value (millions of dollars)	**Nonresidential Buildings**				
	Commercial and Manufacturing	$14,279	$13,450	$12,250	− 9
	Institutional and Other	6,900	7,475	8,275	+11
	Total	$21,179	$20,925	$20,525	− 2
	Residential Buildings				
	One-Family Houses	$17,043	$17,475	$25,525	+46
	Multifamily Housing	6,996	7,400	9,875	+33
	Nonhousekeeping Residential	1,552	1,650	1,650	—
	Total	$25,591	$26,525	$37,050	+40
	Nonbuilding Construction				
	Highways and Bridges	$ 4,275	$ 4,125	$ 4,350	+ 5
	Other Public Works	4,563	4,725	4,600	− 3
	Utilities	1,285	2,600	5,000	+92
	Total	$10,123	$11,450	$13,950	+22
	Total Construction	$56,893	$58,900	$71,525	+21

West
Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

Contract Value (millions of dollars)	**Nonresidential Buildings**				
	Commercial and Manufacturing	$10,105	$ 9,475	$ 8,400	−11
	Institutional and Other	4,131	4,700	5,150	+10
	Total	$14,236	$14,175	$13,550	− 4
	Residential Buildings				
	One-Family Houses	$ 9,573	$ 8,850	$12,425	+40
	Multifamily Housing	4,810	3,975	5,600	+41
	Nonhousekeeping Residential	1,052	1,075	1,100	+ 2
	Total	$15,435	$13,900	$19,125	+38
	Nonbuilding Construction				
	Highways and Bridges	$ 2,100	$ 2,625	$ 2,650	+ 1
	Other Public Works	3,531	3,250	3,175	− 2
	Utilities	3,982	2,700	1,800	−33
	Total	$ 9,613	$ 8,575	$ 7,625	−11
	Total Construction	$39,284	$36,650	$40,300	+10

*Eight months actual, four months estimated

billion square feet of residential building means a prospective gain of nearly 40 per cent in construction contract value to 80.1 billion. (A note on where inflation has taken the housing market over five years: 1983's estimated 1.325 million dwelling units will cost more in total than the 2.0 million units built in 1978!)

Nonresidential building

There are a few hard and fast guidelines to forecasting the nonresidential building market when it is near the bottom of its cycle, and none of them offers much help for this market in 1983. One is that if nonresidential building is to improve, it needs the environment of a strong economy, but the current economic recovery is both overdue and underpowered. Another guideline is that the nonresidential building cycle normally lags general economic activity at the lower turning point. Remember that after the mid-1970s' recession, it took a year for nonresidential contracting to respond to improving economic conditions. And there is no reason to expect a quicker reaction this time. A third rule is that no two cycles are exactly alike. Over the next few years, two special situations—the adjustment to an overbuilt office market and the scarcity of public funds for institutional building—will take the next recovery of nonresidential building along an unfamiliar path.

Economic support for nonresidential building in 1983

Third-quarter statistics failed to deliver evidence that the "strong" recovery scheduled to take hold in 1982's second half in response to the midyear tax cut had arrived. Furthermore, it is now conceded—even by Administration economists—that when the overdue recovery finally begins, it will be weaker than anticipated. Typically, growth in the initial phase of cyclical expansion averages 5 to 6 per cent (real GNP, annual rate); this one will weigh in at more like 3 per cent. The problem: A narrow base of support.

If the size of the 1982 and 1983 federal deficits are any gauge, fiscal thrust is abundant. But obviously, it is not enough. Tax reduction, which must be converted into private-sector spending (or investment) to become effective, does not have the same initial stimulative impact as direct public spending. And military spending—the one area where federal outlays are being greatly expanded—is notoriously ineffective as a creator of civilian jobs.

Outside the realm of fiscal policy, there is little to add strength to an incipient recovery. Interest rates are winding down, but only from very high to quite high. Even as rates decline, this recovery will be left at a monetary disadvantage compared with past cycles when lower rates were enjoyed. Consumers have so far shown little inclination to spend their tax bonus. Homebuilding, usually a countercyclical industry which helps lead the economy out of recession, remains deeply depressed. State and local governments are being squeezed by restraint on federal grants-in-aid from one side and a recession-weakened tax base from the other. Business capital spending, which is characteristically at its lowest when the economy emerges from recession, will be retarded by unusually high excess capacity this time around.

It adds up to this: A recovery that is expected to be self-generated within the private sector by tax reduction may eventually develop into a less inflationary prosperity, but it will take longer getting there than a recovery that enjoys a combination of private- and public-sector support.

The nonresidential building lag

Like other forms of business capital spending, commercial and industrial building lags general economic activity, and that lag is most conspicuous during the transition from recession to recovery. The delay can last as much as a year, giving the nonresidential building cycle its long, flat bottom.

One reason for the lag is that there is little incentive (other than relocation and modernization) to add new productive facilities when industry is already burdened with an excess as it comes out of recession. Less than 70 per cent of capacity is being used at present, and experience shows that only minimal industrial building takes place below 80 per cent utilization.

Another reason for the nonresidential building lag is the heterogeneous makeup of this market. Composed of half a dozen or more individual building types (stores, warehouses, offices, factories, etc.)—each with its own unique cycle—the turning point of the total nonresidential building cycle is a blurred

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composite of several individual turning points. This means that, as nonresidential building begins to recover, its turnaround will take place sequentially, and not all at once.

Stores and warehouses

The nonresidential recovery sequence always begins with retail building. And because retail building is a derivative of housing (not retail trade), the prerequisite to the recovery of retail building is a sustained rise of homebuilding.

Contracting for stores and shopping centers has been in almost steady decline since early in 1979, when the rate of retail building reached a peak of 300 million square feet (annual rate). The subsequent slide to only 155 million square feet in 1982's third quarter closely paralleled the downward path of homebuilding, allowing for a brief lag.

In yet another way, the retail building market has been assuming the characteristics of residential building. During the recent period of extremely low volume of new construction, additions and alterations to existing retail facilities have increased to 25 per cent of total work. Closing in or "malling" older shopping centers is one important aspect of this recent trend.

A sustained expansion of housing starts, beginning in 1982's third quarter, and continuing through 1983 and into 1984, should provide what it takes to trigger the recovery of retail building. Allowing for the usual lag, the second half of 1982 should be the low point of the current retail building cycle, with improvement taking hold in 1983's opening quarter. A gain from a starting rate of 125 million square feet in 1983:I to 160 million by 1983:IV would put the year's total at 145 million square feet, up 20 per cent from the 1982 recession low, and establish the start of the next cyclical upswing.

Construction of warehousing space has been growing relative to square footage of stores over the past decade, suggesting more intensive usage of selling space. Since the mid-1970s, the cumulative total of warehouse construction has matched square footage for store space on a one-for-one basis, compared with a ratio of 0.75:1 during the first half of the decade, when merchandise was kept closer to the point of sale.

The relationship between contracting for warehouses and stores varies over the building cycle, however. Because stores are normally built first, and warehouses added as the need arises, store construction logically leads warehouse construction around the cycle. In 1982, when the retail building market was stable, though depressed, warehouse and store square footage were holding to their normal one-to-one ratio (stores 120 million square feet; warehouses 120 million). As the direction of the cycle reverses next year, stores will lead warehouses in recovery, pulling the ratio down to a low of about 0.95:1. With store construction estimated at 145 million square feet in 1983, next year's forecast of warehouse contracting is 140 million square feet.

Industrial building

Just as retail building usually leads the several categories of nonresidential building into recovery, industrial building is normally the last to respond. With industrial capacity utilization now below 70 per cent, the huge volume of excess capacity that must be absorbed during the next several quarters will delay the recovery of manufacturing building in 1982/83 as it did following the mid-1970s' recession. At that time, industrial construction stagnated for eight successive quarters (1975:II to 1977:I), until capacity utilization climbed its way back across the 80-per cent threshold—the usual trigger point for a new round of expansion.

When recovery of industrial construction finally takes hold, it will begin from an even lower starting place than in 1977. The recurring recession of the 1980s steadily reduced the volume of industrial building to only half its 1979 peak volume of 243 million square feet to an estimated 1982 total of 115 million—35 million square feet below the 1975/76 recession level.

There is no mystery, either by region or by industry, as to where the greatest weakness in manufacturing building lies. Not surprisingly, the Midwest has borne the brunt of the cutback. In that region, the three-year slide amounted to 60 per cent—half again as much as the 40-per cent declines in the Northeast, South, and West. The Midwest's two key industries—autos and steel—are currently doing less than one-third the building in 1982 that they did in 1979. For steel, it has been a steady decline over the period. The auto industry, by contrast, *increased* plant construction in 1980 and 1981, but apparently threw in the towel in 1982.

Building materials manufacturers (as represented by the lumber and the stone-clay-glass industries) were also among those forced by weak markets to retrench in the early 1980s. Successive cutbacks reduced building products manufacturers' 1982 plant construction to only one-third the square footage of 1979's strong volume.

With the prospect of a less-than-robust recovery for the economy in 1983, it is unlikely that next year's limited industrial growth will absorb the 10 or more percentage points of unused capacity needed to reach 80-per cent utilization. Experience under similar circumstances in the middle 1970s cautions that if the decline of industrial construction contracting has finally leveled off at 115 million square feet (as it appears), that is where it will stay for quite a while. The possibility of modest improvement toward the end of 1983 makes room for a small increase for the year to 125 million square feet.

Note: Although 1983 square footage of manufacturing building is estimated to be slightly higher than in 1982, next year's contract value will be *lower*. The reason: the inclusion in 1982's total of the Great Plains coal gasification plant in Beulah, North Dakota. This $2.1-billion project involved only a nominal amount of square footage of enclosed structures. Plans for additional synfuel facilities next year are still too unsettled at this point to include their value in the 1983 estimates.

Offices

While it is reasonable to expect that both retail building and industrial construction will sooner (stores) or later (factories) respond to improving economic conditions in their accustomed way, the same cannot be said about offices. The recent boom in office building, which provided welcome support to an otherwise weakening nonresidential market for the past two years, is due for a major correction.

Somewhere along the second half of 1981 (a year in which an unheard-of total of 317 million square feet of space was started), the office boom began to outrun its demographic base, turning into a speculative bubble. A "soft landing" was still possible at the middle of 1981, when the supply of forthcoming space was in rough balance with the requirements of a rapidly growing white-collar work force. But the boom wouldn't quit. In 1981's second half, even more new office space was started than in that year's first half, and still more has been started so far in 1982.

Meanwhile, circumstances have changed on the demand side of the office equation. The main thrust behind the office boom—an explosive surge of white-collar labor-force growth—actually reached its peak before 1980 and has since been diminishing. This gradually waning demographic support has more recently been compounded by deep recession and rising unemployment—just as the bulk of the office space that was started in the last 18 months is coming on the market. The collision of supply and demand in 1982's closing months means sharply rising vacancy rates ahead. The inevitable adjustment to oversupply will be a heavy drag on the recovery of the nonresidential building market in 1983 (and in 1984 as well).

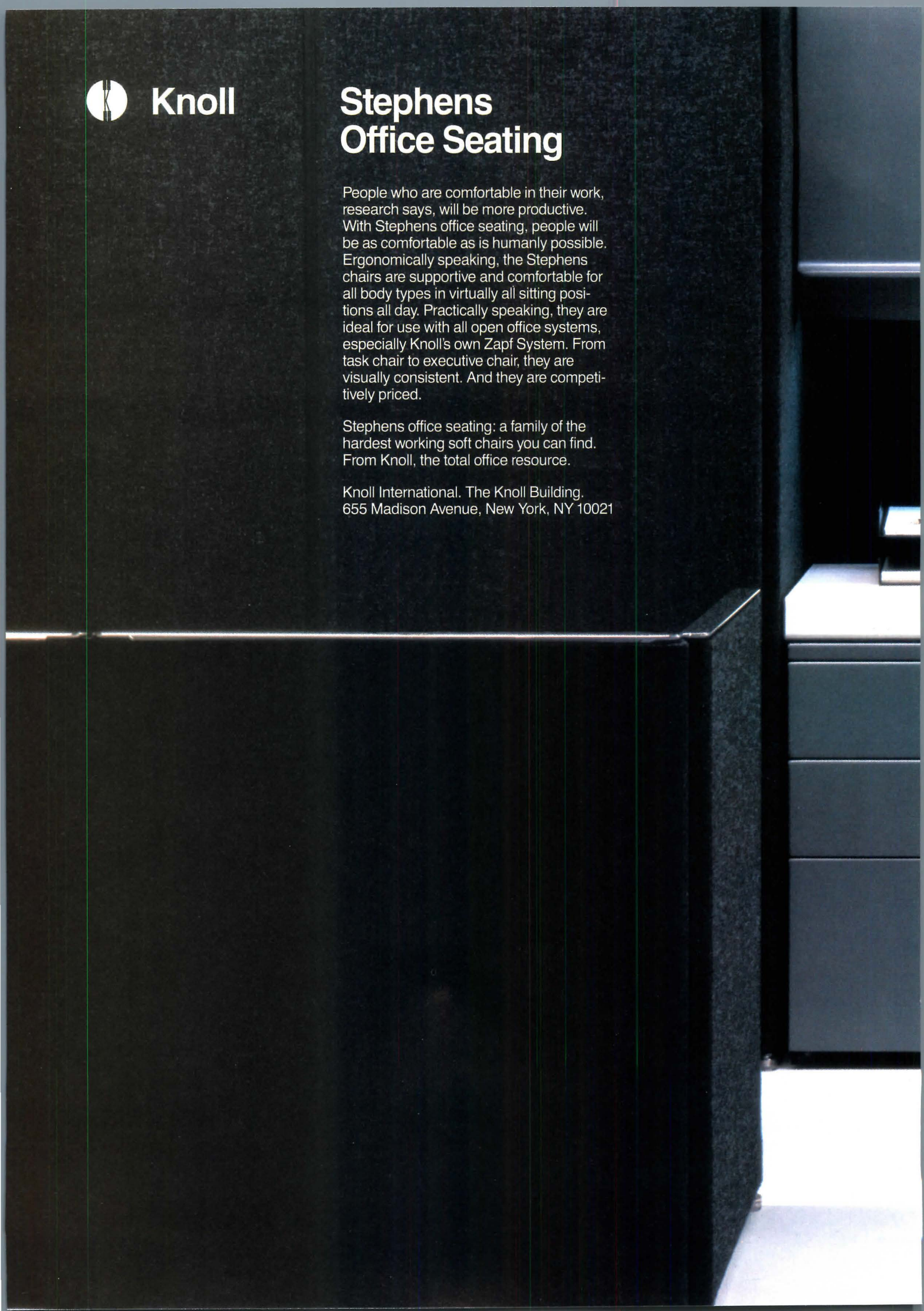
To some degree, the correction is already in progress. The seasonally adjusted annual rate of contracting reached its peak of 338 million square feet in the third quarter of 1981, and by a year later (1981:III), the rate of contracting had eased to 253 million square feet. But by contrast, the current sustainable demand (based on projected growth of the white-collar labor force) is estimated at not more than 225 million square feet. Considering the substantial excess supply that still needs to be worked off, the present imbalance in the market implies a cutback of new construction to something well below 200 million square feet for the next year or two.

Because the office-building boom of 1979-1981 overstayed its welcome, the coming correction is more likely to be severe than gentle. A sharp decline in 1983, from 1982's estimated 253 million square feet to the upper end of the range of 150 to 175 million will only partially reduce the excess supply. Still another year (1984) of building at this reduced volume will be required before the volatile office market can again support an annual rate of 200 million or more square feet.

Institutional building

The institutional building market—schools, hospitals, public-administration buildings, etc.—recently entered the second

Continued on page 69



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Arts commission compromises on compromise design for Vietnam Memorial

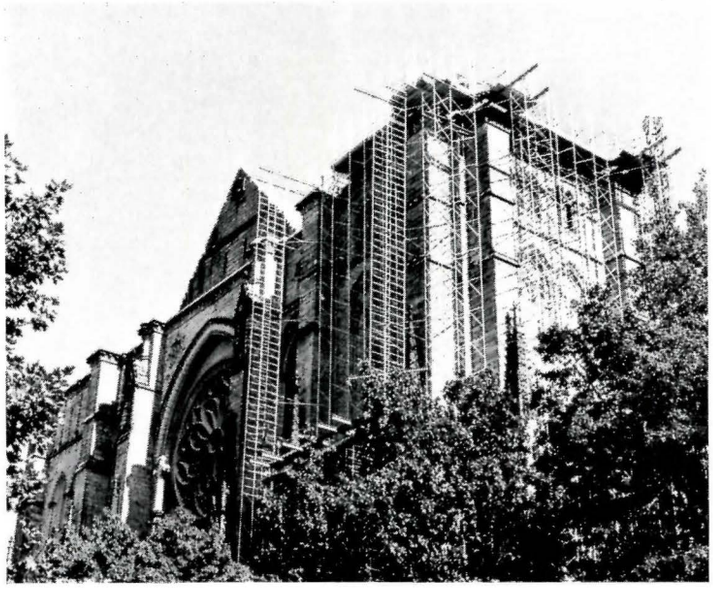
In a decision best described as Solomonic, the Fine Arts Commission, after a long and tense hearing on October 13, approved the addition of a statue and a flagpole to the Vietnam Veterans Memorial but rejected the siting proposed for the added elements. The so-called "compromise" scheme endorsed by the Vietnam Veterans Memorial Fund and Interior Secretary James Watt had placed the statue—an eight-foot-high bronze sculpture of three armed infantrymen—in an open area within the triangle formed by the engraved black granite walls of Maya Yang Lin's competition-winning design. The flagpole was to be installed 40 feet behind the apex of the memorial walls. Noting that the sculpture should not be allowed "to shiver naked out there in the field," commission chairman J. Carter Brown instead proposed that the additions—flagpole, statue, and a locator directory of the engraved names of the war dead—be clustered together at the west end of the site where, Brown suggested, they would help "enhance the entrance experience of the memorial."

AIA President Robert Lawrence, who had on behalf of the association vigorously opposed modifications to the memorial both as a threat to the integrity of the competition process and on esthetic grounds, testified at the hearing that "We should not allow a patched-up, modified and compromised memorial to be built." However, Lawrence subsequently pledged full support for the commission's recommendation that the additions be relocated. "By recommending a complete separation of the conflicting design elements," Lawrence said, "the commission has preserved the integrity of Maya Lin's award-winning design and served the best interests of the public."

In the aftermath of the Fine Arts Commission's decision, the compromise plan was removed from the agenda of an October 21 meeting of the National Capital Planning Commission at which it was to have been considered. The postponement was made at the behest of Secretary Watts, who noted that the arts commission should first review a new plan for the additions. The arts commission offered to consider a revised proposal at its regular meeting on November 10 or at a special session. At press time the rehearing date had not been set, and the scheduled dedication of the memorial on November 11 remained problematic.

Born again: Construction resumes at the Cathedral Church of St. John the Divine

Arlen Li photos



With a determination to overcome all obstacles, Reverend James Parks Morton, Bishop Paul Moore Jr., and the trustees of New York's Cathedral Church of Saint John the Divine announced in 1977 that they would resume construction of the world's largest cathedral after a hiatus of 41 years. On September 29th of this year the third cornerstone—one for the southwest tower of Saint Paul—was at last set in place.

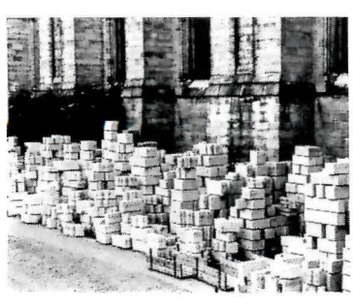
The two obvious benefits of the project will be the completion of a great work of religious architecture and the training of area residents in the ancient crafts of stone-masonry and stone-setting. As Reverend Morton, dean of the Cathedral, stated, "Cathedral-building has always taken centuries, and it has always provided steady work for community residents."

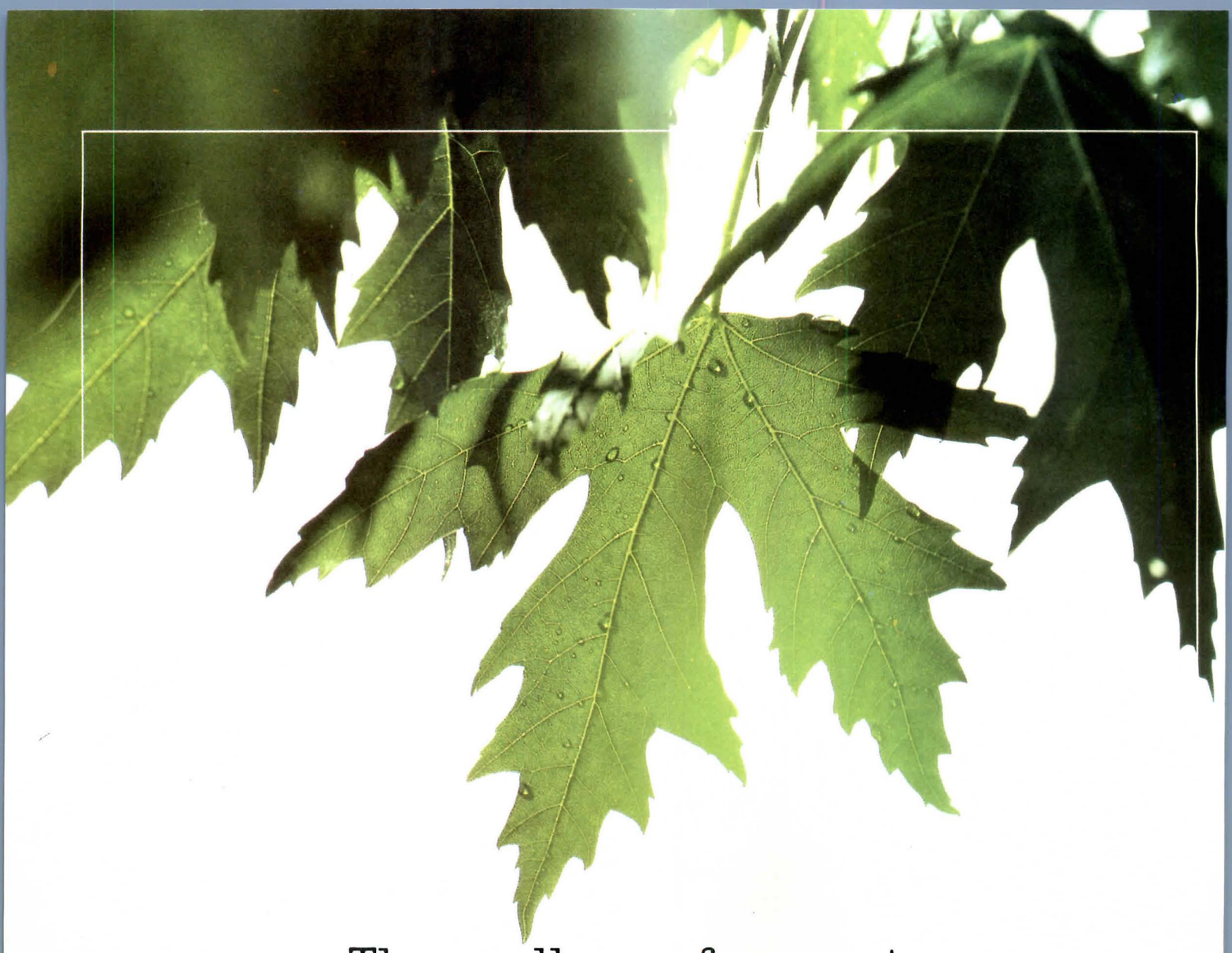
Under the direction of James Bambridge, the master builder who came from England in 1979 to organize and run the project, a crew of apprentices from nearby communities—Harlem, the South Bronx, and Newark, New Jersey—has learned to cut stones and will set the first course this fall. During the winter they will cut and chisel more of the Indiana limestone. Building will resume in the spring.

The original cornerstone of the cathedral, which is sited on the highest point of Manhattan, was laid at the east end in 1892. After a change in architects from Grant LaFarge to Ralph Adams Cram, and a change in styles from Romanesque to Gothic, the second cornerstone—for the nave—was laid in 1925. From then construction continued until the outbreak of World War II when building yielded to more immediate needs. In the time that elapsed, another obstacle to completion came in the form of decreasing numbers of skilled stone workers.

By this spring, three of the original five apprentices will have completed the four years of training needed to obtain their certificates as qualified stone masons. Construction on the cathedral is expected to continue over the next 60 to 70 years, during which time another three or four generations of stone workers will be trained. And, as Mr. Bambridge pointed out, it is not in the cathedral alone that these generations will find work. The recent revival of stone as an energy-efficient and readily available building material can only bode well for the people he trains.

In his 1973 installation sermon Dean Morton said, "Any cathedral that is alive will never be finished. The needs of the city require its continued development and continual growth, and once a church says it is finished it has become a museum and no longer a church." The Cathedral of Saint John the Divine hasn't a prayer of becoming a museum. *L.L.*





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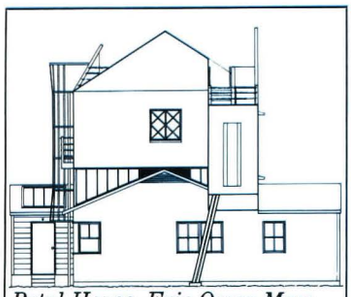
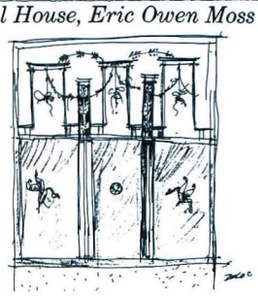
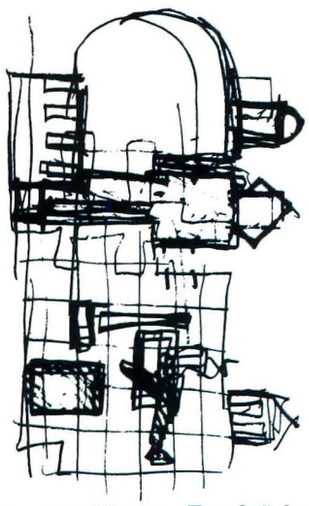


Petal House, Eric Owen Moss



Pompeii Fresco Study, Thomas Gordon Smith



Aerospace Museum, Frank Gehry

The title of the architectural exhibition opening November 13 at the La Jolla Museum of Contemporary Art and continuing through January 2 perhaps says it all. Co-curated by Chicago architect Stanley Tigerman and Susan Grant Lewin, former senior editor of *House Beautiful* and now creative director of Formica Corporation, in cooperation with museum curator Lynda Forsha, the show assembles drawings, models, and photographs documenting recent projects by 13 architects or architectural teams selected by Tigerman and Lewin. Tigerman says the selection was based not on the desire to reward but on representativeness. But the roster of architects suggests that they are representative primarily of the individualistic, inventive, often iconoclastic strain of California architecture, whose very radicalism can be seen as producing a certain coherence. This tenuous commonality is traced in the exhibit, which attempts to explore the connections between the new styles and their antecedents in California's diverse past as well as in the work of architects not associated with the West Coast scene. The architects whose work is examined are Tom Grondona, Rob Wellington Quigley III, and Ted Smith from San Diego; Franklin Israel, Eric Owen Moss, Frank Gehry, Moore Ruble and Yudell, Morphosis (Thom Mayne and Michael Rotondi), Michael Franklin Ross, and Anthony J. Lumsden from Los Angeles; and William Turnbull Jr., Daniel Solomon/Barbara Stauffacher-Solomon, and Thomas Gordon Smith from San Francisco.

1983 Rotch competition announced

The Rotch Traveling Scholarship for 1983 offers a stipend of $13,000 for eight months of foreign travel to U.S. citizens who, on March 10, 1983, are less than 35 years old. The competition is limited to applicants with a degree from a Massachusetts school of architecture and at least one year of professional experience, or with a year's experience in a Massachusetts architectural office and a degree from any accredited school of architecture. Requests for application forms must be received before January 7 by Norman C. Fletcher, Secretary, Rotch Traveling Scholarship, 46 Brattle Street, Cambridge, Mass. 02138.

Competition in The People's Republic

Fittingly, the first national design competition to be held in China since 1965 called for the design of an International Conference Center on a lake-front site in Beijing. Conducted by the Ministry of Foreign Affairs, the competition was open to professionals and students from five leading design institutes and two universities, teams from which submitted a total of 14 proposals. The premiated scheme by a student-faculty team from the department of architecture at Tsing-Hua University in Beijing successfully incorporates into the substantial 150,000-square-foot center, which includes conference and banquet facilities for 800 persons, a modest hostel built on the site in 1959. Similarly, the contemporary structure of concrete and glass recalls in its

details traditional motifs—stepped and sloped brick-faced concrete ribs were inspired by village houses of Anhui Province, and the gate supporting a glass entry canopy was derived from a Han Dynasty watch tower.

San Diego "discovers" a second waterfront

With the new Centerside project, ocean-oriented San Diego is turning instead to the San Diego River. Although the river has for several decades been abandoned to junked cars and periodic flooding, architects Deems/Lewis made the riverbank site an asset by integrating the river into the complex. Accordingly the reflective-glass-clad towers feature staggered vertical planes to increase access to views of the valley, and the landscaping by Kawasaki, Theilacker & Associates extends the river through a series of streams, falls, and ponds to a bubbling "spring" between the two buildings. The riverbank itself was reshaped and artificial islands formed in the riverbed to control flooding.

More design news on page 59

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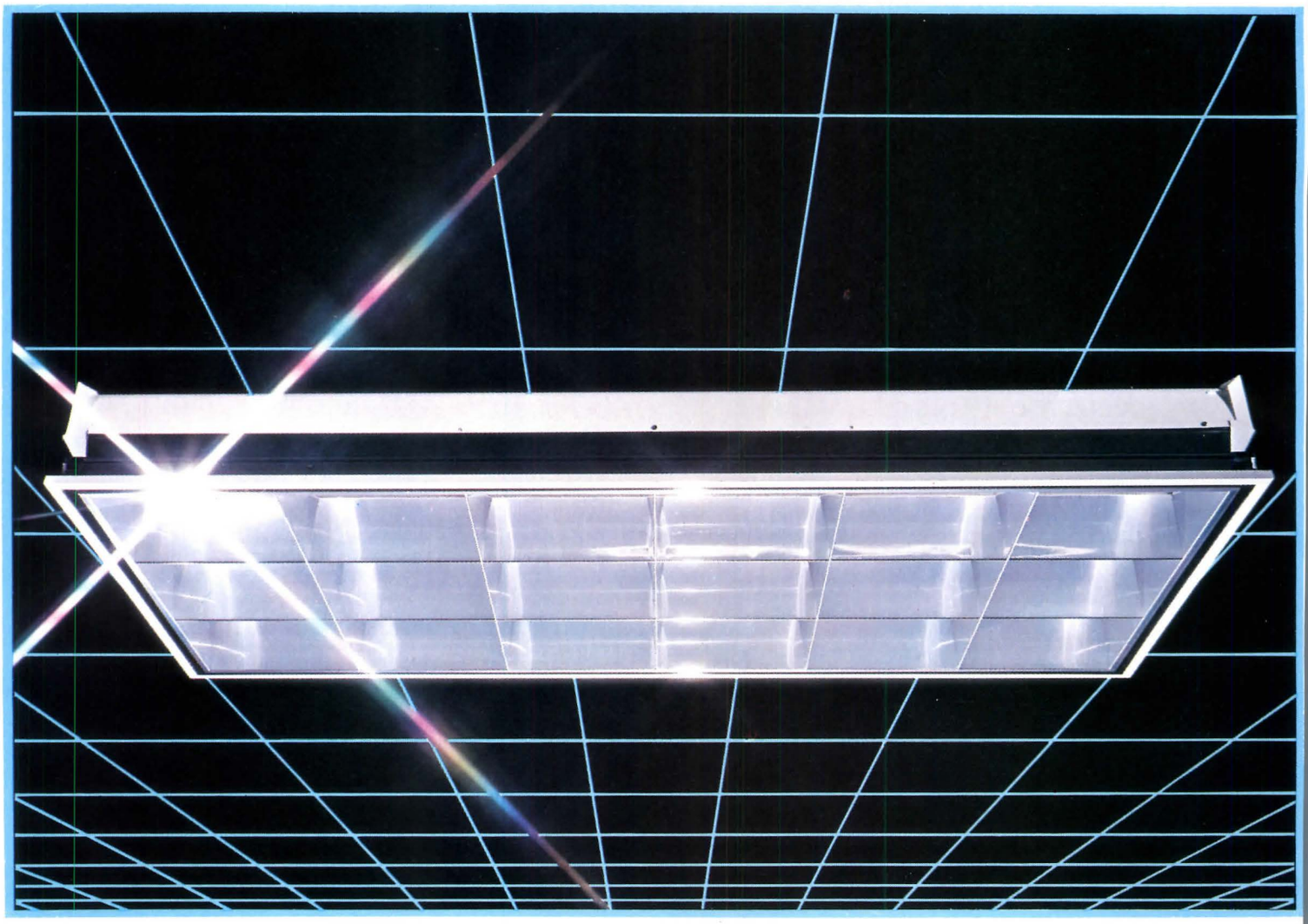

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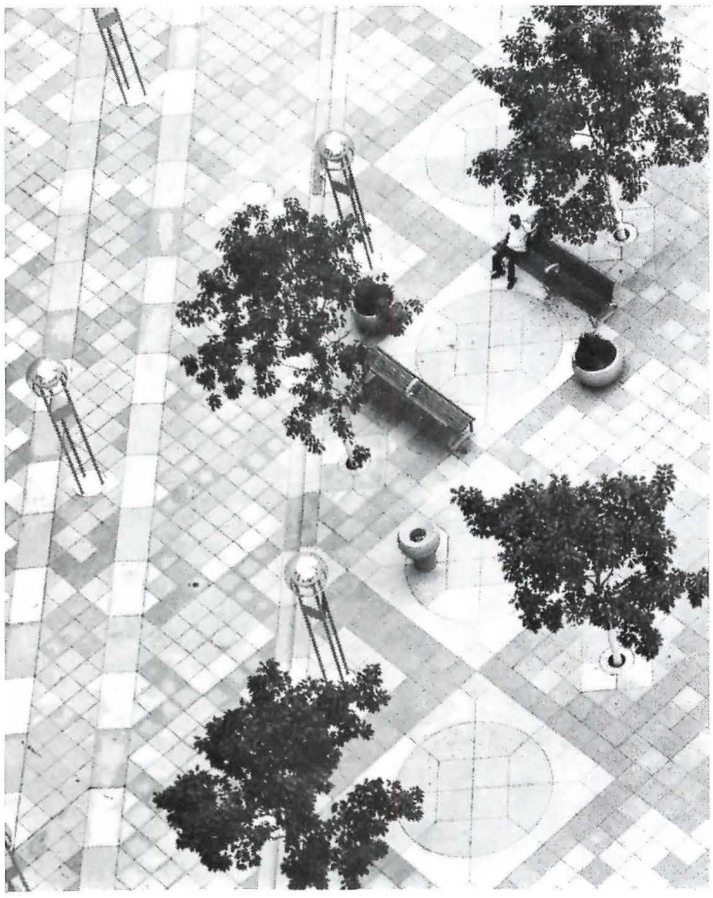
A mile-long mall for The Mile-High City



Conceived in 1971 by downtown businessmen who hoped to counter the lure of outlying shopping districts, Denver's Sixteenth Street Mall was finally christened in mid-October in a week-long celebration under the aegis of its adoptive parent, the Regional Transportation District. That the festivities were kicked off by the launching of the shuttle vehicles that will ply the mall's 14-block-long course is indicative of the mall's evolution between its conception and birth from a pedestrian enclave to a major transportation project.

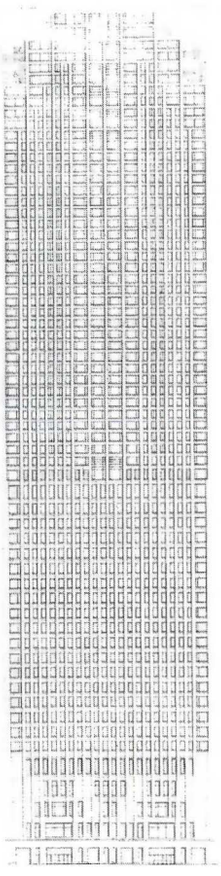
By the time construction of the mall got underway in 1980 its original purpose as a countermagnet for shoppers had become secondary to the aim of relieving traffic congestion in a central business district well into the throes of a major building boom. (More than 100,000 workers now swarm into downtown each weekday, and a 50 per cent increase in their numbers is expected by 1985.) Thus the mall's principal function is to serve as a transit link offering free and frequent shuttle service between transfer facilities that intercept express and regional buses at the edges of the downtown area.

Pedestrians are by no means slighted, however, and the early vision of the mall as a lively, attractive (and attracting) downtown activity center is given full scope for realization in I.M. Pei & Partners' design for the thoroughfare. To better accommodate the heavier pedestrian traffic flow nearest the transfer hubs, the three blocks at each end of the mall are laid out asymmetrically with transit lanes set close together and flanked by a 35-foot-wide sidewalk on the east and a 19-foot sidewalk on the west. In the middle blocks the layout becomes symmetrical around a 22-foot-wide center aisle with transit paths and 19-foot sidewalks on either side. Throughout, the mall is paved with an outsize mosaic of red, gray, and white granite, softened by ranks of honey locust and red oak trees, and enriched by well-designed and well-placed lighting fixtures and street furniture. As a spokesman for the Regional Transportation District observed midway through the festivities opening the mall, "If the first three days are any indication, our city has an overwhelming success on its hands."

Gravesian images...

Four enterprising students of architecture at Portland's new Oregon School of Design have formed a business, Keystone Tops, that offers "architectural images on T-shirts," the first model featuring—perhaps inevitably—Michael Graves's Portland Building in a five-color rendition or abstracted on a variety of background colors. Shown above with a beaming Graves and samples of their wares, the Keystone Tops founders are (from left) Karla Craig, Mary Hulskamp, Susie Chenoweth, and Chris Nickerson. For the unreconstructed, a shirt depicting an Ionic column is also available.

Chicago architecture now and then



Chicago Architects Design: A Century of Architectural Drawings from The Art Institute of Chicago, at the institute through April 10, is the last and largest of a series of three shows featuring selections from the Burnham Library of Architecture. Although the exhibition explores the work of Chicago architects over the last hundred years and spotlights a number of drawings of historical distinction that have not been shown before, special emphasis is given to the contributions of contemporary practitioners. The show assembled by assistant curator Pauline Saliga includes renderings of recent local projects by Helmut Jahn, Laurence Booth, Dirk Lohan, and Adrian Smith, as well as drawings by Bruce Graham, Bertrand Goldberg, Ralph Youngren, Stanley Tigerman, and others.

Elevation rendering, Olympia Centre (1981). Adrian Smith with Robert Diamant, Dianne Legge Lohan, and Neil Anderson.

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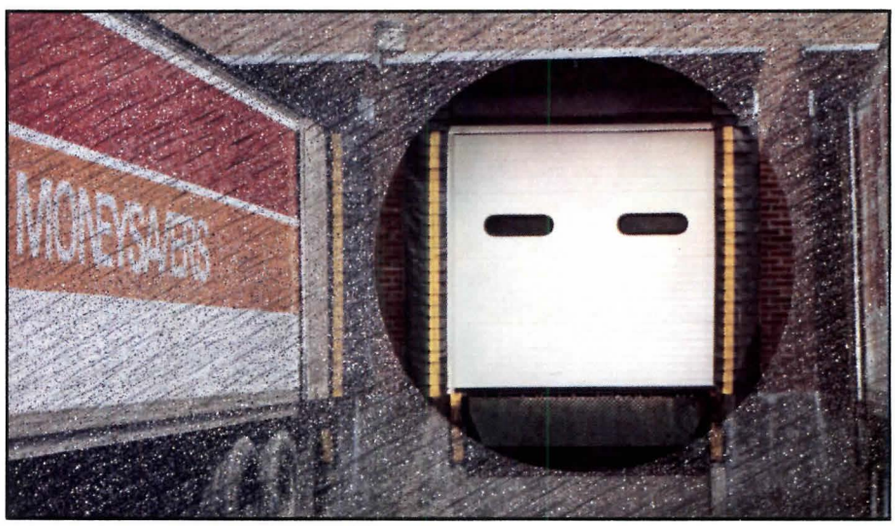

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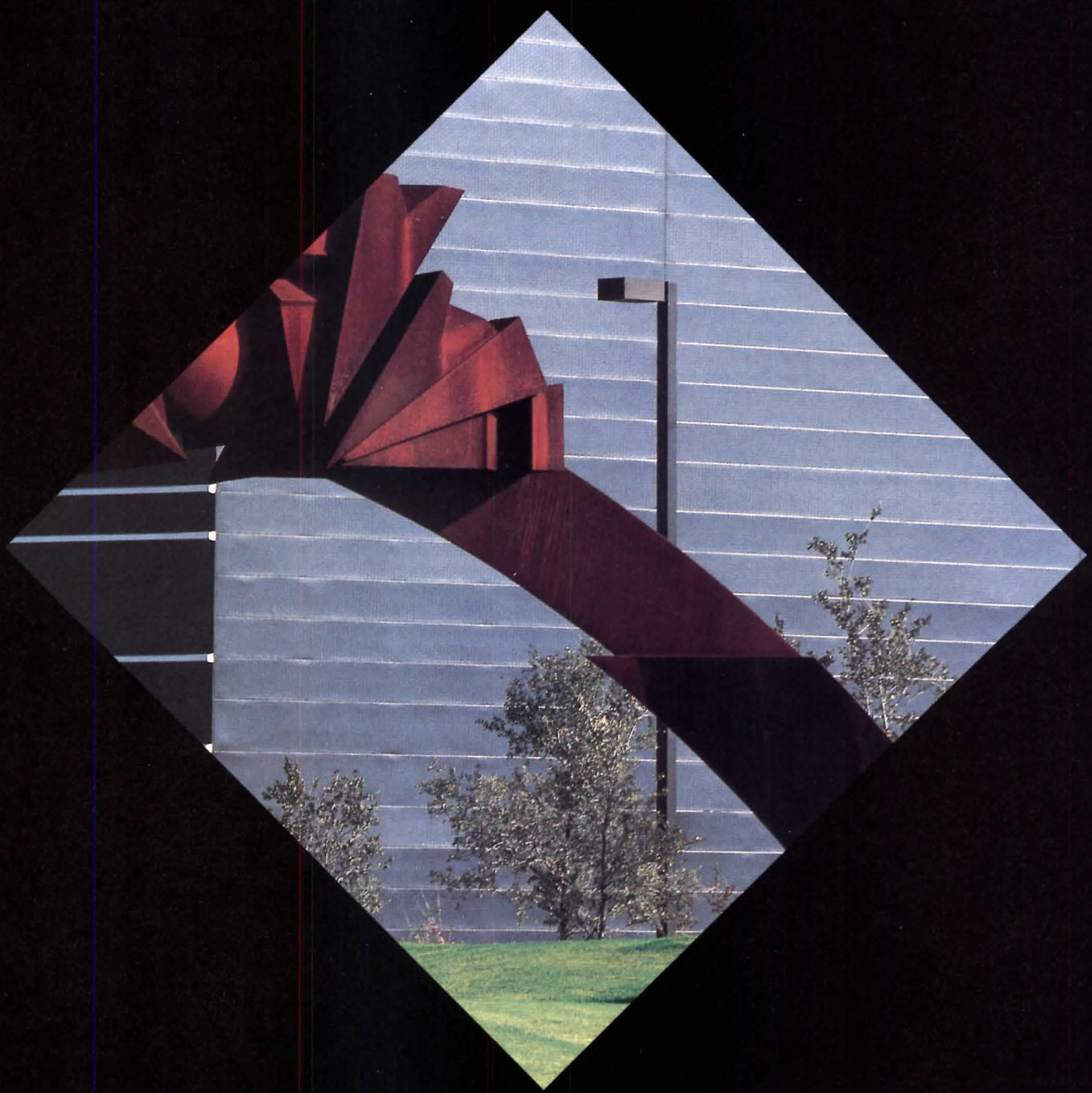

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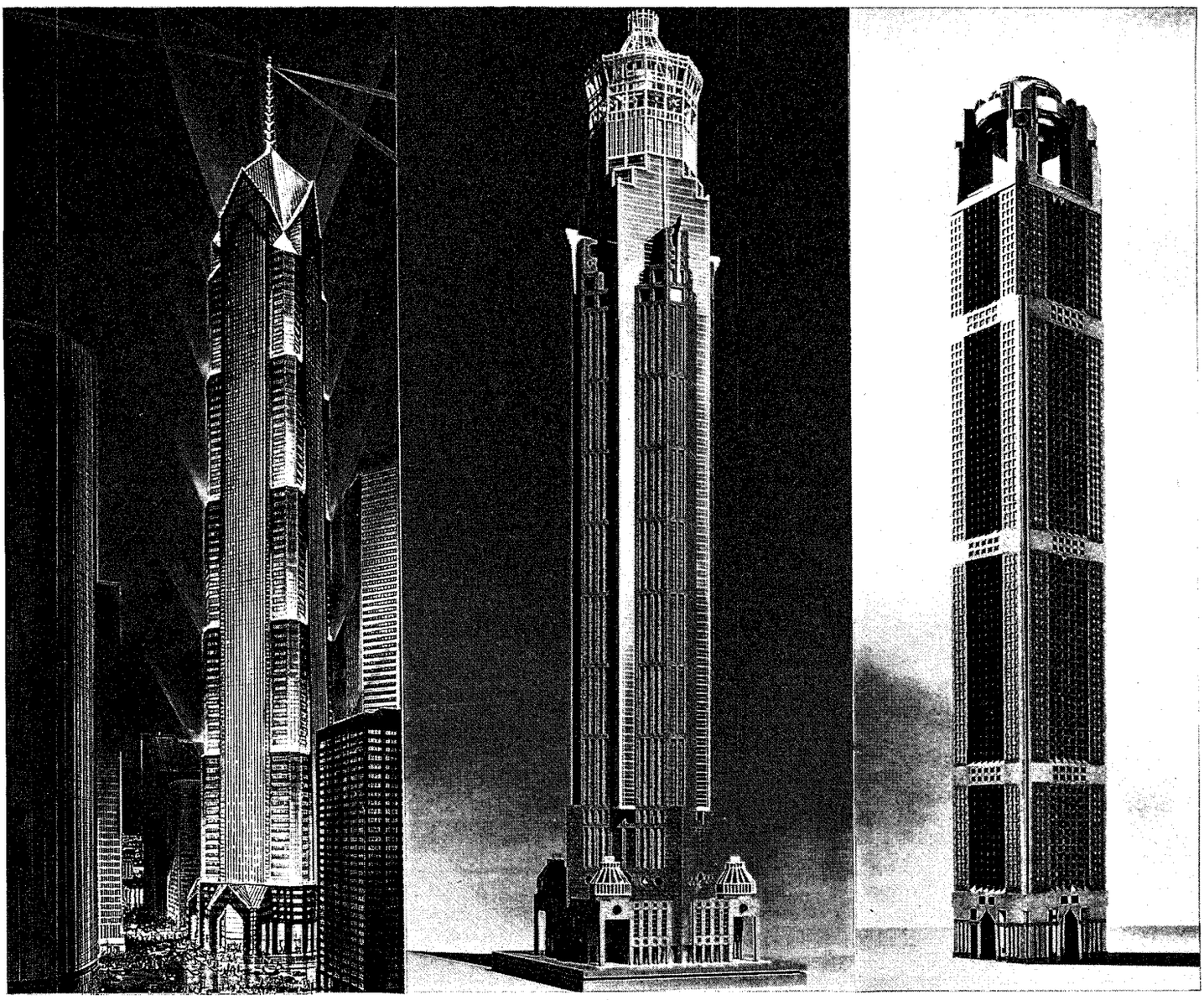

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Southwest Bancshares/ Century Development Competition

Among the objectives set for the three finalists (chosen out of 10 firms invited for interviews) were a distinctive image on the Houston skyline, a flexible, efficient layout, street-level public space, and a restaurant and observation platform. In order to emphasize the building's central location in Houston's downtown business district, Murphy/Jahn have rotated the structure 45 degrees and placed a major entrance diagonally facing each corner of the block (figure 1). The 1,400-foot tower of steel, granite, and glass will comprise some two-million square feet of office and retail space. The restaurant and services are situated below grade, and a 10-story arcade opens onto the street. Architect Helmut Jahn relates that his design is meant to "evoke a relationship to the traditional American skyscraper, to stimulate the viewer's association with buildings he or she knows. At the same time, the richness of past forms and tradition is joined with. . .modern technical systems and materials." Murphy/Jahn will be associated on the project with the Houston architectural firm of Lloyd Jones Brewer and Associates. Construction is expected to begin next year.

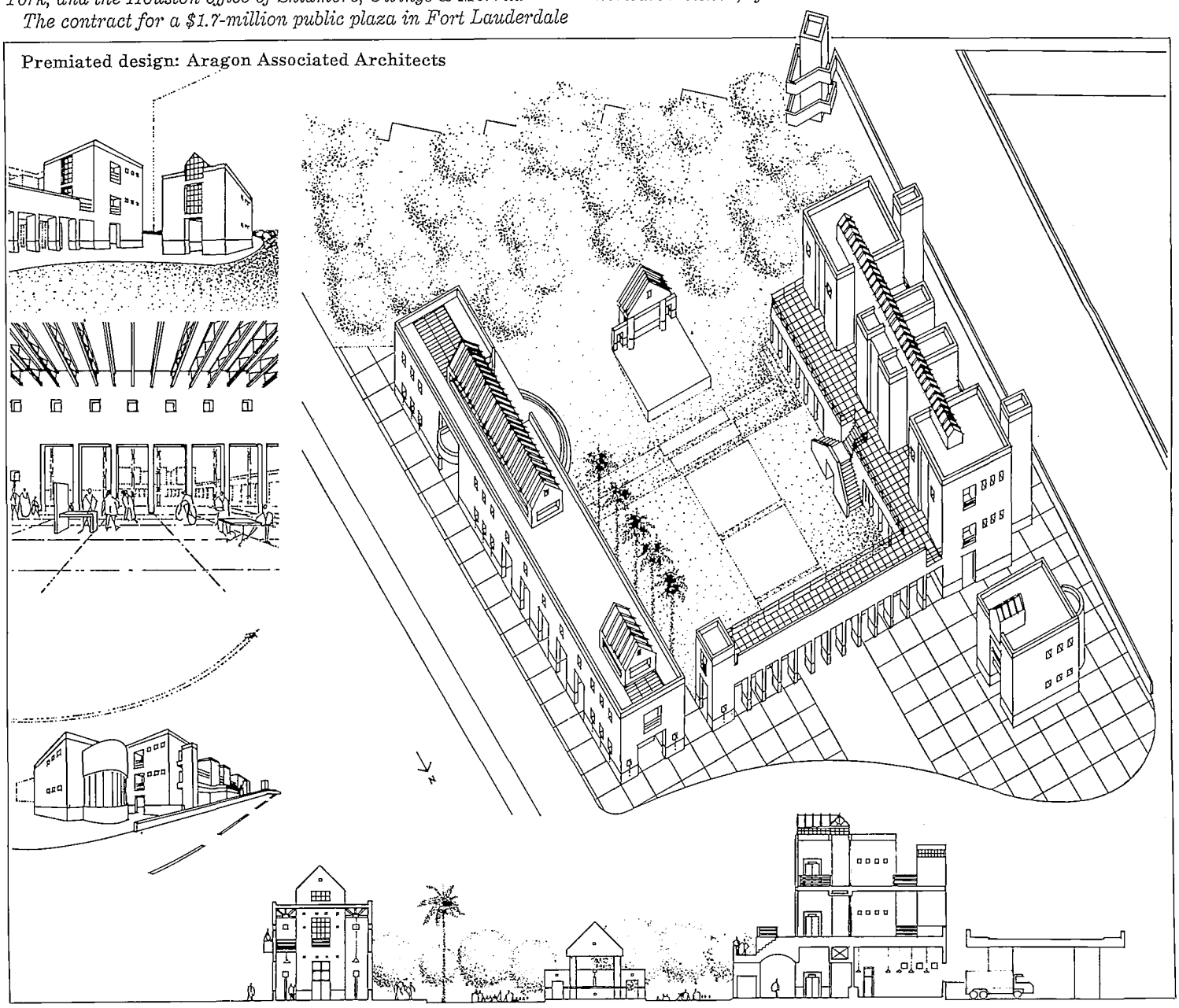
Kohn Pedersen Fox also allude to earlier skyscrapers in the tripartite articulation of their 96-story tower (figure 2), which is ornamented with classical and Art Déco-inspired details. At ground level, corner pavilions and shopping arcades extend the granite-clad base to the property line, although the glass-walled shaft of the tower has been rotated to minimize its apparent density. A trellis-like steel finial crowns the restaurant and observation deck.

Skidmore, Owings & Merrill determined that a square plan configuration with closely spaced columns in the corners would afford the most efficient structure for wind resistance and speed of construction (figure 3). The rigid elements that link these corner zones are expressed in the horizontal banding of the steel-frame tower, which is faced with several varieties of dark red granite. One of the four corner lobbies opening off a travertine and granite plaza would serve the observation deck and skylighted restaurant that occupy the cylindrical penthouse. The architects describe the faceted restaurant enclosure as "a crystalline dome held on four sides like a diamond solitaire."

The Chicago firm of Murphy/Jahn has won an invited competition to design the tallest office building west of the Mississippi, a $350-400-million project in Houston. The joint sponsors of the competition were Southwest Bancshares, Inc., a Houston-based bank holding company, and the Century Development Corporation. We illustrate the design selected by officers of the two sponsor companies, along with the projects submitted by runners-up Kohn Pedersen Fox Associates, of New York, and the Houston office of Skidmore, Owings & Merrill.

The contract for a $1.7-million public plaza in Fort Lauderdale has been awarded to Aragon Associated Architects of Coral Gables, Florida, in a competition conducted by Fort Lauderdale's Downtown Development Authority. Aragon's $10,000 prize-winning design (below), the $6,000 second-prize submission by Heery & Heery, of Atlanta, and the $4,000 third-prize entry by Thomas K. Davis and Marleen Kay Davis of Cortland, New York (overleaf) were chosen by architects William Turnbull, of San Francisco; Mario Botta, of Lugano, Switzerland; and James Stewart Polshek, of New York.

Premiated design: Aragon Associated Architects



Fort Lauderdale Riverfront Plaza Design Competition

The construction of a riverfront plaza is a major step in the planned revitalization of downtown Fort Lauderdale. The 1.6-acre plaza site occupies a prominent location within the 300-acre area of Fort Lauderdale's Downtown Development Authority, an independent taxing district administered by a city-appointed board. The Authority envisions the plaza as a magnet for community life in the rapidly growing neighborhood that will ultimately encompass a cultural and commercial center for the city and its suburbs.

The primary goal of the design by Aragon Associated Architects is the linkage of the city with an existing riverfront park to the south. In order to extend the park into the plaza, Aragon modeled the new public space on a village green, with the outdoor stage required by the program treated almost as a traditional bandstand. The exposed concrete block structures that shape the open courtyard are intended to form a background for human activity rather than compose a dominant monumental presence. Laid out to acknowledge the orthogonal street plan of Fort Lauderdale, as well as a curving boulevard to the north and the diagonal path of a bridge to the west, the plaza buildings house a bazaar, food court, theme bar, restaurant, and multi-use facilities. A separate pavilion to the northwest is to be used for public presentations. The Downtown Development Authority plans to begin construction late in 1983.

Juror Mario Botta commented on Aragon's design: "The element in front of the river becomes a filter of transition fom the urban environment.... The project plays on two dimensions, the side of the city and the human scale. The best qualities of the project unite these different scales." James Polshek remarked, "I was swayed by the variety of architectural expression." He praised the combination of the entry colonnade on the north facade and the secondary entrance to the east that allows the plaza to serve different uses simultaneously. Polshek added that "Formally, the unity of the materialization of the idea is not sufficient to compensate for the excesses of the massing, particularly of the west building.... This scheme is probably going to have problems with the budget. I can only view that as positive. The constraints

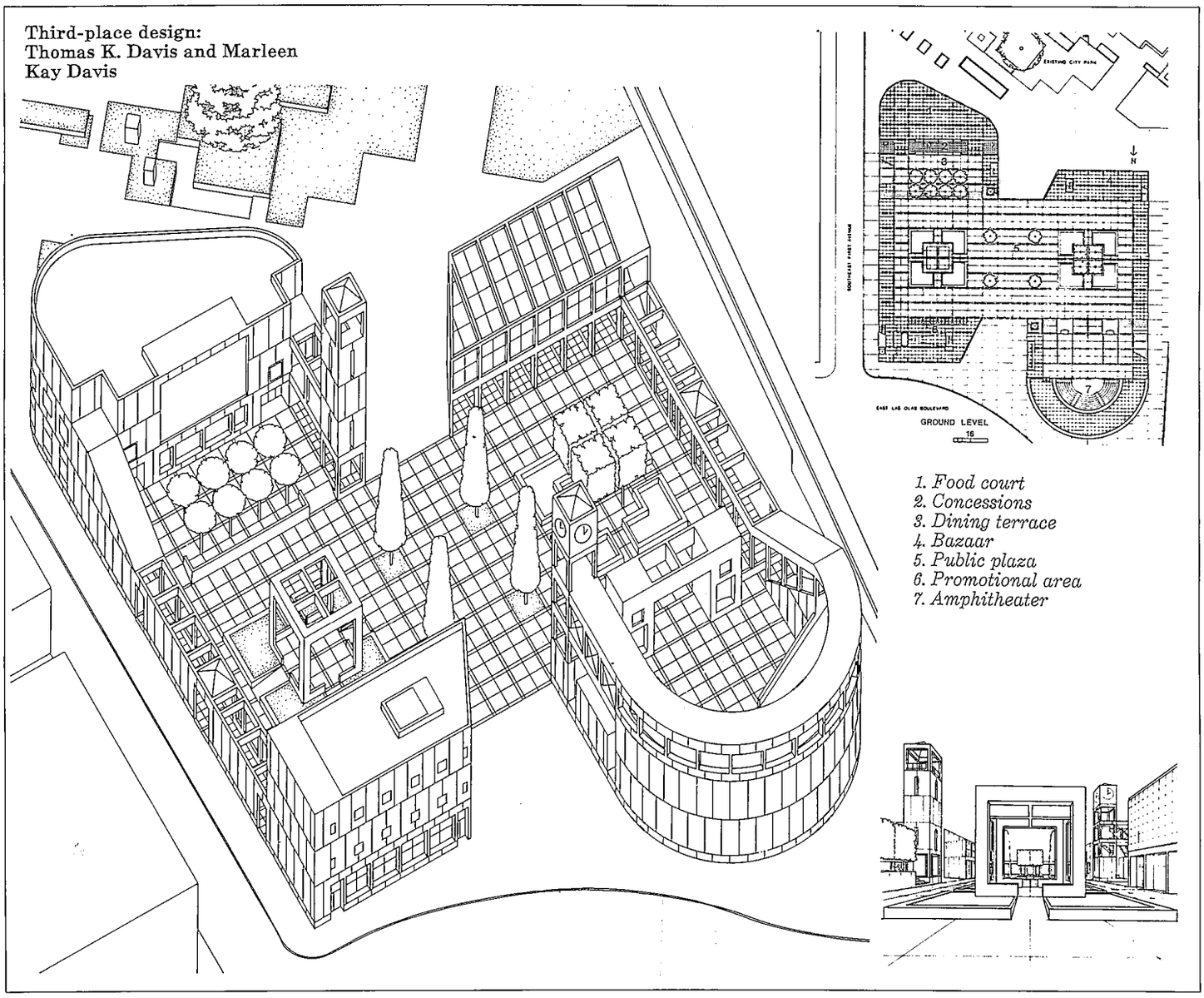
Second-place design:
Heery & Heery, Architects & Engineers

of the real world will force the architects to reconsider the excesses of the architecture. . . ." William Turnbull found that "The strength of this project is the simple bold stroke of dealing with urban space as an extension of an urban park. . . . Aragon's program has very carefully set up activities that will draw people, but there are no real places for people to pause, sit, and enjoy this urban theater."

Mack Scogin of Heery & Heery calls his team's design an "event," to emphasize that it is not envisioned as a static enclosed space: "This concept is a fanciful embrace of urban activity," he says. As rendered in conceptual sketches, the project masses buildings along the north and west edges of the site to act as a visual and acoustic barrier against passing traffic. Along the riverside, a series of stepped mounds (which the architect likens to bleachers, sand castles, and dunes) compose a flexible amphitheater. The plaza sports an array of exotic topiary shelters, designed to be as suitable for art exhibits and other planned events as they are for unspecified informal happenings. Initially inspired by the idea of bringing skyscrapers down to human scale, the plant sculptures include bougainvillea cabin cruisers, limbo-gumbo travel trailers, and passion fruit architectural fragments. James Polshek declared this "Clearly the most provocative and intelligent scheme that I saw . . . a reflection of both the best and the worst of a materialistic society that emphasizes the isolation of individuals rather than the intention of the program, which is to create a place where people gather together. . . . Its childishness must be seen in terms of the reality of built form. I feel that the forms will be significantly diminished in power by the inability to execute them architecturally in the same spirit as that in which they were conceived." William Turnbull concluded, "It's really an Alice in Wonderland scheme. . . . The mandate was for a public place, and this is a magic private place."

Thomas K. Davis and Marleen Kay Davis elected to relate their design to the density of future downtown development rather than to the underbuilt blocks and parking lots of the present-day environment. Mario Botta characterized this project as "an urban intervention. The intention is to create an internal space. . . . [but] the space around elements is not enough to unify the buildings. The two towers at the edges are pretentious, and are not strong enough to hold the other elements." James Polshek said, "With respect to circulation [this scheme] distinguishes between the river walk's linearity and the plaza's centrality. Those are the two major questions and it makes a definite distinction between them. The plaza can function for fixed events or for casual visitors, while another level of life takes place along the river. That is neither good nor bad; it's a matter of the way people use it. . . ." William Turnbull questioned whether the central courtyard would be large enough to accommodate the expected crowds. He also pointed out a "lack of clarity between

Third-place design:
Thomas K. Davis and Marleen Kay Davis



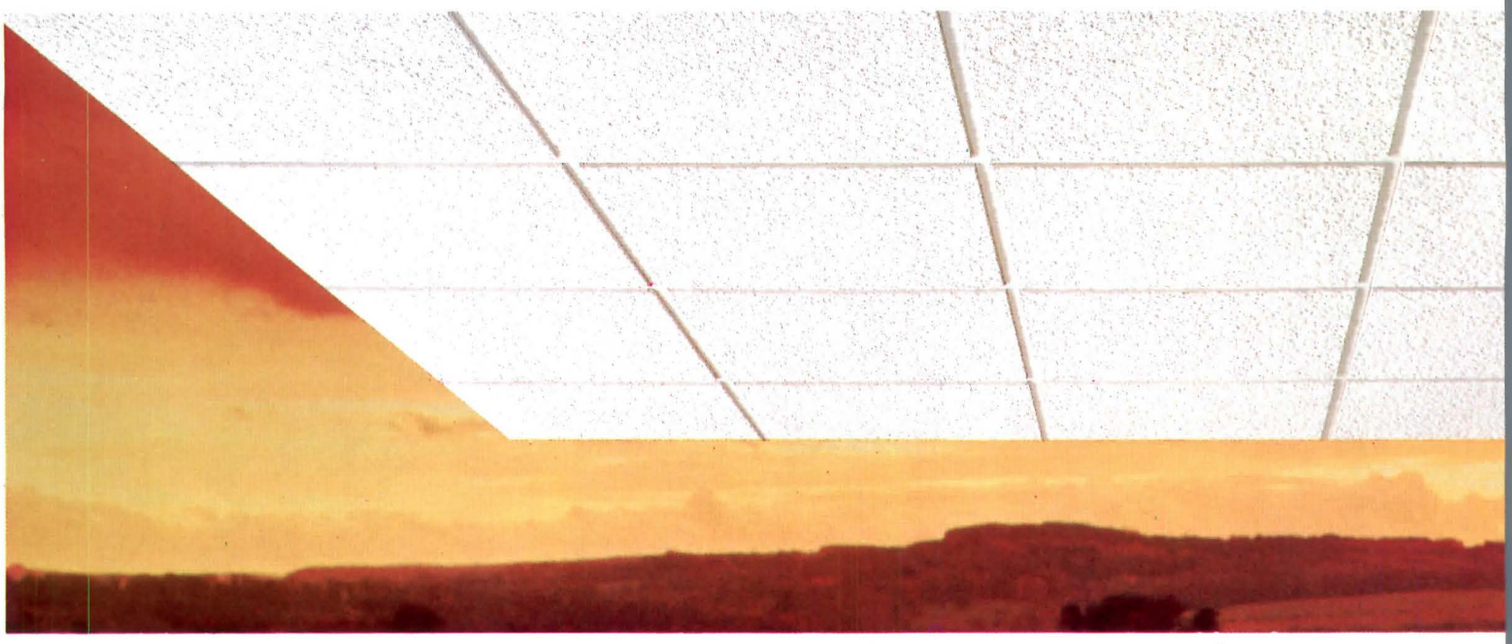
inside and outside" and a disregard of regional climate and vegetation. "This project is very hard and almost northern in its urbanity, whereas if you considered the interior covered with vines or canvas, you could have made a very attractive exterior space sheltered from the heat of the sun, warm visually and sensuously. . . . Here is a very strong scheme that had the potential of being more."

Premiated design
Architects:
Aragon Associated Architects, Inc.—John Ames Steffian, Armando M. Montero, principals; Jorge Luis Trelles, Rafael Portuondo, Rolando Llanes, Luis E. Trelles, collaborators

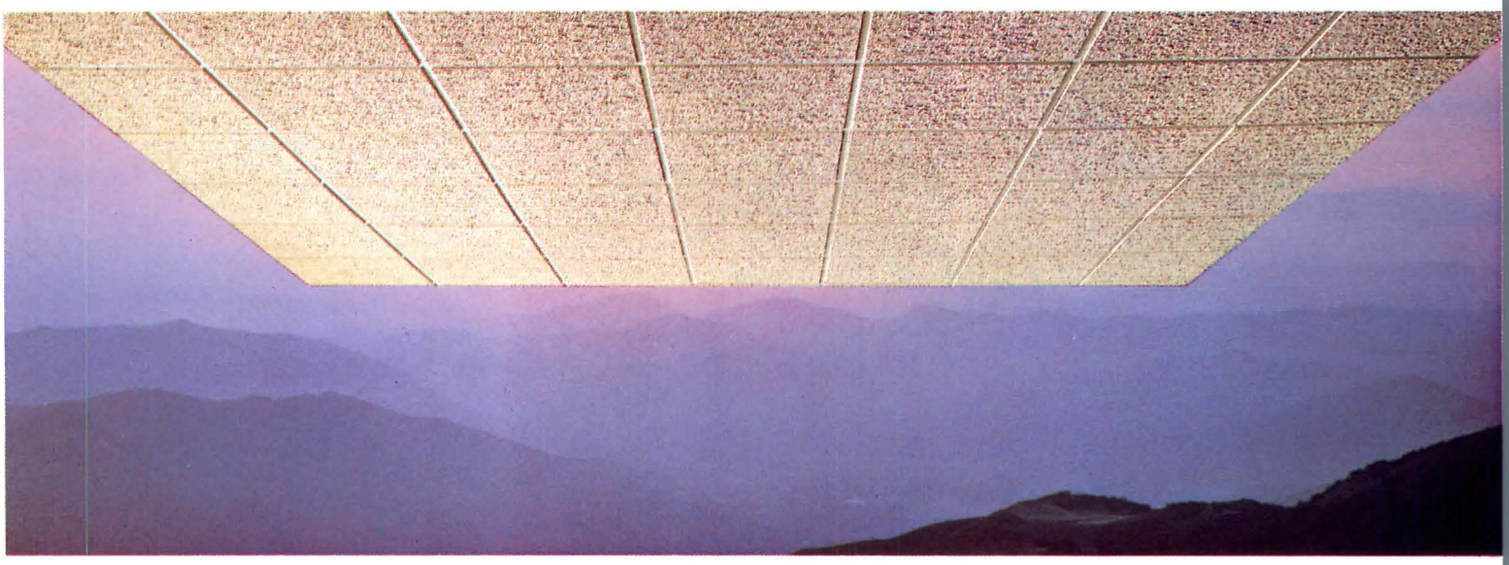
Second-place design
Architects:
Heery & Heery, Architects & Engineers, Inc.—B. Mack Scogin, Jr., principal-in-charge; Merrill Elam, Chuck Clark, Wylie Gaston, Steve Swicegood, Lloyd Bray, Scott Dreas, Susan Desko, Bernard Dotson, project team

Third-place design
Architects:
Thomas K. Davis and Marleen Kay Davis

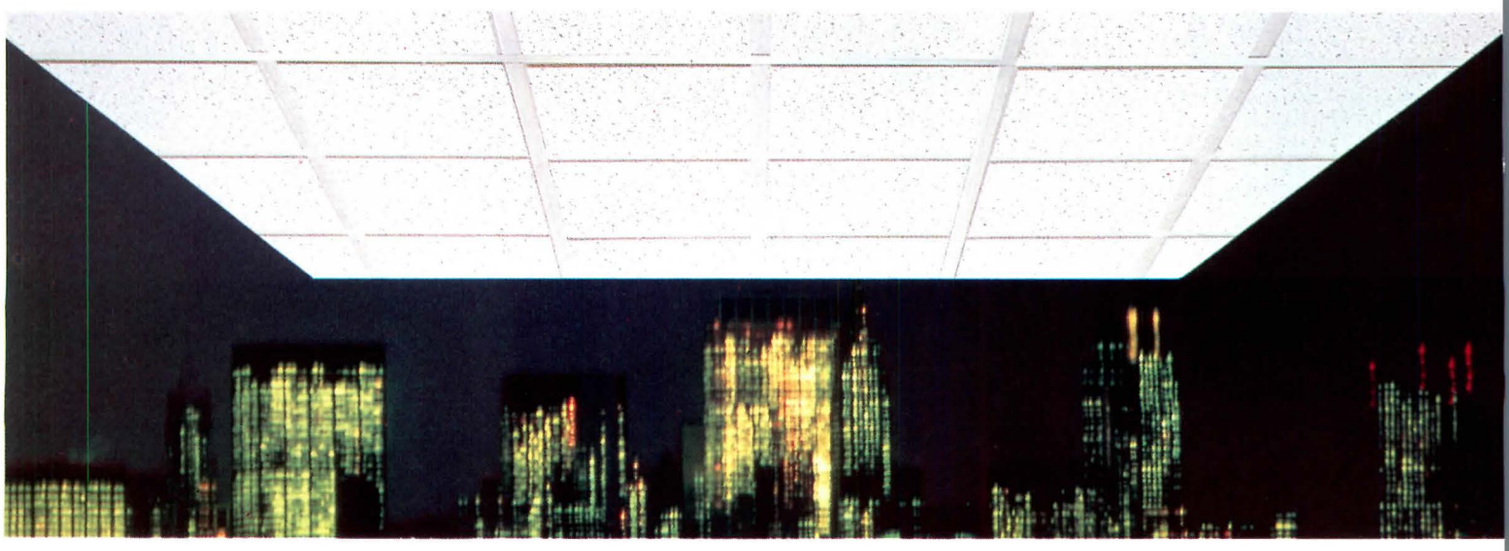
What's in the future for U.S.G. ceilings?



New concepts/Example: exclusive "New Horizons" custom-look AURATONE® panels make deep textures affordable.



Plentiful supply/Example: prestige ACOUSTONE® panels now freely available in integral colors.



Better selection/Example: AURATONE® Illusion Ceiling Series, low-cost panels that look like expensive tiles.

Construction outlook continued from page 45

stage of a long decline that covered much of the decade of the 1970s. The initial phase, a retreat from a plateau of 400-450 million square feet annually from 1970 to 1974 to a lower plateau of 300 million square feet at the end of the decade, was due largely to nonfinancial reasons: shifting demographics (schools) and overbuilding (hospitals).

Just when it was beginning to look as though the necessary adjustment to changed requirements of the marketplace had been made, contracting for institutional building took a secondary decline in 1981 to 250 million square feet. This further slippage was due to the withdrawal of financial support as federal fiscal restraint turned state and local budgets from surplus to deficit in short order. Contracting in 1982 has shown no rebound from the prior year's loss.

The Reagan Administration's "New Federalism" put the future of institutional building in a new and more doubtful context. For the next several years, state and local governments will be required to supplement shrinking federal funding from other sources—a process that can only affect institutional building adversely. On the other hand, the heavily negative influence that educational building has had on total institutional building during most of the 1970s has about run its demographic course. As alternatives to federal funding are developed, gains in some categories in this group are expected to begin reversing the long downward trend of institutional building. Nevertheless, it will take until the middle of the decade before the level of building again reaches 300 million square feet—the point at which the secondary decline began.

Outlook 1983
nonresidential building

The near future offers too many handicaps to permit a recovery of nonresidential building before the second half of 1983. A sluggish comeback of the economy, the normal lag of commercial and industrial building, an overdue unwinding of the office building boom, and the limited availability of public funds for institutional building add up to a delayed response.

In 1983's first half, expected improvement in contracting for stores and warehouses will be overbalanced by sharply declining office building, and total nonresidential contracting will reach its cyclical low of about 875 million square feet (annual rate). Then, as office building begins to stabilize in the second half, gains in other categories will lift contracting above 900 million square feet by the final quarter.

Next year's total of 890 million square feet means a further small (-3 per cent) reduction of nonresidential square footage, completing the cyclical decline that began as long ago as 1980. Contract value in 1983, totaling $54.1 billion, will reflect a different and less costly mix of nonresidential building types—mostly the result of the trade-off between retail building and offices.

Public works

In times of recession, public-works construction normally expands. By tradition, public-works construction usually serves as an antirecessionary safety net for the economy. This rescue function has always been secondary to the main purpose of the several federal programs that provide funds for the long-term needs of the nation's cities for streets, mass transit, sewers, and water. Nevertheless, the practice of temporarily increasing public-works spending in times of recession has ample precedent. The most recent example: Rounds I and II of the Accelerated Public Works program, which pumped a total of $6 billion into the economy to help speed recovery from the mid-1970s' recession.

This time it's different. As evidence of how things have changed, an attempt—in September—at passage of a $1-billion public-works jobs bill for the repair of bridges, roads, and water systems never garnered enough votes in Congress to get the Presidential veto that it most certainly would have received.

As the "New Federalism" concept is applied, public works will be last among the three major categories of construction to adjust to the Reagan Administration's redirection of economic priorities. The consequences of the proposed transfer of responsibility from federal to local governments for all but a few functions (e.g., justice and defense) can already be seen in the recent decline of public-works construction. With federal programs currently funded at approximately 85 per cent of authorization, and with state and local governments unable to make up all of the shortfall, total contracting for public-works construction has declined by 15 per cent since 1979—from a peak of $29.2 billion to the current $25.5 billion. After adjustment for inflation, the three-year shrinkage is more like 30 per cent *in real terms*. With further reduction of funding of federal programs in store for the next several years, the eventual reversal of the decline of public-works construction rests entirely with state and local governments.

The "federalism initiative"—as the Administration calls its proposal to transfer some 40 or more federal programs to state and local governments (with the help of a temporary trust fund to smooth the transition)—has received mixed reviews so far and remains a long way from implementation. In 1983, as the merits of this plan are debated in Congress and as a program

Continued on page 71

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Construction outlook continued from page 69

emerges, look for more "de facto federalism" (i.e., deeper cuts in federal programs without much regard for the consequences). The record to date clearly shows that the federal government is more adept at cutting public-works spending than local governments are at replacing it.

The federal budget for fiscal year 1983, still subject to change even though the fiscal year began October 1, is the best guide to federal spending for public construction next year; but budgeted outlays must be considered as the upper limit for 1983. Although there was not much change in planned spending for public works between the initial FY83 budget (February) and its first resolution (June), all domestic spending is vulnerable to ongoing review (translation: further cuts) in the attempt to hold 1983's ballooning deficit below $150 billion.

Five budget categories—highways, urban mass transit, environmental protection, airports, and natural resources—provide the major federal grants to state and local governments for public-works construction, accounting for more than two-thirds of total annual contract value. In addition, the federal government is directly involved in a limited amount of direct construction (e.g., interstate highways and military construction). Grants to state and local governments are presently slated for a total of $16.3 billion in FY83—*9 per cent less* than 1982's total of $18.0 billion. Until further notice, highways are budgeted to receive the same funding in 1983 as in 1982, but the other categories have been slashed 15 to 20 per cent.

Besides these federal grants to state and local governments, the 1983 budget provides for a 50-per cent *increase* in funds for military construction ($4.0 billion). Much of this work will be done at bases in foreign countries and will not be included in Dodge construction data, which cover only the United States.

Although federal funding for domestic public-works construction will shrink once again in 1983, local governments will attempt to raise their outlays to the extent that they can. Declining interest rates should make the municipal bond market a better source of funds in 1983 than it has been for the past two years.

The tradeoff between federal and local funding of public-works construction nets out as another decline in 1983. A total of $25.0 billion is forecast (versus an estimated $25.5 billion in 1982), with highway spending unchanged and waste water treatment facilities the biggest loser.

Are user taxes the answer?
Much has been written lately about decaying bridges and car-swallowing potholes. Latest to add its voice to the outcry against the neglect of the nation's infrastructure is the Regional Plan Association. In a report analyzing the New York area (an analysis which may be equally valid for Chicago, Atlanta, Los Angeles, and even modern Houston), the RPA concludes: "Unless the coming decade sees virtually unprecedented levels of capital expenditure on the region's infrastructure, economic development efforts may be fatally handicapped from the start."

Clearly, inadequate investment in the maintenance and development of the infrastructure sets limits on the future growth of the nation's cities, as it does on the growth of the construction industry itself. Space limitations here preclude a thorough discussion of this important issue. Perhaps the case for often invisible and rarely appreciated public-works construction can be made by a few rhetorical questions:

- Without adequate sewer and water development, how much housing can be built?
- Without more roads and/or mass transit, how many shopping centers and office/industrial parks can be built?
- Without large-scale regional water resource development, what are the limits to the growth of the arid Southwest?
- Are user taxes really the answer?

Utilities
Because very large projects dominate utility construction, forecasting this category is essentially a matter of tracking individual projects from the planning stage to the start of work. But due to the small number of projects started each year, the possibility of postponement or cancellation of one or two jobs makes this a high-risk area of forecasting.

In 1982, a total of only 12 major projects—the $1.6 billion Northwestern segment of the Alcan gas pipeline, another smaller pipeline, and nine electric power plants—accounted for 80 per cent of the year's estimated total of $8.5 billion of utility construction. The current year's electric power plants, which averaged just over $500 million each, were distributed quite evenly among the regions.

Analysis of more than 50 utility projects planned for the next several years disclosed a total of two pipelines and nine electric utilities with a high probability of starting in 1983. Next year's power plants will be concentrated in the Southwest, with three in Texas alone.

The 1983 total of all utility construction contract value is estimated at $9.0 billion.

Outlook 1983
nonbuilding construction
A small decline in publicly financed nonbuilding construction in 1983 will be offset

Continued on page 167

Attractive home on Cape Cod, Massachusetts; Architects Bedar & Alpers, Boston, Massachusetts; Wood siding and wood trim treated with Cabot products.

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Letters continued from page 4

Your editorial in the July 1982 issue regarding architectural salaries and compensation failed to recognize one of the major deterrents to raising salaries. I agree that salaries are much too low, but young architectural school graduates for the most part are not equipped to do productive work. In the small- and medium-size office, the graduate must undergo a lengthy training period. The training period is costly, requires constant supervision, and some work must be done over. Most architects, I'm sure, raise starting salaries as soon as production capabilities increase to a tolerable level.

The only method of raising starting salaries is to insist that the schools prepare the students with the proper graphic and technical skills to earn their keep for the first few years of their careers. Schools have ignored this suggestion with the rebuttal that they are producing "architects," not "draftsmen."
M. S. Markson, FARA
Chairman
School Liaison Committee
Society of American
Registered Architects
Mt. Prospect, Illinois

The title of your article on Hardy Holzman Pfeiffer Associates' addition to the Currier Gallery of Art, "Inventing a sixth order to honor a Beaux Arts building," is very disturbing [RECORD, August 1982, pages 102-111].

The classical orders are not simply particular interpretations of column and capital but proportional relationships of all the parts of a building to the whole, a relationship that evolved through a long process of modification and refinement. To say that in one building a new order has been "invented" shows either a misunderstanding of architectural history, which does no service to a good magazine, or a willingness to engage in journalistic hype, which does no service to good design.
Victor Pildes, Architect
Chicago

The material illustrated in the article "Making it in Miami" [RECORD, August 1982, pages 112-121] represents, without a doubt, some of the best examples of bad architecture ever published. Does one actually require an architectural education to conceive such a conglomeration of shape and form? Corbu, FLW, Mies and the rest must be stirring, anxious to retaliate, or would they bother at all?

"Tongue-in-cheek" architecture has now succumbed to "slap-in-the-face" architecture. Obviously, the "Miami Five" are snickering up their sleeves as they taxi to the bank.

It's a pity you permitted the "razzle and dazzle" of the ridiculous to contaminate the pages of the new format.
Richard A. Kliemt, Architect
Atlanta

While I was reviewing the Letters column [RECORD, June 1982, page 59], a letter written by Carolyn McCown caught my attention and I'd like to respond to it.

On the question of Michael Graves's style of rendering, Ms. McCown stands correct. It is so excellent and adds so much to drawings that I use his technique on all my presentations.

On the other hand, by stating that his buildings are like mausoleums, she shows, I feel, her misunderstanding about Mr. Graves's ideas and about post-modernism itself.

I also once didn't understand and possibly would have agreed with her, but my understanding of post-modernism has changed my views extensively. To me, the lobbies of most Bauhaus-style buildings are mausoleums. On those travertine walls, I can see names, dates and the emptiness that a mausoleum has.

As a student, I believe that America finally has its own movement. Post-modernism is American. It has been a long time since we as American architects could say that we have brought architecture to a new era.
Peter John Russo
New York Institute of Technology
Old Westbury, New York

Reacting to the Humana Competition spread [RECORD, July 1982, pages 58-59]: until the recent wave of caricature architecture, it is hard to recall a national competition where *all* the finalists produced clumsy and silly designs—capped by yet another pathetic facade manipulation (by Graves). Did the competition program have some kind of bias for Gravesian appliqué and/or bad '50s architecture? And someone is actually going to publish a book memorializing this?

I have the feeling we are in for an uneasy spell, where some more clients, juries and formerly competent architects slump uncritically into the Graves wave or further misapplications of "post-modern" license—because this has been seen to receive disproportionate publicity and easy progressivist acceptance.

On second thought, I guess the book will sell after all: many will be curious to see how Humana and the finalists worked around questions of proportion, scale, massing, texture, long-term esthetic repose, and sensitivity to function—or whether the inevitable batch of crayon drawings will mostly show more deprivative fooling around with perverse facades, empty "references," and awkward flourishes.
John von Szeliski, AIA
The Blurock Partnership
Newport Beach, California

Johns-Manville Architectural Panels. Chosen for beauty, durability and economy at the Von Braun Civic Center.

The Von Braun Civic Center, a 340,000 square foot, five-unit entertainment, sports and cultural complex in Huntsville, Alabama.
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Contractor: Universal Construction Co., Decatur, Alabama.

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Three churches and a chapel

Despite the widely accepted observation that ours is an increasingly secular society, and despite the recently released census information that for the first time in American history the growth in religious membership has failed to keep pace with general population growth, people continue to build churches and synagogues.

This is not to say that the economic figures are all that impressive. As McGraw-Hill economist George A. Christie points out, religious building is "not a growth market." In the annually published F. W. Dodge construction outlook (see page 39), church construction is subsumed in the general category "Institutional and Other." Expenditures in this area for 1981 were only $1.2 billion, and this year should about equal that.

Nonetheless, new churches and synagogues *do* get built.

Demographics account for some of this construction. In Houston, a Sun Belt city that has burgeoned with immigrants from the cold winter and cold economy up north, new housing seems to erupt from the soil—and with new neighborhoods come new churches. The church of St. Thomas Aquinas shown in this study was designed by Charles Tapley Associates for just such a purpose: to house a newly formed parish in a new residential development in the Galveston-Houston diocese.

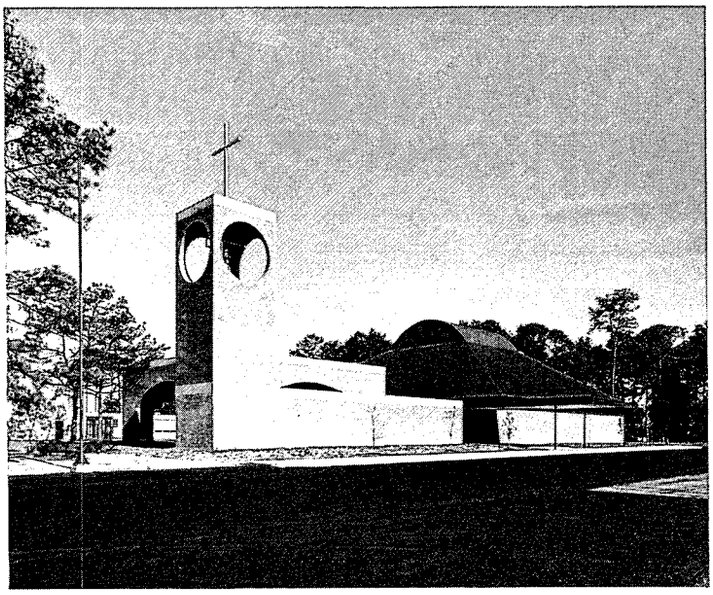
The Houston boom has also infused money into the city, which may partly explain the construction of St. Cecilia Catholic Church, also designed by the Tapley firm. This building accommodates an older parish that had put a higher priority on its school than on a sanctuary. While it postponed building a church, it congregated in the school auditorium for services—a delay now decisively vindicated.

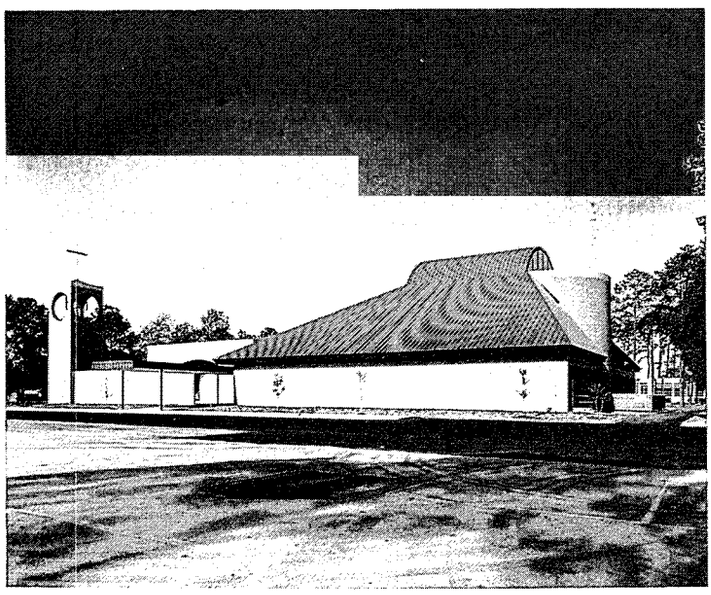
Another reason for building new churches is that parishes outgrow old ones. Medfield, Massachusetts, a small New England town, lies within commuting distance of Boston, and the Church of St. Edward the Confessor had so grown that it had to schedule an almost overwhelming number of Masses to serve weekend communicants. The new buildings, a seemingly vernacular church and rectory on an Arcadian site, were designed by Dooling & Siegel with an eye to saving energy.

The Pettit Memorial Chapel, a case unto itself, has lessons to teach about the difference between cost and value. Its budget was a meager $45,000 to restore a Frank Lloyd Wright cemetery chapel, a task undertaken by architects Lisec & Biederman. But its value to a small Illinois town—and, if it comes to that, to architecture—transcends mere money. *Grace Anderson*

St. Cecilia Catholic Church
Houston, Texas
Charles Tapley Associates, Inc., Architects

Back to the Romanesque, forward from Vatican II





The declarative presence of a campanile traditionally heralds an Italian church. At St. Cecilia Catholic Church in Houston, the same device is the first thing a visitor sees on his approach (top above). The main entrance, under a covered walkway from the parking lot, leads past a garden sheltered by the wall extending from the bell tower. Three cast aluminum bells, seen through large roundels at the top of the tower, peal regularly.

When Vatican Council II called for fundamental changes in the Roman Catholic liturgy in 1962, it implicitly called for some basic changes in the design of churches, changes that were only sketchily defined in a chapter of the 1964 document *Instructions for the Proper Implementation of the Constitution on the Sacred Liturgy*. Architect Charles Tapley, himself a Roman Catholic, has thought long and seriously about the physical symbolism and architectural forms that might emerge from these liturgical changes.

St. Cecilia Catholic Church in Houston reflects Tapley's pondering, taking its shape at least partly from the plan's need to accommodate liturgical functions, notably the location of the tabernacle, which preserves the Host between services. Before the Vatican Council turned the altar to face the congregation, the tabernacle was customarily kept at the back of the altar against the wall. Nowadays the required "solid and inviolable tabernacle" is often placed on one side of the predella. Tapley has chosen to dignify what he thinks of as the holiest of physical symbols, the Host, in a manner unquestionably architectural: a strong processional axis from a minor chapel, where the tabernacle is kept between celebrations of the Mass, to the main altar in the sanctuary. Gray-green slate flooring on the predella, in the chapel and in the aisle joining the two visually reinforces their connection.

The establishment of this axis had other symbolic and architectural consequences. On the exterior, both the axis and the separation of the chapel and the sanctuary are clearly expressed in the massing of the rosy brick building and its deep-eaved, barrel-vaulted copper roof. But if the exterior took form, à la conventional modern architecture, from function as defined by plan, so did it borrow eclectically from architectural history; project architect Gerald Moorhead admits that architectural history courses were always his favorites at school. The robust circular apse derives from memories of Carolingian churches, the campanile and the cloisterlike garden near the entrance from the Romanesque. Evocative but less easy to pin down historically are the round stucco chapel, its encircling ambulatory, and their protective arched brick "tent." The compact form of the canopy takes visual strength from its limestone coping and limestone springers.

The garden itself plays an important transitional role for parishioners arriving at the church. Visible from the walk beneath the marquee from the parking lot, its grass, espaliered wall and campanile interpose a quiet enclave between the busy world and the sanctuary.

Within the sanctuary, attention focuses on the altar, directed thence by the strong spatial axis and by light. The axis is defined both by the wide aisle and the barrel vault above it. The vault, of the same exposed wood and steel as the ceiling, is distinguished further by wood coffers lined with dark brown fabric and edged with copper. Daylight comes into the space both from continuous glazing under the cantilevered eaves and from stained glass tympanums at the ends of the vault. The pale curvilinear stucco apse attracts the light, leaving floors and pews purposely dark.

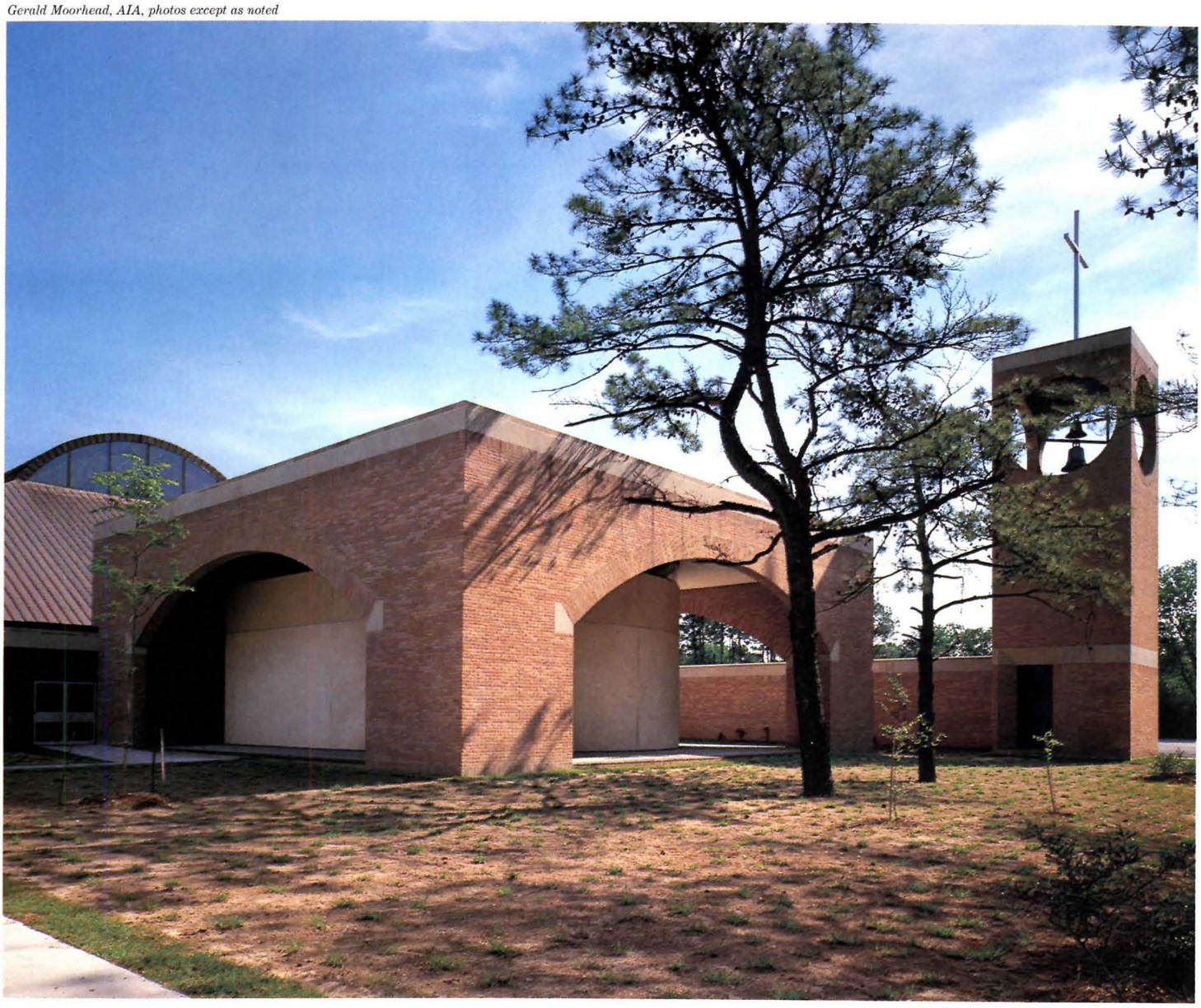
The circular chapel, in addition to serving as the repository for the tabernacle during the week, is also the baptistery. Its chairs accommodate worshipers when priests celebrate the daily Mass.

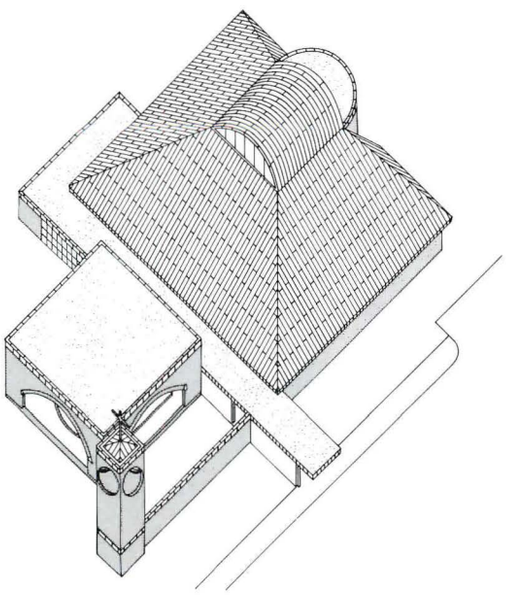
Built in an established residential neighborhood, the church occupies space between the parish's school and an existing parking lot. Until construction of the 850-seat sanctuary, services were held in the school's auditorium. The 18,400-square-foot building cost $1.2 million.

St. Cecilia Catholic Church
Houston, Texas
Owner:
Diocese of Galveston-Houston
Architects:
Charles Tapley Associates, Inc.—Charles Tapley, principal; Gerald Moorhead, project architect

Engineers:
Ellisor Engineers (structural); Timmerman Engineers, Inc. (mechanical/electrical); Boner Associates (acoustical)
General contractor:
E. G. Lowry Construction Co.

Gerald Moorhead, AIA, photos except as noted

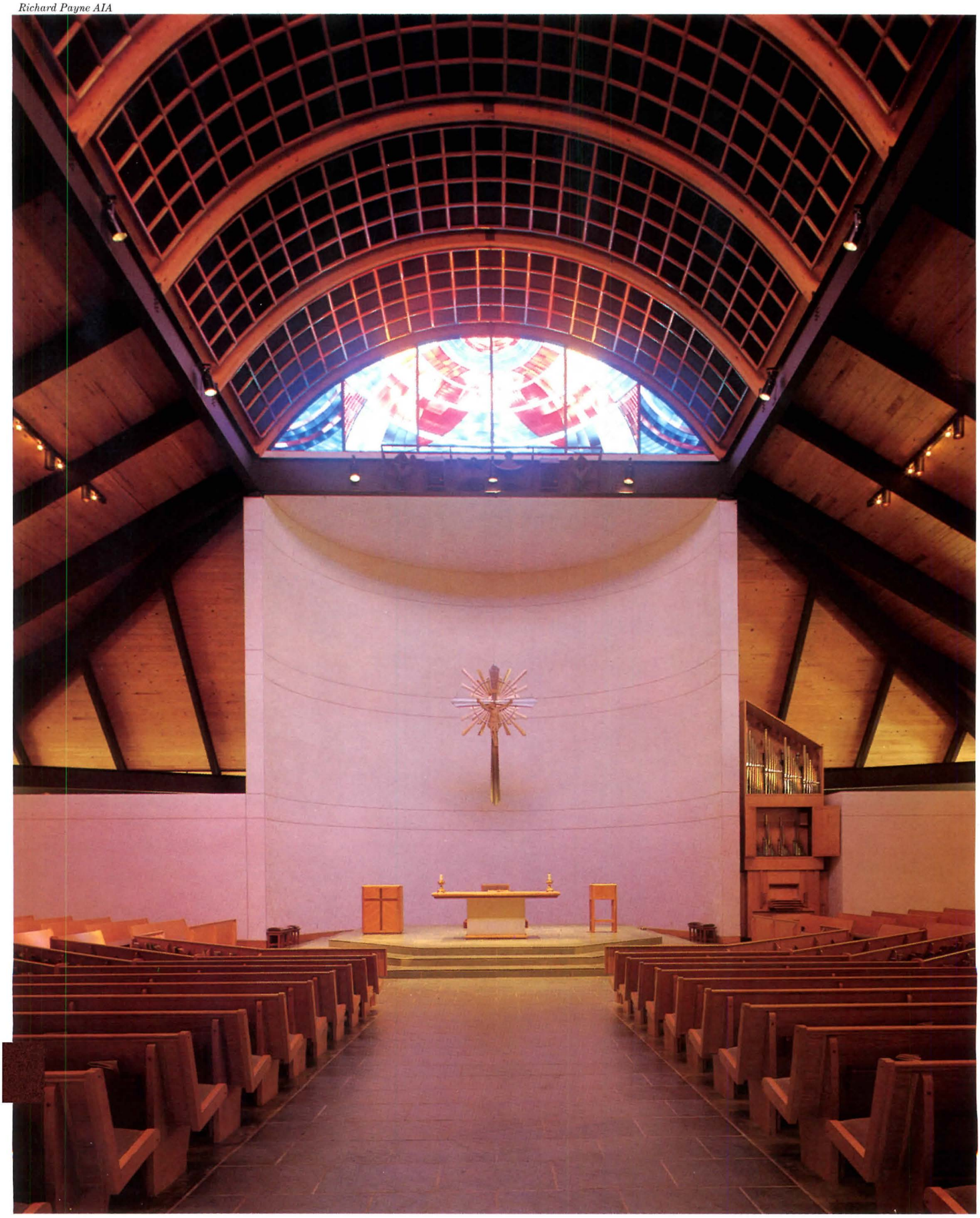




The brick church with its overhanging copper roof takes its form from liturgical function: a strong axis connects the apse and the altar with a minor chapel that houses the tabernacle between weekend Masses (axonometric drawing at left). Native Texas materials appear to special advantage on the chapel (above), where rosy St. Joe brick protects the circular stucco chapel; Luedders limestone was used to accent cornice and springers. The brick pavilion covers both chapel and its surrounding outdoor ambulatory, which adjoins a secluded cloisterlike garden.

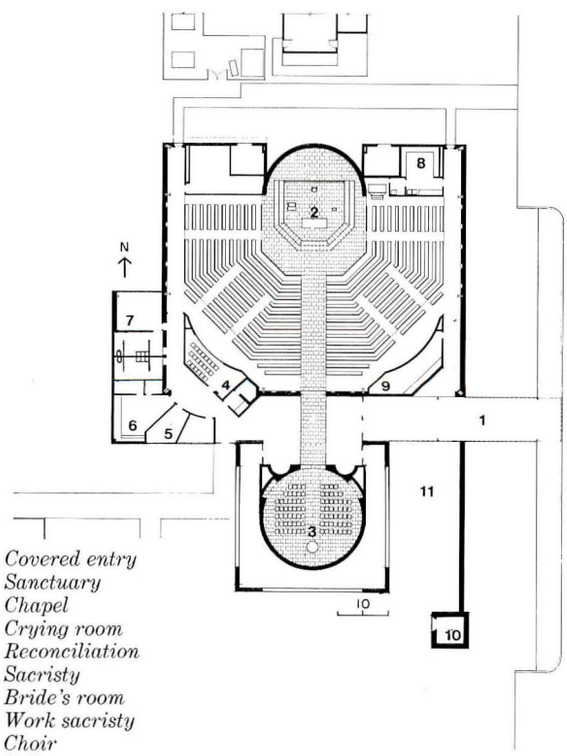
The wide slate aisle and the coffered barrel vault overhead establish a strong axis through the sanctuary of St. Cecilia Catholic Church, culminating at the apse and fastening the eye on the altar. The radiance in the cream-colored stucco apse contrasts with dimmer illumination on floor and pews. The architects designed stained glass for the tympanums of the barrel vault. The north window (below) uses fragments of early Christian symbols such as the fish, the loaf and the grail. The south window, a darker blue against the bright southern sun, symbolizes rebirth with the rainbow.

Richard Payne AIA



Behind an oak grille at the other end of the axis, a small circular chapel houses the tabernacle during the week and provides chairs for communicants at daily Mass (top). The chapel is also the baptistery. Pews in the sanctuary (see plan) curve around three sides of the altar to foster a sense of intimacy during the Mass. In one corner at the back of the sanctuary, a glass-fronted crying room provides a view of the service for mothers of restive children. Behind the crying room are reconciliation rooms, which augment the old confessionals with an opportunity for private face-to-face conversation with a priest.

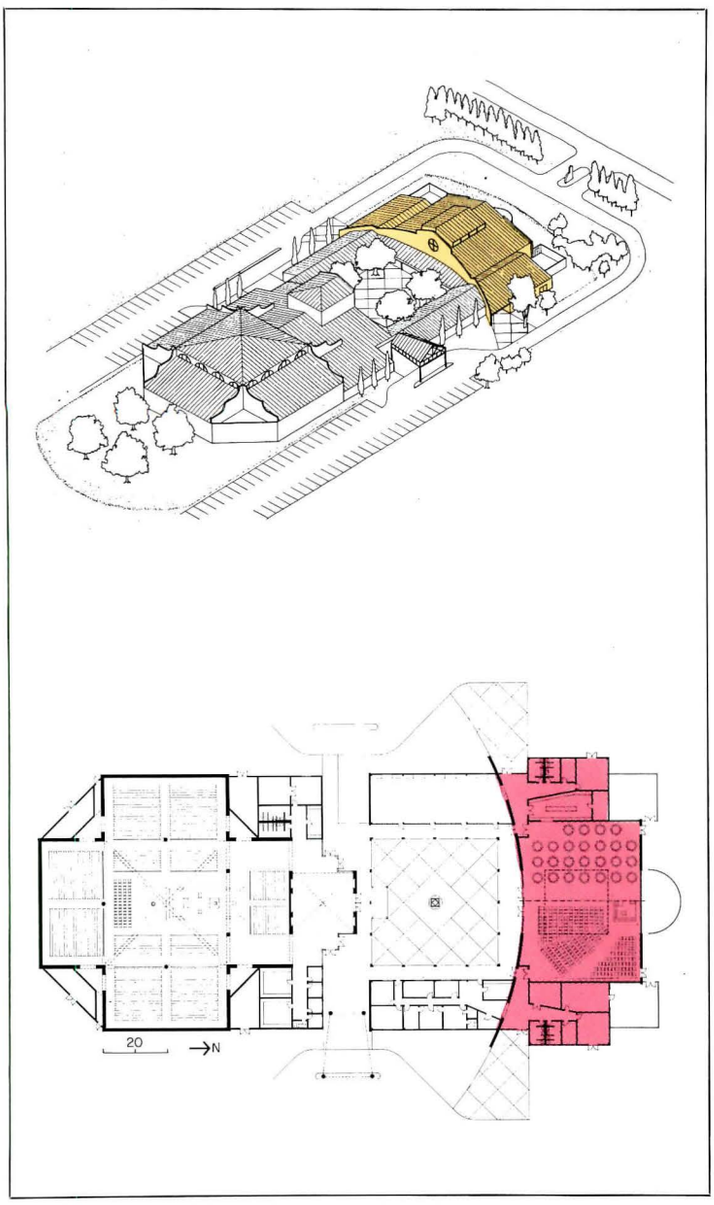
Richard Payne AIA



1. *Covered entry*
2. *Sanctuary*
3. *Chapel*
4. *Crying room*
5. *Reconciliation*
6. *Sacristy*
7. *Bride's room*
8. *Work sacristy*
9. *Choir*
10. *Bell tower*
11. *Garden*

St. Thomas Aquinas Catholic Church
Houston, Texas
Charles Tapley Associates, Inc., Architects

Recollections of Tuscany in suburban Houston



At present, services at St. Thomas Aquinas take place in a building that will become the multipurpose parish hall when construction of the master plan is complete. Succeeding phases call for a pair of wings from the parish hall and the church itself, the entire complex enveloping a large quiet court. The building, located in what was treeless farm country until it recently became a fast-growing residential neighborhood, cost $56.28 per square foot.

Phase I of St. Thomas Aquinas Church in southwest Houston was also designed by the firm Charles Tapley Associates. Like St. Cecilia (see preceding pages), it mines church history for architectural inspiration, though it looks to a different country and period. The curving facade inescapably recalls the peaked fronts and zebra stripes of Gothic Umbrian and Tuscan churches. (Project architect Gerald Moorhead, when asked about "the church that looks like Orvieto," allowed that as a matter of fact he was thinking about a little church in Perugia.) At the same time, the shingle-roofed porch gives a touch of the vernacular, suggesting the modest farmhouses of East Texas.

Located on 10 acres of a former cotton field in a rapidly expanding residential development, this phase comprises in reality a multipurpose hall that will serve temporarily as sanctuary for the new parish until its budget allows completion of the complex. In Phase II of the master plan, the glass doors and stucco lintels at each end of the facade will be knocked out to open into two corridorlike extensions, one for offices and the other for more multipurpose space (see plan at left). Phase III will incorporate the church proper, to seat 1,200 people. Between the future church and the parish hall, embraced by the curved building and the second-phase wings, a large square courtyard will establish a focal center for the complex, offer visual relief in the treeless surroundings, and protect a precinct of quiet and privacy against the expected clutter of tract housing and strip shopping centers.

When used for morning or afternoon services, especially in sunny weather, the temporary sanctuary receives an abundance of daylight both from the long clerestory overhead and from identical glass walls at front and back. Behind the predella, the glass opens a view to a small garden enclosed by a high semicircular wood fence. This area creates a reredos behind the altar, exchanging the traditional carved ornament for a simple tribute to Nature in the form of sunlit grass, leaves and flowers.

During celebration of the Mass, seating wraps around three sides of the altar in the post-Vatican II configuration that encourages communal intimacy between congregation and celebrant. In the evenings and during the week, the parish hall can accommodate social gatherings when chairs are cleared from the central wood floor or replaced with tables. Fluorescent lighting fixtures, pointedly hung to repeat the roof pitch, are operated by dimmer.

Richard Payne AIA, photos except as noted

St. Thomas Aquinas
Catholic Church
Houston, Texas
Owner:
Diocese of Galveston-Houston
Architects:
Charles Tapley Associates, Inc.—
Charles Tapley, principal; Gerald Moorhead, project architect

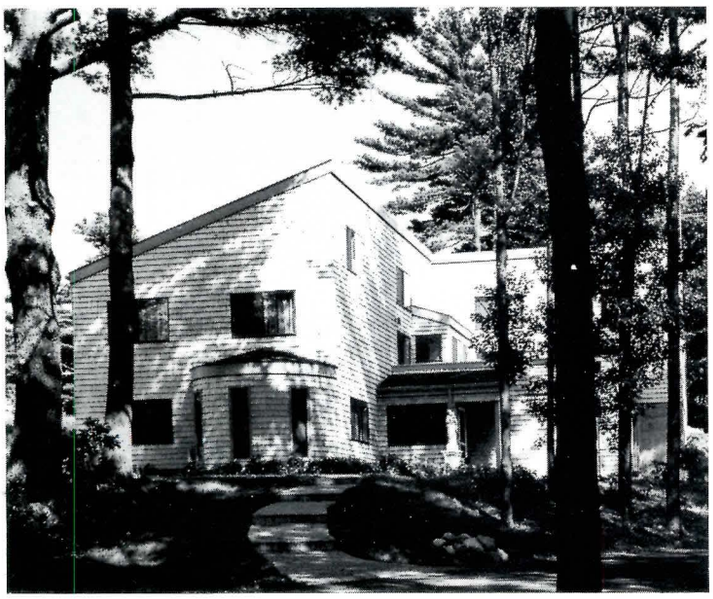
Engineers:
Walter P. Moore & Associates, Inc. (structural); Bible Engineering Corporation (mechanical/electrical)
General contractor:
Brookstone Corporation

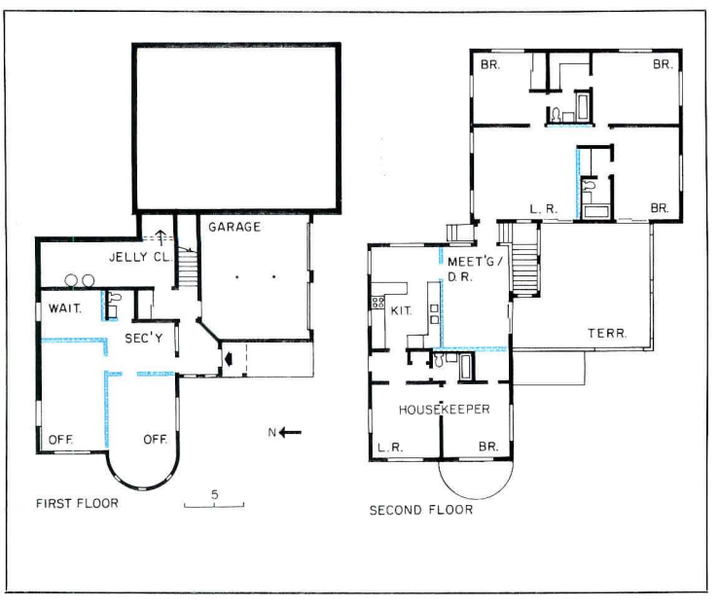
Gerald Moorhead, AIA

The red and tan brick stripes on the front of St. Thomas Aquinas parish hall call to mind the similar brick stripes that remain on Italian Gothic churches when they are not covered over with gilded mosaic. The concavity of the facade foretokens its role as a protective but subordinate facade on the church's forecourt. At the sides of the building, glass doors with stucco lintels were designed for easy demolition during the master plan's second phase, when they will become openings from the parish hall to wings (see plan opposite).

Church of St. Edward the Confessor
Medfield, Massachusetts
Dooling & Siegel Architects

A touch of New England in an Arcadian setting





The multitude of requirements for the new rectory (above) surprised the architects. No simple house, though built on a budget, it called for five wholly separate zones: public offices; semipublic reception space, like a meeting/dining room upstairs; semiprivate space, like the kitchen and living room; private bedrooms (each with a private outdoor area); and separate quarters for the housekeeper.

Moreover, both priests' study/offices downstairs and the meeting room upstairs required acoustic privacy; partitions in those areas all have acoustical insulation. Father Charles Weber, one of two priests who share the house, calls it "the best rectory in the diocese."

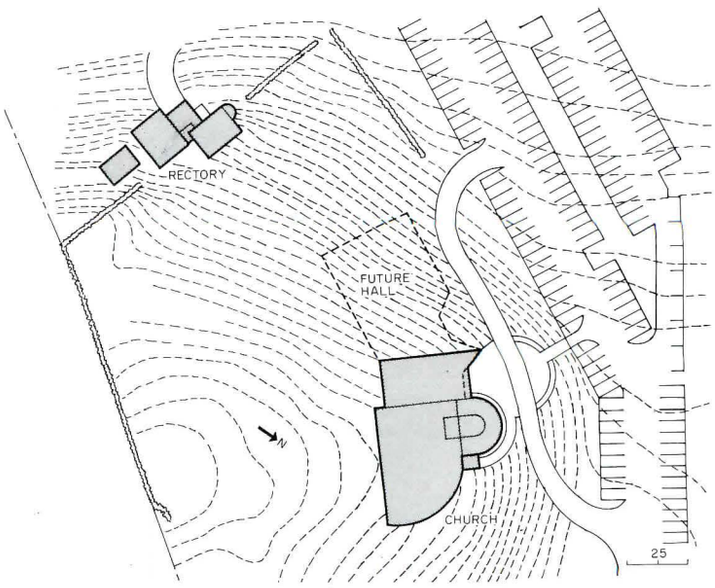
Until last year, the Church of St. Edward the Confessor had its quarters in an aged Victorian building in downtown Medfield, Massachusetts, a suburb of Boston. Downtown is in this case a relative term—Medfield has a population of only 6,000. But the building site was unarguably small and encroached upon by neighbors. Moreover, the church was desperately undersized for the parish, forcing its two priests to schedule as many as 11 Masses over the weekend.

The church's new quarters could not differ more greatly. The new sanctuary will seat 550 worshipers, and the adjacent chapel can add another 125 seats when they are needed. The site, though within walking distance of the town, is rural, indeed sylvan, abounding in tall grass, wild flowers and rhododendron. The only building in sight is the new rectory next door.

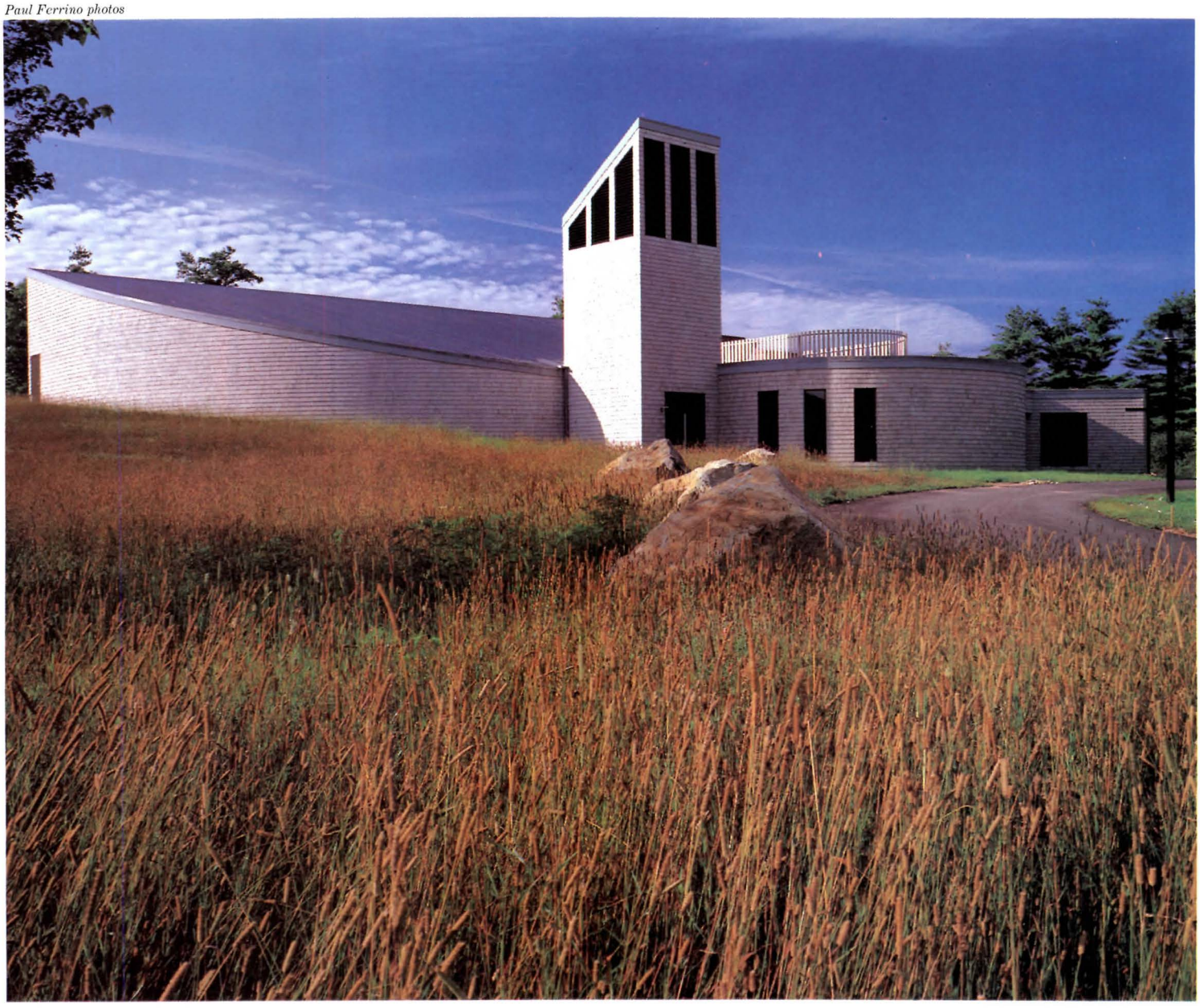
Initially the design gives an impression of ineffable New England—clean, modest, sharply edged in the northern sun. But even perfunctory analysis gives the lie to this impression. Architects Dooling & Siegel have relied on scale to establish this illusion for a building of decidedly nontraditional shape and construction. Not a four-square structure, but a combination of cylindrical and angular elements. Not a wood balloon frame, but steel beams and trusses and a concrete retaining wall. Not white clapboard siding, but pale weathered cedar shingles. Not a pointed steeple, but a shed-roofed bell tower. Most exceptional of all, not a ridged shingle roof, but a slanted disk sheathed with elastomeric sheet. Even the widow's walk is illusory: only maintenance men working on mechanical equipment mounted on the roof are likely to see it close up.

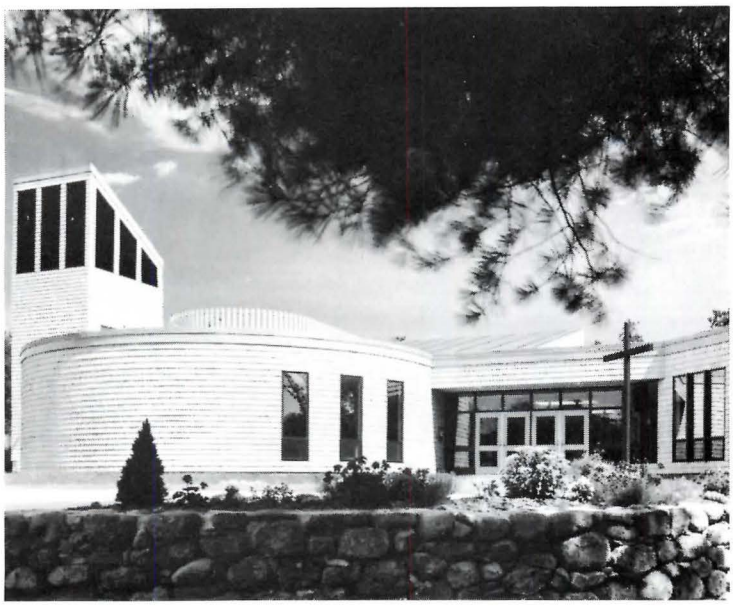
Since New England winters are often harsh, and since this parish, like most parishes, is not wealthy, energy conservation took on a commanding significance for the design. The sanctuary was built into a hillside to take advantage of the earth's insulating properties (see site plan below and section on the following page). More important, high glazing on the southwest side of the sanctuary admits warming sunshine; the concrete floor acts as a heat sink, while the low slanted ceiling prevents heat escaping uselessly upward. The semicircular chapel located near the front entrance gets heat and light through narrow windows facing east and west. The mechanical heating system consists of rooftop gas-fired units with an economizer cycle. The building is not air-conditioned.

The church and rectory together cost $750,000.



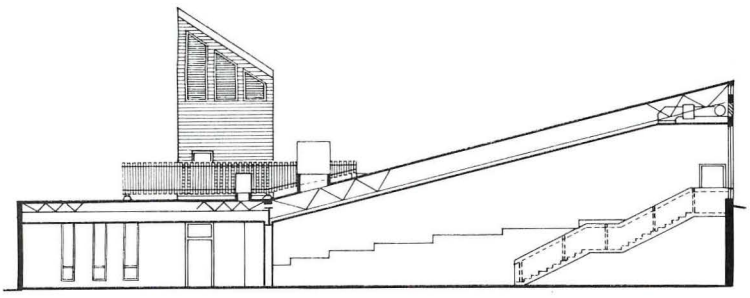
Paul Ferrino photos



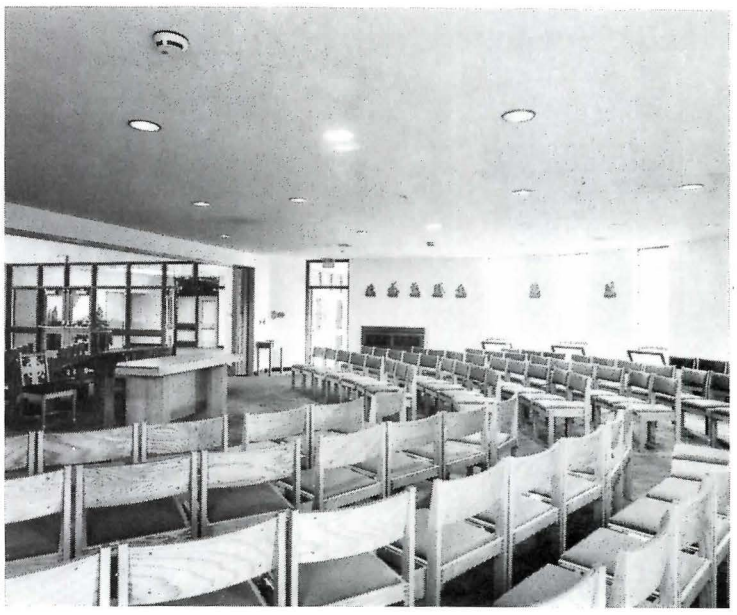


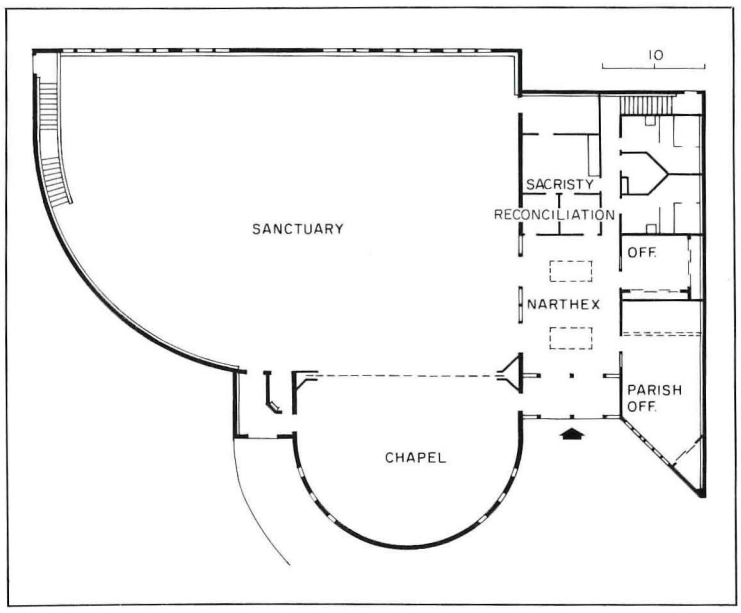
Looking calmly at home in a Massachusetts meadow, the church takes its untraditional curvilinear form, in part at least, from considerations of heat conservation. Despite the steep rise of the circular roof covering the sanctuary, the building lies low to the ground because it is built into the hillside for natural insulation (see section on page 85). A generous terrace at the entrance (left), warmed by the western sun on summer afternoons, accommodates open-air social gatherings after services. It is edged on one side by the circular chapel, on the other by the angular office wing. The traditional New England church spire is in this case a bell tower with a shed roof; a door at its base leads to service space, a stair to the roof, and the bell rope.

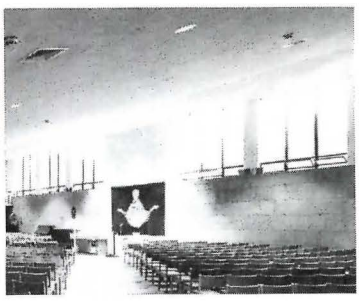
The inclined clear-span ceiling at the Church of St. Edward the Confessor, measuring 98 feet across the windows behind the altar, is supported by steel trusses that bear on a heavy steel beam between sanctuary and chapel and on light-gauge metal studs in the shingled wall curving around one side (see section). The architects chose this construction for the simplicity of installing insulation. The concrete retaining wall rises to grade and the bottom of operable sash at the back of the sanctuary (below and bottom right). The wood railing on the staircase in the corner honors not the fire door at its top, the architects say, but rather the impressive workmanship evident in the cantilevered concrete steps.



Church of St. Edward the Confessor
Medfield, Massachusetts
Owner:
Roman Catholic Archdiocese of Boston
Architects:
Dooling & Siegel Architects—Mark Dooling, Richard Siegel, Phillip Warbasse, Mitchell Goldman, project team
Engineers:
George Horowitz & Associates (structural); MEA Engineering Associates (mechanical); Johnson & Stover, Inc. (electrical)
Consultant:
Michael van Valkenburg (landscape)
General contractor:
Turner Construction Co.

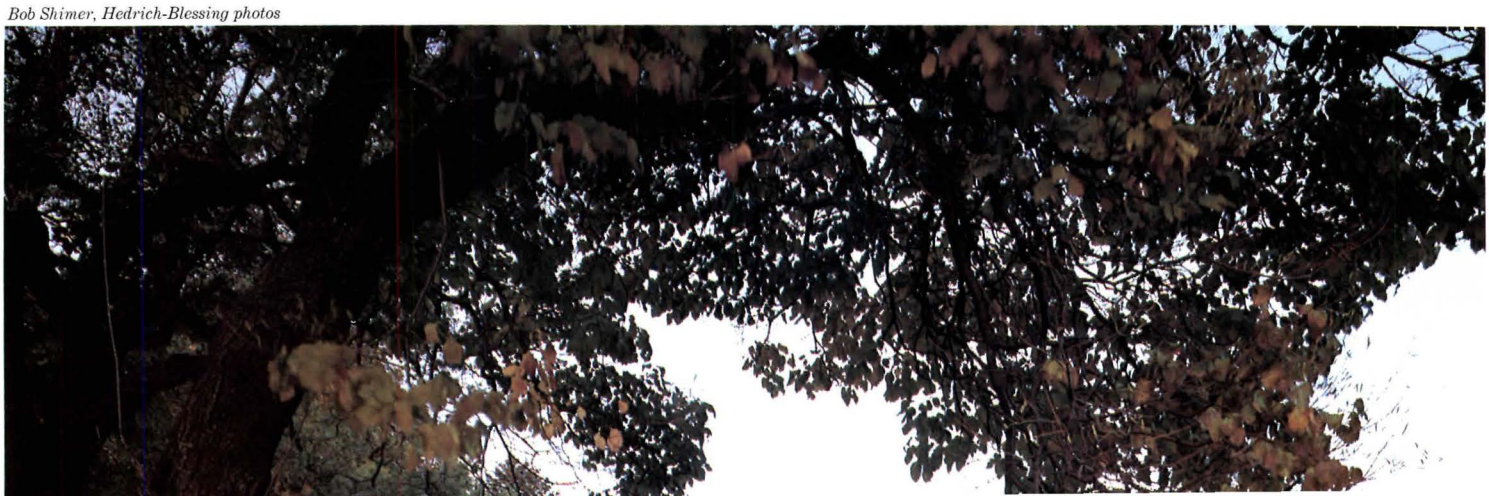






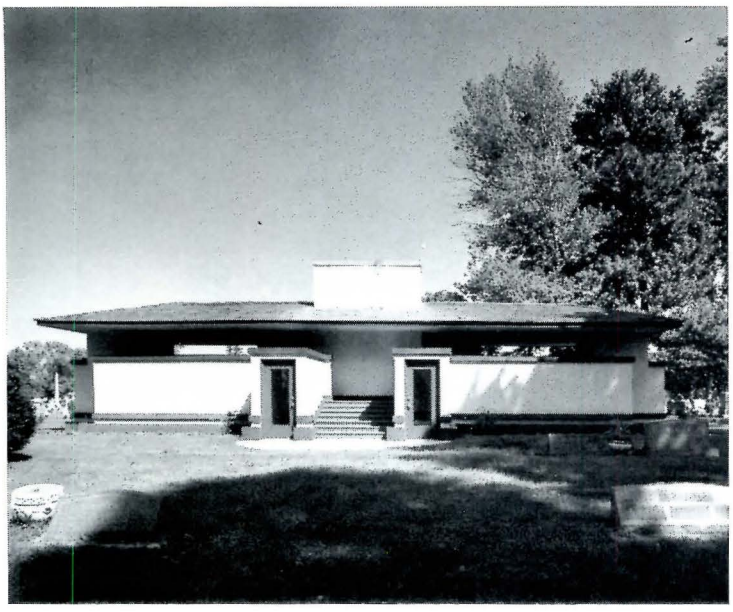
To increase seating, an accordion-fold door opens to join sanctuary and chapel. During the week it is closed to become the altar wall at morning chapel. A wide corridor inside the front entrance gives access to the sanctuary on one side, offices on the other, and the sacristy in back. A small vestibule can be closed off as a separate chapel entry.

Bob Shimer, Hedrich-Blessing photos



Pettit Memorial Chapel
Belvidere, Illinois
Lisec & Biederman, Ltd., Architects

The Prairie Style redux in an Illinois chapel



This small 1905 funeral chapel, Frank Lloyd Wright's only venture in the genre, recovered from the bedraggled state seen at right. Repair of the original pale green stucco called for filling in windows at ground level that lighted a basement excavated after construction. Solid doors on each side of the front steps were glazed (top) per the original design.

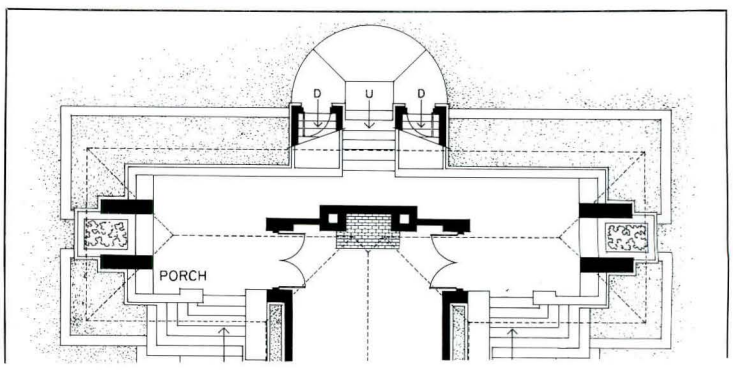
It sometimes happens that an architect's duty is to keep his own contributions to a building invisible. The rule holds especially when he restores the work of another, particularly distinguished architect, and it was observed by Lisec & Biederman when they rescued this Frank Lloyd Wright funeral chapel in Belvidere, Illinois, a small town of 15,000 people a little more than an hour and a half's drive from Chicago.

The nondenominational chapel, designed in 1905—the year of Unity Temple—was commissioned by the widow of Dr. William H. Pettit. Wright, whose only example of cemetery architecture this is, persuaded his client that a memorial sculpture would be less appropriate—and less up his alley—than would be a building for use. But in the years after its dedication, the building fell sad victim to age, disuse and vandalism. Recognizing distinction behind the physical ravages, the Belvidere Federated Woman's Club approached Lisec & Biederman in 1978, by which time it had obtained national landmark registration and made some headway in getting a grant-in-aid from the Illinois Department of Conservation.

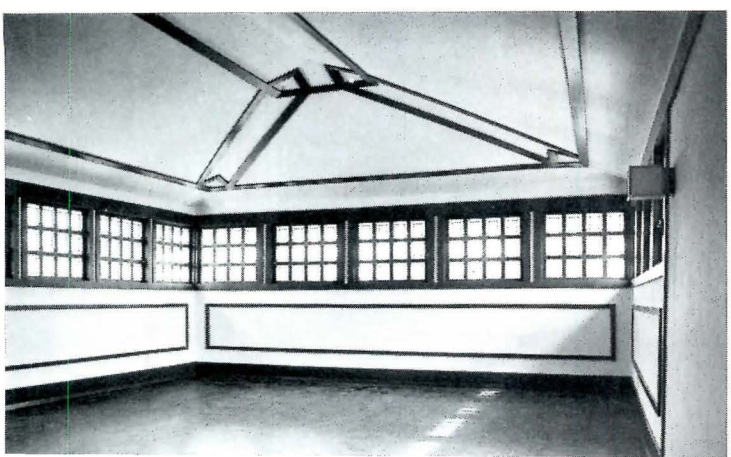
Detective work, as so often in restorations, was the first architectural task. The building, though intact and sound, showed few Wrightian characteristics apart from its appealing proportions. Immediately obvious depredations included a cement-asbestos roof and broken windows covered with plywood. By looking at early photographs, at working drawings lent by the Taliesin archives, and at presentation drawings in the Wasmuth portfolio, the architects learned that wood trim had been removed, that wood steps and railing caps had been replaced with concrete, and that rectangular stucco "pylons" along the chapel walls by the back steps had simply disappeared.

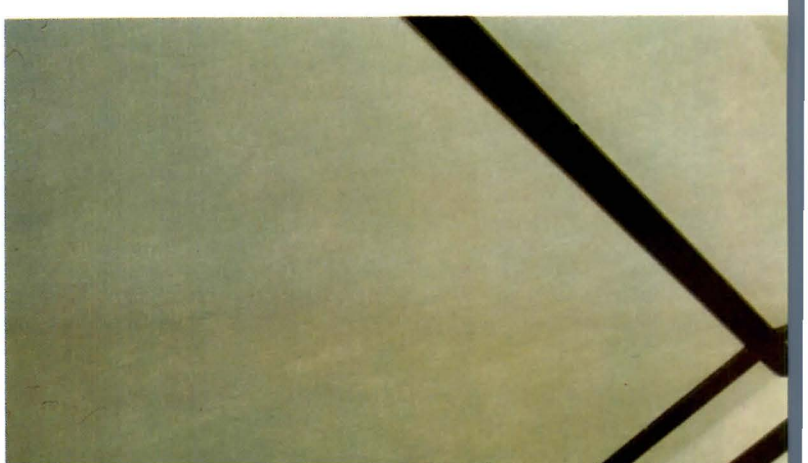
Remedial work involved repairing the lime-mortar stucco walls and coating them with material integrally colored to match the original pale green. (The precise color showed up when a wood bench on a side porch was removed.) New cedar shingles replaced the asbestos roof, new wood steps and railing caps replaced concrete, and new leaded art glass replaced the broken windows—all like the originals. The newly reconstructed dark green wood molding above the plinth emphasizes, as Wright intended, the chapel's low horizontality.

Low bidder on the $45,000 job was a local joint venture of two young men, one with experience restoring Victorian houses, the other making a specialty of art glass.



The art glass, so typical of Wright's design in this period, consists of leaded glass with milk glass corners. It had originally been installed here, contrary to plan, with only nine lights per frame; Lisec & Biederman returned to Wright's intended proportions—12 lights per frame. Lighting sconces had also disappeared without trace, but Michael Lisec, who has been involved in Unity Temple restorations, designed the authoritatively Wrightian fixtures, placing leaded glass cubes around bulbs. Wright's drawings hinted at ceiling fixtures, but wiring did not exist and the room, seldom used at night, receives ample daylight. The tan color of the walls was rediscovered when moldings were removed for repair.

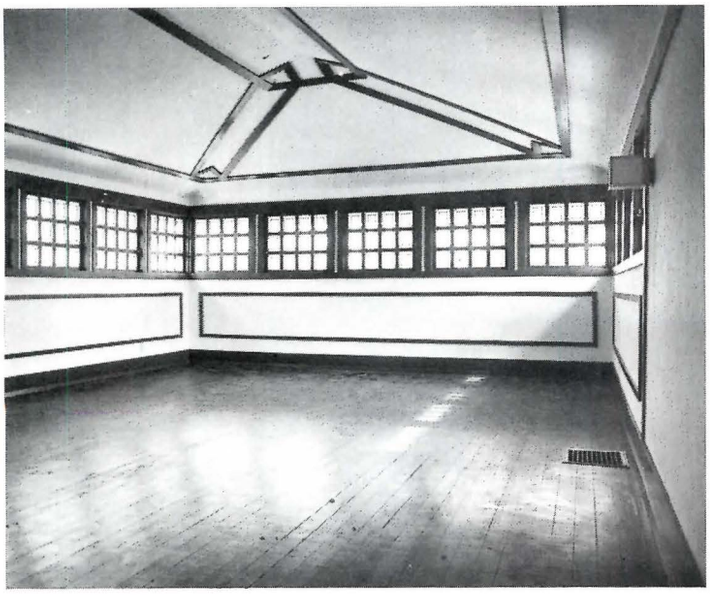


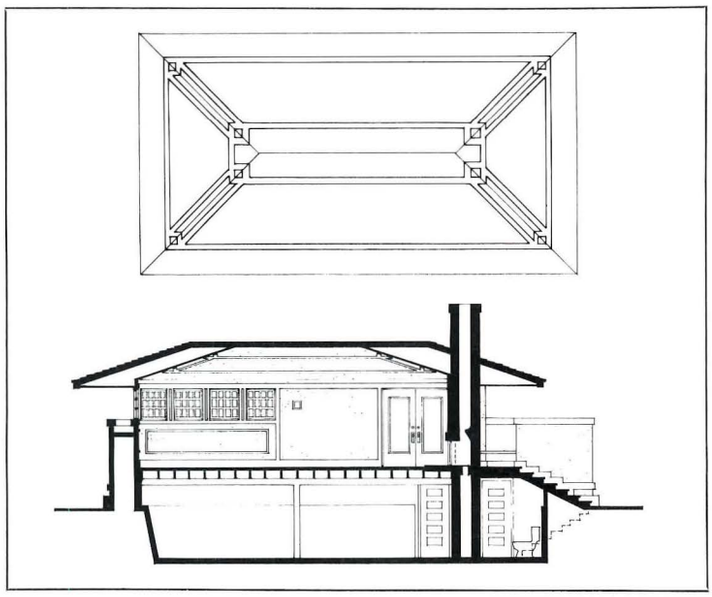


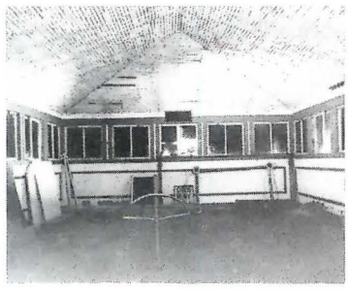
Bob Shimer, Hedrich-Blessing photos

At the back of the Pettit Memorial Chapel (above), leaded art glass, like the original, replaced the plywood sheets that had disfigured as well as protected the vandalized building. Cedar shingles, as originally specified, cover the Prairie Style overhanging hipped roof, replacing cement-asbestos tile and superfluous metal gutters at the eaves. The only roof alteration made by Lisec & Biederman was to build a cricket at the chimney intersection, where flashing had been inadequate. On either side of the chapel, two stucco "pylons" defining the edge of the stairs had disappeared; they were reconstructed from drawings and photographs. Further, the walls at the top of the stairs had been torn down to widen entrances to the porch; these passages were rebuilt to the original measurements—after testing ensured they would admit a large coffin.

The art glass, so typical of Wright's design in this period, consists of leaded glass with milk glass corners. It had originally been installed here, contrary to plan, with only nine lights per frame; Lisec & Biederman returned to Wright's intended proportions—12 lights per frame. Lighting sconces had also disappeared without trace, but Michael Lisec, who has been involved in Unity Temple restorations, designed the authoritatively Wrightian fixtures, placing leaded glass cubes around bulbs. Wright's drawings hinted at ceiling fixtures, but wiring did not exist and the room, seldom used at night, receives ample daylight. The tan color of the walls was rediscovered when moldings were removed for repair.





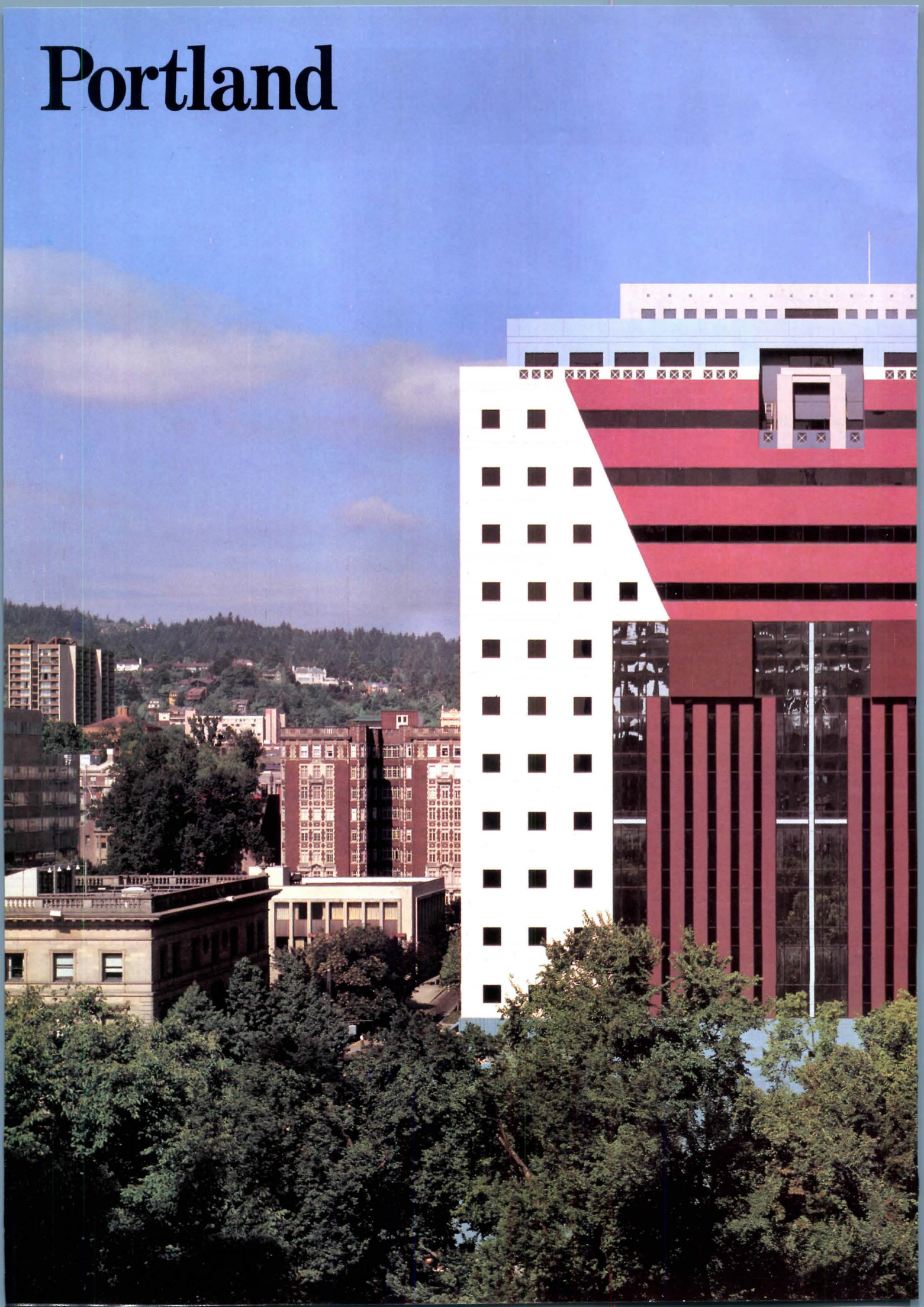


Geometric ceiling moldings appeared in Wright's drawings of the Pettit chapel, but by the late '70s there was no trace of plaster, let alone moldings (right). Lisec & Biederman could not even determine whether the moldings ever existed—no one in town remembered—but thinking the device suitable ornament for the small room, they designed to Wright's plan.

Pettit Memorial Chapel
Belvidere, Illinois
Client:
Belvidere Federated Woman's Club
Architects:
Lisec & Biederman, Ltd.—Michael Lisec, Fritz Biederman, Gregory Thomas

Engineers:
Ammar Consulting Engineers (mechanical/electrical)
Landscape architect:
Joe Karr & Associates
General contractors:
Kurt Bell & Frank Hautkamp

Portland



The Portland Building
Portland, Oregon
Michael Graves, Architect

The concrete garlands festooned across Michael Graves's Portland Building could be a string of blue ribbons awarded for good intentions. No project in recent memory has been endowed by its architect and his champions with such urgent cultural purpose, or such complex and weighty symbolism (see ARCHITECTURAL RECORD, August 1980, pages 96-101). Before construction was barely underway, advocates of the competition-winning design argued that this $22.4-million municipal office block in Oregon would be the first urban monument of our time to reaffirm humanist values ignored throughout the ascendancy of Modernism. Public architecture would once again honor the integrity of the city street; the isolated high rise would become a gateway for the metropolis around it, with lively arcades supplanting the arid plaza; richly polychrome facades, clad in the stylized natural motifs of classical ornament, would figuratively bind artifice to the landscape, and join government and commerce to the people they serve. Given the intensity of debate over the project, and the iconic mystique of Graves's widely published renderings, it was perhaps inevitable that a visit to the now completed building should be anticlimatic. The encounter is indeed disappointing, but not because a stringent budget of $51 per square foot precluded the use of costly finishes, or even because the most fanciful inventions of Graves's original proposal—the fiberglass drapery, colossal brackets, and rooftop *tempietti*—were vetoed by the client. Far more troubling is one's sense that the actual structure is nowhere near so eloquent as the architect's drawings.

The idea of classical grandeur is quite at home in Portland. Two representatives of this tradition, the 1895 City Hall and the 1913 Multnomah County Courthouse, stand to either side of the Portland Building, and Graves has successfully linked them into a municipal complex by scaling the base of the new tower to the horizontal massing of its older neighbors. At the same time, he has magnified classical details into bold surface markings that enable what is essentially a 15-story concrete box to stand out among the taller curtain-walled high rises around it. Seen from afar, this striking graphic effect is enhanced by colors which, though duller and less subtly modulated than the hues in Graves's renderings, are keyed to the gentle sunlight of the Pacific Northwest.

Unfortunately, when one confronts the Portland Building from the Fifth Avenue transit mall outside its front door, or through the trees in nearby Chapman Square (site plan overleaf), he is apt to feel like a theatergoer who has taken a seat too close to the stage for the set designer's painted shadows and false perspective to work their magic. Viewed alongside the chiseled Ionic capitals, dentil courses, and rustication of the courthouse and city hall (photo opposite), the billboard classicism of Graves's elevations appears crude and thin. One misses the play of light and shadow across modeled surfaces that can make monumentality and tectonic logic palpable to the eye and hand.

There is an implicit anthropomorphism of "foot," "body," and "head" in Graves's tripartite composition, but the sum of these parts bears so slight a resemblance to any familiar proportional canon—anatomical or architectural—that the uninitiated observer is not likely to grasp such analogies. One would have to read the architect's scholarly gloss to discover, for example, that the swollen keystones denote rental floors, supported figuratively as well as literally by the municipal offices below, or that the stepped base of the building alludes to the base of a mountain. The most obvious token of Graves's reliance on mimetic imagery is the allegorical statue of Portlandia that will ultimately be mounted above the Fifth Avenue entrance (photo page 99). A scion of the buxom Lady Commerce who stands at the center of Portland's official seal, the melancholy crouching female wrought by sculptor Raymond Kaskey is, at best, an ambiguous emblem of civic pride.

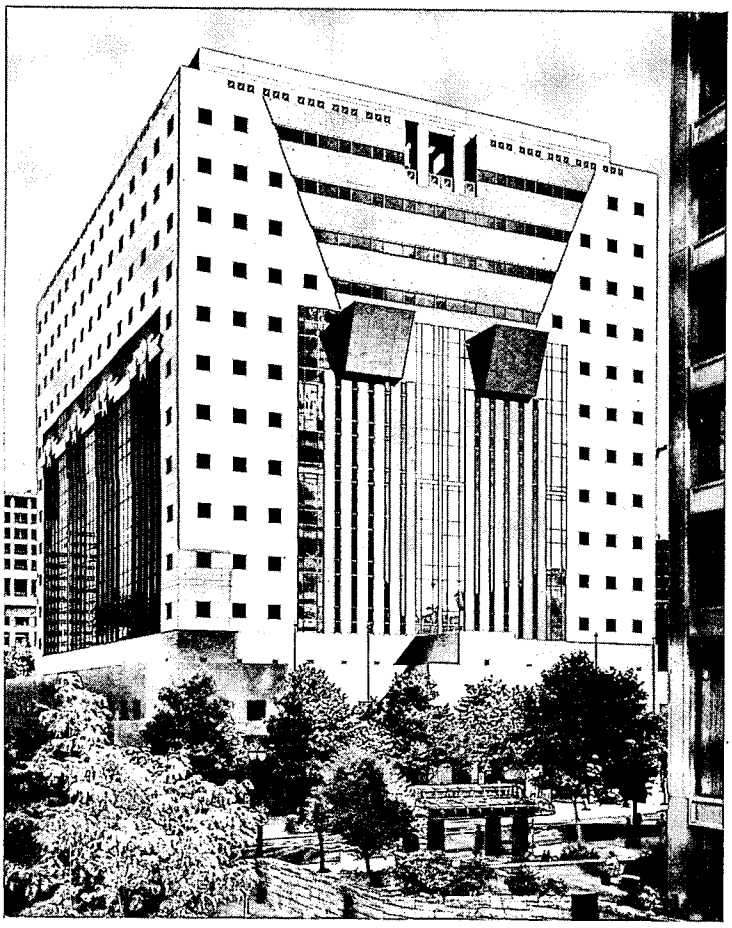
As client for the building, the City of Portland was understandably more concerned with general architectural character than with iconography. (The first priority, of course, was the logistics of economically providing offices for 900 municipal employees, four floors of tenant space, and 6,000 square feet for commercial use.) The owner's statement of purpose issued with the competition guidelines insisted that the project be "Open, exciting . . . expressive of the humanity of the individuals who will use it." Besides satisfying all budget and energy requirements, Michael Graves's design has stirred up more excitement than conservative Portland ever bargained for. But when local residents discuss the prodigy in their midst, they rarely speak of openness or humanity.

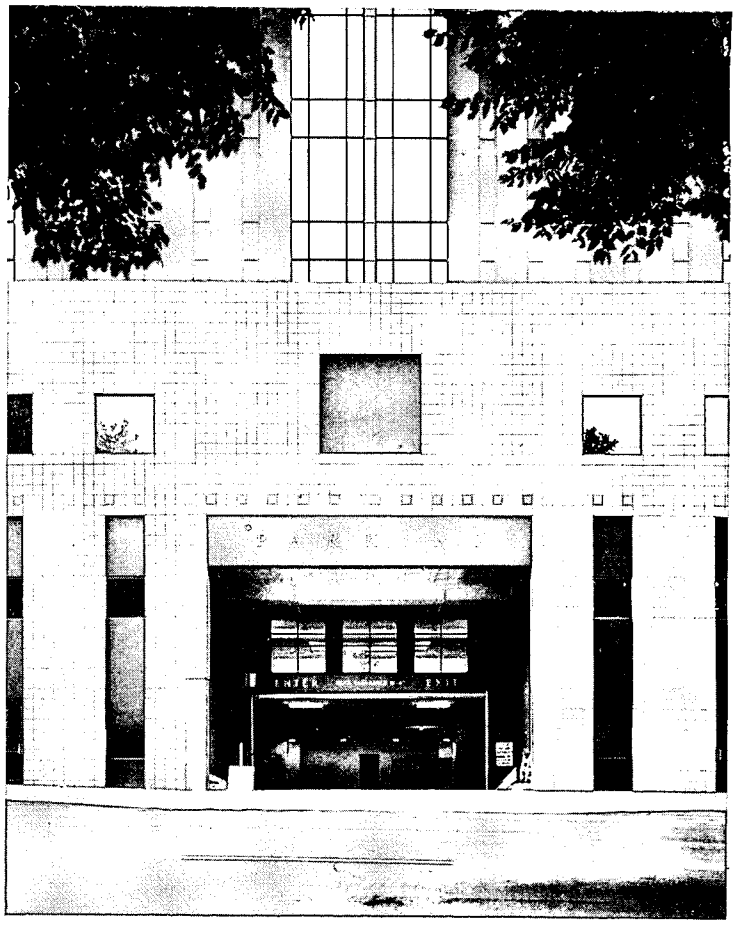
The passer-by looks up in vain for signs of life behind the multistory strips of mirrored glass, or the tiny office windows punched through cream-colored walls like row upon row of dim cellar casements. Inscrutable dark glass doors and shopfronts set back within an arcade reinforce the enigma at entry level, and the high podium of blue tile only emphasizes the bathos of a gaping garage entrance and loading dock immediately opposite one of the city's loveliest parks (photo overleaf).

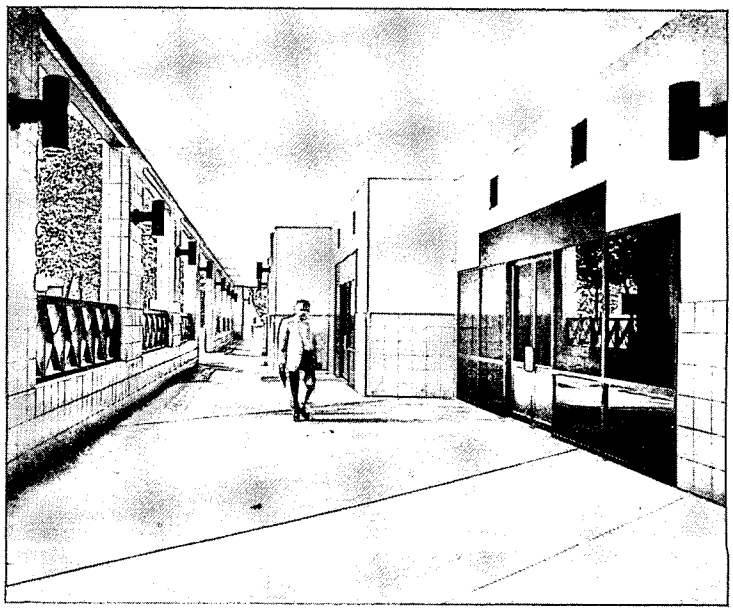
Once Portlandia is ensconced on her pedestal, the Fifth Avenue entrance may acquire the ceremonial distinction it now lacks. As it is, the relative obscurity of the doorway inside the shopping arcade heightens the apparent grandeur of the galleried lobby within (photo page 96). Here, as in the other major public rooms on the first two stories, the schematic evocation of classical prototypes and an axial plan lend the dignity of statelier chambers to gypsum-board enclosures. Tiled wainscots, oversize chair rails, and a palette that could have come from a Victorian handbook define architectural order by contrasts of texture and chromatic harmonies. The scenographic articulation that seems overblown on the exterior of the building is much more satisfying in the controlled environment of interior spaces, even though its charm is marred by the unhappy mixture of glare and penumbral gloom diffused by fluorescent cove lights. Graves did not lay out the present arrangement of work stations and partitions on the upper stories, but the small (four- by four-foot) solar gray windows he specified contribute to their warrenlike ambience. (Occupants of one office recently taped cardboard bars onto their window panes in protest.) The city employees who work here appreciate the energy-conserving aspect of Graves's design and yet, as they crane for a tantalizing glimpse of the Willamette River, Mount St. Helens, or Chapman Square, they may well ask, "Why is this better than a glass box?" For all the messages it was meant to convey, the Portland Building remains eerily mute. *Douglas Brenner*

Cervin Robinson photos, except as noted

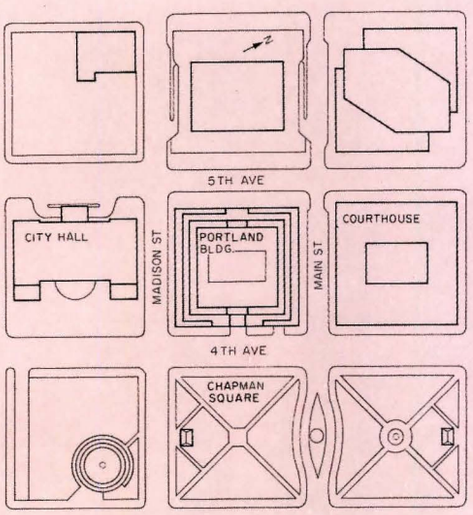
Owing to the client's objections to exterior embellishments proposed in Graves's design, the Portland Building that opened officially last month is a somewhat modified version of the project entered in the 1980 competition. The sole vestige of a fanciful rooftop "village" is a pair of belvederes notched into the mammoth keystones. Bas-relief ribbons, neatly tailored in an Art Deco mode, proved to be an acceptable substitute for the flowing rococo swags of Graves's original scheme. Each reinforced concrete garland was precast in three pieces and bolted onto the building. As on most of the tower's concrete surfaces, the colored finish applied to the garlands is elastomeric paint. Glazed ceramic tile frames the open loggia along Fifth Avenue (bottom left and right) and a Fourth Avenue entrance to parking and

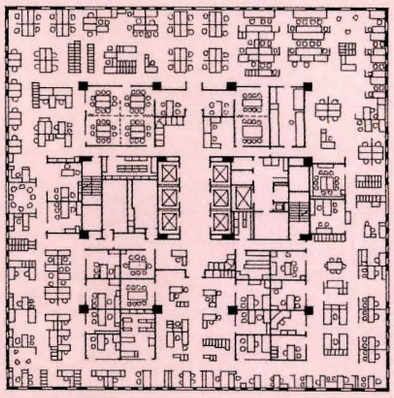


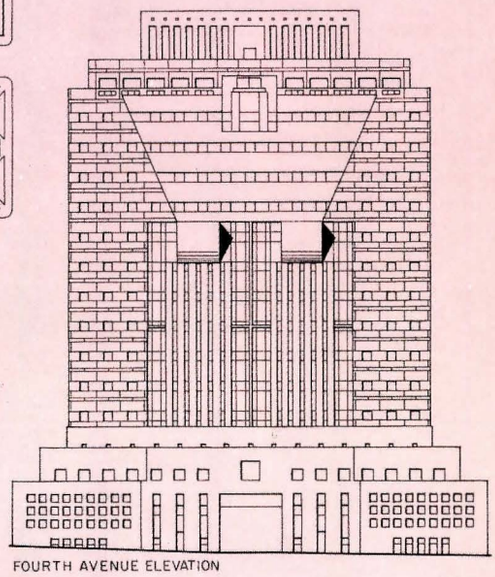


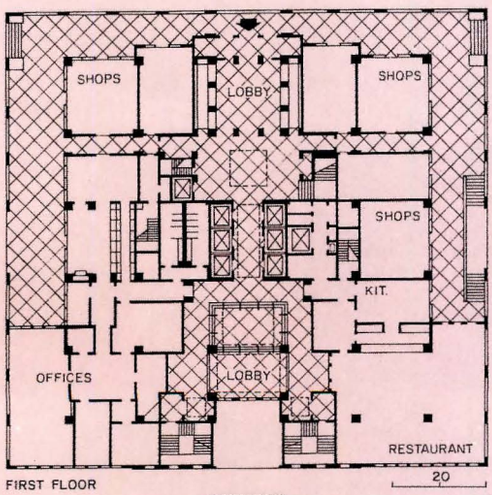


loading areas required by the competition program (photo top right, elevation below). The energy-efficient accommodation of some 362,000 square feet of program space within a tight budget was the deciding factor in the selection of Graves's design. In accordance with the competition rules, his plans included layouts for all public rooms and service areas as well as schematic placement of work stations and partitions on the nine city office floors (rental tenants occupy the top four stories). The contract for the actual design of municipal office interiors was awarded in a later bidding competition which Graves entered but lost to the Zimmer Gunsul Frasca Partnership. Graves's chief imprint on these spaces (beyond a color scheme inspired by his own pastels) is the perimeter fenestration, which is intended to reflect human scale at desk height and assert the role of architecture as a framing device. Measuring nine square feet in the original plans, the solar-glazed casements were enlarged to 16 square feet at the client's insistence.

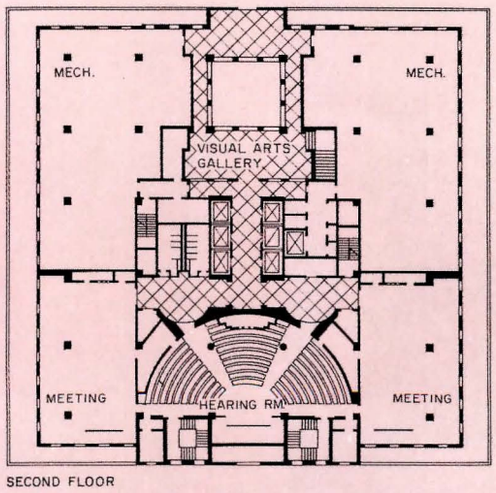



TYPICAL OFFICE FLOOR


FOURTH AVENUE ELEVATION



FIRST FLOOR



SECOND FLOOR


Ed Hershberger

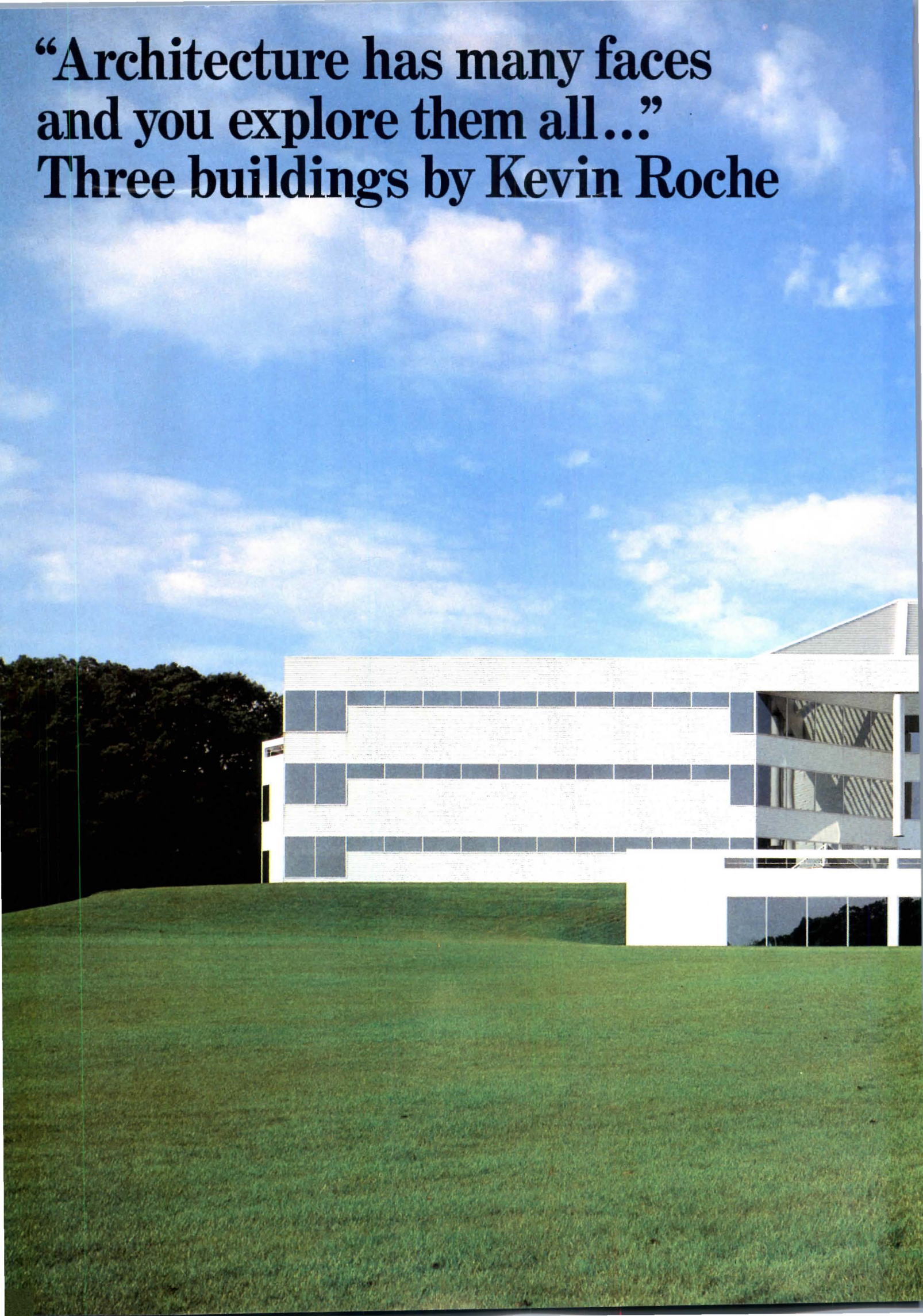

SECURITY

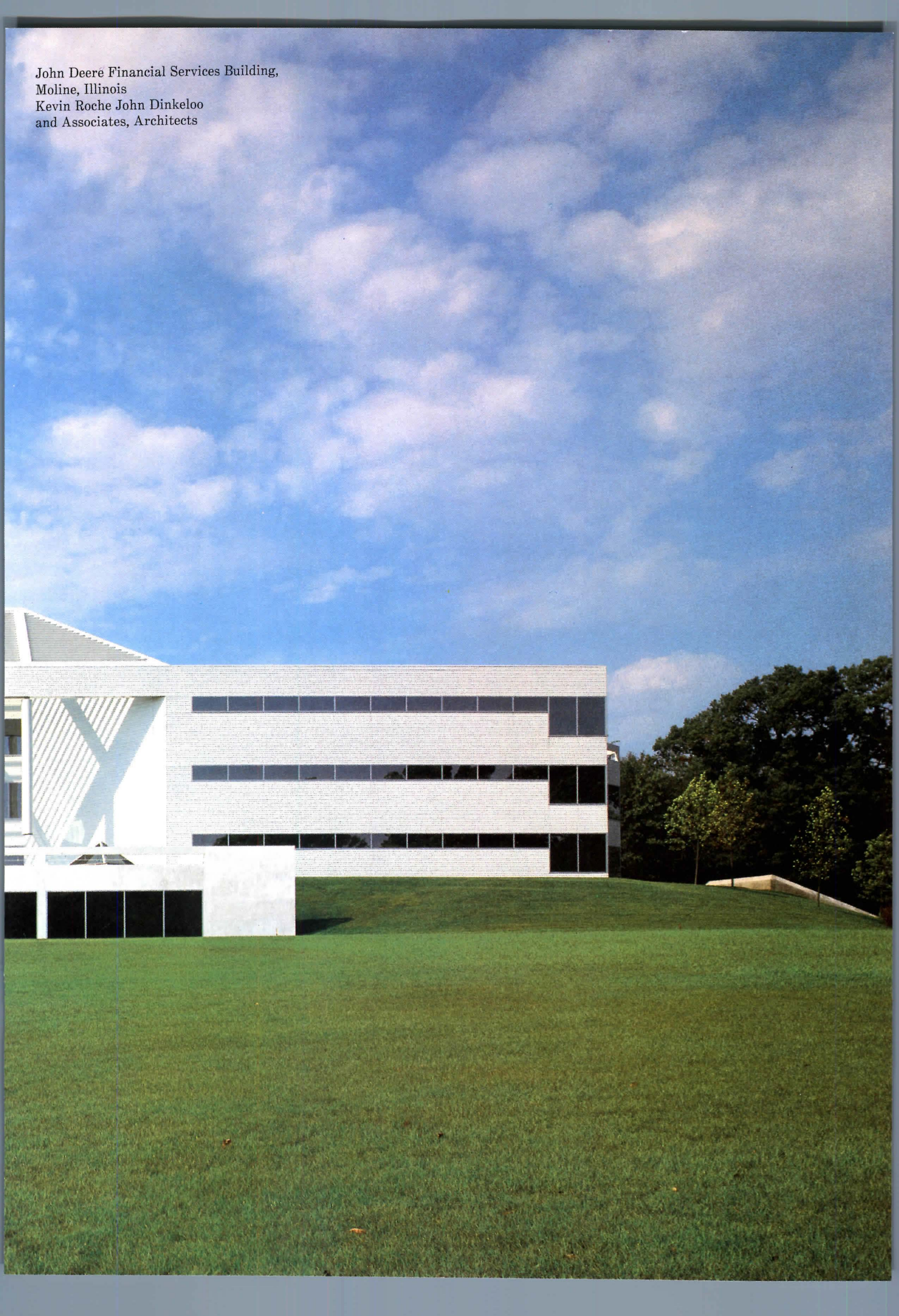
Michael Graves characterizes his low-budget interiors as "gyp-board city." Nevertheless, in public spaces such as the entrance lobby (opposite) and the visual arts gallery that overlooks it (upper photo below), he followed the example of the Pompeiian muralists he admires by using polychromy to simulate more sumptuous decor (terrazzo floors are the one genuinely luxurious finish). An axial parti organizes circulation routes and vistas, as in the enfilade from the foyer through the elevator lobby (bottom photo). The dais that terminates this axis will be furnished with park chairs and café tables for brown-bag luncheons. Windows offer a tunnel-like prospect of the garden in Chapman Square, framed by the concrete jambs and ceiling of the garage entrance.

A screen of Roman grilles at the rear of the hearing room (lower photo below) echoes the pattern of railings on the exterior of the building. As a gift to the city, Graves has offered to design a rostrum for the hearing room and to paint a mural in the framed panel outside the auditorium entrance (upper photo). The mural surround and flanking niches mark one end of an axis that extends through the visual arts gallery. For its inaugural exhibition the gallery is displaying drawings and models by Graves. Also on view is a model of the Portlandia statue selected by a competition jury that included the architect (opposite). Portland's one-per-cent-for-art program is paying for the $200,000 copper figure that will surmount the Fifth Avenue arcade.

The Portland Building
Portland, Oregon
Owner:
City of Portland Public Buildings Corporation
Architect:
Michael Graves, Architect—Michael Graves, principal-in-charge; Lisa F. Lee, project manager; Gavin Hogben, Theodore Brown, Dennis Cormier, Brian Wishne, Deborah Natsios, Mason Perkins, assistants; Peter Arnell, Ted Bickford, Nick Gonser, Steven Harris, Eric Kuhne, Joe Mancuso, Sharon Pachter, Stephen Perkins, Juliet Richardson, Terry Smith, Suzanne Strum, Keat Tan, Max Underwood, Karen Wheeler, David Zung, competition phase assistants
Associated architects:
Emery Roth & Sons, P.C.; Edward C. Wundram
Engineers:
DeSimone & Chaplin, Consulting Engineers (structural); Thomas A. Polise, Consulting Engineer, and Cosentini Associates (mechanical/electrical)
Municipal office interiors:
Zimmer Gunsul Frasca Partnership—John A. Moll, project director; Debbi Moody, Sue Kerns, Alice Boczkaj, Holly Rodway, project team
Consultants:
Cerami & Associates (acoustical); Lerch/Bates Associates (elevators)
Stenciling:
Sara H. Hopkins
General contractor:
Pavarini Construction Co., Inc., and Hoffman Construction Co. (joint venture)
Construction manager:
Morse/Diesel, Inc.

"Architecture has many faces and you explore them all..." Three buildings by Kevin Roche





John Deere Financial Services Building,
Moline, Illinois
Kevin Roche John Dinkeloo
and Associates, Architects

A stately country house for corporate operations

Earlier this year, Kevin Roche won the Pritzker Prize for an extraordinary body of work stretching back over 20 years.

He has designed buildings covering a very broad range of building types, from city towers to low-rise office buildings set in pastoral industrial estates, college buildings, museums, terminals, and hotels. His design awards would fill a wall, though—you are not surprised to find when you know the man—none are on display in his Hamden, Connecticut, office. Each time one of his buildings is finished it seems to be something special—always beautiful, always supremely logical, yet always exploring something new....

"There is not, and there should not be, a single direction in architecture," Roche argues. "Architecture has many faces and you have to explore them all. You must always be on a search—if you know where you're going from the start, you haven't pushed yourself hard enough." As the three buildings that follow indicate, Kevin Roche keeps pushing—not just on the major, large-scale commissions, but on more modest projects. These three just-completed buildings—two office buildings and a campus complex—are all about 100,000 square feet in area. All had modest budgets, and none are marked by the luxurious finishes and materials that so set off, perhaps most memorably, the Ford Foundation building. These buildings were in design at the same time as Union Carbide's giant office complex in Danbury, Connecticut, General Food's elegant and formalistic headquarters in Rye, New York (both nearing completion), and Roche's work at the Metropolitan Museum of Art in New York. These three smaller buildings clearly received the same kind of attention, the careful, even intense, exploration, that was lavished on the bigger work. "Ultimately," Roche says, "it is the ability of architects to deal with every kind of problem at every scale that will make the difference in creating a good environment. The 'masterpiece' buildings by any and all of us are not enough...."

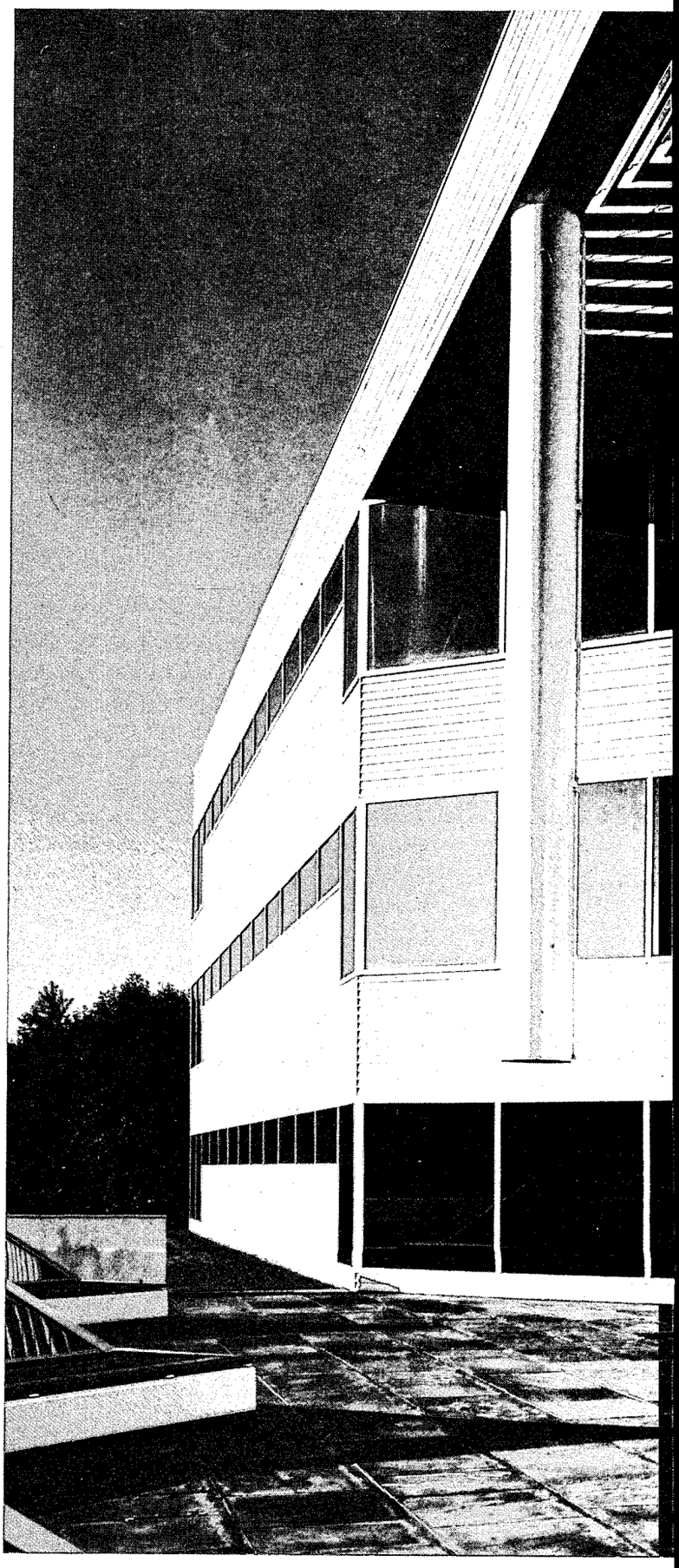
These are, as Roche puts it, "nice, simple and straightforward buildings, and they don't pretend to be anything more than that." Nonetheless, they are each special—and they are special (and different from each other) because they grew so logically from their sites and their programs and the expectations of their owners.

The John Deere building (described beginning at right) grew out of the client's wish for a low-rise office structure that would establish a very strong image for those arriving at the company's sprawling corporate headquarters site—and (see photograph on the preceding page) it does that very well indeed. It also sets up (as the client wished) a strong contrast with the famous Saarinen and Roche buildings set farther into the site.

The Kentucky Power Company building (pages 106-109), while it is fairly close in function (that is, simple office space) to the John Deere building, is very different because the essential of its program was that it fit comfortably into a tight one-block site in a small city, and become a part of that community in scale and in public use. Thus, in an office building, we find an auditorium, a gallery, and a cafeteria used by the public and by the owner.

The final building of this group—a visual arts center for Texas Christian University—was shaped by a very complicated program and a very complicated problem of image. It is an entry building to the university, it relates to a neo-Georgian campus, and it ties together a variety of schools and faculties.

Three very different buildings—each growing with splendid logic out of the same essentials of site, and program, and hoped-for image—which is, after all, much of what architecture is all about. *Walter Wagner*



This is the third building by Kevin Roche and the predecessor Saarinen firm on the Deere and Company headquarters site, but it is very different in function from the well-known weathering steel headquarters building and its "annex," the Deere West office building (RECORD, February 1979). The company wanted this building "separate in every way," and thus it is located over a quarter-mile from the earlier buildings, is reached by a separate drive, is white instead of "black," and is a building with solid walls and clearly defined strip windows in contrast to the all-glass curtain walls of the earlier buildings with their strongly expressed steel frame.

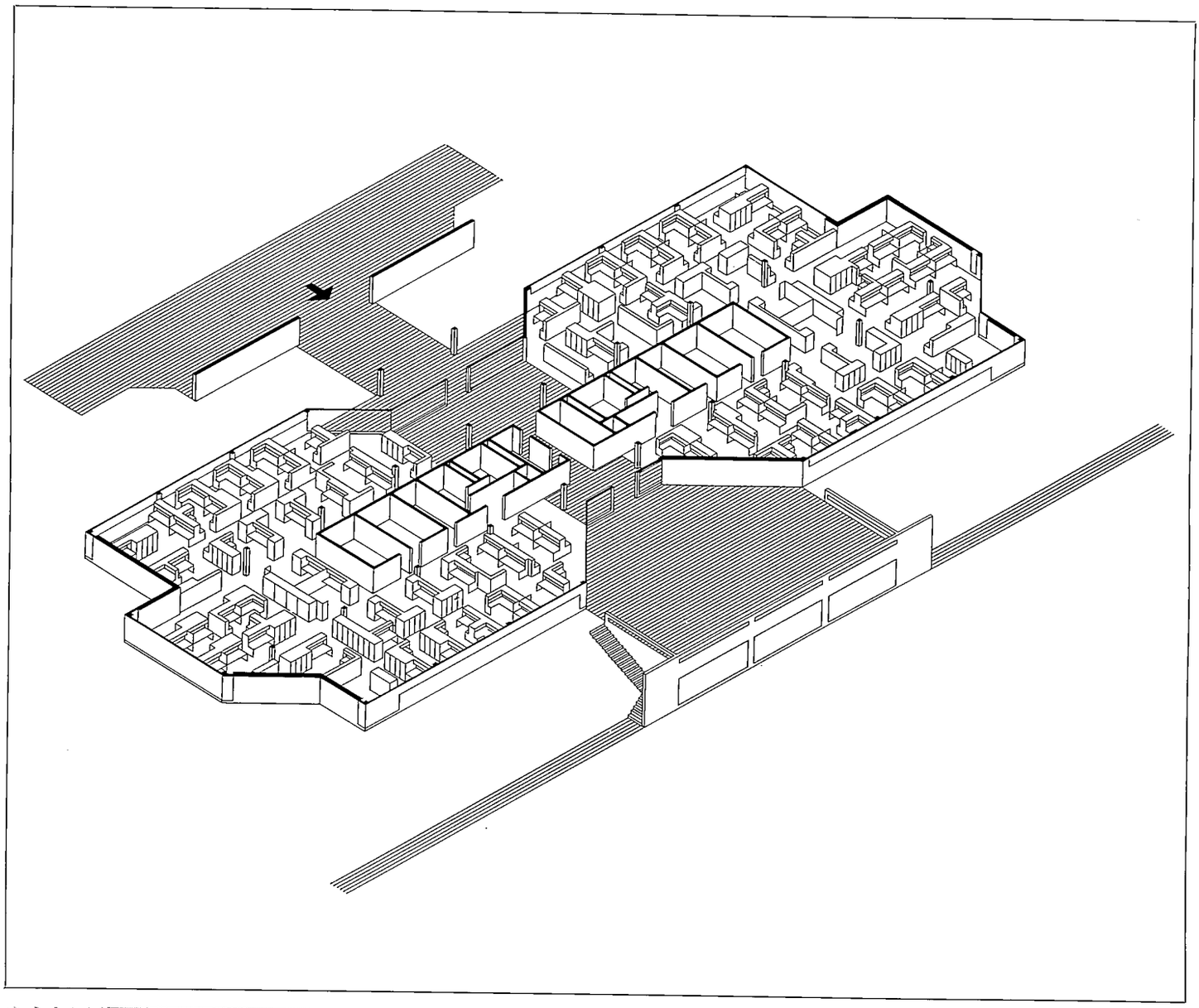
The image here, since we must have images these days, is "country house in a park," or maybe even (given the gleaming white portico and pediment seen best on the previous spread) "ante-Bellum mansion." But this is no simple allusion—the pediment is a steel-framed trellis that sweeps up over the roof to screen the mechanical equipment and elevator penthouse. The shadows cast by the trellis animate the complexities of the set-back portico: two of the three portico walls (photos this page) are glass, the third is solid; the two-foot steel pipe columns ("which seemed visually necessary") are not structurally necessary, so they were suspended and cut off eight feet above the terrace as an expression of that. ("It is bit of a surprise when one walks out on the terrace. . . .") The crisply detailed

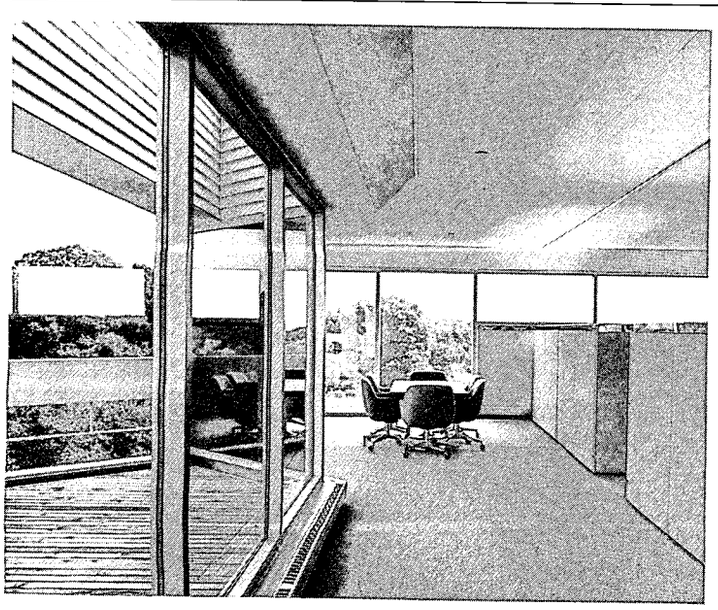
siding is aluminum—"an attempt to use a commonplace material very elegantly."

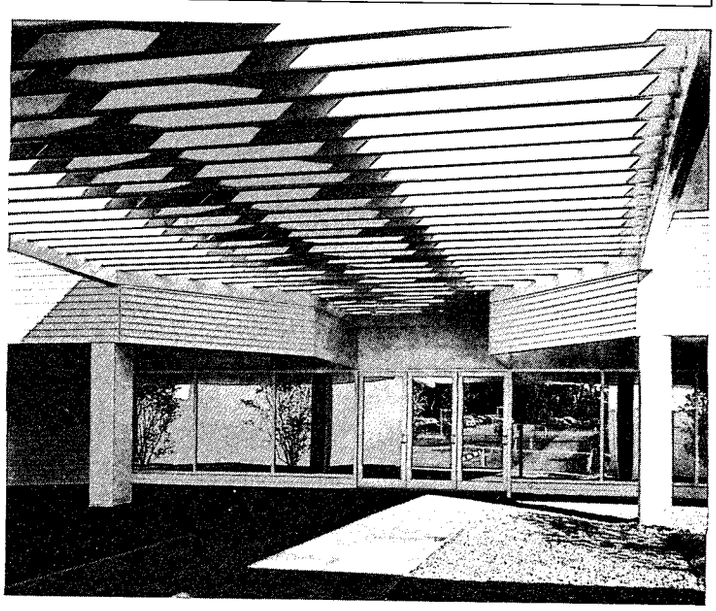
The terrace itself is bluestone, marked by three skylights that brighten the cafeteria below.

The building plan is simple—three stories of open-plan work stations (see drawing) with the cafeteria tucked into grade below the terrace. The windows are mostly strips of silver reflecting glass set above the five-foot line—that is, at the tops of the partitions (photo below left). At the corners, and in the "portico," the glass drops to floor level to create special spaces for meetings, and as circulation focal points; the core walls are mirrored to bounce the daylight back into the work spaces. Entrance to the building (photo below) is through a garden wall and under another steel framed trellis—this entry is on the far side of the building from the country house view experienced by arrivals driving into the Deere complex.

In sum, a simple and spare building, made special by the trellises and the portico and Roche's usual very careful detailing of simple materials and design ideas.





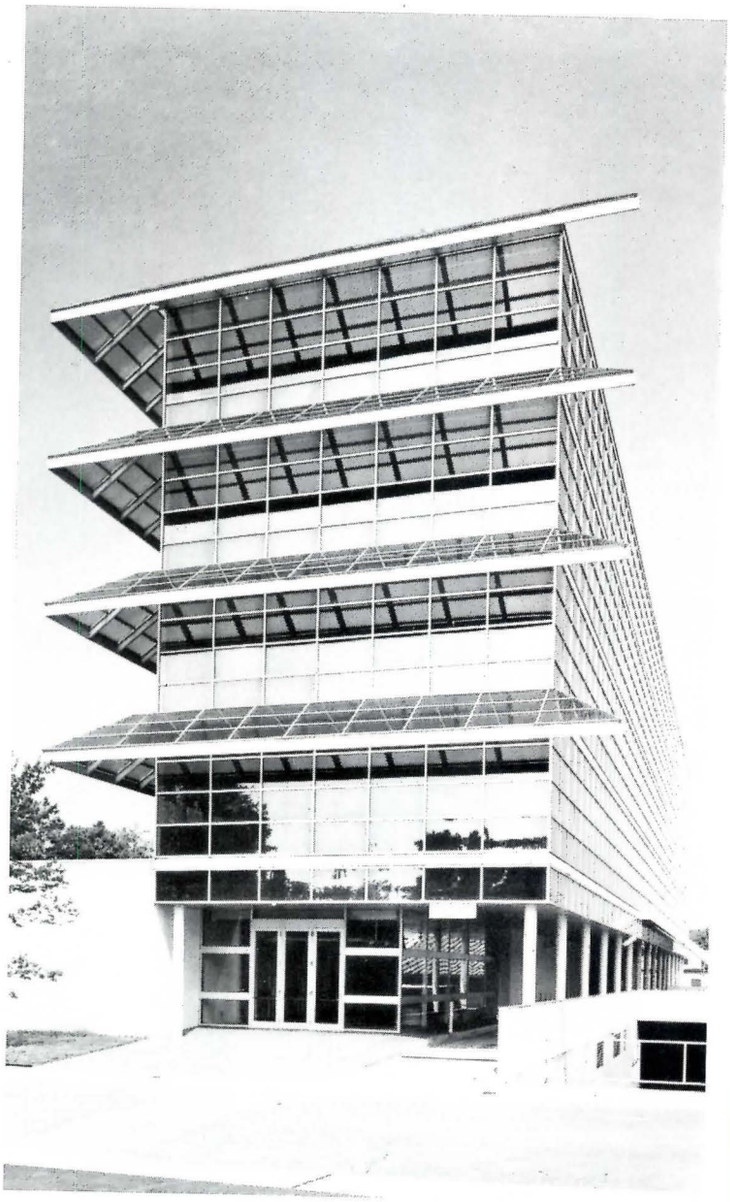


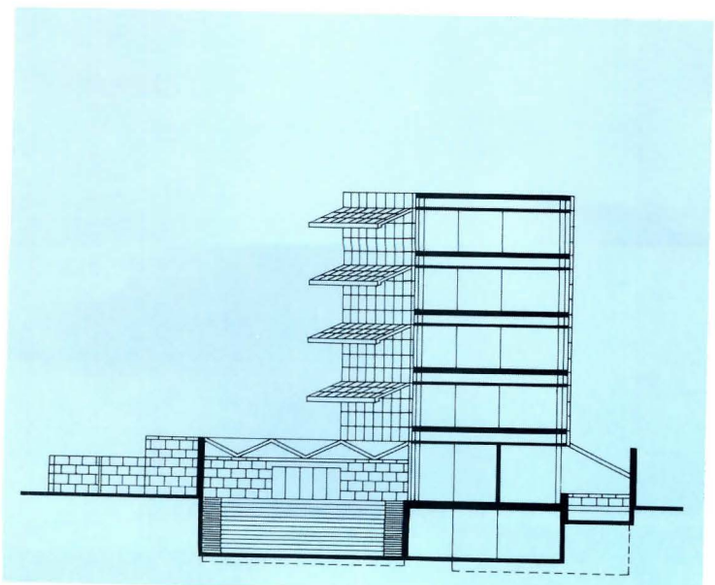
John Deere Financial Services Building, Moline, Illinois
Architects:
Kevin Roche John Dinkeloo and Associates—project architects: Kevin Roche, John Dinkeloo, James P. Owens, Jr., David Jacob, John V. Owen

Engineers:
Weiskopf and Pickworth (structural); John L. Altieri (mechanical/electrical)

A friendly and small-scaled office building for a small town

Kentucky Power Company
Ashland, Kentucky
Kevin Roche John Dinkeloo
and Associates, Architects





This elegantly detailed glass sculpture is set on a city block in the small town of Ashland, Kentucky. The neighborhood is essentially residential, with a large public park diagonally across the street—and the park played an important part in shaping the building. The executive offices, of course, wanted to overlook the park, but the orientation was south and west, and so the idea of the deep awnings was born. The awnings extend 7 feet, 6 inches—structurally framed in white-painted steel but trimmed in aluminum and using the same green reflective glass as the walls. The awnings completely shade the offices in summer, create a very pleasant light in the offices, and not only animate the design but tend to diminish the vertical scale. The awnings sweep in an unbroken line around three sides of the building, giving way to a simple curtain wall on the north-facing wall where, of course, solar control is less critical.

The client was anxious for the building to be a friendly and open-to-the-public addition to the town—and thus almost the entire ground floor (see plan overleaf) is given over to spaces used at least part of the time by the community. For example, the auditorium, used by the owner for a continuing series of cooking exhibitions as well as company meetings, is also used frequently by community groups for meetings, lectures, theatrical

productions and films. This space (photo below) is enriched with handsome finishes, and enlivened by the glittering proscenium—a simple frame with back-lit stippled glass. The curtained wall in the background opens to the appliance exhibit on the main floor, left open during company events. A large dock and backstage area, served by a loading ramp from the street, facilitates both the cooking exhibitions and theatrical productions.

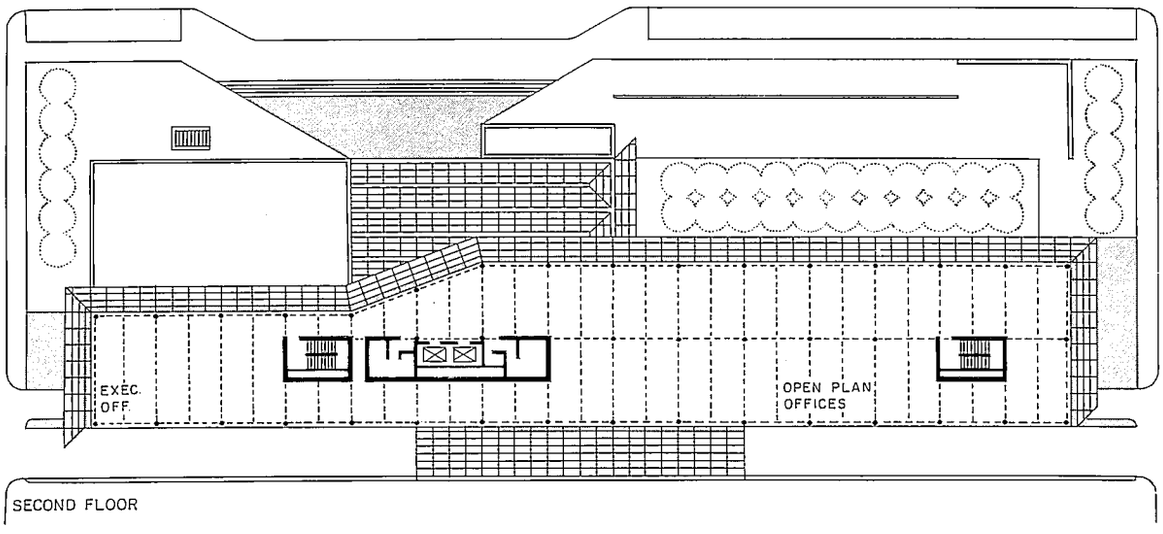
The cafeteria (below opposite) is used for community banquets and parties; and the lobby/exhibit space is as often used for displaying the work of local artists as it is for displaying appliances. This gallery opens to a planted sculpture garden, enclosed by a glass screen so it is enjoyed as much by passers-by as by visitors to the building and tends to reinforce the park image at the other end of the building. All of these public spaces are entered off the main entry, a broad terrace covered to the building line by lively rows of skylights in the same glass and flanked by the auditorium and plant-filled cafeteria.

On the upper office floors, the executive offices are in the narrower (35-foot-wide) section, which opens over the entrance to the 50-foot-wide general offices—fitted out in a flexible open-plan scheme. In all of the office spaces, the walls below sill height are heavily insulated behind spandrel

glass matched in color and reflectivity to the windows above.

This building is, of course, a major addition to the town, but in height and setback and by means of its public spaces it clearly fits its small-town framework—a friendly and small-scale addition.

Kentucky Power Company Headquarters, Ashland, Kentucky
Architects:
Kevin Roche John Dinkeloo and Associates—project architects: Kevin Roche, John Dinkeloo, David Powrie, Steuart Gray, Andrew Mogridge, John V. Owen
Engineers:
Severud-Perrone-Szegezdy-Sturm (structural), Cosentini Associates (mechanical/electrical)



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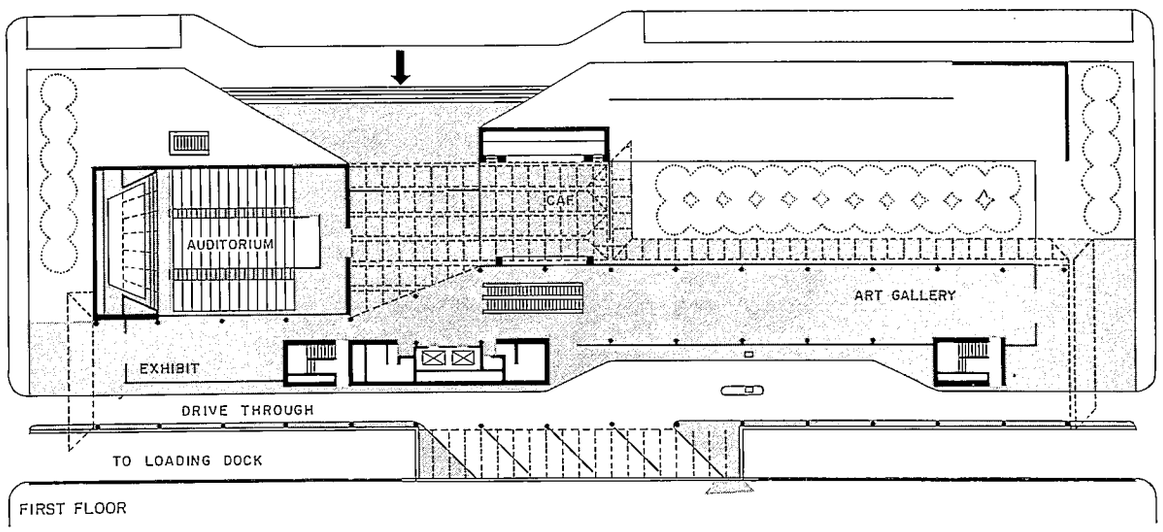
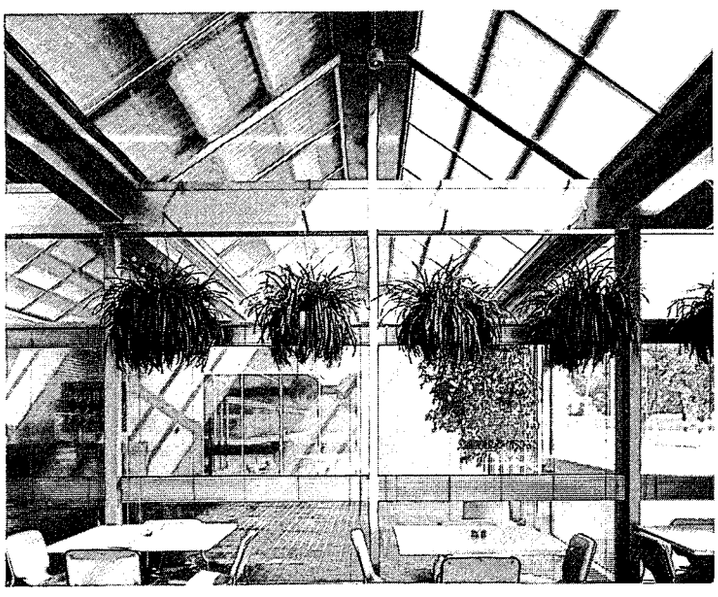


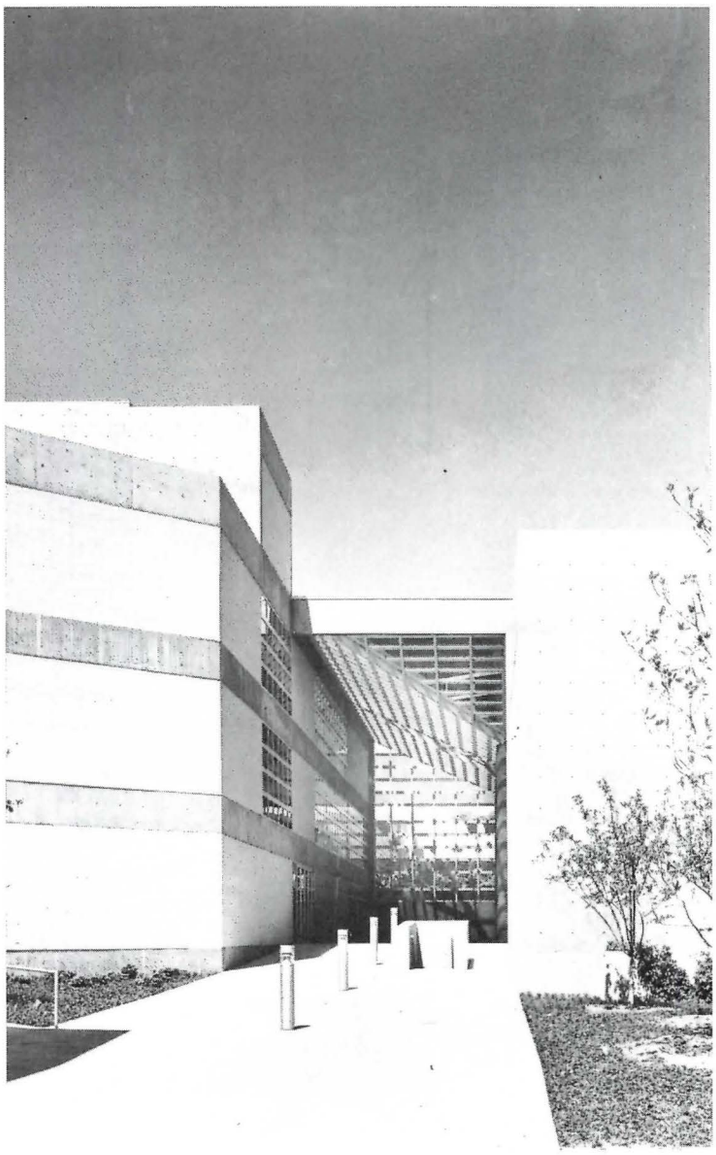
FIRST FLOOR

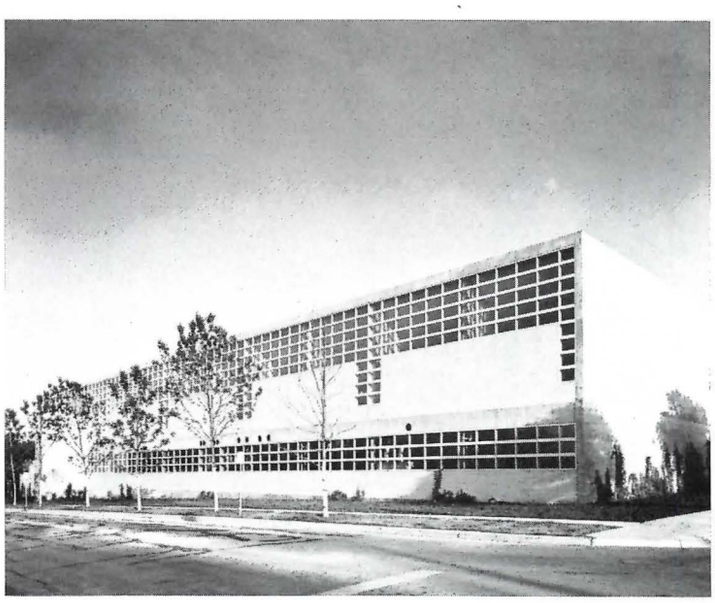


A strong new gateway to a college campus

Visual Arts and Communication Building
Texas Christian University, Fort Worth, Texas
Kevin Roche John Dinkeloo
and Associates, Architects

This 100,000-square-foot campus building presented much more complex problems of program, of site, and of image than the two office buildings shown earlier. The campus of TCU is dominated by neo-Georgian buildings, most in buff brick with formal entries marked by classic columns and pediments. Perhaps the most important of these is a rather splendid concert hall across the street from this newest campus building. The two buildings share the responsibility as the gateway to the university, and while of course they are totally different in character, Roche's design has completed the entrance appropriately and firmly. The new building, concrete framed, is finished in the same brick; the two buildings are the same height. The portico of the concert hall is echoed in a contemporary way by the columns and glass canopy that mark the entrance to this building. As seen in the foreground of the large photo, one wing of the new building angles forward close to the street, creating a mass that is similar in size to the concert hall and set back equally from the main entry road to establish that gateway. The part of the building set farther back rests on the building line of other existing buildings and opens up the view of the campus from the entrance across the terrace and green lawns.

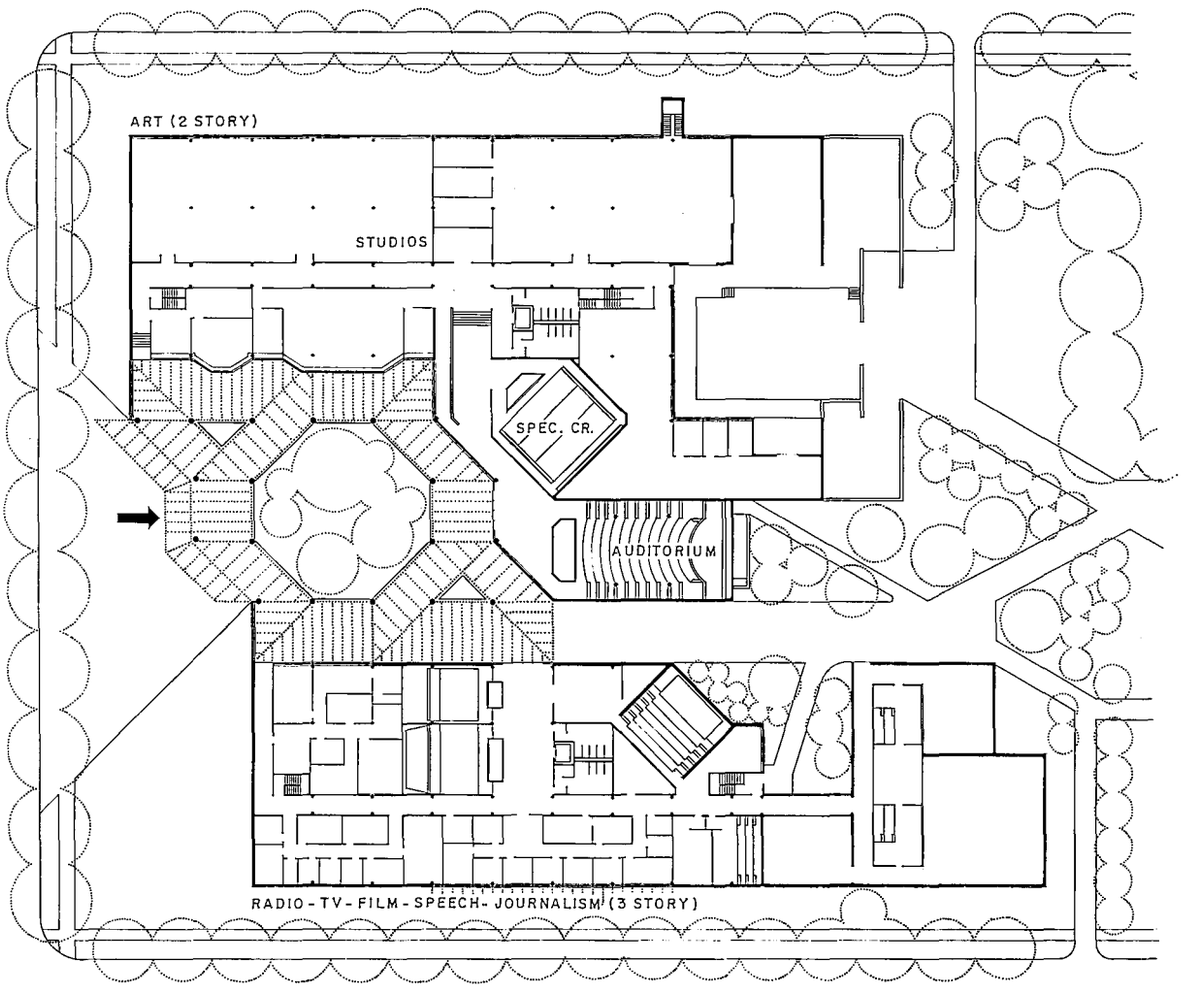


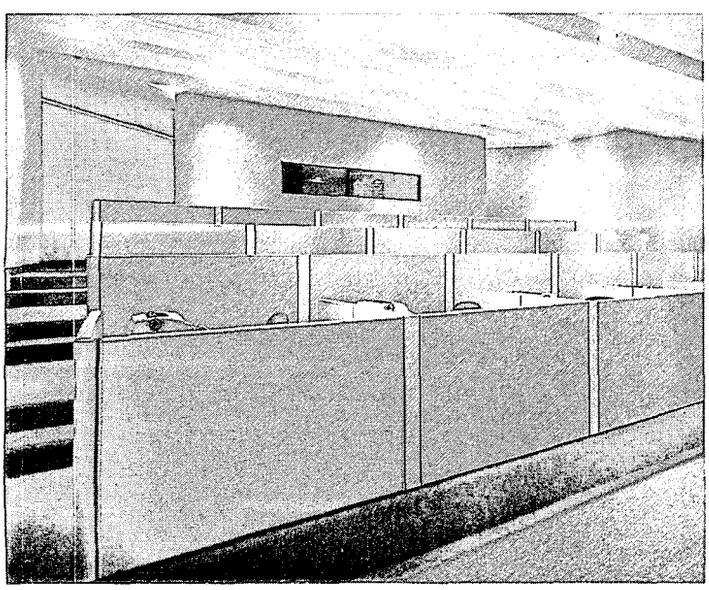


The program was a complex one, calling for complete facilities for teaching art and art history; radio, television, film, and journalism; and speech communication. Roche elected (see plan below) to divide these functions into two buildings separated by a great covered courtyard (photo opposite). The Department of Art dominates the two-story north wing (top in plan), with offices, classrooms, a slide library and a major exhibition space along the south wall looking into the entry courtyard. On both levels, studios for painting, ceramics, photography and sculpture are on the north wall. Both levels of studios are lighted by horizontal banks of windows (photo bottom right, previous page); the two-story tall painting and sculpture studios also have north-facing monitors in the roof.

The south wing has three stories. The radio-television-film faculty has the first floor, with two television studios (one visible from the courtyard), a complete radio station, related classrooms, workrooms, and facilities for film editing and previewing, voice practice and scenery construction.

The second floor is given over to journalism, with all of the facilities (including the latest electronic word-processing equipment) for production of the campus newspaper and magazine, and related classrooms and work spaces. The top floor houses the speech communication department.





All of these well zoned activities are drawn together by the immensely powerful glass-roofed courtyard—which serves as entry to the complex, forecourt to the major lecture-recital hall-auditorium for this complex, a popular informal student center and—symbolically—a gathering together of all the arts taught here.

J. M. Moudy Building for Visual Arts & Communication
Texas Christian University
Fort Worth, Texas
Architects:
Kevin Roche John Dinkeloo and Associates—project architects: Kevin Roche, John Dinkeloo, David Powrie, Steuart Gray, Jon Carr

Engineers:
Gillum Consulting Engineers of Massachusetts (structural); Friberg Alexander Maloney Gipson Weir Inc. (mechanical/electrical)
Interiors:
Frederick D. Oberkircher

Facing some environmental issues in house design

Lipsey Residence
Aspen, Colorado
William Lipsey, Architect

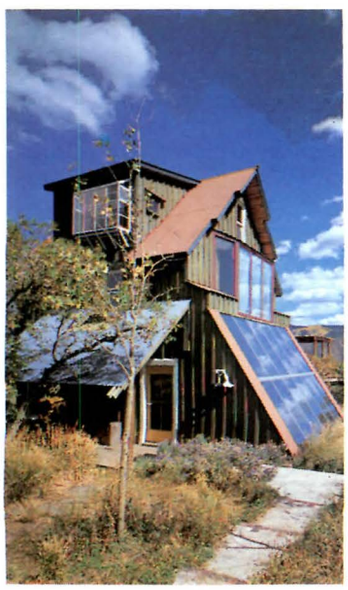
The design of the Lipsey house in Aspen, Colorado (opposite page and below left), and the Caplin house in Venice, California (pages 118-121 and below right) both exhibit in different ways an awareness on the part of their owners and architects that land, materials and energy must be conserved. The houses, while sharing this attitude toward natural resources, differ greatly in size. The Lipsey house occupies as little as possible of its 3½-acre site, while the Caplin house covers almost all of its 30- by 90-foot lot in a dense neighborhood.

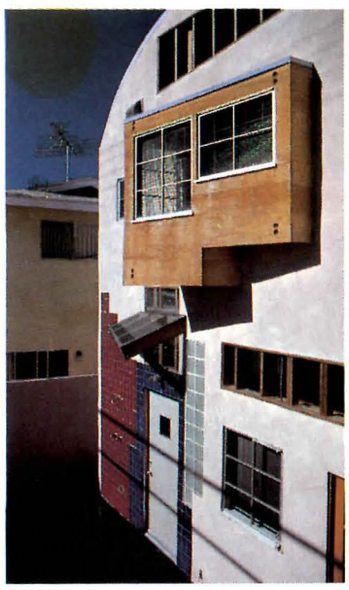
Architect/owner/contractor William Lipsey's interest in reducing costs by conserving building materials led him to construct for himself a three-story, three-bedroom house which is downright tiny, yet seems amazingly spacious. By treating the third-floor bedroom as a mezzanine and allowing living room and kitchen volume to extend on either side to the roof, by interconnecting the two floors with a lightly framed stair, and by using huge bay windows, Lipsey has shown how generously livable a very small house can be.

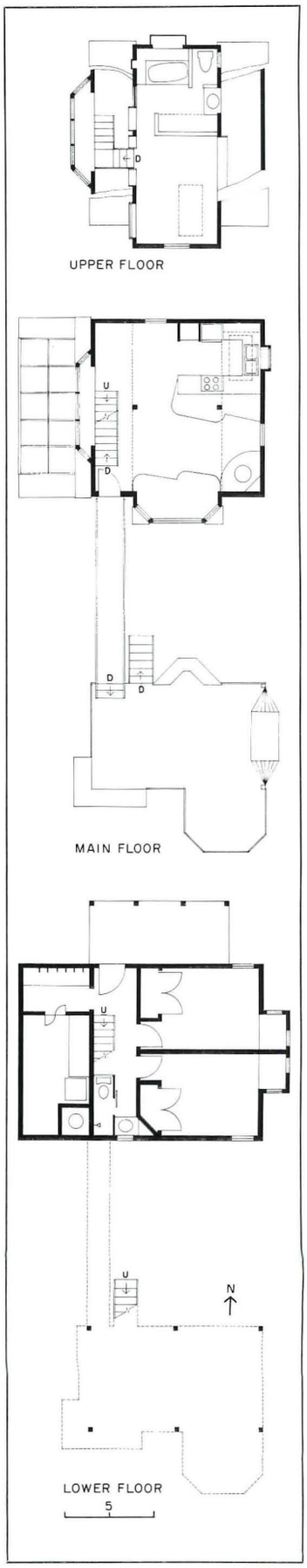
The entire Aspen house is only slightly bigger than the Caplin's atrium, which in turn comprises only a fourth of the volume of their house. But the Caplin house, while too big to be a prototypical house of the future, conserves another valuable resource—land. The average size of an unfinished residential lot in the United States is currently more than 12,800 square feet. The Caplin house has been inserted into a dense residential neighborhood on a 2,700-square-foot lot. If more houses to be built in the '80s were, like the Caplin's, inserted within existing urban infrastructure in denser, clustered patterns, millions of acres of forest lands, agricultural lands and wetlands would be saved.

Both houses conserve energy. The Lipsey house is heated by a combined active and passive solar system, while the Caplin house is carefully ventilated to capture sea breezes and further cooled by a watered gravel bed beneath the floor slab.

The imagery of both houses reflects the fact that their owners have gone out of their way not to conspicuously consume. The Caplin house is deliberately rough in its exterior execution (more craftsmanlike pains were taken on the interior) and the Lipsey house is in a Western farm vernacular. Both seem to suggest that ostentatiously luxurious living is somewhat demeaning, that high-tech finishes are unsuited to domestic life and that houses should really be made by hand and look it. *Mildred F. Schmertz*







Gordon Schenck photos

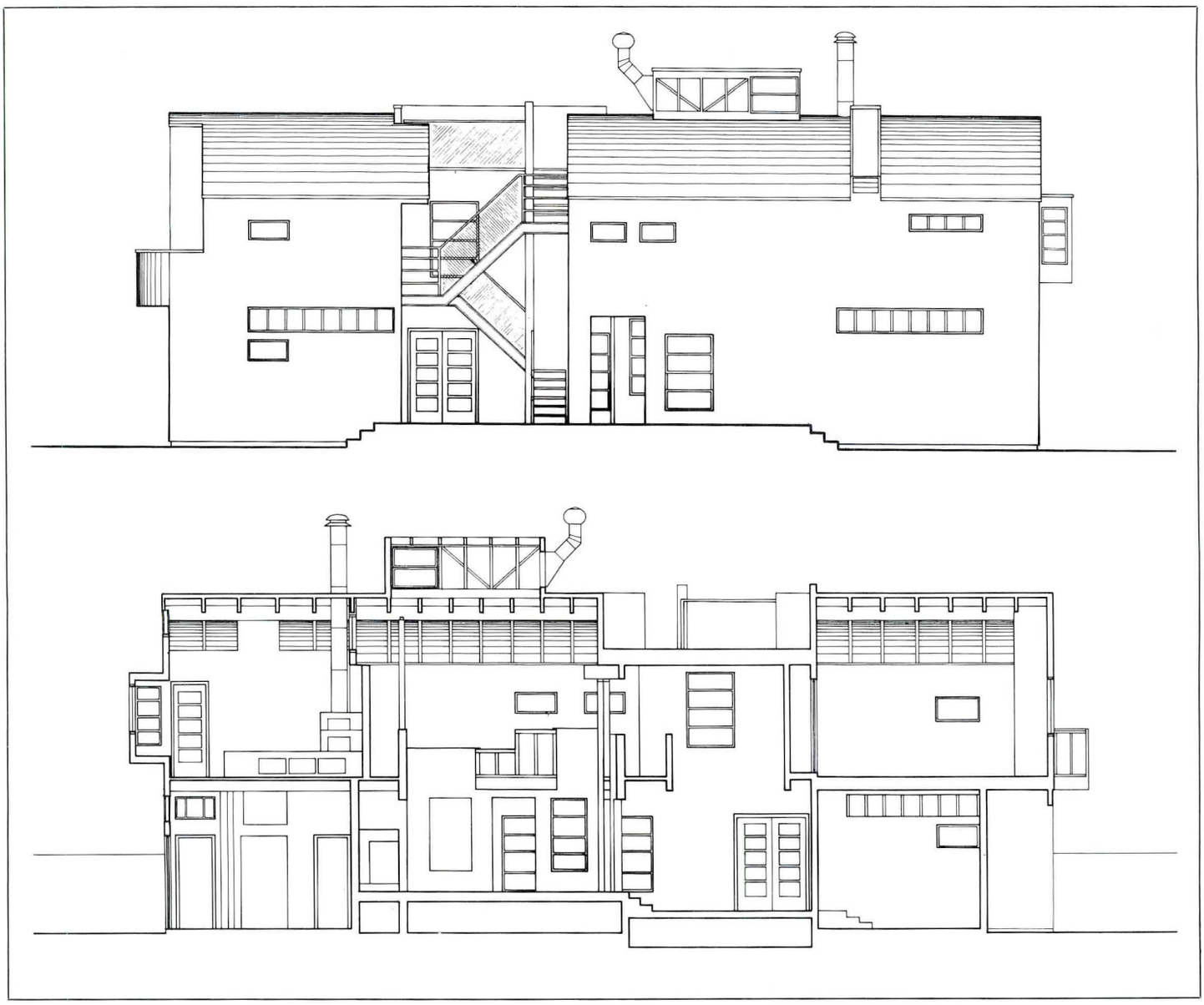
This solar house is perched near the edge of a high ridge overlooking Aspen's Roaring Fork Valley. It occupies a 3½-acre site at an altitude of 8,800 feet. Small, compact and three stories high, it offers magnificent views of the surrounding brush oak groves and sage meadows. According to owner/architect/contractor William Lipsey, in designing the house he strove to "avoid high art pretension"—an effort which he acknowledges could become a pretension in itself. Because he wanted the house to have the innocence and naiveté of American folk art he chose a local anonymous farm house vernacular with Colorado mining camp overtones—forms of imagery which he believes to be so rooted in regional building traditions as to never become dated. His use of rough sawn spruce board and batten walls combined with corrugated steel roofing are within this tradition and give the house a rich texture and scale. Also, as in the early Western rural vernacular, the house appears to be an assemblage of elements added and pieced together as needed, rather than a preconceived formal whole.

The pot-bellied cast iron stove in the corner of the living room (above), and electric baseboards, provide supplemental backup heat to the house's combined active and passive solar system. Solar heat enters the house through a collector on the first floor level (photo page 114). It is stored within a 3,000 gallon "water pancake" located below the first floor slab. This heat, escaping from the pancake, radiates through all the living areas before being exhausted through the roof. Solar generated hot air is also ducted over the water heater. All aspects of the solar system are homemade using stock lumberyard components. Winter heating bills average $35 per month—not bad for a wooden house high in snow country.

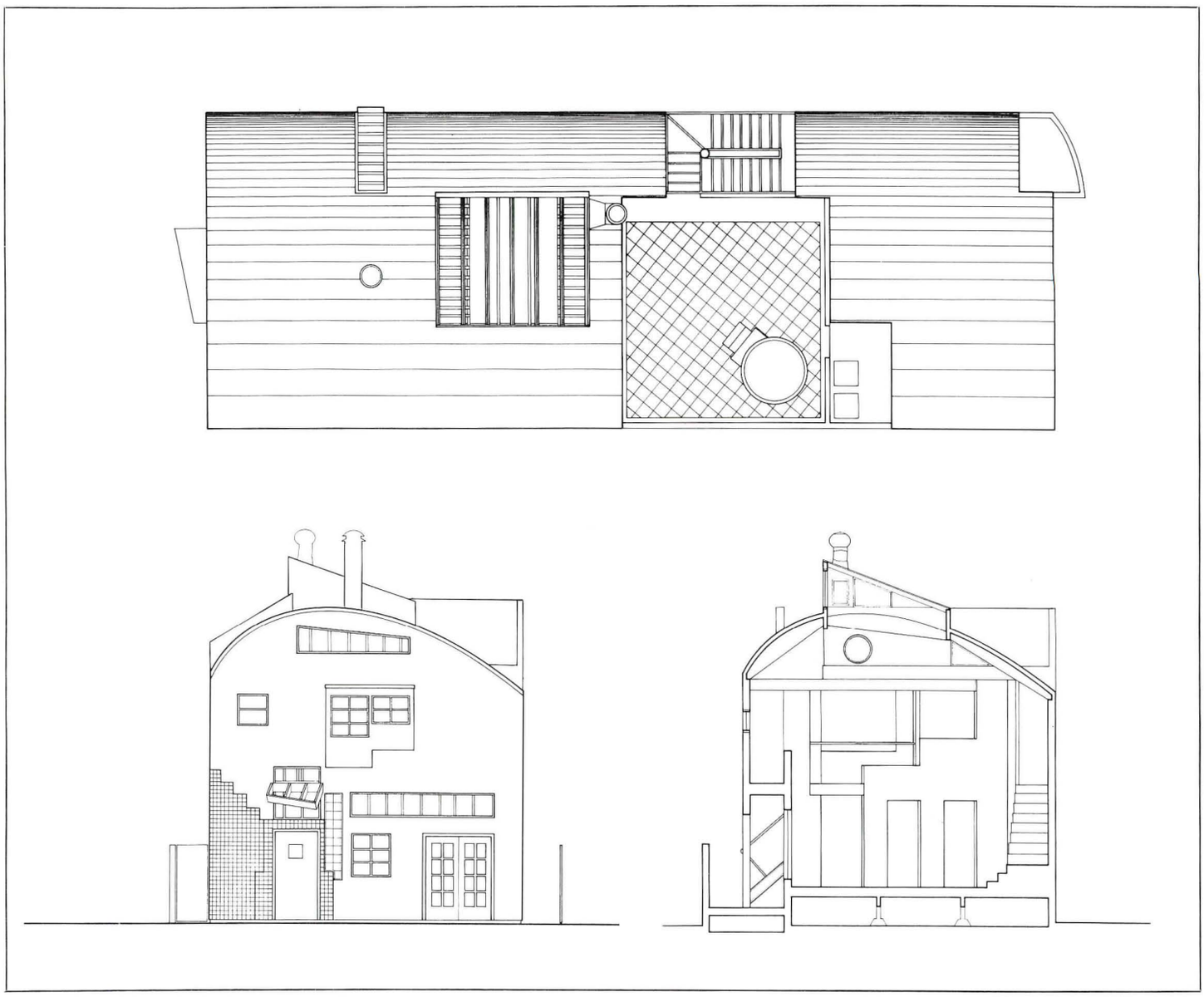
The Lipsey Residence
Aspen, Colorado
Owner/architect/contractor:
William Lipsey
Solar consultant:
Ron Shore

Wideboard pine flooring, what architect Lipsey calls "ice cream parlor" ceramic tile, pine "car siding," and stamped metal panels used unpainted to increase their textural and tactile qualities, are used throughout the interior because they are familiar and traditional. The remaining wall surfaces are drywall with pine trim. The third floor ceiling over the bedroom and under the roof (left) is of exposed spruce roof planks.

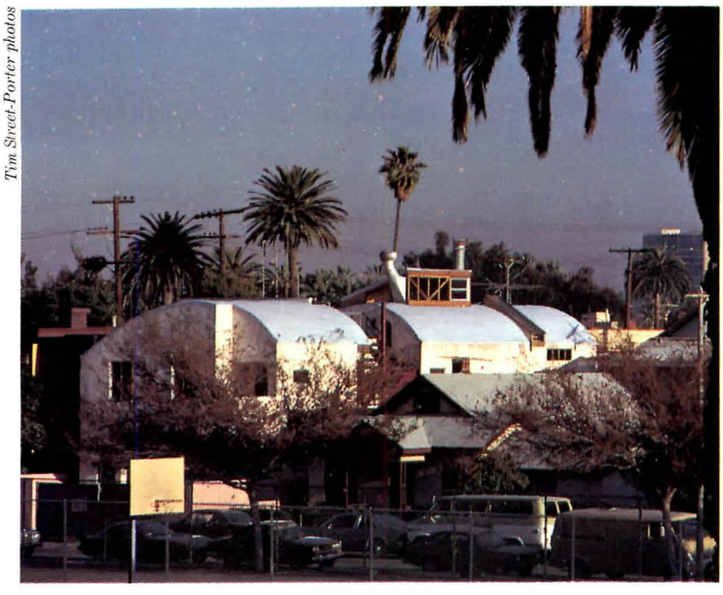
Caplin Residence
Venice, California
Frederick Fisher, Architect



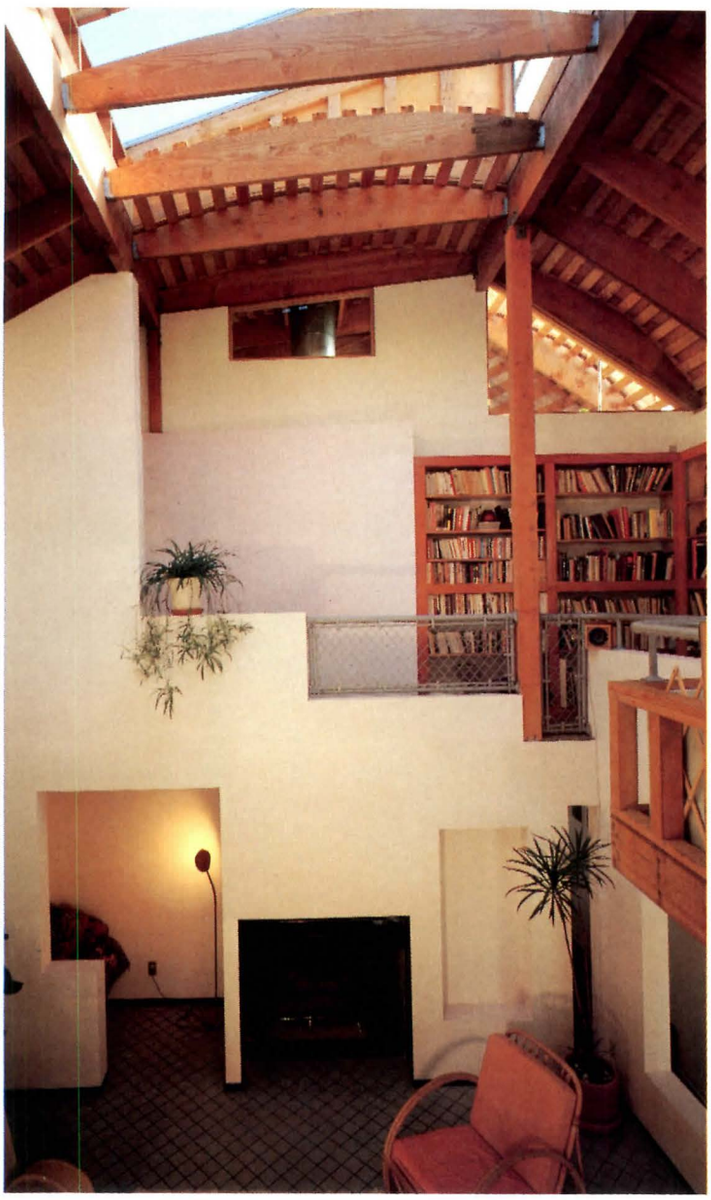
The budget for this house went for size, rather than for elegant well-crafted finishes, so it is as large as architect Frederick Fisher could make it, almost filling a 30- by 90-foot lot and contained within a low wall. The house is individualistic, rather eccentric, and thus seems well-suited to its neighborhood, a densely packed, socially and economically heterogeneous community—not unlike New York City's Greenwich Village. The neighborhood has many buildings in a style which Fisher's clients, the Loren-Paul Caplins, like to call "junkitecture." (Junkitecture, as opposed to mere "shackitecture," suggests the art of collage, the use of materials as found, irreverently juxtaposed.) The young clients themselves do more than coin words—he is a musician, she a sculptor; and the house is essentially two first floor studios—one for each—on opposite sides of a central two-story skylit atrium/living room with sleeping and study quarters on the second floor. The clients describe themselves as "gourmet bathers" and in response to this preference, architect Fisher devised an elaborate, multi-fixtured bathroom and a hot tub on the roof terrace (plan opposite page top). The house is filled with nautical metaphors to express the fantasies and memories of the husband who spent 14 years of his life on a houseboat in the Seine. Compact little nooks and crannies for everything, steep ship's ladder-like staircases, deck railings, two portholes and an aluminum flue recall his river days as does the boat-hull framing of the atrium skylight (section opposite). The curved silhouette of the roof is meant to suggest a wave about to break into surf—a metaphor which celebrates the client's odyssey from river to ocean and current mooring near a Pacific beach.



Tim Street-Porter photos

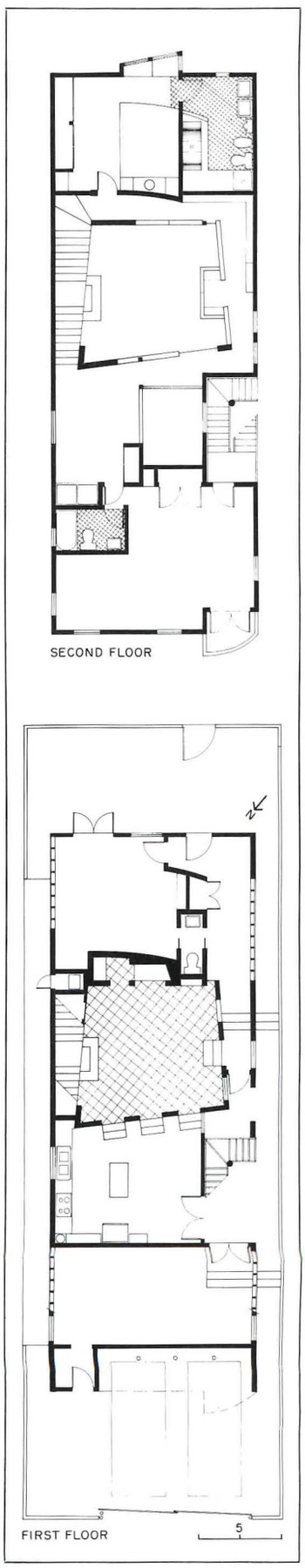


The house is wood frame, stuccoed on the outside and painted pink. Fixed windows and unglazed openings which invite ocean breezes are framed in wood. All movable window sash is aluminum. On the entrance facade (drawing above left and photo opposite page) two shades of plum-colored tile surround the door and are joined by a panel of glass block. A plywood sheathed bay window and a tilted trapezoidal door canopy project from the wall plane. None of these elements has been installed with finesse, rather the opposite, but altogether they become a cheerful, low-tech, homemade collage, very much like the rest of Venice.



The central portion of the slatted, inverted ship's hull ceiling filters the skylight, bringing to the atrium a soft and lovely light augmented by light from perimeter windows introduced through window-like openings in the atrium wall. Fisher once worked with Frank Gehry and the latter's influence can be seen in the occasional segment of chainlink fence. The atrium is surrounded by stairways and mezzanine passages affording asymmetrical vistas into the more private areas of the house.

Adjoining the atrium as part of the communal space is a large kitchen (not shown). Between the kitchen and garage is a completely sound-isolated studio. Floors in the atrium and kitchen are of tile. Natural cooling is reinforced by a watered gravel bed under some of this floor from which cool air is distributed through the atrium. The skylight opens toward the ocean breeze.



Caplin Residence
Venice, California
Owner:
Loren-Paul and Anne-Laure Caplin
Architect:
Frederick Fisher—Thane Roberts, partner for schematic planning
Engineers:
Frank Lucas and Associates (structural)
Consultant:
Mike Anderson (energy use)

Bookcases and a projecting balcony are a pleasing complication. In the master bedroom (left) the flue extending from the atrium fireplace becomes a decorative element in silver as it rises from the chimney breast/headboard of the bed.

Round Table

Concrete in architecture: a current assessment

Concrete as a building material is clearly in transition in many ways—that is the key conclusion of ARCHITECTURAL RECORD's most recent Round Table, cosponsored by Portland Cement Association. Participants held common as well as diverse, sometimes conflicting, interests in design, engineering and construction. They talked about: how current esthetic perceptions are affecting architectural concrete; how new building shapes and structures in concrete are emerging from new market demands on tall buildings; how new high-strength concretes are assisting this trend; how common-sense applications of precast concrete are making a reality of some touted advantages of industrialized building; how more research is needed to continue progress in concrete structures; and how the "soul" of concrete fascinates architects, engineers and builders, alike.

Moderator Wagner began by asking what distinguishes concrete from other building materials, specifically: "What are concrete's clear-cut advantages as a structural material and as an architectural material?" Not one to shrink from a challenge, engineer William LeMessurier identified some very basic advantages: "As a structural material, it's 'cheap.' It's one of the most economical materials in the world. One of the most important advantages is that concrete is more rigid per dollar for tall buildings than anything else you can buy. Architectural material? There are absolutely no limits in what one can do. Most of the great buildings of the century used concrete. One of the things I'm sorry about is that architects seem to have backed away from taking advantage of the glories of concrete as an architectural material—they are unlimited."

Added engineer August Komendant: "Freedom of choice is the principal advantage—what architects or engineers dream can be executed in concrete. Furthermore, we can more easily integrate mechanical systems with concrete structures. Concrete has excellent fire resistance, and requires practically no maintenance. Properly designed concrete buildings are very durable, they never change. Architectural concrete can be like travertine—very expressive; very durable."

"A very important aspect of concrete," said Vincent DeSimone, "is its universal availability. All it requires is cement, aggregates and water. It takes a ton of money to build a steel mill, but every underdeveloped Third-World country can have concrete. It can be found in Nigeria where they make a very low-grade brick with a U. S. brickmaking machine, it can be found in Egypt, Saudi Arabia, China, etc."

Added concrete specialist Jaime Moreno, "One of the most unusual qualities of concrete is its versatility. The architect can have as many textures and colors as he wants. And concrete has tremendous versatility as a structural material. We have heavyweight concretes for radiation shielding and normal and lightweight concretes. We have a tremendous variety of strengths from non-structural concrete to concrete with strengths of 14,000 psi—which is what we are up to now in Chicago. Also we have the special concretes—corrosion-resistant concretes, insulating concretes. And one of the most recent is something called 'flowing' concrete. Through use of super-plasticizers, we can get a very high-quality concrete that has an initial slump of 8 to 10 in., which means it is very easily placed in the forms, but then it shortly goes back to a 2-in. slump, which means that it is ready for finishing.

Engineer Hal Iyengar of SOM cited an extremely useful property of concrete for tall buildings: "The weight of concrete is really an advantage in extremely tall buildings as we search for rational solutions to what we call the 'perception problem' caused by wind motion. The mass of concrete improves the mechanical damping. Concrete can provide from two to four times the amount of damping that we get from a steel-frame building." (Ed.: The more mechanical damping a building has, the less it will accelerate when the wind blows.)

The "plasticity" of concrete—i.e., the ability to create almost any shape at almost any scale came up both early and late in the discussions. Said Hal Iyengar, referring to structural trends: "We've come to a point in architecture, especially with tall buildings, when we are getting away from 'cereal-box' designs, and concrete offers a choice and freedom in creating various building shapes and profiles. Using the reinforced-concrete-tube vocabulary with concrete, one can practically create any type of free form even for an extremely tall building."

Architect Bruce Fowle acknowledged that "certainly concrete offers more flexibility in the design stage—permitting more complicated, and in some cases more exact, buildings," but he expressed concern that concrete buildings lacked flexibility *after* they were built. Dr. Komendant agreed, especially with regard to industrial buildings.

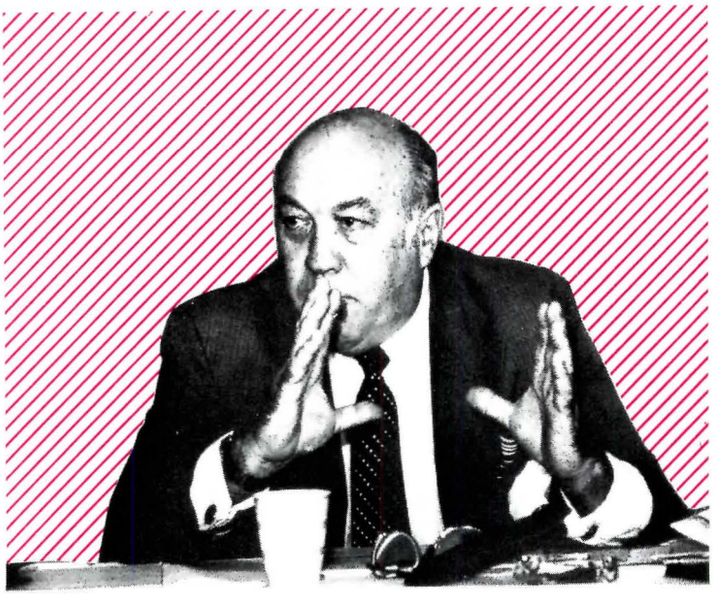
"On the other hand, concrete has more possibilities for designers to express themselves both inside and outside because the designer has full control of the material as a final product," commented architect David Finci.

"Poured-in-place concrete is a unique material because it is manufactured right on the site," said architect Reg Hough. "Almost every other material needs a sophisticated process of manufacture which is somewhere else. With site-manufactured concrete, I think the biggest area for innovation could be in the construction process itself. Architectural concrete has sort of slacked off—for two reasons, I think. First, architects have turned from architectural concrete and are starting to explore new things. Secondly, architects have not been confident they could get a consistent quality with architectural concrete that they could with other materials. There are several reasons for this, and one of them is that the control mechanisms architects and engineers put into their design documents have not been standardized or up-to-date. Furthermore, architects and engineers need to know as much about concrete construction when they are designing buildings as the contractors do when they are constructing them."

"A full dialogue has to take place between the architect and the engineer, to make architectural concrete work," said Hal Iyengar. "Architects and engineers have to be involved not only in the proportions of members, but in making sure certain conditions are achievable, certain kinds of details are acceptable, and good quality can be obtained. Please keep in mind that architectural concrete takes extreme care—it's almost an art."

Interjected Bill LeMessurier: "One comment which maybe is a little offbeat: part of the problem with architectural concrete is that people have an esthetic attitude toward it which perhaps is incorrect—that it's supposed to look like stone, or plastic, or something else. I think about a building by LeCorbusier in Cambridge (Mass.) which he, in fact, never got the chance to see. People who have seen his buildings in Europe say this one is fantastic—they never look like this in France. The point is you can create architecture out of rather crude concrete and have something rather handsome if you get over the idea that it has to be perfect all the time.

"On the other hand, our firm did a lot of fine architectural concrete buildings in the '50s and '60s in New England—one of them, Paul Rudolph's Blue Cross-Blue Shield building. The secret to it was not writing the specifications because we could



Herewith, a sampling of quotes from the day's animated discussion. David Finci (top left): "I believe there is more to precast concrete than panels and parking garages. Some years from now technology will be more advanced, and we will be making buildings in the factory." William LeMessurier (top right): "I don't favor either steel or concrete. I think that is a dumb proposition. But whatever materials we use, we ought to use them straightforwardly, making buildings sing in their own right." Jerry Corbetta (bottom left): "I think there is a place for a 'concrete' engineer in the architect's office, the engineer's office, and the contractor's office." Hal Iyengar (bottom right): "With architectural concrete, architects and engineers have to be involved not only in the proportions of the members, but in making sure certain conditions are achievable, certain details are acceptable, and good quality can be obtained. Producing architectural concrete takes extreme care—it's almost an art."

Panelists, left to right: Irwin G. Cantor (structural engineer), president, Office of Irwin G. Cantor, New York City. Louis J. Corbetta (contractor), president, Corbetta Construction, Co., White Plains, N.Y.

use the same specifications on two jobs and get a botched job one time and a good job the next. The good jobs were always done by the good contractors who had craftsmen working for them. We had a form subcontractor who, fortunately, still operates up there and builds formwork lovingly. I wouldn't undertake an architectural concrete building that would just go out to any contractor."

The contracting process is a lot different now than it was 20 or 30 years ago, stated Louis J. (Jerry) Corbetta of Corbetta Construction Company. "There is scarcely a general contractor who also will do the structural concrete work. Even the structural contractor sublets work to a reinforcing-steel placer, to a form company to do the erection, and perhaps also to a concrete placing company. The work is so fractionalized that very little of the master-builder concept is left. We were fortunate to be involved in an exception to this trend recently in the Union Carbide headquarters in Danbury, Connecticut by Roche-Dinkeloo. The job was bid in phases, and only concrete contractors were invited to bid the structural phase of the work. The winning bidder (our company) became a general contractor in its own right, and did not have a construction manager between it and the architect and engineer—which makes a whale of a difference in the way a structure goes together."

Moderator Wagner asked the architects if the lack of quality construction in some parts of the country affected architects' decisions about building

Replied Bruce Fowle: "Absolutely! The lack of concern and care by a contractor—because he has subbed everything out—is incredible. We are spending all our time handling change orders. There is hardly any time for architecture. One of the problems with architectural concrete is that you have no alternative on which to design a building. If you get into budgetary problems, you have to back off the quality of formwork, the type of finish—if you throw it out to lesser contractors, you are dead."

To do architectural concrete the contractor needs to understand the importance of having a non-leak form, pointed out Jerry Corbetta: "This is so basic, and yet probably 80 per cent of all the concrete constructors are not aware of this because they don't do architectural work often enough. More than half of all the labor expended in a concrete structure is just to produce the formwork. A structural contractor who does a floor every two days in a high rise (two-day cycle) doesn't think about the quality of formwork. The fellow who does know how will not get the work because his bid will be too high."

The owner needs to be more realistic about this situation, pointed out engineer Irwin Cantor: "The owner wants this magnificent architectural experience, yet he throws the job out for low bid, and he gets the kind of people Jerry mentioned. You get a two-day cycle man saying he can do it, but his people are not conditioned for this kind of work."

"The only way I have found for the architect to control the quality of architectural concrete," said Reg Hough, "is for him to actually detail some construction formwork—put down in a very graphic way how the formwork should be built to solve the architectural problems. Of course, you've got to know what you're doing; it's difficult but it can be done. At I. M. Pei & Partners we have done a number of jobs where we put out a set of drawings to define the detailing of architectural formwork and the construction sequencing. But they are not contract documents—they are suggested methods to explain the architectural/engineering considerations of construction important to the design. This is really the only way you can do it under the conditions that exist today in 'buying out' a building structure."

Other panelists issued further caveats. Said Antranig Ouzoonian: "Many of us are retained to design a structure, but the followup is not there. Sure, we go through shop drawings, but the owner forgoes the inspection phase—for financial reasons, or because he doesn't see the need of it, or because he feels the contractor is bound by his contract. I think inspection by competent field personnel is an absolute must for architectural concrete."

Irwin Cantor: "We don't send out 'supervisors;' our insurance companies tell us we send out 'observers.' Many times these people don't have the authority to stop work because the owner often doesn't back you up."

Jerry Corbetta: "Most of the inspectors that architects send out to the field are not really experts; they are young people learning, and are not capable of doing the job."

Vincent DeSimone: "Sometimes the owner will take your specifications and in negotiating with the contractor say, 'I need this admixture, I don't need that . . .' you don't have the same project you specified."

Andy Ouzoonian: I would go one step farther—many times you will find a construction manager who does not adhere to the specification when he buys out, and that's worse."

All the panelists picked up their pencils when Irwin Speyer said: "Generally drawings are read in the field, and specifications, only in court."

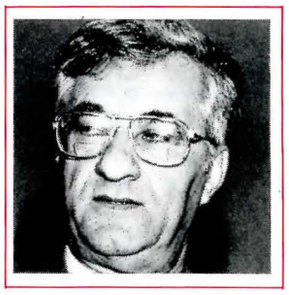
On a more positive note, Dr. Komendant replied: "I never take work where I'm not involved directly in checking the job. I've carried out many architectural concrete jobs, and, even using unskilled labor, the results have been amazing. When I was structural engineer for Louis Kahn (Komendant's book is called *18 Years with Louis I. Kahn*) we worked as a team, and the contractor was involved. We listened to him, and when his proposal was reasonable, we said go ahead and do it. As far as patching of concrete and honeycomb are concerned, these can be avoided through proper vibration. You have to take a couple of intelligent fellows and teach them how to do it."

Vincent DeSimone was not so sure that problems such as honeycomb can be avoided with today's construction practices. "A concrete subcontractor who sees a specification that says there shall be no honeycomb in one paragraph, and then says in the next paragraph that he must have written permission from the architect or engineer to make a repair would be 'crazy' to bid the job. I think we are going to see a lot more use of exposed concrete, but not where the concrete is the exposed surface. I believe the surfaces will be painted, as was a portion of the aquarium in Baltimore by Cambridge Seven Associates."

Architect Richard Foster demurred: "I have a problem with that because we have clients who would put up a brick wall as an interior finish any place they could, with the rationalization that they could build two brick walls for what it would cost to paint gypsum board over 10 years. So I would be concerned with building a 40-story building and then painting it.

The simple matters of regional practices and competitive prices affect whether or not choice of a concrete is logical

Bill LeMessurier reported the following: "We have worked in many states, and included among them are Texas and Florida. I was asked to give an opinion on a steel building someone was proposing in Fort Worth, and I said, 'Why did you do this in steel? You do concrete down here so much faster; you don't have weather problems.' In many cases they don't even have unions,



Left to right: Vincent J. DeSimone (structural engineer), president, DeSimone, Chaplin & Associates, New York City. David Finci (architect), executive vice president, The Eggers Group, P.C., New York City. Mark Fintel (engineer), director, advanced engineering services, Portland Cement Association, Skokie, Ill.

etc. So as consultant on this job, I persuaded them to look at the concrete building. They ended up saving $5 a square foot on a 40-story building. But this was a regional matter. If I were to put that same building out for bid in Boston, it would be hopeless—you couldn't get anybody up there to do it. The contractors are not organized to produce high-rise concrete buildings. In Miami, on the other hand, if I were to propose a tall steel building, I would be burned to death!"

"There are other regional idiosyncrasies," added Irwin Cantor. "You can do something in New York City, but then totally not understand the pricing when you go out into Nassau County on Long Island or up into Westchester County. In New York City, prices can vary from month to month—and even job to job. We put out two projects within weeks of each other in New York City. One of these is a 30-story building at 54th Street and Madison Avenue that was priced for both steel and concrete, and ultimately was built in concrete. The other at 528 Madison Avenue, diagonally across the street, was originally priced for concrete, and then re-engineered and built in structural steel. Both owners believe they have the right job."

The Round Table next turned its attention to whether or not precast concrete is alive and well

Responded precast manufacturer, Paul Gleason: "A major advantage of precast concrete is quality control because we make our elements in a factory. When inspections are made at our factory by the architects or the engineers on the first casting or two, we can easily make adjustments. Then we have a pretested, prequalified piece that goes to the job. After that, the only question is did we assemble on the job site properly. With *in situ* concrete, an inspector is not going to do the same job in winter when the wind is howling up on the 20th floor as he would in the spring. In the factory an inspector will spend an extra half-hour, or whatever it takes, to produce the product the way the architect wants it."

Engineer Vincent DeSimone was not convinced that all the field problems have been solved with precast concrete: "Totally precast buildings are one thing, and precast mixed with poured-in-place are another. With mixed construction, sometimes the skins don't go on the structure quite as nice as one would expect. Tolerances promulgated by the American Concrete Institute are not the same as tolerances promulgated by the Precast Concrete Institute. So this has to be taken into account when precast is cladding a poured-in-place structure."

Continued Paul Gleason: "I would like to reinforce what Vincent said about the fish and the fowl—precast vs. monolithic. The consistently most successful buildings are those that are completely precast—buildings where the cladding, the floor slabs and the columns, and the coordination and shop drawings, have all been done by the same manufacturer.

"Many of our projects do express structure because precast elements should supply finish, texture, color, shape—and when they come to the job they are in finished form, including window frames cast into the cladding. Wall panels should serve as bearing walls because I believe that the structural capacities of concrete should always be used. Otherwise, maybe we should use a different material."

Architect Richard Foster extolled many of the virtues of precast concrete, but was concerned because there seem to be fewer and fewer suppliers: "I finished a building in Rochester that was very, very successful. When we chose precast concrete panels mixed with brick for a building on Long Island, we couldn't find anyone to bid it. The nearest company I could get any information from was the one in Toronto that did our Rochester building. I would like to continue using precast concrete, but I don't want to design around it and find out that it's a unique product.

"Another worry I have is who are the young people coming up today who know how to detail precast concrete? Many years ago we had a supplier who came into our office and taught us the principles of using precast concrete. He should be in the precast hall of fame, if there is such a thing. This man showed us all the subtle details one should know. Does a book exist—a guide that covers this information?"

Foster was answered by Irwin Speyer who just happened to have been the editor of one and the same: "The book is called *PCI Manual for Structural Design of Architectural Precast Concrete (PCI MNL-121-77)* It's been done by people who know the subject and covers everything from designing joints to thermal and acoustical background. It's a state-of-the-art kind of thing—a very helpful book."

Co-moderator Fischer asked Irwin Speyer if precast concrete is a little less glamourous in its applications than it was in years past. Said Speyer: "Precasters are now making money. They now are promoting their products only where they can assure themselves of making a reasonable profit. They are not trying to do in precast what is better done in cast-in-place. There are bearing-wall buildings, floor slabs, parking garages—nothing terribly esoteric, as far as I can see."

In that context, Andy Ouzoonian said that Weidlinger Associates is using precast plank (8-ft wide by 36-ft long by 12-in. thick.) for 35 stories of the Portman Hotel in Times Square. "The precast plank gives you a finished ceiling, as in typical motel construction, but we also are using it in diaphragm action to give lateral stability to the building. We haven't mentioned much in our discussion about slip-form construction, which sort of died down in New York. But it also will be used in the Portman project—a 54-story exposed-concrete core."

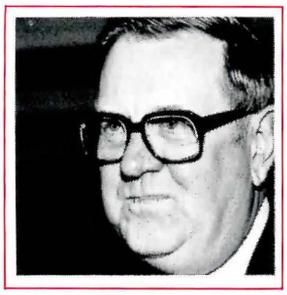
Some industrialized systems, though not highly publicized, show robust signs of activity, and more are emerging

Architect David Finci, in lamenting the lack of greater activity in complete factory-built buildings of precast concrete, said: "I believe there is more to precast concrete than parking structures and precast-concrete panels. I believe that some years from now technology will be more advanced and give us the opportunity of producing the buildings in the factory, and with better control in erecting them at the site."

The systems that have lasted, and new ones emerging, are hybrids, pointed out Mark Fintel, director of advanced engineering services for Portland Cement Association, who proceeded to give the Round Table a capsule history of developments: "If you look at the evolution of large-scale utilization of precasting, specifically as related to residential construction, you find that the really big projects occurred in Europe following World War II because the traditional industry was not able to supply housing demand. But these European types were not totally adaptable to the architectural approaches and living standards of this country. What evolved in this country were large panel structures with plank floors—and their success was due in large extent to the low cost of the planks.

"If you look at Operation Breakthrough, where so many new ideas came on the scene, you find that very few survived. Those that did survive are still with us, and the strongest survivor is probably Forest City Dillon of Cleveland. Their system developed as a strictly American type. It is not totally precast,

More panelists, left to right: Richard Foster (architect), Richard Foster Associates, Greenwich, Conn. Bruce S. Fowle (architect), partner, Fox & Fowle, Architects, New York City. Paul W. Gleason (precast manufacturer), chairman of the board, Formigli Corporation, Berlin, N.J.



but rather a composite-type structure—a combination of precast and poured-in-place concrete that behaves monolithically. Other composite systems are being marketed. One by Material Service Corporation in Chicago uses a 2½-in. precast, prestressed plank which serves as a built-in form for poured-in-place concrete completing the floor slab; the vertical structure can be bearing walls or columns. Another composite system called Filigree is successful in various parts of the country. These various systems are successful, I believe, because they have eliminated certain traditional trades from the job that are difficult and expensive, and have used techniques that make the buildings monolithic structures."

Bill LeMessurier echoed Mark Fintel's remarks about Forest City Dillon and suggested further reasons for the company's success: "I visited their plant a year ago and found it to be a fantastic operation that has produced some 40,000 apartment units. The interesting thing is that the delivery system of the whole product is different. This is a company that controls the entire process. The mechanical systems in this housing are all installed in the factory. The bathrooms and kitchens are built in self-contained modules that are delivered to the job."

Followed up Mark Fintel: "Several years ago, some of us were in Russia as a delegation. The Russians were very proud to tell us that their industrialized buildings use, I think, about 12 man-hours per unit of area. Later on when we talked to Dillon, we found that they need only one-third that amount for their buildings."

"Not always do you need a factory," contended Dr. Komendant. "I worked on a project for a new city in the desert which was in a seismic area. Various proposals came in but none were satisfactory because joint connections were very weak and prices were very high. No materials except concrete were available, and cranes were not available. I developed a system for this project that used universal forms to produce open-ended concrete boxes. The tops and bottoms were enclosed by planks. The boxes can be cantilevered; they can be designed to provide balconies—the system is absolutely flexible."

Vincent DeSimone still saw housing as a custom market: "I appreciate the value of prefabricated housing in constraining design to a regular floor plan, but I would regret it if we ever reach the cooky-cutter stage. Housing has to be tailor-made to satisfy the human spirit."

Concrete has a special place in high-rise and atrium-type office buildings of the future envisioned by engineers Hal Iyengar and Bill LeMessurier

At the begining of the Round Table, SOM's Hal Iyengar suggested that a composite structure of vertical concrete elements and horizontal steel elements has several significant advantages: 1) steel is more suitable than concrete for long-span floor systems, 2) steel floor systems are less labor-intensive than concrete, 3) the mass and stiffness of concrete in columns and tubular frames can be put to work mitigating motion caused by wind forces, 4) concrete "superframes" for relatively lower atrium-type office buildings bring loads down to the foundation, while allowing the interior architecture to take the forms that designers feel they should have.

Said Iyengar: "We started looking at mixed steel-concrete construction in 1955. One of the concrete frame types we used early was an exterior concrete tube in a closely-spaced column system that provided all the wind resistance. As we dealt with various contractors, we came to realize that the floor-framing construction could be speeded up if we made it out of structural steel. The logical combination was an exterior reinforced-concrete tube with structural steel floors on the inside. We saved weight of steel and also made construction of steel simpler—no rigid connections were required for wind resistance.

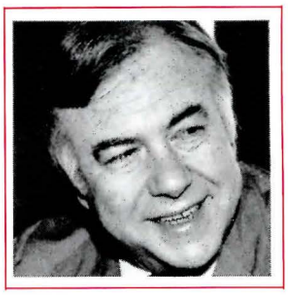
The latest example of this is the Three First National Bank Building in Chicago, a 60-story composite building. Its outer tube, which is a truncated square shape to respond to site conditions, is reinforced concrete, and the interior is steel. Canadian First Center, in plan a parallelogram with the corners cut off, is a 64-story composite tubular system. This building has an extremely articulated, sculptured form. There are solid walls where they are needed, and framed-tube elements for window areas. We also have been doing a number of buildings with shear walls for core bracing. Finally, we have been coming up with a series of structures for atrium buildings which we call composite "superframe" buildings. We find that multiple atrium buildings—i.e., atriums stacked on top of one another—want to be organized as flatter buildings with large floor areas, and with the atriums expressed on the outside. To do this the corners of the buildings are framed tubes, 60 ft or more wide, linked every 10 stories by a two-story solid beam element."

Dr. Komendant asked Iyengar whether there was any trouble with unions because of mixing the two trades, concrete and steel. "I don't want to use the word trouble," Iyengar said, "but there is a lot of resistance from the unions and also from the industry. The steel industry is used to building tier-type steel buildings. All of a sudden they have to deal with another material on the outside, and they feel that they might be constrained. Lifting capacities are different; the cranes are different. When we bring in construction managers who coordinate the timings and the lifting arrangements properly, the problem disappears. Still, we want to separate the steel and the concrete into two separate activities so the trades work on their own procedures with their own efficiencies."

Bill LeMessurier then described for the group two very unusual composite buildings he has designed for Dallas and Houston: "I am indebted to Hal Iyengar and the late Fazlur Khan for developing this combination of materials which I think is one of the most remarkable things that's happened in the last 20 years! I am starting to build a 73-story building in Dallas which we first designed completely in concrete. It would have been the world's tallest concrete building. It was exceedingly economical from the standpoint of materials, but it was clear it was going to take seven months longer to build than an all-steel building, and that killed the economy. We designed an all-steel building within the same format, and it had to have many pounds of steel to get the rigidity needed. So we decided to exploit the separate virtues of the two materials. An interior cage of steel is carried by 16 concrete columns set in from the edge of the building about 20 feet. The steel proceeds nine stories ahead of the concrete, but the 16 concrete columns pick up all the loads. Essentially, the framing is a three-dimensional Vierendeel system. The inner cage, which has 30- by 30-feet bays, is stable in itself—something like a child's 'jungle gym.'

"We are going one step farther for an 82-story building in Houston. We have boiled down the structure to only eight concrete columns—two deep columns on each side of the square floor plan. It's tapered building, starting at 180 feet at the bottom and ending at 150 feet at the top, and is about 1,220 feet high.

"You get into problems you have to solve, the biggest one being creep. The solution to that is, don't carry the load anywhere else except on the concrete. Instead of the inner cage



Left to right: Reginald Hough (architect), associate, I.M. Pei & Partners. Hal Iyengar (structural engineer), partner, Skidmore, Owings & Merrill, Chicago. J. Karl Justin (architect), Justin Architects, New York City.

coming all the way down to the ground as a tube of steel, the cage hangs from the concrete columns.

"Gigantic nine-story A-frames on the inside of the Houston building take both wind and dead load. The steel hangs by itself for nine stories. You get the speed of construction from steel, designing steel columns that can carry 10 stories in place of the concrete. You put the concrete in there for this enormous economic advantage it has in providing stiffness to the building. The trick is to use concrete only where it does the most good; don't spread it all out everywhere."

Have research and advances in design methods given engineers more confidence in doing concrete buildings? Moderator Wagner asked Mark Fintel to comment on where we are now, and what still needs to be done. Said Fintel: "Twenty-five years ago there was only limited capability within the engineering profession to design concrete buildings. But with time more and more enginering offices have become more efficient in designing in concrete. Also, in the last 25 years, there has been considerable research going on at the universities, at the Portland Cement Association, and in the industry to upgrade design methods and evolve new ones. But obviously there is a time lag between completion or research and its application in the field. This is particularly true in the seismic area. There still is a lack of confidence within the engineering profession as to whether concrete can really do the job.

"However in new codes that are coming out, seismic provisions have been included that incorporate quite a bit of state of the art. I have in mind particularly the code proposed by the Applied Technology Council in California, called ATC-3. It will take a number of years before the provisions of this code are incorporated into the codes in other parts of the country. The biggest need at the moment is an educational program to acquaint the professions with the latest available research.

"In the code area, there is a constant complaint from the engineering profession that the codes are too complex. But a lot of changes in structural design have taken place. Our structures are totally different from the ones we had previously. The codes that take into account the new complexities of design are in conflict with the economics of the design profession. But the complexities of codes relate only to a small volume total construction. Most construction, say 80-85 per cent, is simple structures which don't need a complex code. The solution probably is to have two codes—one for simple structures, and one for more complex structures that warrant application of more advanced technology.

"Historically, concrete has been at a disadvantage for earthquake design because, in itself, it is a brittle material. But in the last 20 years a lot of research has been done to develop details for ductile behavior of concrete, and by now concrete has gained a position almost of equality with steel as a material able to resist earthquakes.

"Within a number of years, many parts of the country will have codes requiring one degree or another of earthquake resistance, and New York City will be one of these. In New York this will require additional details; however, these are minimal details which for a minor cost increment will provide a good degree of earthquake resistance." (Engineer Irwin Cantor was not convinced the cost would be minimal. He thought that some projects marginally tilted toward concrete might then become marginally tilted toward steel.)

Vincent DeSimone then asked Bill LeMessurier what Boston's experience has been since they adopted earthquake provisions five or six years ago. Said LeMessurier: "I'm not sure everybody is following the code as conscientiously as they might. The intent of the Massachusetts code and this new ATC-3 code is to try to identify what the best evidence is of the level of earthquakes that can occur once in 500 years. That means that an earthquake has a 0.2 per cent chance of occuring this year—and that's one thing we never think about. The intent of these codes is not to protect the buildings from damage, but to prevent people from getting killed in them. We have had disastrous earthquakes on the East Coast. For example, the earthquake in Charleston in 1886 did far more damage than the Civil War. We have to wait until it happens to ever take any of these things for real.

"Along these lines, I have had occasion to think rather deeply about the wind in New York, and, to this date, since the age of skyscrapers, the 100-year wind hasn't occurred. But someday there will be a hurricane come up the Atlantic, and it will not break land until it comes right through the Narrows. Then we will see some interesting results."

Getting back to the specific subject of research in concrete, Hal Iyengar made a plea for a broader approach: "Unfortunately much of the research is concentrated on basic things we were talking about 20-30 years ago—how to design a column and how to design a beam. I would like to see research involving structures in their true behavior, the interaction of different elements. Beams and columns are tied together and they work together, but research in this area is not well coordinated, and not very well done.

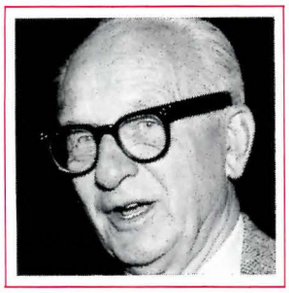
"Using the code gives me a better sense of confidence, but at the same time the code cuts down on safety factors. For that reason I'm always watchful; I set my own limitations on how far I can go with it. I don't completely understand all the ACI Code says, and all its equations. It leaves a lot to be desired in terms of explaining shear. You can go through the ACI Code mechanically, but if you want to come up with a confident shear design, you have to use your own imagination—and I find this a bit troublesome."

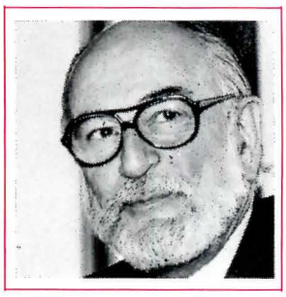
Continued Vincent DeSimone: "In the context of research and advances that have been significant, I would have to say that the every-day in-house use of computers is one of these. Engineers can't afford to design longhand with the latest Code and still be able to produce a building that's viable. With the combination of ultimate load design and computers, we are able to make concrete buildings very competitive."

Speaking up for the smaller engineer, Irwin Speyer said: "There has to be a field for a lot of small research projects—half a dozen tests to answer many of the questions that come up. We know what certain inserts in concrete can do for attaching precast elements, but what if they are changed slightly, then what?"

Bill LeMessurier took the opposite view: "I think the great lack in research has been to study whole concrete systems, whole concrete buildings. We have been discussing pieces and parts for a long, long time, and this country is losing ground. I heard a very impassioned lecture recently by Vitelmo Bertero, one of the great teachers and researchers in concrete design in this country, who is a professor at Berkeley (University of California). He said that Japan has six earthquake-shaking tables to test modules of whole buildings. We essentially have one—at Berkeley. When you make a fifth-scale model of a concrete building and subject it to a simulated earthquake, it doesn't behave according to all the normal theories. We need a lot more studies. And I don't know how we are going to get them funded in this country."

More panelists, left to right: Dr. August E. Komendant (structural engineer), Montclair, N.J. William LeMessurier (structural engineer), LeMessurier Associates, Inc., Cambridge, Mass. Jaime Moreno (concrete technologist), Material Service Corporation, Chicago.





Mark Fintel knew whereof LeMessurier spoke: "The extent of research going on in Japan in building engineering is probably five to six times as much as that being done here now. Before going there, I was so proud of our PCA laboratories—I thought we had the best in the world. Then I went to Japan and saw five or six such campuses, each belonging to an individual construction company.

"When we looked into it we found that legislation in Japan says you cannot use a component in a building unless it has been tested in a laboratory, and, as a result, all of the large construction companies have to do tests. Obviously the public has to pay more for buildings to the extent that research is done."

Hal Iyengar suggested that some kinds of field research could be simple and not expensive, but at the same time could give an enormous insight into the behavior of buildings: "For example, the only way you are going to learn about creep is to measure the buildings in which it occurs. We need more examinations of slabs and connection details—going out into the field after a year or two and see how they behaved—where they have cracked and why."

Followed up Jaime Moreno: "I agree that the construction industry has but a very small part in research compared to Europe, and particularly Japan. Material Service Corporation in Chicago, the company I work for, does limited research, but it is related only to the products we market. This gives us a certain amount of liability protection when we bring a new product to market."

Vincent DeSimone urged government funding to qualified groups: "The National Science Foundation has contributed to some of our industry-related groups, but this isn't enough. You are not going to get contractors to fund this research; and, certainly you are not going to get any trail-blazing engineers to spend their own money on research."

Said Irwin Speyer: "If owners agreed to a hold-harmless clause, I would gladly donate my insurance premium to research."

"At the risk of sounding like I'm making a political speech," declared Irwin Cantor, "this country has simply deprived its universities and research groups of the ability to do these things. There comes a time when the federal government has to help an industry. Growth and knowledge are a matter of life or death for our nation."

Moderator Wagner wondered about how advanced construction methods are for producing concrete

"It's a great variable from one part of the country to another," said Jerry Corbetta. For example, the tower crane which is so great is used in Chicago and out on the West Coast, but you can't find one in New York City. Its use has been restricted here because we had the long-boom crane earlier and we weren't forced into it. Flying forms are used in the South and in the West, but they're rarely seen in New York, even though they could reduce the cost of labor on forming of high-rise buildings by 50 per cent. But we are a splinter industry and small business, over-all, which makes a big difference how you talk about research, development and design."

"Nonetheless," amplified Mark Fintel, "the prices per square foot of finished construction are considerably lower here than in any other place in the world. Material costs are about the same all over the world, but our costs for finished construction are less because the construction efficiency is incomparably higher than any other place. The cast-in-place construction process is the best industrialized method of construction that has evolved in this country."

"I disagree slightly with Mark," said Hal Iyengar, "because I find the concrete construction industry in western Canada to be 10 years ahead of us. They are well-organized and mechanized. I can build a building in Calgary a lot faster than in Chicago, even though the temperature goes to minus 30 degrees in Calgary. Their heating system is very advanced."

"Even so," remarked Vincent DeSimone, "there are any number of techniques—slip form, lift-slab—etc., that have been available but not used for some strange reason. The tendency sometimes is to optimize the cost of materials and forget about time. An owner could be losing revenues of hundreds of thousands of dollars a day because we have not optimized the construction operation—which could benefit from construction techniques that are by this time two decades old."

Added Reg Hough: "A construction manager, if he is brought in early, is supposed to solve some of these interfaces between engineering design, architectural design, and the construction. But it seems to me that most construction managers tend to look more at the dollar signs of a project in the early phases, and to be hesitant to give meaningful construction input about the structural design and how to build what's being designed until the project gets too far down the line. One of the problems in the category of formwork is that the formwork companies tend to over-emphasize speed and cutting labor costs and under-emphasize the quality of the end-product."

What about the new products that are being introduced? For example, how will high-strength concrete affect architectural approaches and engineering design?

Responded Jaime Moreno: "High-strength concrete, like quite a few other products developed in the Chicago area, is really an answer to a market need. In 1966 we were using 5,000 psi concrete until a developer came to us and said he needed smaller columns to give larger rentable area, and this was achieved with high-strength concrete. In 1972 we went to 7,500 psi concrete; in 1974, to 9,000 psi; and in 1978 to 11,000 psi. Several months ago we placed 14,000 psi concrete in two columns that we have instrumented in a research program sponsored by local organizations, the ACI, and ourselves. The main reasons for high-strength concrete besides reducing column sizes is to improve stiffness in certain members and to improve shear."

Added Bill LeMessurier: "With the building in Dallas I described earlier, we decided a long time ago that we wanted to use 10,000 psi concrete. We have concrete suppliers there using local aggregates who are learning the technology of getting good high-strength concrete with super-plasticizers and fly-ash. So far tests have shown strengths between 9,300 and 13,800 psi.

"My principal concern in this job is the stiffness of the concrete; I needed a high modulus of elasticity. We find this high-strength concrete to be a fantastic thing. It will provide six times as much stiffness per dollar in a column as steel. That's what I want in this building, and it is making possible whole new approaches."

Mark Fintel: "I believe that super-plasticizers are probably the most significant development in concrete technology in the last 20 years."

Another new product the Round Table discussed was fiberglass-reinforced concrete—FRC, as it is known in this country, and GRC, as it is known in England. Said Paul Gleason: "It's providing us with a new material for architectural cladding. It gives a kind of crispness and sharp corners. Also we are able

Left to right: Antranig Ouzoonian (structural engineer), associate partner, Weidlinger Associates, New York City. Irwin Speyer (consulting engineer), New York City.

to create elements such as sunshades with it. It's light and very thin (about ½ in.). Volume changes can be a problem with large pieces, in turn giving us problems with the connections. It is made with a very rich cement mix, so it follows the contours of fine lines into a form. Architecturally, it comes out like a blue serge suit. The other advantage is that you don't have to load up the exterior with heavy weights of ordinary concrete or masonry. We are working on other finishes besides ordinary glass-fiber concrete, gray or white, because it's rather lifeless. If we introduce exposed aggregates, the panels will look better and still be only about an inch thick, and they will weigh only six or eight pounds a square foot. But while we eliminate the necessity for steel reinforcement in a traditional sense, we have to put in enough ribs, returns and reveals in the panels to stiffen them and make them suitable for attachment to facades, and that added labor reduces the economic advantage."

Steel-fiber-reinforced concrete was touched upon by Irwin Speyer: "This has the ability to increase the tensile capacity of concrete, and I would think should have benefits in seismic areas where you are trying to achieve ductility. Otherwise you end up with an awful lot of stirrups to accomplish this."

In a round robin discussion at the end, the participants discussed their wish lists and reiterated some frustrations

Said architect Bruce Fowle: "I have never seen a building that I didn't try to figure out how I could build it in concrete. I think it's the best material for any number of reasons. But practical matters often interfere, and, somehow or other, the buildings don't become totally 'concrete.' For example, we did a 40-story building in New York City, which was concrete for the sake of economy. We could get into the ground immediately, whereas, at that time, the steel industry was backlogged five or six months. Because it was a very tall thin building, however, the mass of concrete was desirable to resist overturning forces from wind. We tried to express concrete in the core area of the building, but this would have meant using shear walls all the way up the building, and this would have added a day or two per floor to the construction. So we did the core with concrete frame and block infill. Also, while we would have liked to have left the round concrete columns unfinished in the lobby, the developer felt they should be painted to avoid problems with graffiti."

Concluded Reg Hough: "From an architectural design point of view, I think concrete will go through peaks and valleys just as have other design concepts. And as the industry finds out how to achieve better results technologically, the architects will respond accordingly. What we have to try to achieve is a construction-oriented design process. We have to get something into basic organizational standards and procedures as to how this should be done. There should be something in the handbooks that says that these are the procedures that should be followed."

Said Bruce Fowle: "With architectural concrete what is lacking is some protection for the architect. Right now it is too much of a gamble for him to specify it. The industry has to clean up its act. There need to be more rigid standards for finishes. If we think of woodwork for a moment, I can take the standards on architectural woodwork to specify premium grade or common grade, or whatever, and the industry knows exactly what is meant by these designations."

Followed Jerry Corbetta: Over the years the engineering field has developed a number of specialized disciplines. Now consultant James Shilstone thinks there should be a 'concrete' engineer, in addition to the others we have. I concur. I think there is a place for that concrete engineer in the architect's office, the engineer's office, and the contractor's office."

Bill LeMessurier took the long view in his articulate, thoughtful summary: "Two things. One is that if you go back 100 years, architects didn't know anything about concrete. It all was in the hands of the engineers. It was used industrially. The structural forms that were logical to it at the time were developed for utilitarian purposes. Then this was discovered by architects—people such as LeCorbusier and so on. Then we went through this great period of architects taking the design away from engineers and turning it all into art. Unfortunately they have gotten bored with this right now, and maybe we are going to have a period of rest. So maybe engineers can go back and advance the art one generation further. Architects will come back and discover what we have been doing while they are painting their buildings, and so forth. We will have a new age all over again, I predict, because fundamentally I think that all great architecture throughout history never divorces the structure from the architecture. If you put a Doric column or a little pastiche of pediment on the building, you've lost the moment when the palette of materials is handled by a master. I'm not in favor of steel *or* concrete. I think that is a dumb proposition. But whatever materials we use, we ought to use them straightforwardly, making buildings sing in their own natural terms.

"The greatest building I know in the world happens to be a concrete building. It's the Pantheon in Rome. I go to see it every time I'm in Rome. There it is, with coffers still enduring, and the very clear design. It is one of the greatest things that man has ever built. The separation of structure and architecture is not an issue, and never was to most great architects and engineers. Sooner or later we will get back to that.

"Something we have to be very serious about is to make sure that young people, young engineers and young architects, have experience with real materials in the field—learn how things are really built. I think it is shameful that less and less is taught about how things really get done in the world—I happen to teach in an architectural school, so I know something about what goes on. We cannot escape the computer. It's the greatest blessing that's been added to our lives in years, but it's not the whole story of life, particularly not the whole story of a building. We still have to deal with physical reality in a building and understand it. Also I hope we get back to the day when builders really build and not just add up columns of figures."

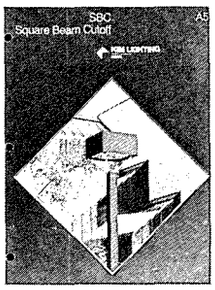
As often has been the case at the Round Tables, architect Karl Justin had some of the last words: "All in all, it seems to me that concrete in architecture is in a state of relative health and balance, even though we are not perhaps performing up to our potential. There clearly are lots of alternatives to put into the top of the hopper and different activities going on in different facets of the concrete field. Unfortunately, out of the hopper you can only make one choice per project. Concrete lends itself beautifully to architectural expression. It's universally and cheaply available as a material. It is so cheap that it takes great design skill to make it expensive!"

Robert E. Fischer

Product literature

For more information, circle item numbers on Reader Service Card, pages 183-184

Systems guide
A four-color, 8-page brochure outlines structural, roof and wall systems, and design accessories. Structural systems include clear and multiple spans, and column systems, while the accessories listed are windows, doors, ventilators and skylights. Atlantic Building Systems, Inc. Atlanta, Ga.
Circle 400 on reader service card



Outdoor lighting
A 32-page brochure illustrates with photos, diagrams and charts, the "Square Beam Cutoff" fixture, its specifications and mounting poles. The brochure lists area lighting, street lighting, urban renewal areas, malls and pathways as suitable for the fixture. Kim Lighting, City of Industry, Calif.
Circle 401 on reader service card

Undercarpet cabling
A 16-page color catalog describes the features of a UL-approved cabling system. Included is information on installation, accessories and specifications. Used with carpet squares, the system is claimed to eliminate the need for underfloor ducts. AMP Special Industries, Paoli, Pa.
Circle 402 on reader service card

Backflow prevention
A 6-page foldout brochure describes the "Model 825Y" reduced pressure backflow prevention device. Flow curves are included and graphic renderings show the device operating under static, normal backsiphonage and backpressure flow conditions. Febco Sales, Inc., Fresno, Calif.
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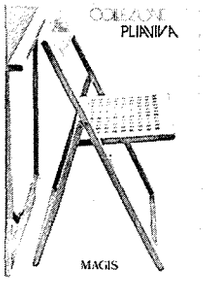

Wooden furniture
A 12-page brochure describes the "Pliaviva" program of folding wooden furniture for the dining area. Tables, chairs and trolleys come in a variety of finishes—ash or beech woods and laminated or wood tops. Photographs illustrate all of the options. Magis, Motta Di Livenza, Italy.
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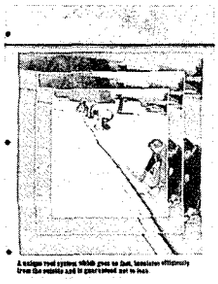

Roof system
A "rubber roof energy system" is described in an 8-page brochure. Guaranteed not to leak, the system consists of expanded polystyrene insulation board protected by a layer of insulating fiberboard and large sheets of rubber membrane. SYenergy Methods, Inc., Cranston, R.I.
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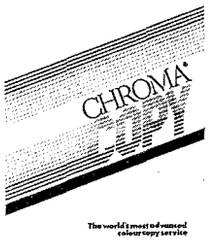
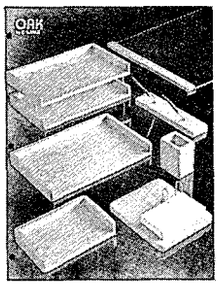


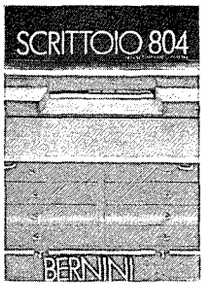
Color copy service
Now offered through franchises in the U.S., *Chromacopy* is a European-invented color process that produces high quality photocopies. Recommended for graphic presentation and documention by planners, architects and engineers. Chromacopy, New York, New York.
Circle 406 on reader service card

Fire doors
UL rated, stile and rail, raised-panel fire doors are described in a 4-page color brochure. These doors have an appearance identical to standard doors from this company and are available in sizes up to 3 ft 6 in. by 8 ft. They come in pine and a variety of hardwoods. Sun-Dor-Co, Wichita, Kansas.
Circle 407 on reader service card

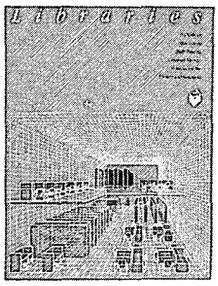
Tempered glass
Developed by a not-for-profit association, the "Engineering Standards Manual" is an illustrated, 51-page source of detailed information on the specifications and standards for tempered glass building products. Glass Tempering Association, Topeka, Kansas.
Circle 408 on reader service card



Desk accessories
Solid oak accessories with radius edges and non-skid cork bases are described and illustrated in a page of literature. Letter trays, pencil cups and desk pads are all coordinated and are available in medium or light oak. C-Line Products, Inc., Des Plaines, Ill.
Circle 409 on reader service card



Writing desk
A 6-page color brochure describes and illustrates the "Scrittoio 804" writing desk designed by Gianfranco Frattini. Line drawings illustrate features such as the sliding top, large and small drawers. The desk is available in rosewood or walnut. G.B. Bernini, Milan, Italy.
Circle 410 on reader service card

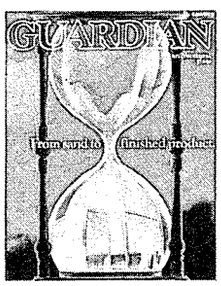


Library space
A 22-page color booklet entitled "A Guide to Spacesaver High-Density Compact Storage Systems for the Library Environment" describes and illustrates a variety of space-saving plans. Case studies are included. Spacesaver Corp., Ft. Atkinson, Wis.
Circle 411 on reader service card
More literature on page 135

Product literature *continued*

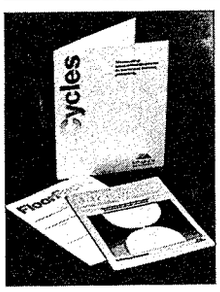
For more information, circle item numbers on Reader Service Card, pages 183-184

Solar collectors
An 8-page color brochure describes 2 types of *Solector* solar energy collector panels and the racks used to mount them. Included are specifications, diagrams, descriptions and applications. Also discussed is a computerized library of design assistance programs. Sunworks, Inc., Somerville, N.J.
Circle 412 on reader service card



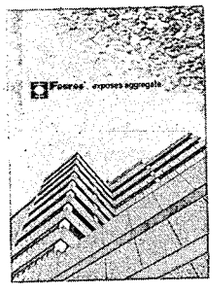
Glass
A 24-page color catalog covers the capabilities, specifications and performance data of a line of architectural glass. Float, reflective, insulating, safety and acoustical glass are featured as well as data on glazing. Guardian Industries, Carleton, Mich.
Circle 413 on reader service card

Ornamentation
An 8-page brochure features *ArtCarved* moldings, rosettes and medallions. Designs are manufactured in 10-ft lengths in either a standard non-rated material or an optional non-combustible version. The product is applicable for both exterior and interior installations. Entol Industries, Inc., Miami, Fla.
Circle 414 on reader service card

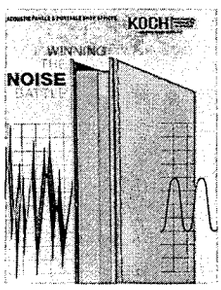


Cost-effective contract carpet
The *LifeCycles Program* is a packet of material designed to aid contractors in life cycle costing of carpets. To compute the costs of floor-coverings in terms of their life spans, specifiers complete the enclosed *Floorfacts* form to generate a computer projection of costs. Milliken & Co., LaGrange, Ga.
Circle 415 on reader service card

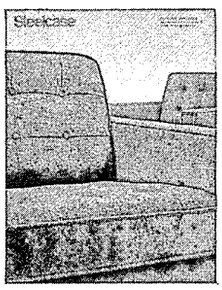
Tiles
A 6-page color brochure features the Grohn collection of tiles. Each style is shown in detail and in a typical installation. Dimensions are given as well as samples of colors available. A rating system describes the durability of various tiles. Mid-State Tile Co., Lexington, N.C.
Circle 416 on reader service card



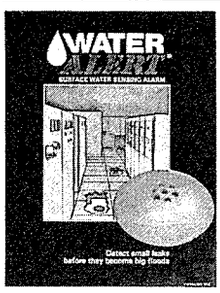
Aggregate finishes
An 8-page color brochure features photographs of structures all over the world to illustrate textured exposed aggregate finishes with chemical retarders. The advantages of these finishes versus smooth concrete are explained. Preco Industries, Ltd., Plainview, N.Y.
Circle 417 on reader service card



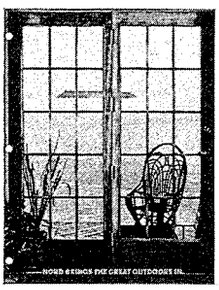
Acoustics
A 16-page brochure describes portable shop offices and modular acoustic panels. The offices come in 7 sizes and panels are manufactured with a gauge line width of 30 in. Specifications are included. George Koch Sons, Inc., Evansville, Ind.
Circle 418 on reader service card



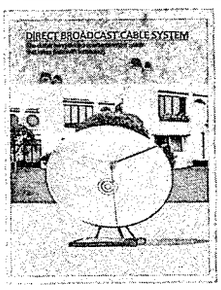
Seating and tables
A four-color, 8-page brochure describes Series 2200 seating and tables for lounges, lobbies and executive suites. All can be covered in the company's fabrics, vinyls and leathers; bases are of welded steel tubing in a variety of finishes. Steelcase, Inc., Grand Rapids, Mich.
Circle 419 on reader service card



Water sensors
Remote indicators and water sensing alarms are described and illustrated in a 12-page color brochure. Typical applications are computer rooms, missile sites and process plants. Each indicator can monitor up to 12 sensors. Dorlen Products, Greenfield, Wis.
Circle 420 on reader service card



Patio doors
A 6-page color foldout brochure features solarium patio doors made of Western hemlock. Included are deadbolt locks and 4 hinges on every door. Installation and finishing instructions are included in the brochure. E.A. Nord Co., Everett, Wash.
Circle 421 on reader service card



Cable system
A 4-page color brochure describes and illustrates a cable system for multiple dwelling complexes which includes satellite television, video games, banking and shopping, and fire, burglar and medical alert systems. DBC Systems, Inc., Brighton, Mich.
Circle 422 on reader service card

Fire prevention in concrete
A 12-page color brochure describes the advantages of precast and prestressed concrete in preventing the spread of fires. The brochure focuses especially on the advantages over a sprinkler system which may be turned off. Photographs illustrate hazards. PCI, Chicago, Illinois.
Circle 423 on reader service card

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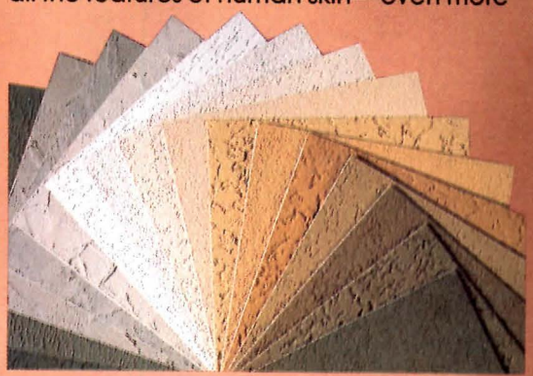

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The American Gas Association presents:

Passive Solar Design Awards Competition*

PASSIVE SOLAR DESIGN COMPETITION
AMERICAN GAS ASSOCIATION

Purpose: To encourage the design and construction of practical residential housing which optimizes the use of energy through passive solar design techniques and the use of natural gas for space conditioning and household appliances.

Eligibility: This competition is open to all architects, designers, and builders with built or buildable designs. By entering the competition, designers of unbuilt projects agree that should they win, they will build their designs.

Categories: A. Single-family detached.
B. Multi-family, up to six dwelling units.

Registration: A non-refundable $50 registration fee must be submitted by January 31, 1983 for each design to be entered. Design submission deadline is February 28, 1983.

Awards: Winners in each category will receive the following awards:

- First prize—$4,000.
- Second prize—$2,000.
- Honorable Mentions—$1,000.
- National publicity in professional trade journals.
- Publication in a book of competition highlights to be distributed nationally.

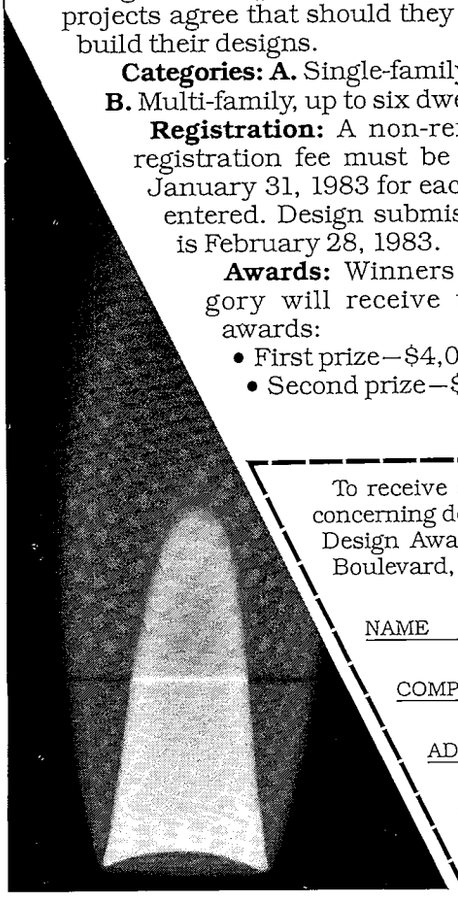
Judging Criteria:

- Economic viability in local housing market.
- Suitability of design to urban mass housing market.
- Adaptation to surrounding environment.
- Optimum use of gas energy for backup and appliances.
- Architectural style.
- Overall energy efficiency.
- Marketability of design.

Jurors: Samuel J. Cunningham, Manager of Research, Southern California Gas, Los Angeles, CA; James Leach, Downing-Leach, Boulder, CO; Richard G. Stein, FAIA, The Stein Partnership, New York, NY; Donald Watson, FAIA, Guilford, CT; Steven Winter, Steven Winter Assoc., New York, NY.

Competition Director: Albert J. Ream, American Gas Association, Arlington, VA (703) 841-8575.

***Cosponsored by Solar Age Magazine.**



To receive a copy of the registration booklet which contains detailed instructions concerning design submissions, please complete this form and return to: Passive Solar Design Awards Competition, Room 1002, American Gas Association, 1515 Wilson Boulevard, Arlington, VA 22209. **Do not send design entry with this form.**

AR-11

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Category: ☐ A. Single-family ☐ B. Multi-family ☐ Built ☐ Unbuilt

Gas: The future belongs to the efficient.

New products

Richard Meier's new furniture for Knoll explores the double cube
This elegant new furniture collection has been designed by Richard Meier for Knoll International, Inc. Meier worked closely with Knoll for four years to design the seven pieces now available—chair, high and low stools, conference/dining table, low table, chaise longue and display stand (not shown here). Two other pieces, a double sofa and high chair, are not yet in production.

While Meier's design reputation clearly rests on his extraordinary architectural work—his white houses and, more recently, the Atheneum at New Harmony and the Hartford Seminary—he has also designed furniture since 1963, either built-ins or custom made. "Furniture has always been an integral part of each space I design," says Meier. "I see it as yet another means by which space can be shaped and manipulated."

Meier's decision to design a contract/residential collection came during his 1978 redesign of the members' reading room at the Guggenheim Museum, for which he designed a wood chair similar to the one shown here to relate to Frank Lloyd Wright's interior. After this job, he set out to re-work the proportions and features of the Guggenheim chair for a more universal application. Meier's own words best explain his intricate design philosophy for the new chair: "In many ways the chair developed in the manner of a work of architecture. The simple idea emerged from a double cube, one on top of the other. The bottom, from the seat downwards, is carved out of the lower cube; an upward extension, the curve of the arm, is formed from the implied upper cube."

The pieces in the collection are clearly carefully integrated. While each is a distinct object, the unifying vocabulary of forms, curves and interplay of vertical and horizontal lines is similar, and there is a unifying plane height of 27½ in. for the chair arm, conference/dining table and high stool.

Knoll's construction of each piece maintains a high standard. All are made of maple, and come in black or white lacquer, or natural finishes. Lacquer finishes are immaculate. And every connection is a mortise and tenon, with each furniture piece hand-rubbed during assembly in a small shop in Pennsylvania. This labor-intensive work is reflected in the prices; each piece will be priced individually. An "M" trademark is carved into the underside of each item. Knoll is counting on Meier's furniture line to become a traditional offering ranked with its Mies van der Rohe, Marcel Breuer and Eero Saarinen collections.

1. High stool: tall and spare, this stool has a stainless steel foot ring; its 27½-in. height relates to the chair and the conference/dining table.

2. Chaise longue: with no delineated front or back, the symmetrical curved seat frame (upholstered in leather, suede or velvet) rests atop a slightly rocking sled base of complex vertical and horizontal supporting members.

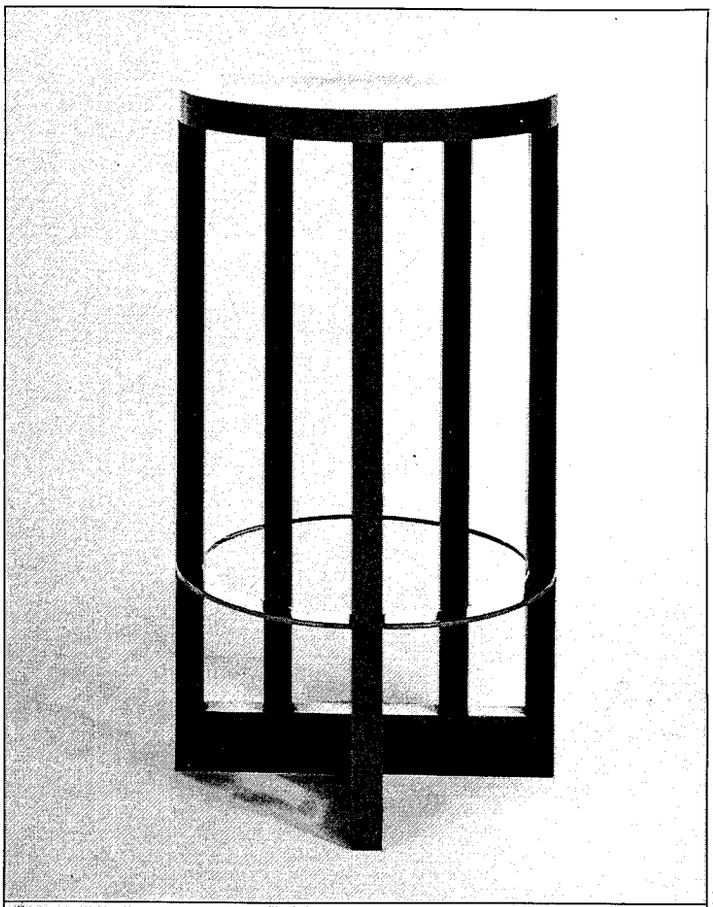
3. Conference/dining table: an I-shaped base comprised of wood columns supports a 60- by 96-in. top; height is 27½-in., relating to the chair and high stool. (Also shown in photo number 4.)

4. Chair and low stool: the centerpiece of the collection, the chair emphasizes strong vertical and horizontal lines. It is so well proportioned that another chair can be aligned, facing the opposite direction, to form a love seat, or many chairs can be positioned to form a snaking line of curvatures. The chair's 27½-in. arm height is identical to that of the conference/dining table and high stool. The low stool works well with both conference/dining and low tables, or separately in informal arrangements.

5. Low table: to maintain proper proportions in this table, the crisscross base is heftier than that of the conference/dining table; topped by 40-in. square surface.

Knoll International Inc., New York City.

Circle 300 on reader service card.
More products on page 141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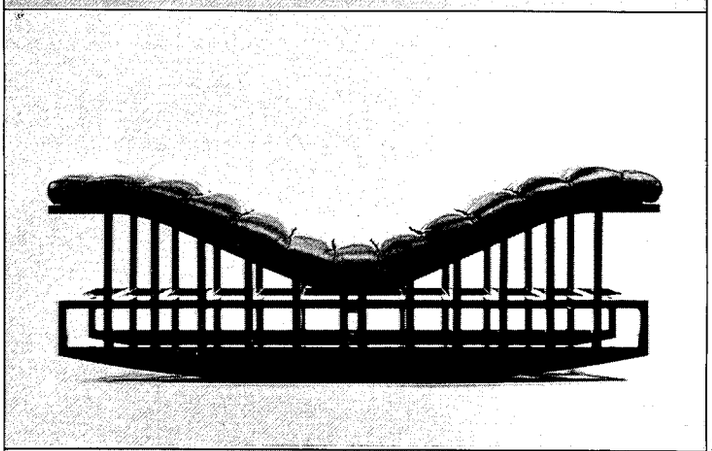
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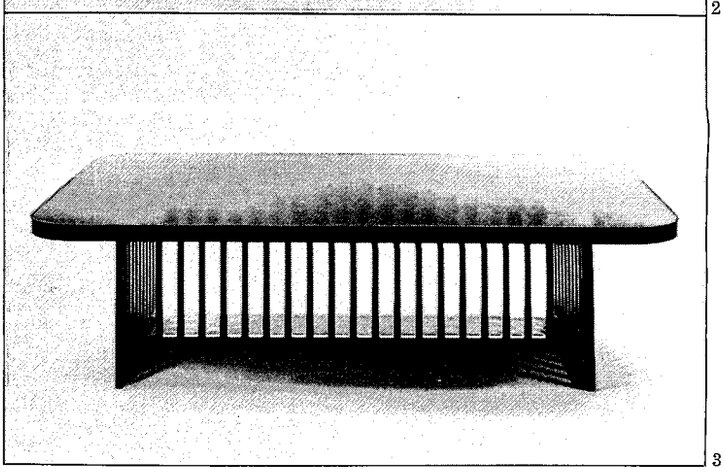
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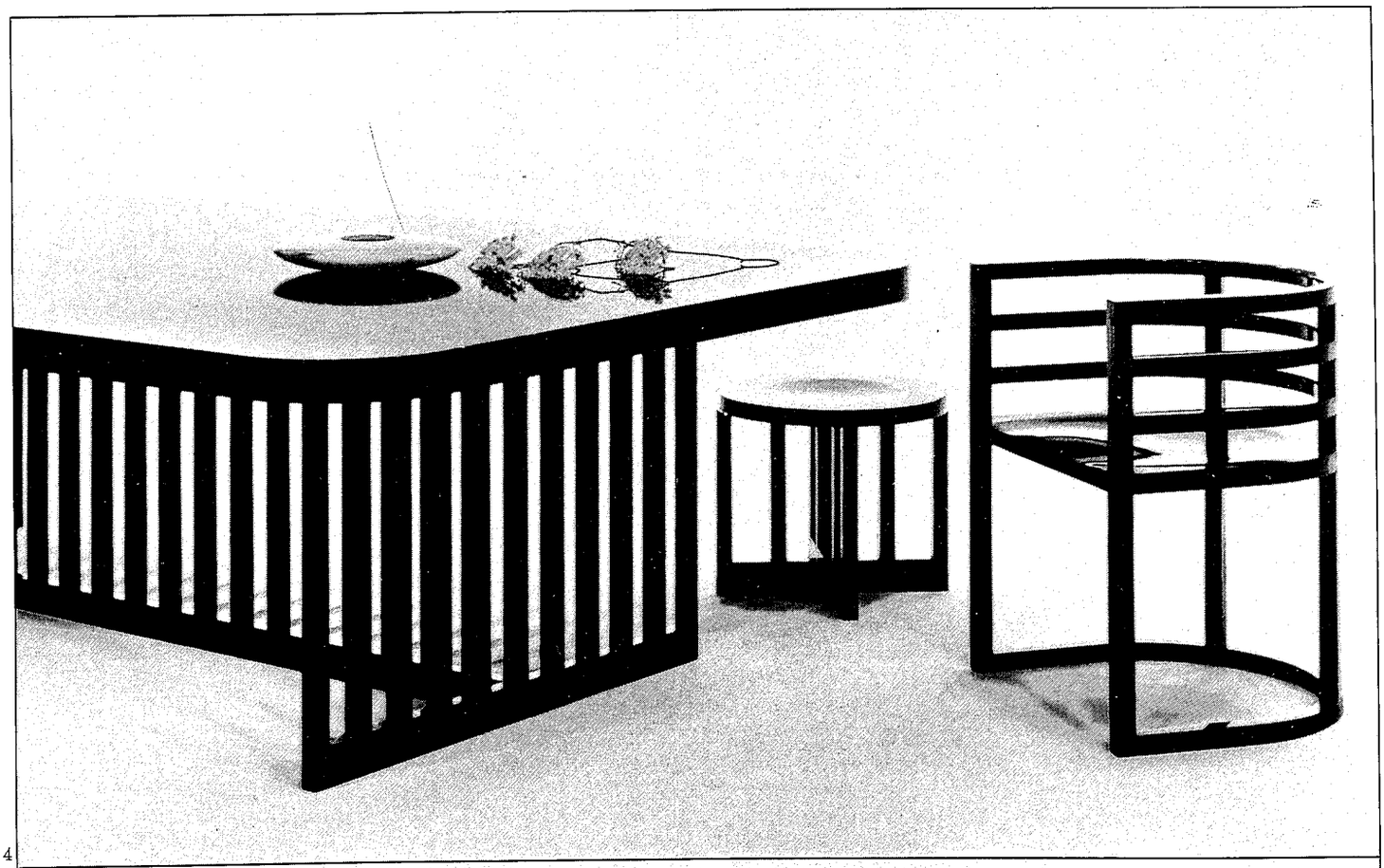

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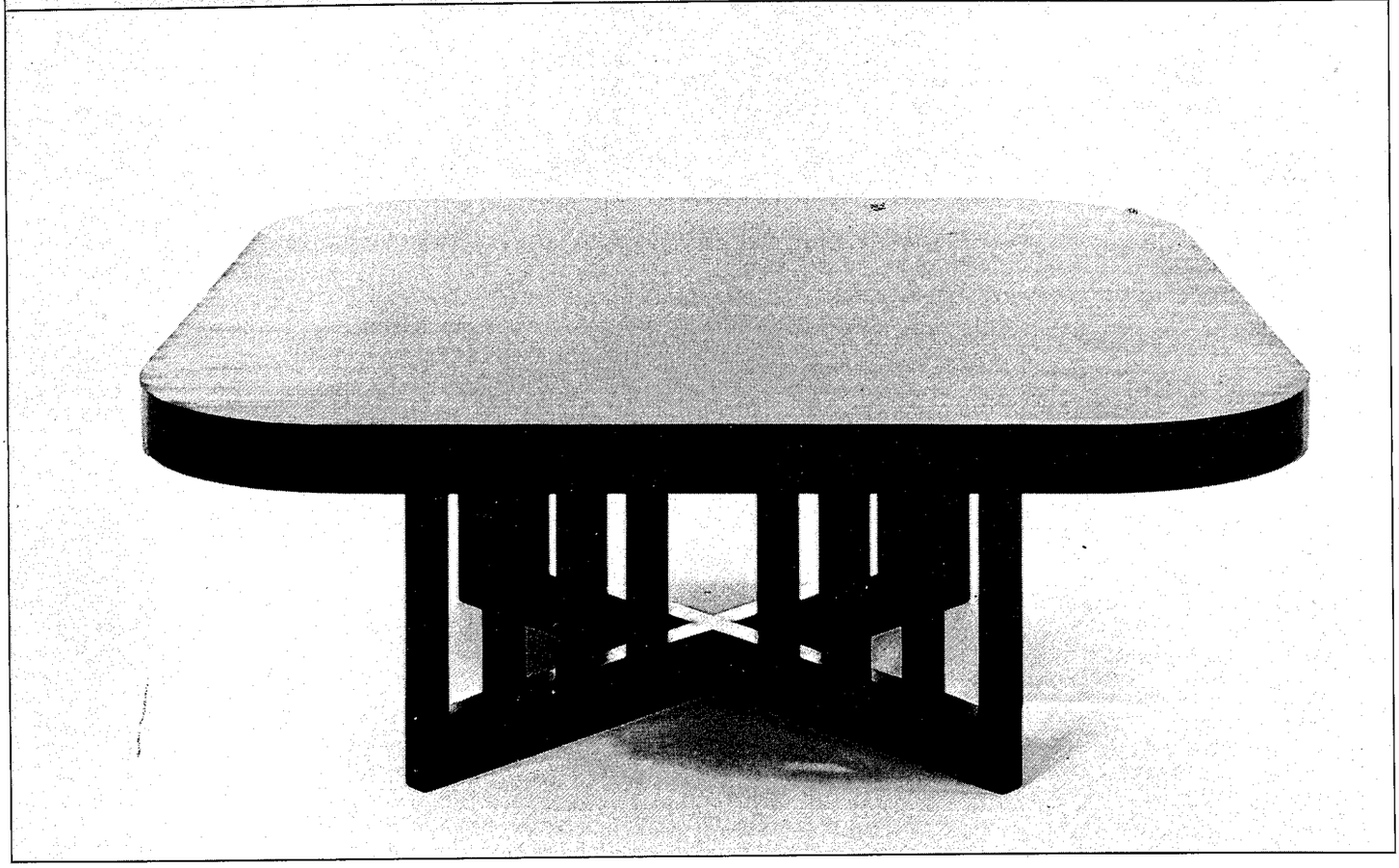

5

Control the fire monster!

When Sargent introduced the 60 series exit device, it offered a full line of smooth operating, contemporary devices in true hardware finishes. And now Sargent adds an equally full line of Fire Exit Hardware for use on all fire rated doors up to and including 3-hour. As true today as it has been since 1864, it makes good sense to specify Sargent!

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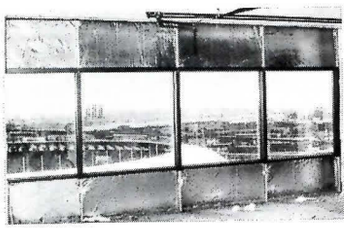
Continued from page 139

Office chair
The Series 600 chairs, designed for the electronic office, include 14 models (the executive model is shown). Features are soft, contoured back and seat; cushioned armrest; tilt and swivel versions; and adjustable height control. All are available in a variety of fabric textures and colors, with color-coordinated trim; and all have 5-prong base. All-Steel, Inc., Aurora, Ill.
Circle 301 on reader service card

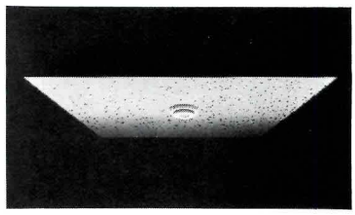
Office furniture
This series of furniture features a rounded work surface edge. The surfaces for CRT and EDP printout machines are 26-in. high, while other furniture arrangements can be coordinated with 42-in. or 48-in. wide panels. All-Steel, Inc., Aurora, Ill.
Circle 302 on reader service card

Office conference furniture
The S4 Series of office furniture has a primary work surface which doubles as desk and conference table. The perimeter pieces, cube storage units, and high storage/wardrobe units are attached to a 4-in. high black platform called the "organizing element." A removable insert in each work surface allows cables to pass through. Dunbar Furniture, Berne, Ind.
Circle 303 on reader service card



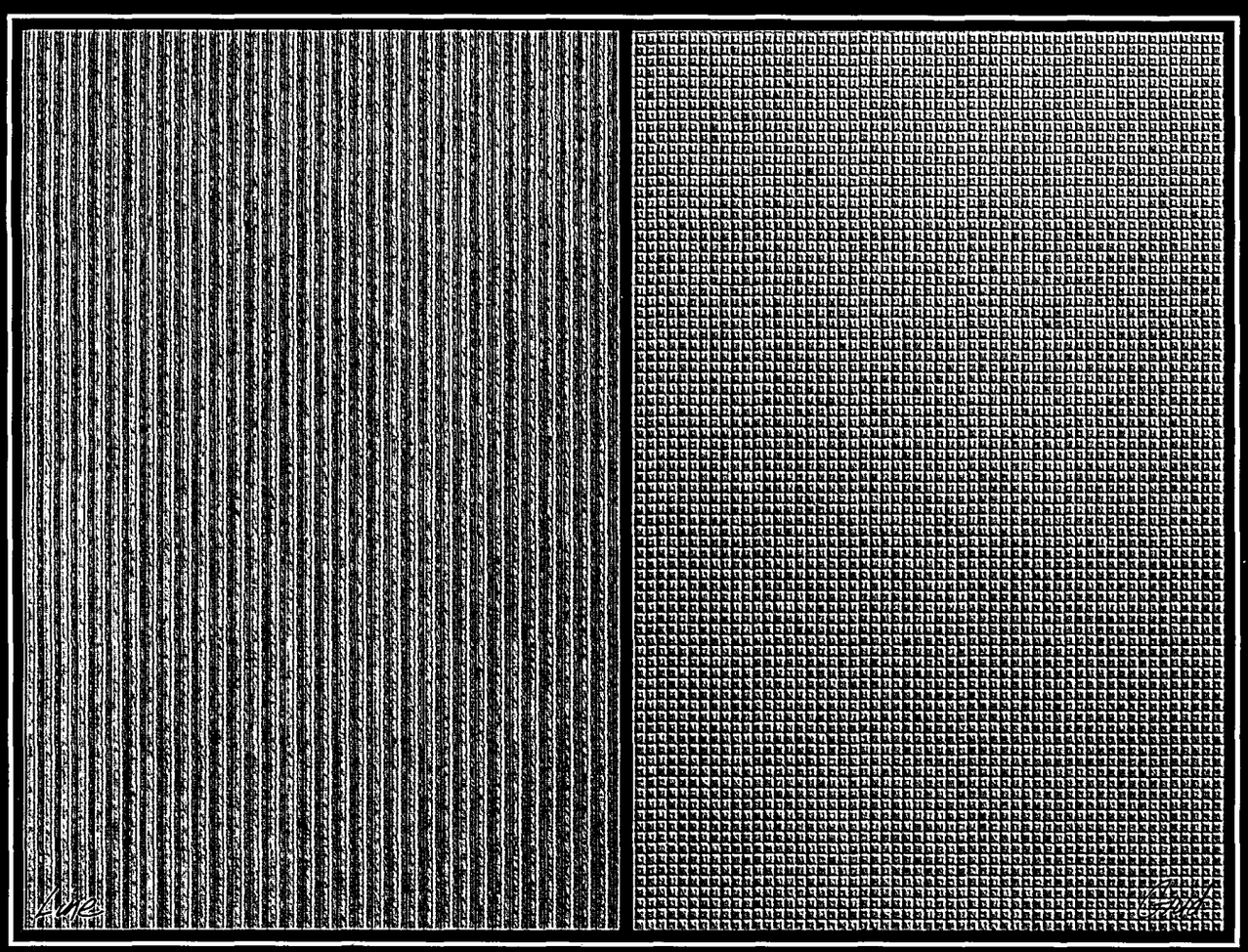
Asbestos-free insulation
Insulations called "Fibergard" were developed for energy conservation, sound control and fire protection and are designed specifically for commercial buildings. Of semi-rigid, felted material, they are a blend of silica-based raw materials laminated with an intermediate temperature binder. Forty-Eight Insulations, Inc., Aurora, Ill.
Circle 304 on reader service card

Planters
A series of square landscape planters comes in either redwood or oak. Modular units are available in 6 sizes with 5 different heights. Also available are both hanging and freestanding benches and a trash receptacle. Pouliot Designs Corp., Shakopee, Minn.
Circle 305 on reader service card



Industrial fixture
The *Baymaster* high bay luminaire operates in high ambient temperatures, and is adjustable for wide, medium or narrow distribution without tools. It accepts hps, metal halide and mercury vapor lamps. Options include a 250W quartz emergency lamp and wire guards. Appleton Electric Co., Chicago.
Circle 306 on reader service card
Continued on page 143

This is Nevamar



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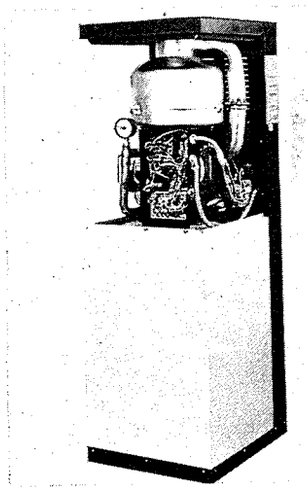
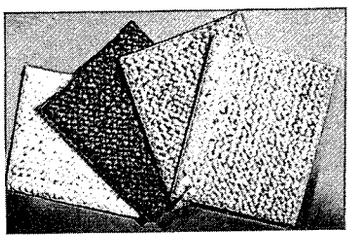
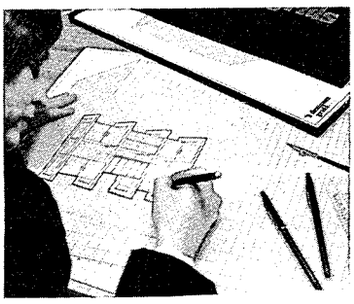
Continued from page 141



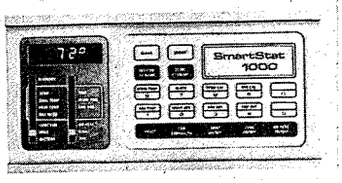
Heating
A gas-fired *Heatmaker* boiler provides energy-efficient residential hydronic heating and domestic hot water in one appliance. Energy-saving features include: sealed-combustion through-the-wall venting, a power burner with electronic ignition, a 1-qt boiler for low cool down losses, and a totally insulated transfer tank providing 130 gph of hot water. Suggested applications for this chimneyless boiler are new or rehab apartment developments, oil or electric conversions and supplementary solar installations. BGP Systems, Inc., Newton, Mass.
Circle 307 on reader service card



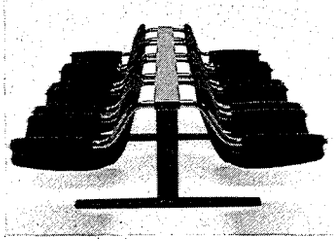
Loop pile Berber
An all-wool Berber-style carpet, "Sparta" is suitable for contract or residential use. Manufactured in a 13-ft 2-in. width, "Sparta" comes in oyster white, bone, camel and birch colorways. Weave-Tuft Carpet Corp., New York City.
Circle 308 on reader service card



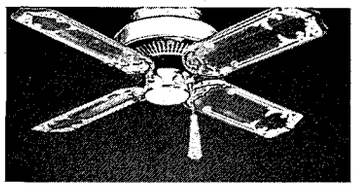
Perspective drawing
"Architectural Grids" provide the draftsman with 16 different three-point perspective views, each set within a frame which suggests the shape of the final drawing. Each grid is labeled and calibrated; sheets are placed under tracing paper for simplified production of perspectives, plans and elevations. Kleidon & Assoc., Medina, Ohio.
Circle 309 on reader service card



Thermostat
A microprocessor-based unit, the *Smart Stat 1000* system controls single- or multi-stage hvac equipment, including heat pumps, in both commercial and residential installations. Said to be easy to program, the control is adaptable to all gas-fired, oil-fired, and electrically-powered hvac systems. NSI Control Products, Jefferson City, Tenn.
Circle 310 on reader service card



Public area seating
Designed for high-traffic reception areas where maintenance and space-saving considerations are critical, the "Jetport" system consists of several freestanding units that can be sleeved to special purpose modules to form long continuous rows of single- or double-place seating. Burke/Alpha, Downsview, Ont. Canada.
Circle 311 on reader service cards



Low ceiling fan
A space-saving model with classic styling, this "Old Jacksonville" fan measures only 8½ in. deep, providing a 6-ft 9½-in. clearance when installed on a 7½-ft ceiling. It is available in 38- or 42-in. configurations. Features include a 3-speed control, reverse switch, solid wood blades, and optional light kits and accessories. Nichols-Kusan, Inc., Jacksonville, Texas.
Circle 312 on reader service card
Continued on page 145

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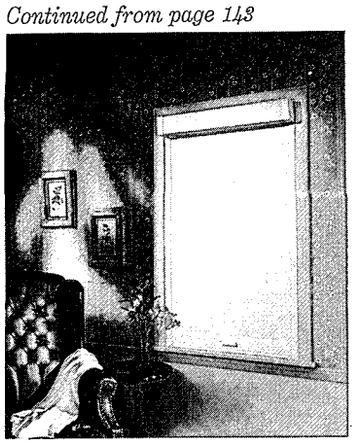
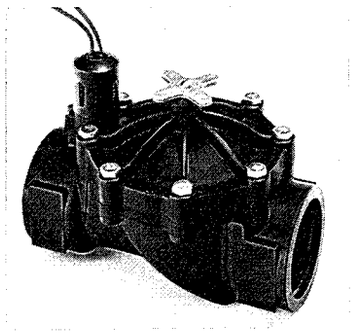
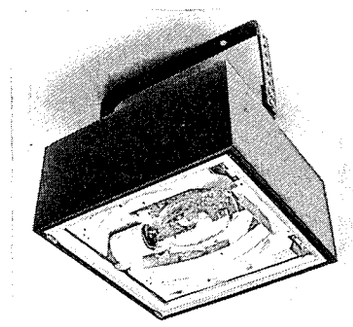


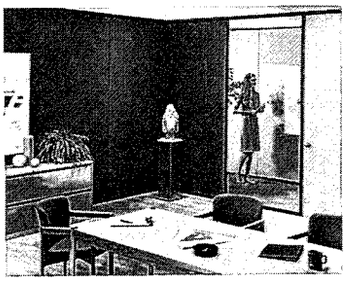
Window seal
The cream-colored fabric shade of the *R-Value* "Window Seal System" is a composite of 3 insulating layers and 2 reflective layers bonded together. A cornice conceals the roller system and prevents seepage of air above the shade. The Graber Co., Middleton, Wis.
Circle 313 on reader service card



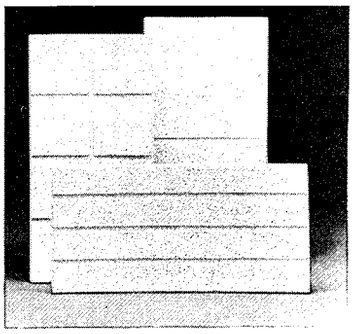
Valve
A 2-in. plastic remote control valve has been developed for use in this manufacturer's sprinkler systems of higher flow demand. Offering a manual internal bleed control and brass flow adjustment stem, the valve is designed for easy installation and minimum maintenance. Weather-matic, Inc., Dallas.
Circle 314 on reader service card



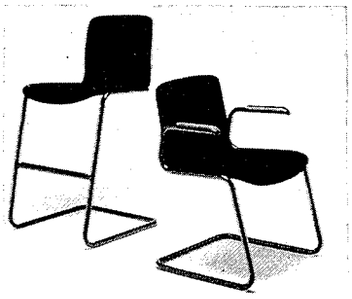
Garage lighting
For all types of enclosed structures, "Form Ten" sharp cutoff luminaires provide glare-free light from low-energy HID lamps up to 400 watts. Four interchangeable optical systems are offered. "Form Ten" parking garage lights have an adjustable mounting assembly, which extends the unit below ribbed or waffled ceiling patterns. Gardco Lighting, San Leandro, Calif.
Circle 315 on reader service card



Full height partitions
Designed to create private areas in offices, the *Spacesetter System* requires no permanent attachment to walls or ceilings, and can be easily installed and relocated by in-house maintenance personnel. The full-height partitions are metal-framed, and have a Class A flame spread rating. Modernfold, New Castle, Ind.
Circle 316 on reader service card



Ceiling panels
Three new versions of *Fascination* ceiling panels give the visual effect of individual tiles, with the economy and convenience of lay-in panels. The 2- by 4- ft fissured panels have an NRC of .55 to .65. Conwed Corp., St. Paul, Minn.
Circle 317 on reader service card



Tube frame chairs
Offered with or without covers in 2 seating heights, "Kinetics 100/300" chairs and stools provide cantilevered spring seating. Appearance options include bright chrome or colored *Kinkote* frames, and birch or upholstered seats and backs. Kinetics Furniture, Downsview, Ont. Canada.
Circle 318 on reader service card

Continued on page 151

BEST VAN MPG* UNDER THE SUN.

America's Best Selling Van— Now First With 20 MPG!

But Ford Vans aren't best sellers just for setting gasoline mileage milestones. They're all "out front" designed — the engine is moved forward to make loads of room for passengers. And room for loads — up to 4,490 pounds worth.

Plus you get Ford exclusives like tough body-on-frame construction and Twin-I-Beam front suspension. It's no wonder more Ford Vans are on the road than any other make.†

*Diesels excluded.
†Based on R.L. Polk & Co. cumulative registrations as of July, 1981.

Get it together—Buckle up.

BEST VAN MILEAGE

30 EST HWY 20 EPA EST MPG

E-100/150 with optional 4-speed overdrive transmission. Use for comparison. Your mileage may differ depending on speed, distance and weather. Actual highway mileage and California ratings lower.

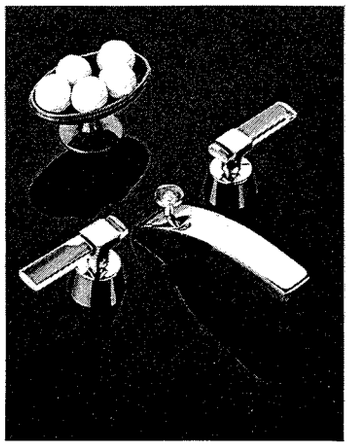
FORD ECONOLINE

FORD DIVISION Ford

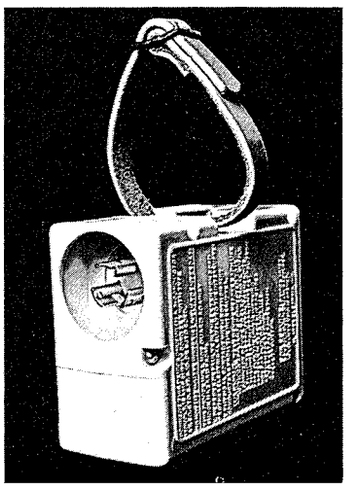
AMERICA'S TRUCK

BUILT FORD TOUGH

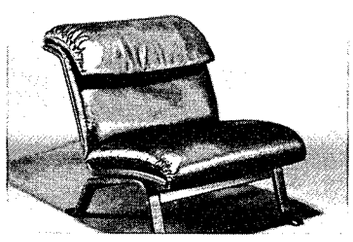
Continued from page 145



Brass faucet
Of solid brass construction with clear *Lucite* handles, "Valley XL" faucets are said to provide a contemporary, custom-made appearance. Fittings come in either a triplate chrome or gold finish. U.S. Brass, Plano, Texas.
Circle 319 on reader service card



Portable GFI
Rated at 15A, 125V, this new "Hitch-Hiker" ground fault interrupter has a locking-type recessed plug, and a looped leather strap for hanging around a belt or from a hook. Housed in a shock-proof *Lexan* case, the portable unit meets all NEC requirements, and has a built-in relay to monitor and protect against an open neutral condition. Slater Electric Inc., Glen Cove, N.Y.
Circle 320 on reader service card



Swedish seating
The "Bonito" sofa group from Göte-Möbler is available in a number of combinations, with 3, 4, or more seats. Upholstery options include imported fabrics and fine leathers. Each piece comes with a five-year guarantee, and specific instructions for proper care of the upholstery material. Torben Frederiksen Enterprises, San Rafael, Calif.
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Continued on page 153

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Our entire array of functional and aesthetic HPL Doors and adjustable aluminum frames are in Ft. Worth, Texas. And La Mirada, California. And Dover, Ohio. And Atlanta, Georgia. And Edison, New Jersey, too.

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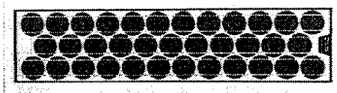
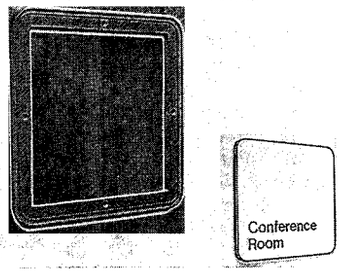
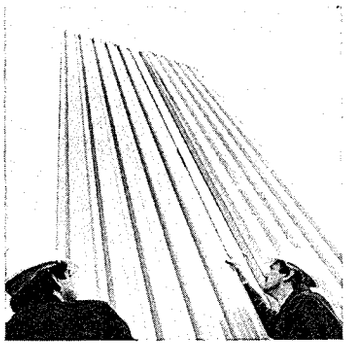
Continued from page 151



Solar generators
For use at any remote site where electric power lines are too costly or difficult, "Solar Power LG Series Photovoltaic Modules" generate 33 W peak power. Units can be custom configured in series or parallel to generate any voltage or current needed on site. "LG Series" developed by an affiliate of Exxon Corp., are said to be the first such modules qualified under JPL Block IV testing with no problem failure reports. Solar Power Corp., Woburn, Mass.
Circle 322 on reader service card



Sign frame
A plastic sign frame known as the "1700 Frame" is made from injection-molded high-impact ABS plastic with radius corners. Mounting is accomplished by screws or double-face vinyl foam tape. Signs come in plastic, anodized aluminum, brass and acrylics. Sign plates are ⅝-in. smaller than frame size to provide a ⅛-in. reveal between plate and frame. Best Sign Systems, Kansas City, Mo.
Circle 323 on reader service card



Insulated panels
Now available in a range of colors and configurations, *Delta Rib* panels come in insulation values of up to R-66, and are said to be ideal for use in food processing, cold storage, warehousing, arenas—any area where a controlled temperature is required. Normal panel widths are 3 and 4 ft with single panel lengths of over 40 ft. Cold-matic Refrigeration of Canada Ltd., Downsview, Ont., Canada.
Circle 324 on reader service card
Continued on page 155

WON-DOOR FIREGUARD®

A simply beautiful solution to code requirements for elevator separation.

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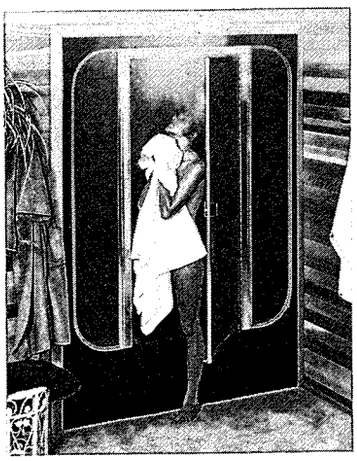
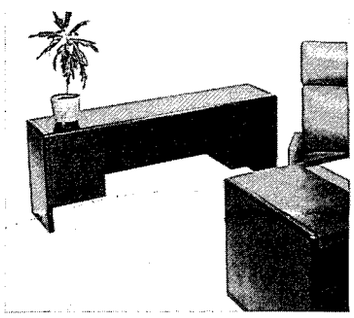
Continued from page 153

Flooring panels
Resin-bonded *Waferwood* panels have received "Sturdi-I-Floor" certification from the American Plywood Association, and meet NRB 108 and national code performance standards. *Waferwood* is produced "sized for spacing" in 4- by 8-ft panels in ⅝- and ¾-in. thicknesses. Louisiana-Pacific, Portland, Ore.
Circle 325 on reader service card



One-piece tub
The Hytec "Showerbath" is available with steambath and whirlpool options; a photo shows the steam-proof door used on the 60-inch unit. A steam generator and/or factory-plumbed hydro-jet assembly are built into the seamless, contoured cast acrylic shower and tub combination. Hytec, Inc., Tumwater, Wash.
Circle 326 on reader service card



Executive office
Freestanding credenzas are now offered to work with this maker's line of 60- and 72-in.-wide desks and panel-hung work surfaces. Units are made of oak in both light and dark finishes, and feature several pedestal and tambour door options. Matching conference tables are available in rectangular, race-track and round top shapes. Rose Johnson, Inc., Grand Rapids, Mich.
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9. Not applicable.

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G. Total—average number of copies of each issue during preceding 12 months, 81,127; actual number of copies of single issue published nearest to filing dates, 80,465.

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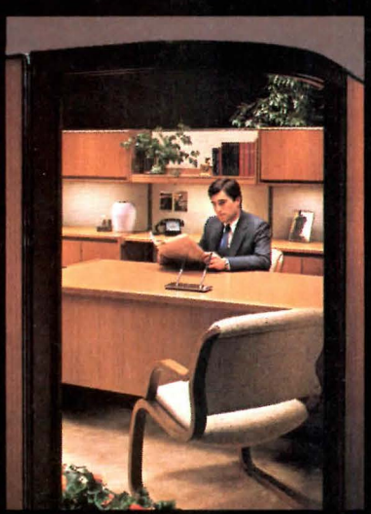

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