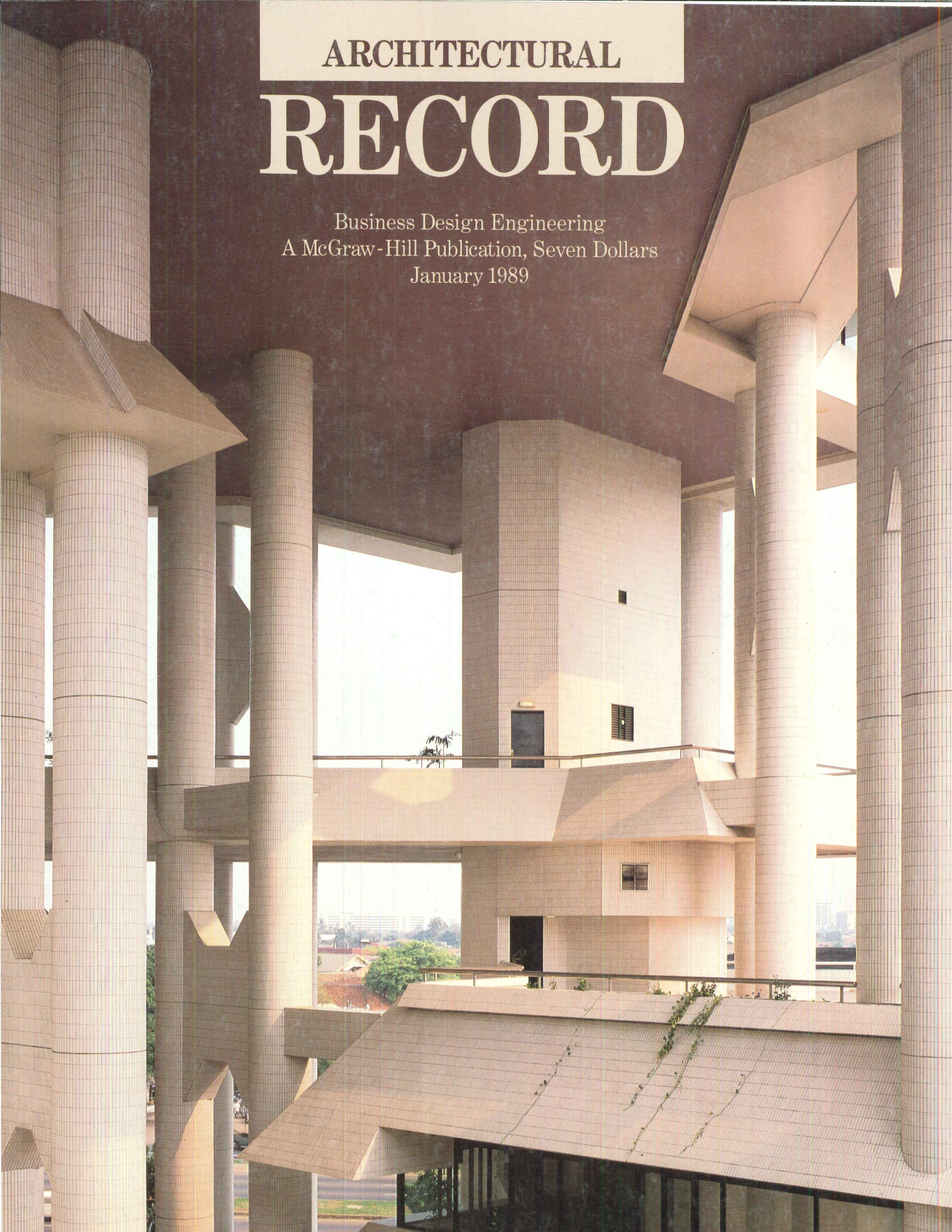


ARCHITECTURAL RECORD

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



Overall, you are 100 percent on the mark in bringing the attention of the profession to the issues "in our own backyard" [ARCHITECTURAL RECORD, November 1988, "In the Public Interest"]. The group of winners is truly exemplary in the depth of design and exploration achieved with the meager budgets typified in projects that are in the public interest. Obviously, we at Bruner/Cott enjoy seeing our work published, but in this particular case we are honored to have Washington Elms in the company of so many fine projects.

Once again, congratulations on a terrific issue and what I hope is the beginning of a very important annual program for ARCHITECTURAL RECORD.
*Leland D. Cott, AIA
Principal
Bruner/Cott
Cambridge, Massachusetts*

David Greusel's article "Marketing strategies may compromise professional goals" [ARCHITECTURAL RECORD, August 1988, page 27] triggered some reactions. This is not intended as a disagreement or argument. Some of his statements simply started thoughts rumbling in my head. The quotes are Mr. Greusel's.

"The practice of architecture is, or should be, more akin to the practice of medicine." Perhaps, but the analogy compares apples with oranges. Medicine deals with anxious, confused, fearful, ill people who, for the most part, accept their physicians' diagnoses with trepidation but also with confidence.

Architecture deals with positive, aggressive, enthusiastic people who have money to spend and who, for the most part, would be their own architects if only they had the time, or if some law did not prevent them.

We, as a profession, will only be valued by others if it is clear to others that our profession

makes a contribution to society. Our society values the medical profession; it pretty well ignores the architectural profession. And why not? The architectural profession pretty well ignores the society from which it draws its sustenance. All too often architects are invisible in their communities. When we do emerge, it is frequently in a transparently self-serving manner. Rarely does the architect take unequivocal public positions.

If we architects want acceptance, we must earn it.

Become visible. Take a stand on issues about which we have special sensitivity. We will definitely lose a few clients, but the community may discover a profession—a profession they assumed was extinct.

*Bob Wanslow
San Francisco*

I am disappointed that your publication of Bruce Goff's Japanese Art Pavilion [ARCHITECTURAL RECORD, September 1988, pages 92-99] did not recognize the imaginative engineering contribution of the late J. Palmer Boggs.

Boggs was associated with most of Goff's work for some 20 years prior to his death (the pavilion being the final project for both men), and there had developed an unusual design collaboration between architect and engineer.

*Ernest E. Jacks
Associate Dean
School of Architecture
University of Arkansas
Fayetteville, Arkansas*

Correction

Greg Hursley should have received credit for the photographs of Robert Shaw ECHO Village (ARCHITECTURAL RECORD, November 1988, pages 120-123).

January 11 to February 17

"Dreams and Details: A Retrospective of the Work of Paul Rudolph"; at the Steelcase Design Partnership, 305 E. 63rd St., New York City.

January 12

"Crisis in the Workplace," a seminar on VDTs, indoor air, and workplace smoking, sponsored by Bestype Office Environments; in the McGraw-Hill Auditorium, New York City. For information: Hedy Faulkner, Bestype Consulting, 501 Madison Ave., New York, N. Y. 10022 (212/888-9009).

January 19 to February 25

"Jože Plečnik, Architect," showing the work of the early 20th-century Czech architect; presented by the Architectural League of New York, at the Urban Center, 457 Madison Ave., New York City.

February 4

"Architecture/Shaping the Future: Legoretta, Maki, Meier, Rogers," a symposium with the four architects as speakers; at Mandeville Auditorium, University of California, San Diego, La Jolla, Calif. For information: 619/534-3400.

February 27 through March 1

Third annual National Town Meeting on Main Street, "Main Street at Work," to consider downtown revitalization, cosponsored by the National Main Street Center and the Texas Historical Commission; in Austin. For information: Kennedy Smith, National Trust for Historic Preservation, 1785 Massachusetts Ave., N. W., Washington, D. C. 20036 (202/673-4219).

March 3-30

"Illegal Houses," drawings and models for nonconforming metropolitan houses by 10 young Minnesota architects; at the Minnesota College of Art & Design Gallery, 2501 Stevens Ave. S., Minneapolis.

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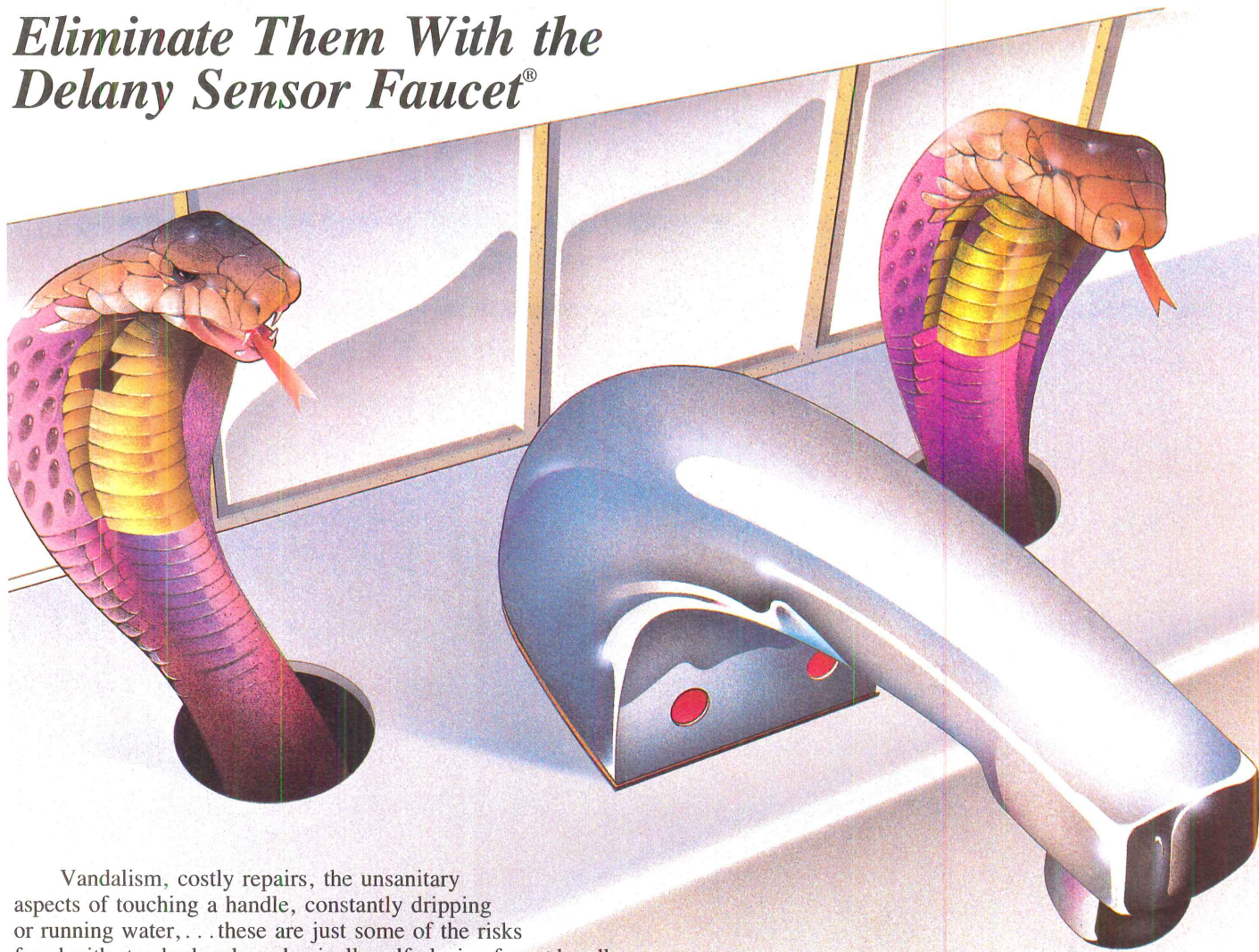


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Dharmala Sakti Building, Jakarta

Paul Rudolph, architectural design consultant

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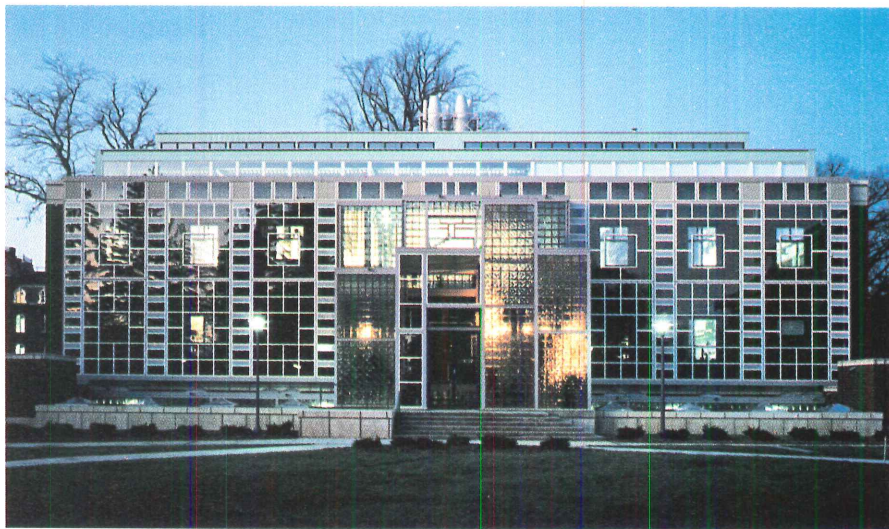
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5 Categories

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6 Entry Acceptance

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10 Publishing of Winning Entries

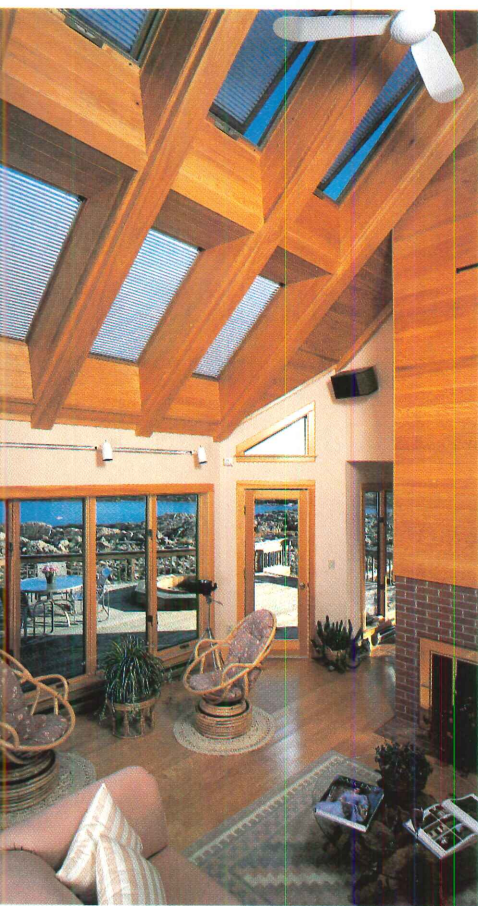
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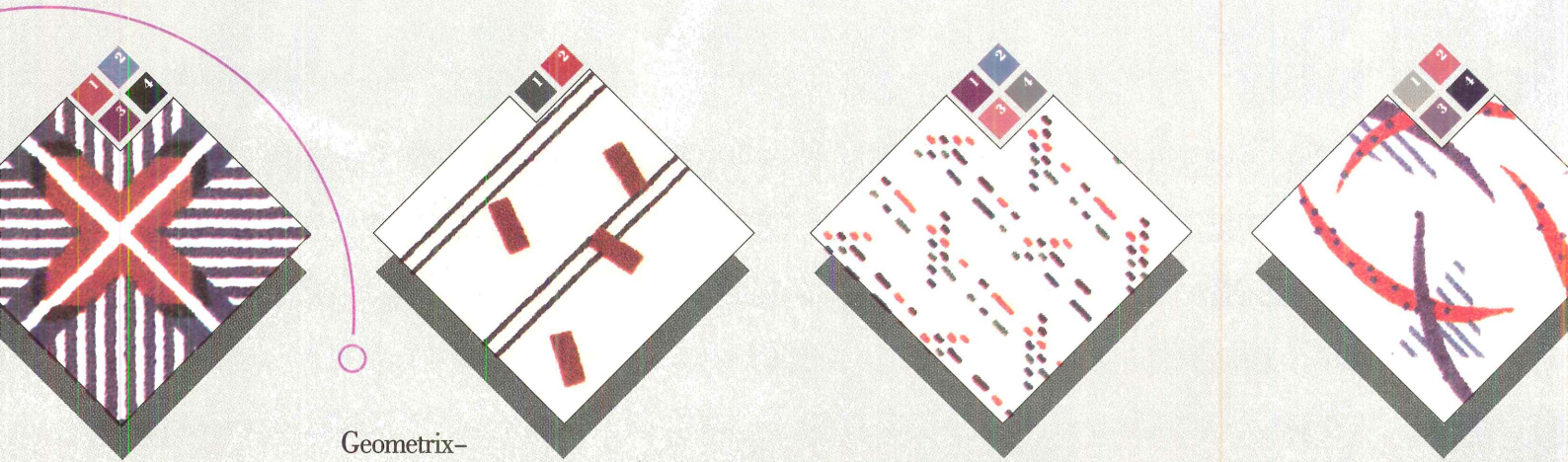
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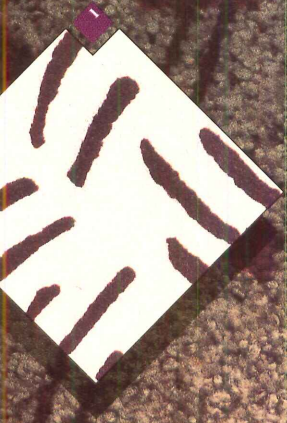


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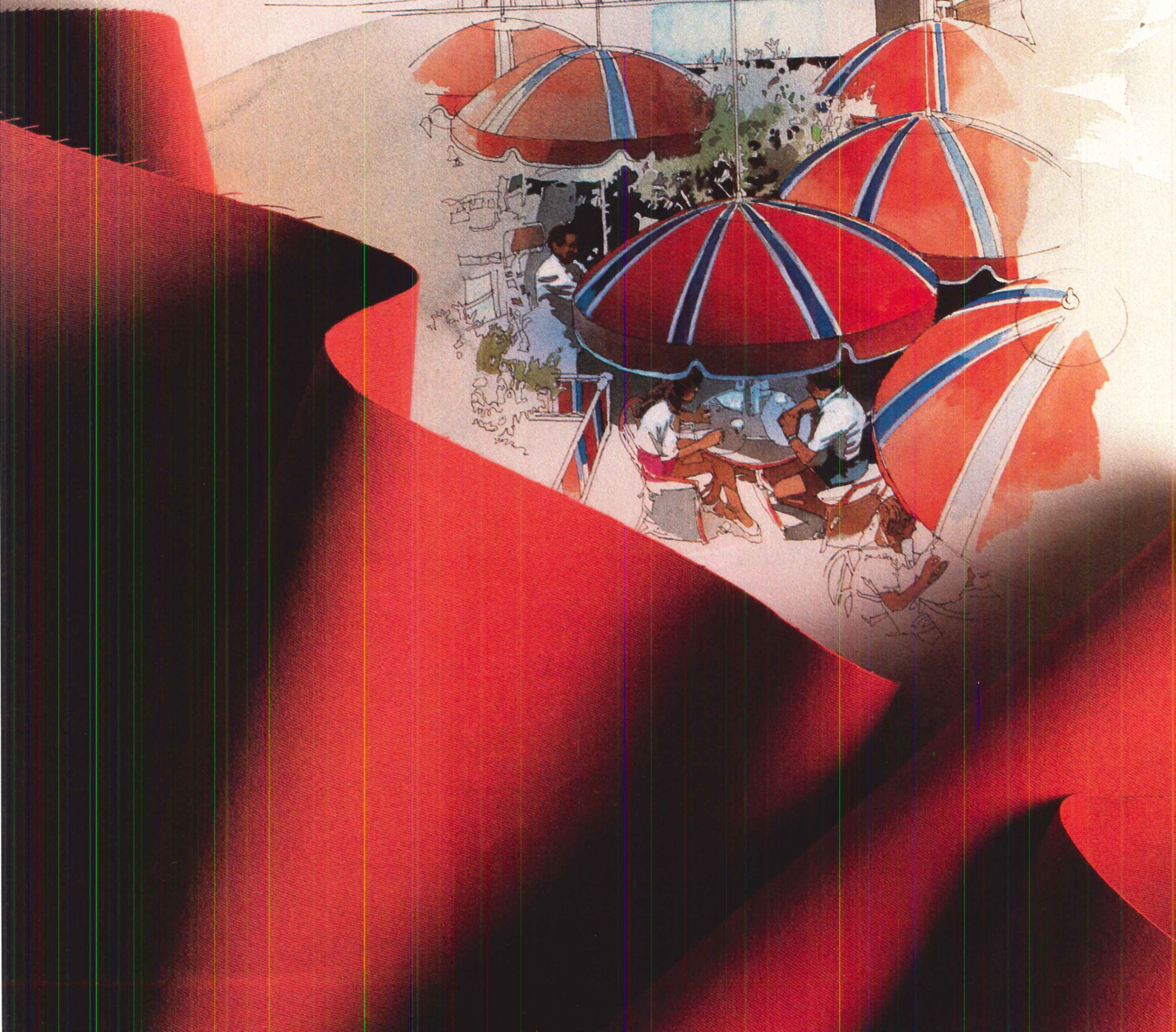
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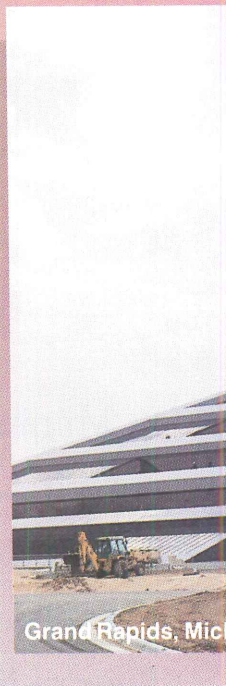
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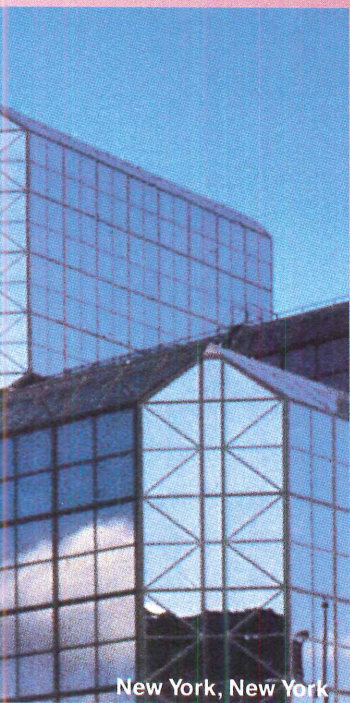
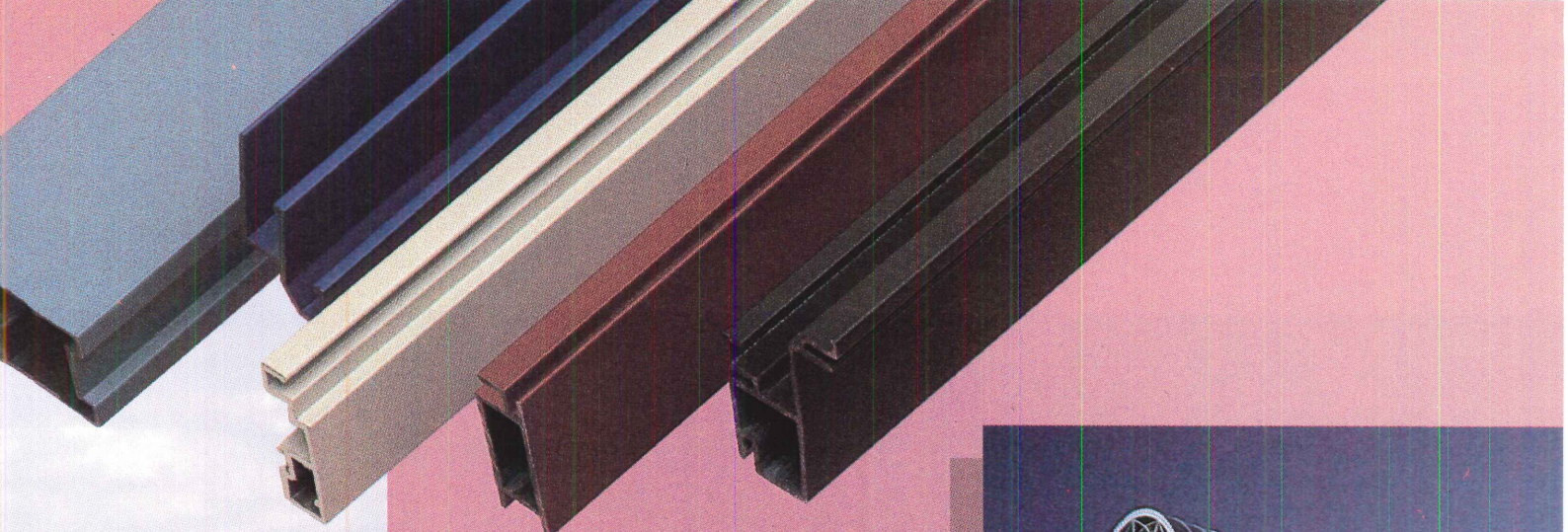
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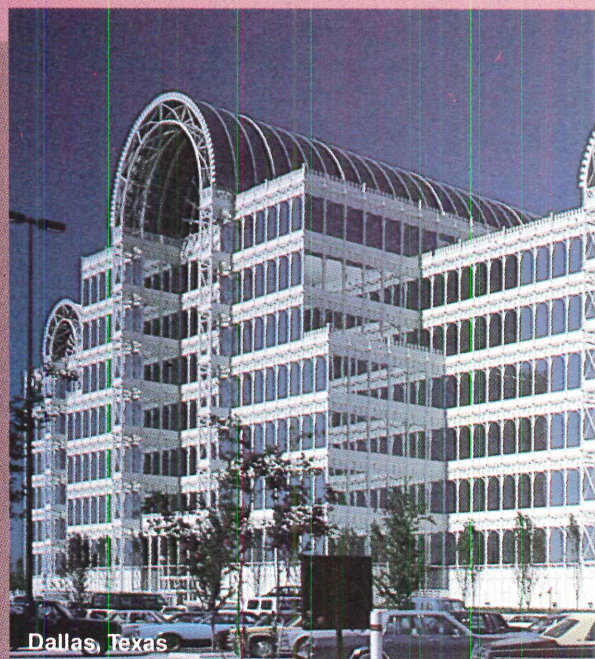
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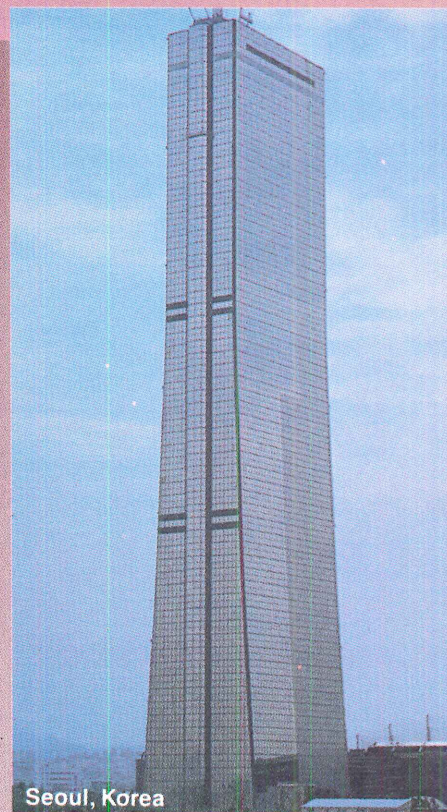
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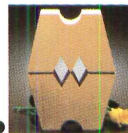
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A leaky roof can floor you with repair costs and inconvenience. For a roof system that performs the way it's supposed to right from the start, come to the company with over 130 years' experience. Manville.

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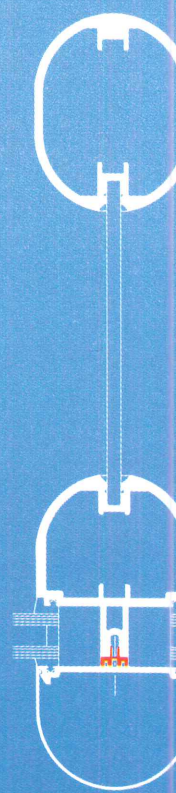
Contractors who will install these roof systems.

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Trusswall from Kawneer introduces the rounded look to the high span entrance. Trusswall spans the clear story entrance area with the structural strength and the desirable aesthetic appeal of the rounded mullion. Formed by circular extruded aluminum chords connected by a separating web that adds stability, strength, and variety, Trusswall becomes a real design alternative.

There are two sides to every story.

On the outside, Trusswall presents a number of faces. One is the innovative circular cover for the sculpted look. Another is the more austere approach, silicone glazing, for an uninterrupted line. And the rectangular cover presents a third more traditional light.

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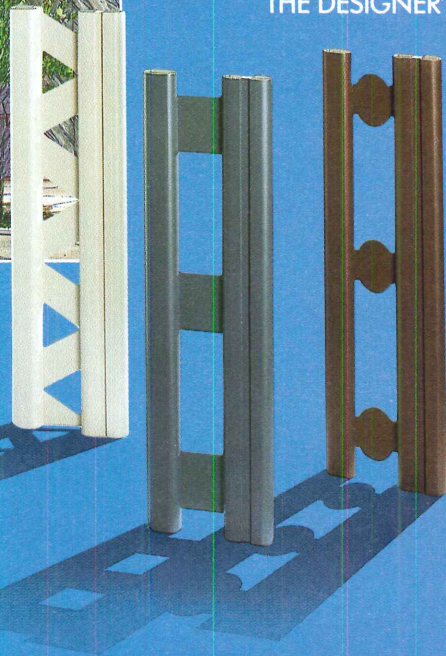
With four web options to choose from, design flexibility increases. The choices are offered. The choices are yours.



But while the design options offer flexibility, the integrity of the structure remains inflexible. A thermal break, and the flexibility of either 1/4" or 1" glass attest to Trusswall being ready and willing to take on nature's harshest elements.

Trusswall. Further evidence of Kawneer's commitment to space.

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For product information on Trusswall contact:
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Technology Park—Atlanta 555 Guthridge Court Norcross, GA 30092
Circle 14 on inquiry card

Louver Selection Simplified

The company that wrote the book on architectural louvers is now bringing its exciting story to the screen.

The comprehensive new *Louver Selection Software Package* from C/S allows architects, engineers, spec writers and contractors to quickly and easily select and specify louver systems for almost any application.

The program contains all pertinent louver selection data including air volume, free area velocities and pressure drops.

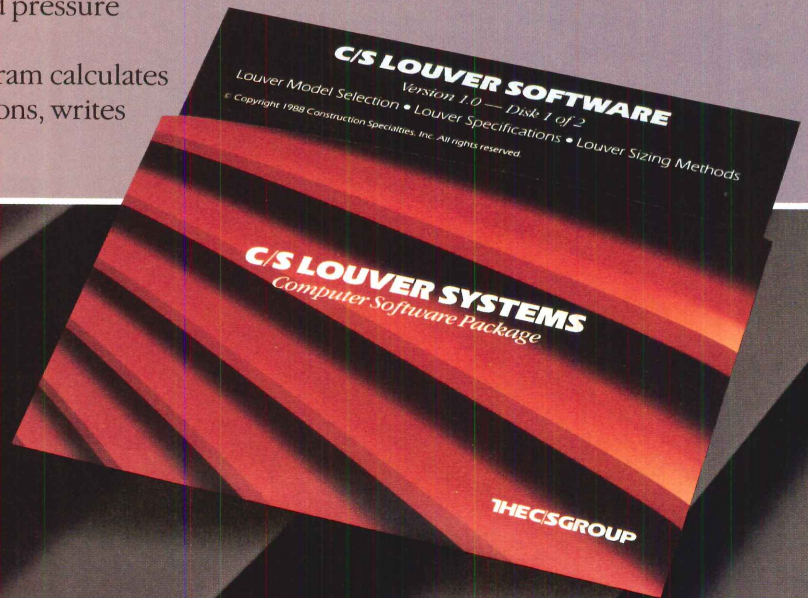
In addition, the program calculates maximum opening dimensions, writes

complete specifications and can store the results on a disk.

So if you use an IBM PC or PC-compatible computer and want to simplify louver selection, call 1-800-USA-LVRS today. We'll send you the program fast—and free!

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Through the independent Education Evaluation Services for Architects, certain persons, including those trained abroad, may be able to meet NCARB education requirements. For information, contact the EESA, P.O. Box 17499, Milwaukee, Wis. 53217 (414/964-0477).

Joy departs AIA

After a 10-year affiliation, Joy Brandon has left the AIA and her latest position as senior director of its communications center. She joins John Burgee, Architects. Former positions include consultant to the National Trust and account executive in advertising.

Annual Build Boston conference continues to grow in national importance

With the drawing power of sponsors from the building-design profession and construction, preservation, and interior design (for list, see RECORD January 1988, page 27), this conference and products show now transcends its regional roots. Last November, almost 6,000 attendees showed up to view the products of over 350 exhibitors (vs. 200 in 1987) and to attend conferences run by personalities of national note.

Many of the conferences go right to points dear to architects' hearts. In *Getting work*, Sasaki principal Ken DeMay said clients who talk to each other are "most

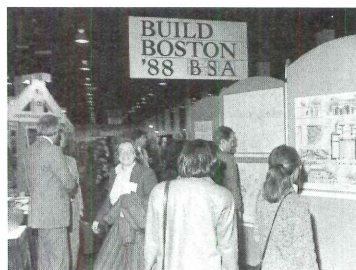
IFMA convention yields new president and push for architects' involvement



At its annual conference and products exposition held in Atlanta on October 23 to 26, the 5,600-member International Facility Management Association installed architect Edmond Rondeau (photo), real-estate manager for the Contel Corp., as president. Other new officers include vice president Erick Lund of the 3M Company. General-session speakers included Playfair Inc. CEO Matt Weinstein, who spoke on *Putting Fun to Work: The Power of Humor in Management*.

On a more serious note, land planner Bruce Hendler with the

Grad Partnership spoke on how diminishing resources and community activism are bringing new complexity to the difficult process of site selection. Still, he warned, a recent survey of facility managers reveals that they often fail to consider these issues, focusing instead on the traditional ones of operating and labor costs, labor availability, site accessibility, and market proximity. "Many managers make the local chamber of commerce their first and only stop." In an age of growing public awareness of what new facilities mean to, e. g., traffic congestion, community identity, and real tax costs, such failure may derail a project after substantial amounts have been spent. Hendler urged that thorough environmental research and sound counsel, including bringing expert design consultants in early to the site selection process, augment traditional criteria. *C. K. H.*



effective." Easley Hamner of Stubbins Associates: "Jobs come from increasingly diverse sources"—e.g., contractors. But, "the networking thing can get out of hand; you fill out endless proposals for dead ends. Pursue your fortes." In interviews, increasingly sophisticated clients are looking not just at a firm's capabilities but those of the project team. "But don't bring more people than there are interviewers." When competing firms go on the same day, "Try to position your interview last," said DeMay. "First is second best. Never after lunch." Hamner: "Rehearse, rehearse

and then act extemporaneous; convey enthusiasm." Do you go in with a design? "That's what clients pay you for," said Hamner. "If competitors do," said DeMay, "say it's premature without knowing the criteria." Is your firm too big for the job? Say: "But, it's just what we like most doing." Too small? Associate with another firm.

In *How to set and raise fees*, Martin Organization principal Laura Staines said the problem is to keep other firms from lowering theirs. DeMay: "Clients can't see that 40-percent lower fees mean 40-percent less services." On fee basis, Hamner had developed prototypes of production costs for different building types, sizes, and characteristics, such as site-improvement inclusion, to give clients a rational lump-sum amount. On contracts based on time, DeMay said: "You're asking for arguments over the quality of time spent." He

AIA votes no change in 1987 General Conditions

Despite much criticism of the latest version of Document A201, including assertions that it does not look after architects' interests particularly well (RECORD, March 1988, pages 36 to 38), a study by the AIA staff and counsel, assisted by the documents committee, has produced a confidence vote by the AIA board of directors that means no changes are contemplated. Principal areas examined were definition of "work," and the provisions on dispute resolution, hazardous waste, and shop-drawing review. The study was summed up in a 73-page report. (An initial response to the criticism by Dale Ellickson, senior director of the AIA's documents program with responsibilities in A201's drafting, was published with the critical RECORD article by attorney Carl Sapers.) The only action recommended by the report: a public-education program to foster better understanding of the documents.

preferred a dollars-per-square-foot basis. Both Stubbins and Sasaki try for 20 percent profit. What happens if you discover your fee is too low? The only discretionary time you can reduce is schematics, said DeMay. Hamner: "Still, bill as much as you can up front."

On *How to run a profitable design firm*, moderator Wilson Pollock of architects ADD Inc. said: "It's an oxymoron." Still, his firm includes a standard sheet printed like the rest of its contract that, among other restrictions, limits liability to \$50,000 or 4 percent of its fee, provides a 15 percent add-on for consultants and reimbursables, and puts a cap on inspections. Internally, he issues regular statements of time left on a job, publishes a set number of hours that should be spent on such activities as code research, and does cartoons of all drawings required on a job to avoid false starts. *Charles K. Hoyt*

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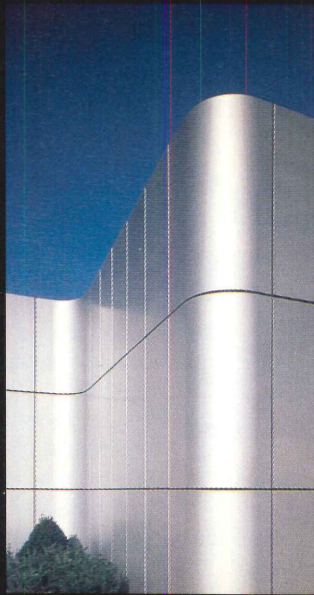
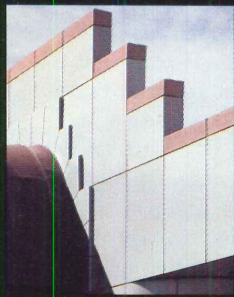
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U N C O M P R O M I S E D D E S I G N F L E X I B I L I T Y

Marketing: Awards program reveals the latest techniques

by Ernest Burden

Awards committee

Sally Rasmussen, Chair
The Earth Technology Corp.
Long Beach, Calif.

Barbara Blake
American Subcontractors
Association
Alexandria, Va.

Ernest Burden
Ernest Burden Associates
New York City

Janine C. Creel
The Earth Technology Corp.
Long Beach

Timothy Ehlen
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Garry R. Gaston
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Philadelphia

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Architects
Washington, D. C.

Art Riser
Margill and Associates, Inc.
Atlanta

Howell Williams
Howell Williams Design, Inc.
Houston

Howard J. Wolff
WVKR Inc.
Alexandria

For nearly a decade, the Society for Marketing Professional Services has been presenting awards to architects and other design professionals for their outstanding promotional material. After encouraging a long uphill struggle, its leaders finally deem that material to be on a par with the products of most big commercial corporations. Gone are traditional architects' and engineers' brochures filled with pictures of past projects preceded by long statements of the firms' philosophies and histories. The new graphics and layouts are appealing in their sophistication and the texts shorter and more appropriate to client markets. This is a result of

Gone are traditional architects' and engineers' brochures filled with pictures of past projects preceded by long statements of philosophies and histories of the firms. The new graphics are sophisticated and the texts shorter and more appealing to client markets.

not only the SMPS efforts, but a growing awareness among firms that client expectations are steadily increasing even while the firms must vie for attention in a very competitive marketplace.

There is a continued trend of basing effective promotional material on thorough research of target markets. This year's awards chair, Sally Rasmussen, noted that "more and more firms are doing surveys, whether accomplished in-house or by consultants." They get client input up front and continuous feedback during the design of material and afterwards. Rasmussen pointed out that what is important to clients is not how great your firm is but

what you can do specifically for them—how effectively you can demonstrate your understanding of their business and their problems.

Production is one part of development over the last 10 years in which changes have been most noticeable

The days of do-it-yourself photography are gone. Quality color separations and sophisticated printing techniques continue to improve across the board. What is clear from this awards program is, if a design firm wants to succeed in today's highly competitive marketplace, it has to develop tools at least comparable to other firms'.
Continued on page 31

Best of show

Succinct impact sums up architects Gensler and Associates' brochure aimed at a specialized market—retail-store design. The essence of each completed project is shown in one photo spread across two pages. Each is accompanied by one line of text that, rather than describing the obvious, sets a theme meant to grab the readers' attention—here, that both clothing and the store which sells it "should capture a mood and expand on it."



Newsletters

The Spector Group architects' entry won first place in this category for attracting readers with articles of broad general interest into which Spector's involvement has been more or less subtly woven. In these issues: a new kind of developer, universities; the evolving fate of a former drive-in movie (now, due to the architects' ideas, development); and a U. S. branch of a French department store (designed by the architects) so vast that the clerks use roller skates.

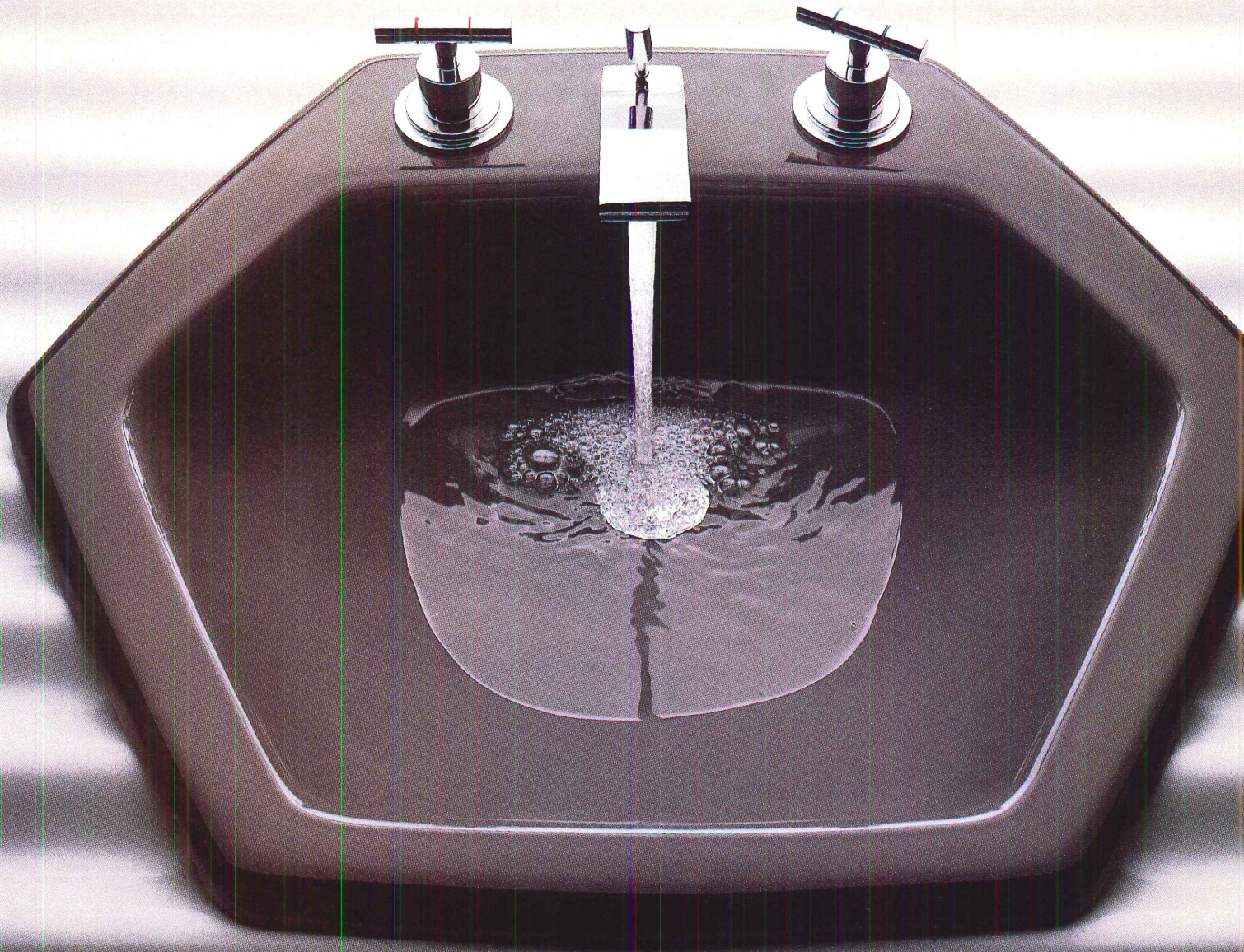


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Circle 17 on inquiry card

The bottom line seems to be putting your money where it counts: in research, in the concept, in the design, in the writing, and, finally, in quality printing.

Still, budget was definitely not the primary criterion that separated effective material from the rest. Rasmussen pointed out that "all the expensive paper, four-color printing, and spot varnish in the world isn't going to make bad graphics look good." The bottom line seems to be putting your money where it counts: in research, in the concept, in the design, in the writing, and, finally, in quality printing.

Here is what set apart the winning entries in some of the categories: corporate identity programs. The purpose of a corporate identity program is to give a visual expression of what a firm

is. The less-effective programs tried to be all things to all people. Each winner had a distinct program of design that was consistent not only for letterheads, brochures, and other documents going out to the public, but for internal documents, such as transmittals, title blocks, and report covers. This consistency of external and internal image lends a remarkable aura of strength to how a firm is perceived.

Direct mail including newsletters. Newsletters have been the traditional form of direct mail but the growing use of other forms, such as postcards, has led to the creation of two categories at SMPS. Direct mail is used to target

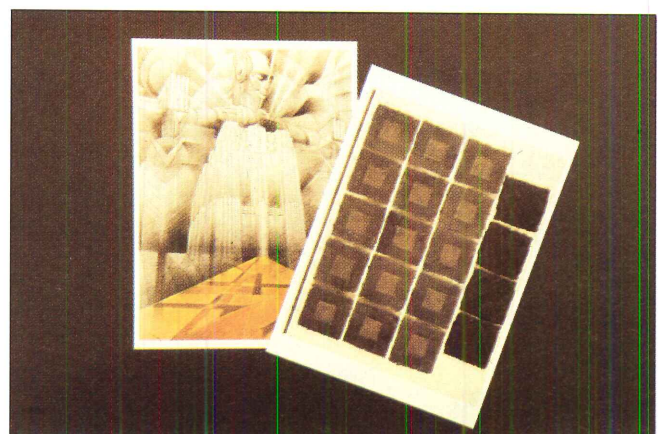
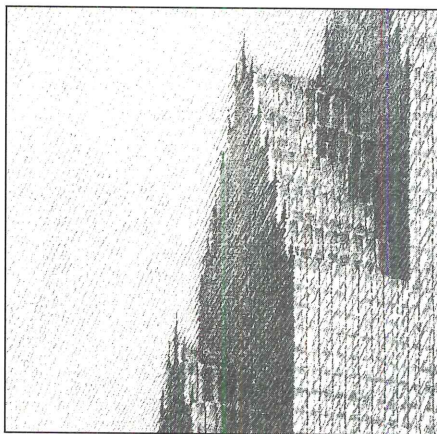
markets, to get leads, to build an image, and to let clients know what design firms are doing. This year's winning firms had a strong objective, knew their position in their market, and knew what they hoped to get from the program. The use of direct mail in the professional-services industry is indeed gaining popularity for one very good reason—it works. For instance, King & King's entry shown below gained the firm direct recognition among clients, status in the art world, and generated an article in the firm's target-region newspaper. **Company brochures.** Here quality graphic design, photography, copywriting, and printing were clearly of high

importance among the winning entries. Apparently, less continues to say more; winning brochures displayed minimal copy and maximum visual impact to drive their points home.

Audiovisuals. A wide range of types, objectives, and technical capabilities were seen in this year's entries: video brochures, videos to show a firm's expertise in particular markets, and even a dual-language presentation for foreign investors.

There were many unique approaches seen in this year's entries—all of which emphasize the flexibility of the new electronic medium. Among these was a modular brochure

Direct mail
Gensler's Houston office won first place with a series of three similar cards mailed in rapid sequence (right) to accomplish several purposes: Most directly, the cards told the client base of the move across the street into the RepublicBank Center (Johnson-Furgee) pictured on each card in a manner reminiscent of both a Seurat painting and a computer printout. The repetitive graphics emphasized that Gensler is a high-style firm and that the move was not a downward one but one into a prestige building, despite local hard times. Succeeding versions of text also touted the current roster of clients and staff and added a personal note with a New Year greeting. Second-place King & King Architects engaged 10 artists to design 12 postcards sent every two-weeks as testament to how the firm's buildings stood the test of time over a 120-year history and to architecture's close intermarriage with art. Shown: interpretations of the 1932 Niagara Hudson building in Syracuse and the 1955 Montadaga County Building.



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Corporate advertising program
First-place winner, architects Larrabee Associates, launched a four-part series in a regional real-estate magazine when the firm was just 16 months old. By "an intense brainstorming session" among the firm, graphic designers Baldwin Design, and copywriter Rob Murray, the ads brought name recognition and explained the phases of producing a building—which, says Schuyler Larrabee, "clients can be surprisingly naive about." Shown is the ad on the working-drawing phase.

Congratulations

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◀ **Vitreous State Laboratory, Washington, D.C.**
Architect: Perkins & Will, Washington, D.C. (front from left) Gunnel Porelius, Ruth Gless, Laura Jensen (back from left) Timothy K. Smith, Gunter P. J. Buerk

▶ **Ryerson Athletic Complex, Toronto, Canada**
Architect: Lett/Smith Architects, Toronto, Canada (from left) Wilson Shu, Project Design, William Lett, Partner-in-Charge

▶ **Coastal Cement Corporation Terminal, Boston, Mass.**
Architect: HMFH Architects, Inc., Cambridge, Mass. (left to right) Shih-Ming Kao, Designer; Hagay Dvir, Project Manager; Mario Torroella, AIA, Director of Design; John F. Miller, AIA, Principal-in-Charge



▶ **Optima Center, Highland Park, Ill.**
Architect: Optima, Inc., Northbrook, Ill. (left to right) Thomas Howell, Matthew Foster, David Hovey (President), Michael Glynn, Timothy Anderson

▶ **Head-Smashed-In Buffalo Jump Interpretive Center, Ft. MacLeod, Alberta, Canada**
Architect: The LeBlond Partnership Architects & Planners, Calgary, Alberta, Canada (left to right) Robert H. LeBlond, M.R.A.I.C., Jaroslava Cibulka, John S. Livingstone

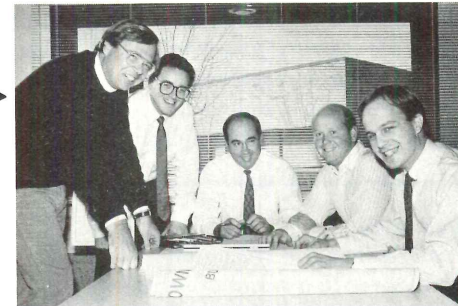


▶ **Solo Cup Corporate Office Building, Highland Park, Ill.**
Architect: Serena-Sturm Architects Ltd., Northbrook, Ill. Martin J. Serena, (left) Partner-in-Charge, William D. Sturm, Designer; Carol Raveret, Project Architect, Thomas Raveret, Project Architect



▶ **Blue Cross and Blue Shield of Connecticut Parking Facility, North Haven, Conn.**
Architect: Ellenzweig Associates, Inc., Cambridge, Mass. Blue Cross and Blue Shield of Connecticut, Inc. (sitting left to right) Radha Prasad, Vice President, Operational Services and Support; Harold M. Jordan, Senior Vice President, Real Estate Development; Ellenzweig Associates, Inc., (standing left to right) Charles E. Worcester, Associate; Harry Ellenzweig, Principal; Gary Gwon, Associate

▶ **Awards Jury:** (left to right) Paul M. Sachner, Senior Editor, *Architectural Record*; Reginald D. Hough, AIA, I. M. Pei Partners; Bonnie Roche, Bonnie Roche Architects, P.E.; Michael M. Dwyer, AIA, Buttrick, White & Burtis. (all of New York, New York)



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5420 Old Orchard Rd. Skokie, IL 60077



CANADIAN PORTLAND CEMENT ASSOCIATION
365 Bloor St. East, Suite 1900, Toronto, Ontario M4W 3L4

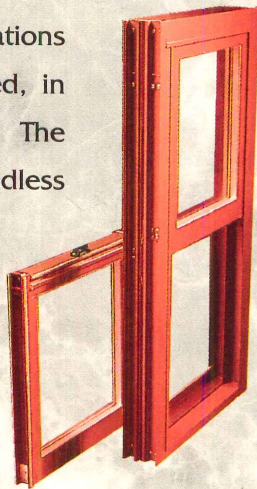
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Welcome an exciting, stylish window that has completely different finishes on the interior and exterior of the building. Striking colors such as blue, green and red create visual interest on the exterior, while finishes such as white, brown or beige accentuate the interior decor. Or, combinations such as anodized and paint can be used, in addition to a multitude of special finishes. The design freedom of this process creates endless opportunities using double-hung tilt, single hung, projected, casement and fixed lite units for a truly unique window project.



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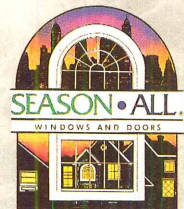
*This window has achieved the highest performance rating of any full test size, double hung, heavy architectural aluminum window, according to AAMA's most recent certified products directory published September, 1987.

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Reprints of articles that have appeared in *Architectural Record* over the past five years are available for use in mailings and presentations. These custom promotion brochures reproduce the article exactly as it appeared in *Record*—if the article was published in color, the minimum order is 500 copies; if published in black-and-white, the minimum order is 100 copies.

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ARCHITECTURAL
RECORD



When viewing a video, [the client] must view the whole thing. Unless it's tightly edited, which most aren't, he will not gain as good an impression of your firm as you might think he would.

maintaining three case studies, each of which could be separated and used individually for a presentation on a specific, corresponding project type. Another was a spectacular video program about the adaptive use of a historic landmark as a corporate headquarters. Some simply showed firms' projects in the format of printed brochures. However, these video programs were less successful than their print counterparts, both in capturing awards and in advancing the state of the art. Many such video programs were on the stage the print brochures were 10 years ago—trying to do it all and show it all. On Tuesday, the 14-minute videos will be pared down to four

minutes, clients' time will be spared, and the marketing message will be all the more memorable. When a client gets a brochure, he reads it selectively in the 20 seconds to two minutes maximum that he will give it his attention.

But, when viewing a video, he must view the whole thing. Unless it's tightly edited, which most aren't, he will not gain as good an impression of your firm as you might think he would.

There were several other important lessons to be learned from this year's entries:

- Video is not a do-it-yourself medium. It requires technical expertise in shooting and editing.
- The cost compares well with printed presentations.

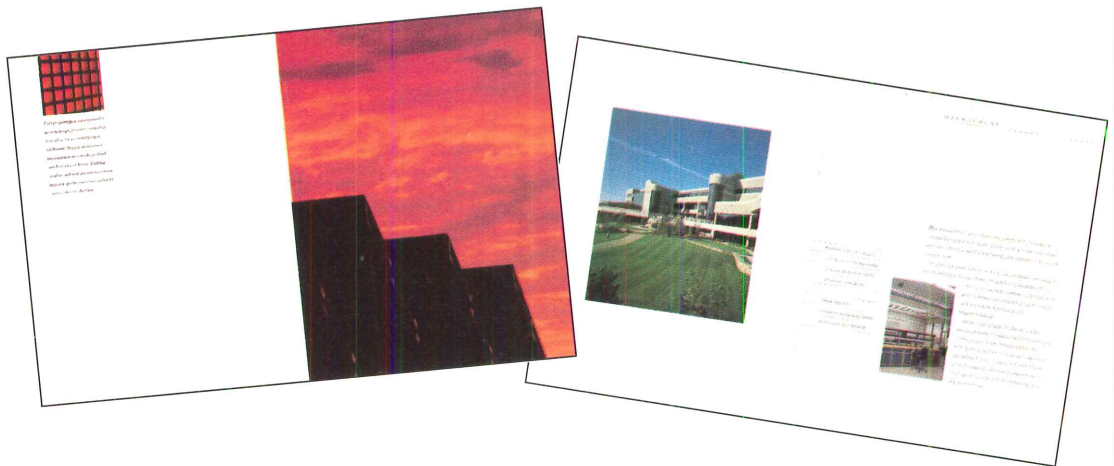
- Copies cost about one-tenth of slide presentations.
- The medium is flexible and can be changed quite easily.
- Presentations can be assembled rapidly.
- Video does not have to be of commercial broadcast quality to be effective.

The first-prize entry by Stevens & Wilkerson Inc. proved all of the above. It was an interview presentation produced by a local camera crew on a remote location to take a county selection committee on a tour of a prison project that it would otherwise not have been able to visit. Done on a tight budget (\$10,000) and a tight schedule (10 days), it was approached with a documentary style and showed

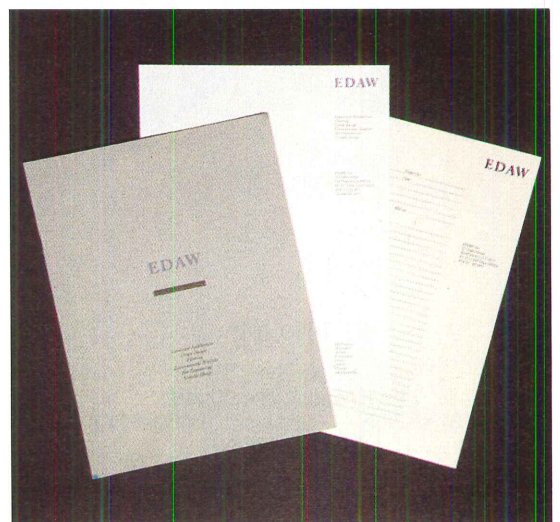
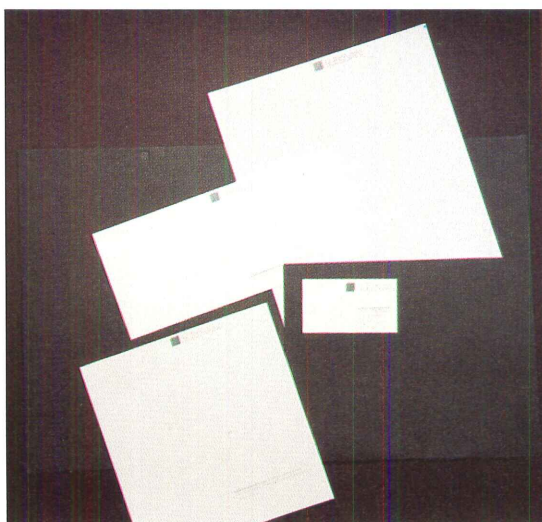
prison officials and the architect describing a facility very similar to the one the county was seeking. The firm was awarded the job, not simply because it used video, but because the medium allowed the principals to address and answer all of the clients' concerns.

Mr. Burden is an architect based in New York City. He specializes in the design and production of marketing presentations for design professionals, and lectures on all aspects of presentations—particularly on video and computer technology. His latest book, Design Communication: Developing Promotional Material for Design Firms, was recently published by McGraw-Hill.

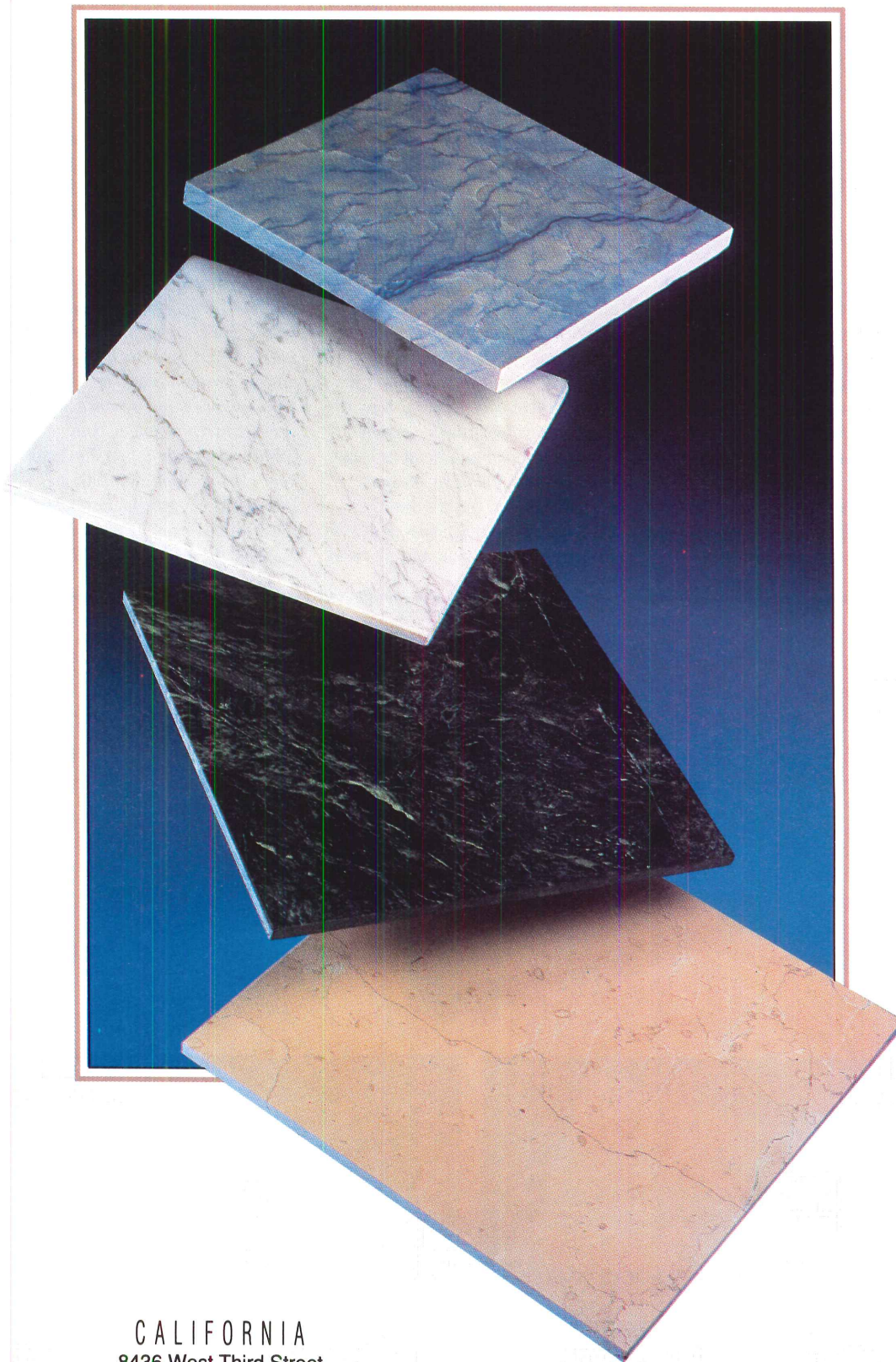
Company brochure exercises in minimalism seem to characterize the first-place brochure by architects and planners Sullivan Associates Inc. (right) and the second-place one by the Kling-Indquist Partnership (far left). The object is to convey strong impressions with concise descriptions of services and strong, occasionally almost-abstract graphics, rather than wandering into detailed descriptions of projects.



Corporate identity program design quickly recognizable graphics and repeat them is the message of successful entries by Sullivan (first place) and planners EDAW, Inc. (second place). Such devices as a green square on everything from report covers to transmittals means client familiarity for a firm with ongoing name changes. To EDAW, with business partially in graphic design, consistency in all its printed documents is particularly important as it calls of the firm's ability to do one of its basic jobs.



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EUROPEAN HEADQUARTERS
Florence Italy

Circle 23 on inquiry card

Construction finance: Foreign-investor worries mean high interest rates a while longer

by Phillip E. Kidd

This month, a new Republican President and a Democratic-controlled Congress will take office. Ever since the Wednesday after the election, the financial markets have viewed this combination with increasing nervousness. Their main fear is that this split will inhibit decisive actions to cut the federal deficit.

America is being seen as profligate. The federal deficit has become a symbol of an America that is

living too far beyond its means. That profligacy is also reflected in our huge trade deficit. Compounding the impact of those deficits on our economic position in the world is our inability to save enough to fund either of them ourselves. Instead, we are becoming more and more dependent on foreign money to support our consumption habit.

To our foreign creditors, the election results indicate that any deficit-reduction program put

The future of this economic advance, now the longest peacetime expansion since before the Civil War, is in the hands of consumers.

forth by a Republican President will be derailed by a Democratic Congress with its own agenda. The result will be a stalemate. That would leave both deficit problems drifting along without any serious efforts at reduction.

At this point, no one knows how President-elect Bush will fare with a Democratic Congress. That uncertainty, however, has prompted foreign, as well as domestic, investors to send a strong, continuous signal to both parties in the weeks since the election. That message has been in the form of a persistent attack on the dollar. It is telling our political leaders: Deal with the federal deficit immediately! If you do not, then the cost of money to finance it will rise. It is against this backdrop that economic news will be interpreted in the first half of this year.

There is encouragement for the necessary corrective steps

Generally, the economy enters this new year with ample momentum. Employment is high, unemployment low, and inflation in check. Industrial production and exports continue to lead the expansion. Surprisingly, agriculture may bounce back from the severe droughts of last summer faster than expected to add another layer of strength.

Nevertheless, the future of this advance, now the longest peace-time expansion since before the Civil War, is in the hands of consumers. They must continue to slow their demand for foreign products, while maintaining purchases of domestic goods and services. And, they must save more.

They will receive several economic prods to take these actions. The decline in the dollar's value will increase the prices of foreign goods, making domestic goods more attractive. Next, the recent rise in short-term interest rates will encourage additional savings,

while discouraging some credit-induced consumption.

Interest rates will stay up until our creditors' confidence returns

For some time, the Federal Reserve has been firming monetary policy. Initially, it was responding to inflation fears during the summer; but now it is snuggling to maintain order in the foreign-exchange markets.

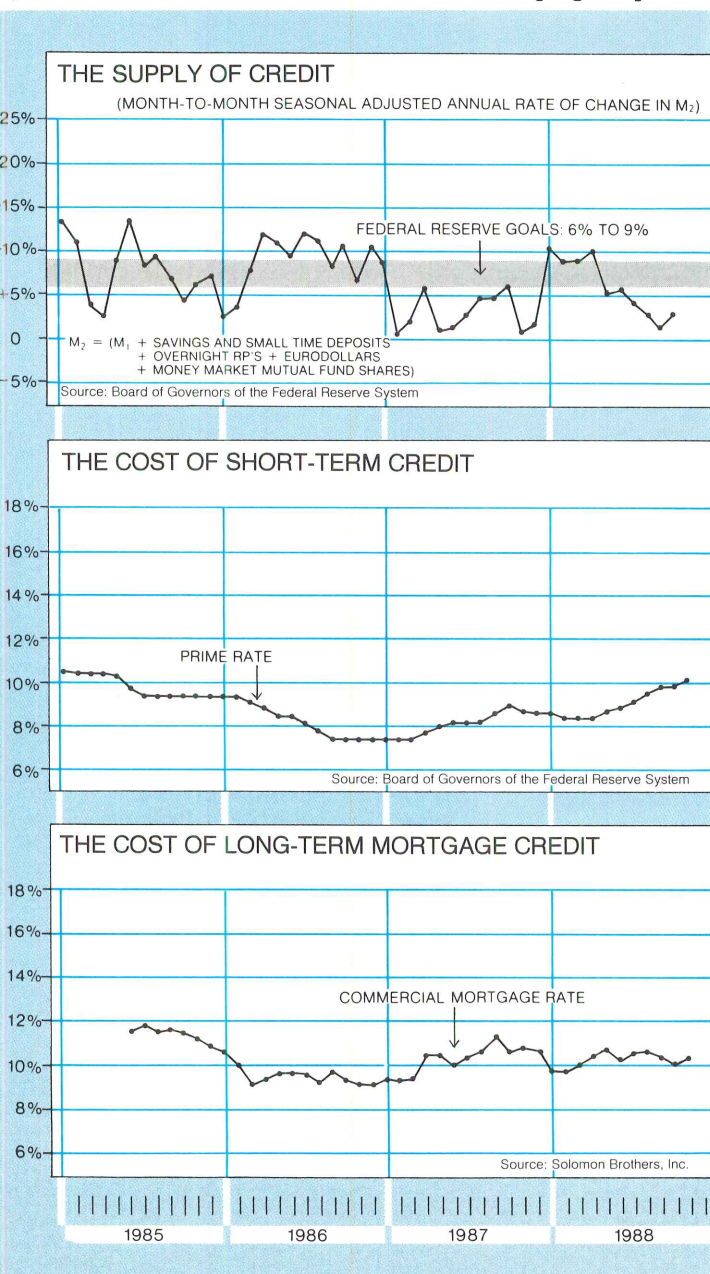
To date, its actions have mainly affected short-term interest rates, which have risen between 100 and 125 basis points (a basis point is 1/100th of a percent) since the summer. Remarkably, long-term rates have fluctuated in a much narrower band. However, that is changing.

Impatient with our political leaders to enact a creditable deficit-reduction plan, foreign and domestic investors have begun demanding higher rates to purchase domestic financial instruments. In the near-term, their actions will overwhelm the positive changes in consumer actions. Consequently, interest rates will rise, especially in the long-term end of the market.

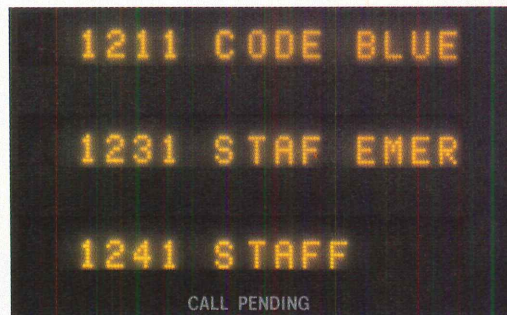
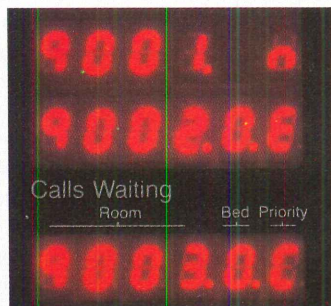
Rates on quality assets will fluctuate between 8.25 percent and 9.25 percent for short-term instruments; 10 to 11 percent for seven- to 10-year governments; and 12.5 and 13.5 percent for mortgages.

Such increases will hurt most construction, except industrial building. The need for more capacity will keep the latter rising. Single-family and retail building will continue slipping while rate hikes spell more trouble for the overbuilt multifamily- and office-building markets.

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



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Management: Workable firm-ownership transitions through ESOPs

by Carl M. Sapers



In the nearly 30 years that I have observed at close hand architecture firms, large and small, one of the most perplexing problems has been the orderly transition of control from one generation to the next. Of course, 30 years ago, only a handful of firms worried about transition because most architects considered their creative talent personal and nontransferable; indeed, many thought it appropriate for their reputations (and whatever value that engendered) to follow them to their graves in much the same way that the ancient pharaohs were always buried with all of the trappings of their worldly power.

In the years immediately following World War II, the complexities of new building projects and the notions nurtured at the Bauhaus respecting collaboration helped alter the way architects organized their practices.

Mr. Sapers is a partner in the Boston law firm of Hill & Carlow. His clients include architects around the world. He is an adjunct professor at the Harvard Graduate School of Design, where he teaches legal problems in design. In 1975, he received the AIA Allied Professions Medal and, in 1988, was elected Honorary AIA.

(Whether apocryphal or not, the legend persists that Frank Lloyd Wright, the icon of individualism, challenged Walter Gropius's view that architecture should be a collaborative venture by demanding if Gropius would call in his neighbor for assistance if he decided to have a baby. "No," said Gropius, "but I would consult my wife.") Today, much of architecture is practiced by pseudonymous firms that trade on their corporate reputations rather than on the distinctions of a single architect. Beginning with Gropius's The Architects Collaborative, the current has carried many eponymous firms with it. Thus, Caudill, Rowlett & Scott became CRS Design; Rodgers, Taliaferro, Kostitsky and Lamb became RTKL Associates Inc.; even the modest change from "Hugh Stubbins & Associates" to "The Stubbins Associates" recognized the increased corporate nature of the practice.

These name changes invariably were external evidence of the founding father or fathers yielding more control and influence to their juniors. When the successors were carefully chosen, they have demonstrated conclusively that a second generation can build on the accomplishments of the first. Many of our most distinguished national firms are the results of this process, and the process has worked successfully as well for many regional and local firms.

If an architecture firm can be transferred as a going operation and if the next generation can thereby gain a significant head start in the marketplace, then the initial owners will have transferred something of value to their successors. I hope to suggest here ways of measuring that value as well as describing the use of an employee stock ownership plan (ESOP) as an appropriate device for achieving the transfer.

With employee stock ownership plans, the principals of architectural firms, as well as the employees, may just be able to have their cake and eat it too.

How to determine the value of an architectural firm

Some students of this subject, while recognizing that real value can be passed on, have chosen to apply a conservative net-worth approach. If net worth is calculated on an accrual basis (rather than the cash basis used for tax returns), it adds up the value of all cash, receivables, work done but not yet billed, furniture, fixtures, and equipment, and other miscellaneous assets, and then subtracts out debt, accounts payable, other miscellaneous liabilities, and a reserve for taxes. (While the cash-basis taxpayer may effectively avoid paying a tax, the valuation just described accrues value to the extent receivables exceed payables, and proper accounting requires that a tax on that value be accrued as well.)

Is a purchase for net-worth value a good deal? If the firm can carry on its business without disruption, of course it is. For, in reality, the purchaser has bought two things—assets minus liabilities plus an ongoing business—while paying only for one, the assets minus liabilities. Moreover, since the tax laws encourage owners of personal-service firms to withdraw as compensation all of the firm's profits, retained earnings in personal-service firms never amount to much, with the result that the only significant assets are in the accrued-accounts-receivable and work-in-process lines on the balance sheet. A net-worth valuation hardly distinguishes between successful and unsuccessful firms.

But proponents of net-worth valuation will say that this valuation puts less strain on the purchaser and, if, as is often the case, the purchaser is the firm itself redeeming shares, the proponents believe their conservative philosophy will enhance the firm's future. But so, of course, would buying an

office building worth \$20 million for \$10 million or any other extraordinary bargain.

Some years ago many firms in Boston and Cambridge adopted the Boston formula: Value a firm on the basis of net worth plus 15 percent of one year's receipts. The latter factor recognized some of the ongoing business value; for, at the valuation date, there were contracts on which work remained to be done and from which compensation remained to be paid. If, as a rough average, a firm had 12 months of work already signed up, why not add an assumed profit margin (15 percent on that work) into the value being purchased. But the Boston formula didn't account for the firm's capacity to get the next commission and, more important, to continue to perform competently and profitably the work required. Some characterize that capacity as good will, but it is more aptly a reflection of the indisputable fact that a well-organized firm, working harmoniously, with a history of successful projects, is more valuable than a new office yet to prove itself.

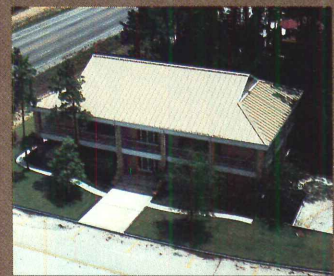
When ESOPs began to tempt architects and other personal-service firms for reasons discussed below, the crude valuation techniques of the past had, in any case, to be reassessed because the Internal Revenue Code required that, to qualify a sale to an ESOP, the valuation had to be made by an independent professional appraiser. The formulas set out in firm bylaws or stockholder agreements were no longer an adequate basis to proceed.

Professional appraisers seem to agree on certain basic principles

First, the most accurate way to assess value is to look to the marketplace. Because of the paucity of recorded transactions

Continued on page 39

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Architectural firms are people-driven; the talent the founder gathered to his firm doesn't often look forward to a career earning money for absentee owners. If the talent jumps ship, the firm isn't worth much.

the sale of architectural firms, the only publicly recorded marketplace is in traded shares of firms that do both architecture and engineering. There are 10 or 11 (including London) such public firms, some of which may, after analysis, be suitable for comparability.

Why do professional appraisers feel more comfortable using their valuation on marketplace values? Chiefly, because the price of a share of publicly traded represents both the purchaser's assessment of the company's past record and its future performance. None of the above valuations made such a prediction; a rational stock market always does.

Second, professional appraisers rely chiefly on the price/earnings ratio as the basis for comparing values. Because architectural/engineering firms—particularly closely held firms—seldom retain earnings to build up book values, reliance on net worth does not reflect actual value. As of last fall, the average of three or four such public firms most often used as comparables have an average ratio of 13.5. Thus, a professional appraiser would multiply a firm's earnings by 13.5 to compute an initial estimate of the firm's value.

Third, professional appraisers commonly make adjustments to the earnings of the firm being appraised and further adjustments to reflect differences between publicly owned and closely held firms. The appraiser will add back to earnings any expenses that a public company (with responsibilities to its broad constituency of shareholders) would not be likely to incur, such as compensation beyond what is necessary or customary and fringe benefits exceeding those normally provided. This adjustment typically increases the firm's earnings.

Since the comparison is with public companies, appraisers will

discount the value of the firm by the lack of marketability of its shares (a discount of between 10 and 15 percent) and will apply a further discount, when appropriate to reflect the fact that the comparable public companies operate on a larger scale that enhances their value.

Finally, reported transactions of publicly traded shares always represent minority interests. If the transaction contemplated by the firm being appraised involves the transfer of control, a premium of 20 to 30 percent may be added to the price.

Where does all this come out? Each firm is, of course, judged on its own facts and figures, but it may be helpful to report that I have received appraisals on my clients' behalf in the following ranges: firms with net fees in the \$2.5-million range: value \$1 million; firms with net fees in the \$6.5-million range: value \$4.8 million; firms with net fees in the \$15-million range: value \$6 million; firms with net fees in the \$40-million range: value \$22 million. None of these transactions involves a transfer of control.

There are several ways in which a firm's founder can realize the value he created

He can sell the firm. In the early '70s, there were several conglomerates interested in acquiring architecture/engineering firms; today there are foreign companies interested in acquiring such American firms as subsidiaries. The acquisitions of the '70s haven't fared well. Architecture firms are people-driven; the talent the founder gathered to his firm doesn't often look forward to a career earning money for absentee owners, be they United Conglomerates Corporation or a Japanese construction company. If the talent jumps ship, the firm isn't worth much.

Nearly the same can be said for taking the firm public,

although, when there is a vigorous market for the shares of small companies, it has been possible to sell only a minority interest to the public, keeping key employees in an ownership role. In today's market, that is very difficult. But even if the market improves for small companies, being partly public is often compared to being partly pregnant. Once you take the step, even with a minority interest, you must comply with the requirements of the SEC applicable to public companies, including the disclosure of a great deal of information you might rather keep to yourself or, at least, to your management.

A traditional route is for the founder to sell small fractions of his interest to key colleagues. But he usually retains control until he is ready to retire. The colleagues are understandably reluctant to use their own cash to buy the founder's shares without a coincident transfer of control. As a result, this sort of transaction seldom occurs without the firm paying directly for the shares by giving a bonus equal to the price of the shares plus the tax cost to the purchasing employee. If the tax is 40 percent (assuming a federal tax of 33 percent and a state tax of 7 percent), the employee needs \$1.67 for every \$1 he actually pays for the founder's shares ($X - 40\text{ percent } X = \1). Note that the founder is effectively transferring to the employee/purchaser \$1.67 from earnings of the firm that he might otherwise pay himself. Then 67¢ is siphoned off by the taxing authorities, and \$1 goes back to the founder. But he must himself pay taxes on the dollar, leaving him with a net yield of 60¢ on the transaction. If he had paid himself the \$1.67 as a bonus in the first place, he would net \$1 after taxes and still have the sold shares. The traditional technique is not favored by those who can add and subtract.

The leveraged ESOP presents a more attractive possibility

Initially conceived as a variant on the qualified profit-sharing plan in the mid-1980s, ESOP underwent a critical mutation into a tax-favored technique for passing the economic benefits of ownership from stockholders to employees. Like profit-sharing and pension plans, the essential tax benefits of an ESOP are that the firm can deduct its annual contribution to the plan, the employee-participant in the plan pays no tax until he withdraws his account, usually at retirement, and the plan itself is exempt from any tax on any increase in its value. Strong Senate supporters of ESOPs made it still more attractive by adding three further incentives.

• First, the ESOP may borrow (leverage) enough money to buy in the stockholders' shares all at once, using the firm's credit to support the loan. The lending institution may exclude from its income 50 percent of the interest paid by the ESOP. As a result, banks generally charge ESOPs about 85 percent of the firm's normal borrowing rate. If the firm could borrow at 10 percent, its ESOP could borrow at 8.5.

• Second, the firm may contribute as a deductible expense as much as 25 percent of its employees' compensation vs. 15 percent for a profit-sharing plan. Other limits on contributions were either enlarged for ESOPs, as in the maximum allowed to be added annually to a participant's account, or waived altogether as in allocations of forfeitures.

• Finally and most significantly, the selling shareholder may defer any taxation on the proceeds he receives from the sale, provided he is willing to reinvest those proceeds in the securities of a U. S. (but non-government) issuer. If he holds the replacement securities until death, he avoids a tax altogether and, even if he makes sales, he

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Management continued from page 39

pays a tax only on the portion sold. This roll-over provision also makes ESOPs possible for small firms with limited borrowing capacity. In small-firms, the founder typically pledges his replacement securities as additional collateral to the lending bank, which is then more than adequately secured. If the loan is for eight years, the pledge is often for half that period after which the lender looks only to the credit of the firm. A pledge by the selling stockholder is, of course, not required when the firm itself has strong credit standing.

But, as I earlier observed, founders are reluctant to sell their shares if they coincidentally must give up control of the firm. Here the ESOP is the answer to the founder's prayer. The shares are sold to the ESOP trustee who, except for questions affecting organic firm changes, votes the shares on behalf of the plan participants. The trustee selects the board of directors that manages the firm. In the eight architecture-firm plans we have put in place, the selling shareholder or his designee becomes trustee immediately after the sale takes place. For all practical purposes, he never relinquishes control.

ESOPs have been used most frequently in large industries in which union contracts may have substantially reduced profit margins. Since the union employees are the beneficiaries of the proposed ESOPs, they are often willing to yield up wage and other benefits as a trade-off to ESOP participation, thus enhancing the value of the company and the price of its shares. These ESOPs are commonly called wage-concession ESOPs. Our architecture-firm ESOPs have followed a similar pattern when a small firm is involved. The founder and his senior associates agree to give up bonuses during the period when his replacement securities are pledged to the lending bank. In exchange, the founder agrees to resign as trustee when the pledge is released and to appoint a committee of the associates as trustees in his place. The associates have a clear target and a clear understanding as to when they will inherit control of

the firm. The "wage concession" is that they must risk lower bonuses for four years. The founder who receives dividends or interest on his replacement securities, even though they are pledged with the bank, probably matches his lost bonuses with the new source of income.

Now that the taxes on capital gains and on ordinary income are set at the same rate, the ownership of stock has no economic advantage over receiving compensation. The only remaining advantage may be that stock ownership is the ultimate source of control. In the ESOP described above, control

has passed to the ESOP trustees who may be coincident with the board of directors. To be a director means to have a voice in compensation decisions and therefore to control the economic benefit flowing from the enterprise. Three of our clients have sold 100 percent of the outstanding stock to the ESOP, having accepted the notion that stock ownership will be largely irrelevant to their firms' future.

There remain, of course, the economic benefits to the ESOP participants. Some day they will retire and want to be paid the value of their accounts. That payment takes place *only after*

the loan has been paid in full and then from that year's contribution into the plan. Putting the tax advantages to one side, the firm pays twice for the stock: first, by financing the purchase of the stock from the founder; second, by paying a former employee the value of the stock at retirement. The latter payment must be viewed as a retirement benefit. An ESOP makes sense only when the firm provides retirement benefits. Then, an ESOP makes abundant sense for an architecture firm concerned with the transition from one generation to the next.

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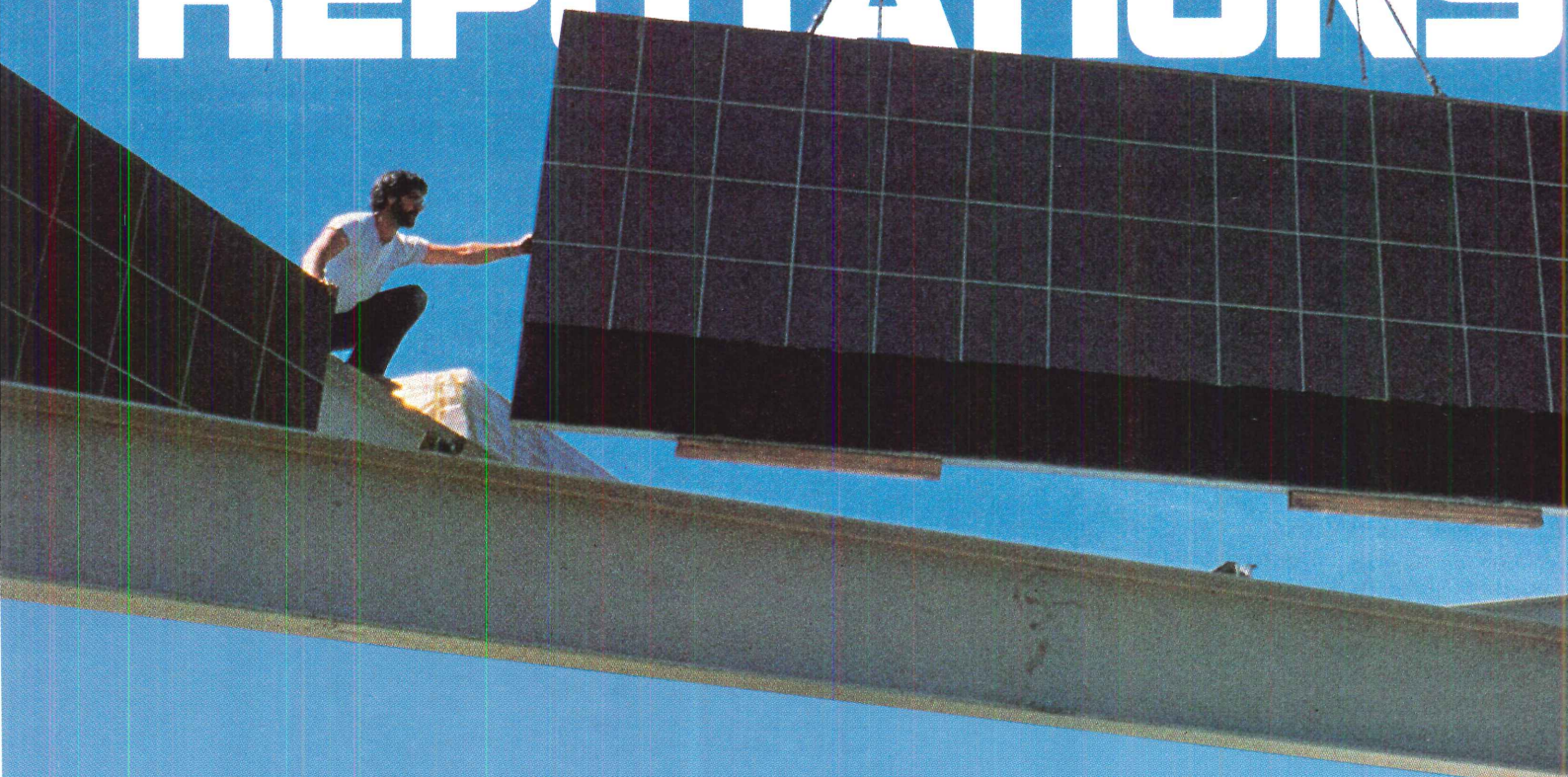
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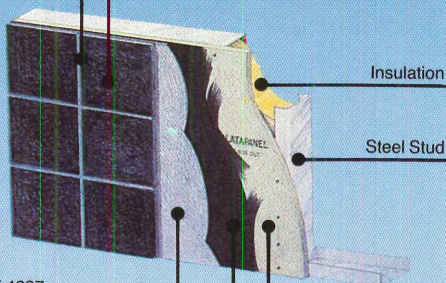
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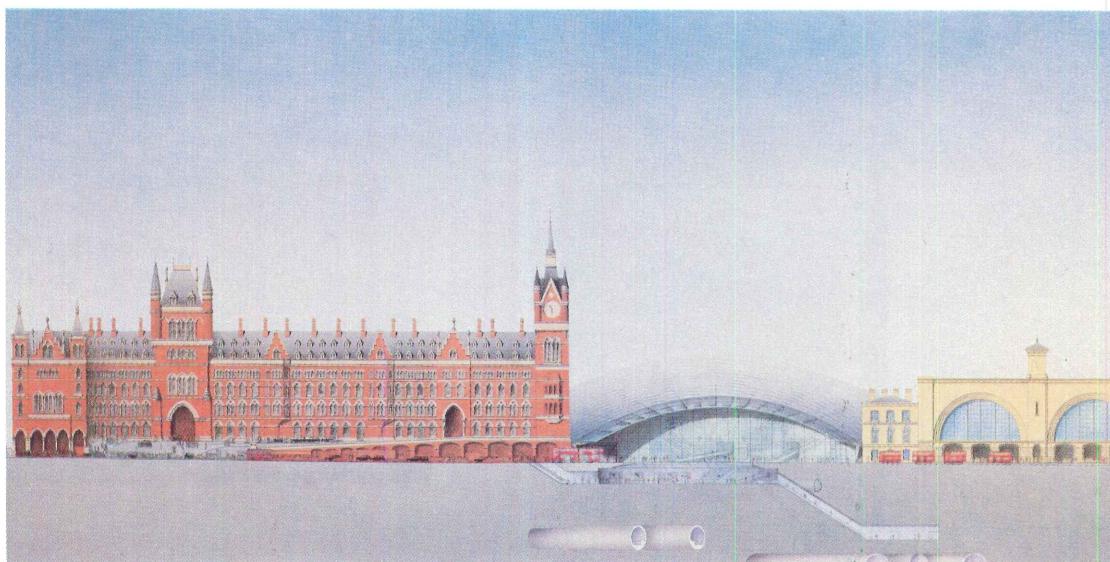
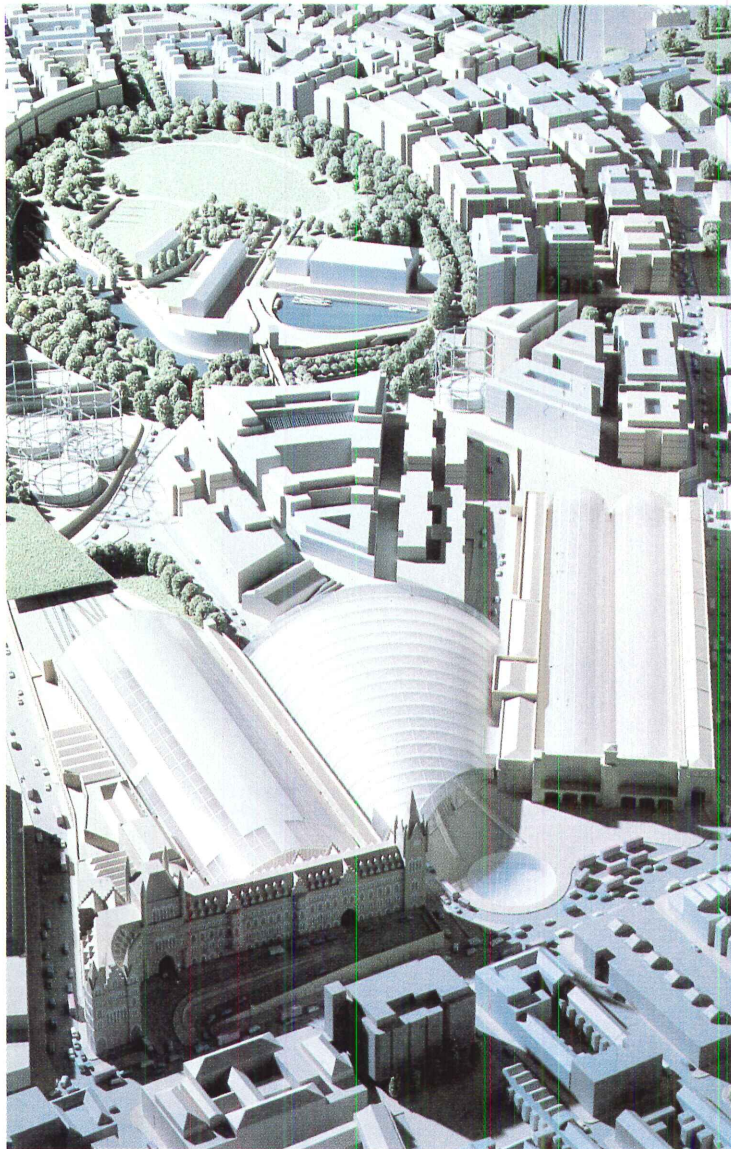
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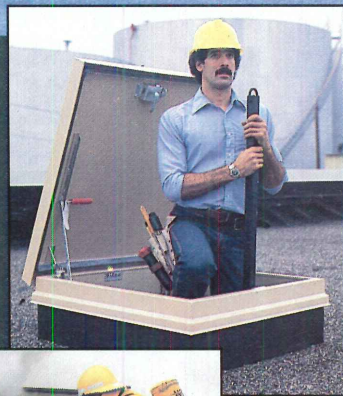
Foster Associates, having completed a master plan for the 125-acre King's Cross site in London, calls the project "one of the greatest opportunities in Europe for decisive inner-city renewal." The enthusiasm is understandable: the site includes not one but two of London's much vaunted 19th-century railway stations—St. Pancras and King's Cross—as well as the Grand Union/Regent's Canal and a number of landmark buildings.

The major need at this juncture is a large transportation nexus, involving major railway lines and the London underground, in addition to a starting point for a new British Rail link to Stansted airport and a connection to the Channel tunnel, which is now under construction and which is intended to carry trains to France. The plan would provide still a third steel and glass vault, a wedge-shaped structure joining the existing train sheds and leading from an entrance in Euston Road to a glazed shopping arcade and thence to an elliptical six-acre park surrounded by commercial development.

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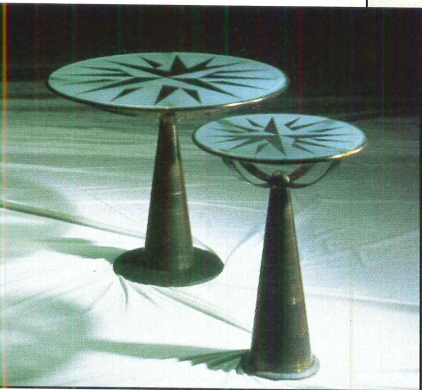
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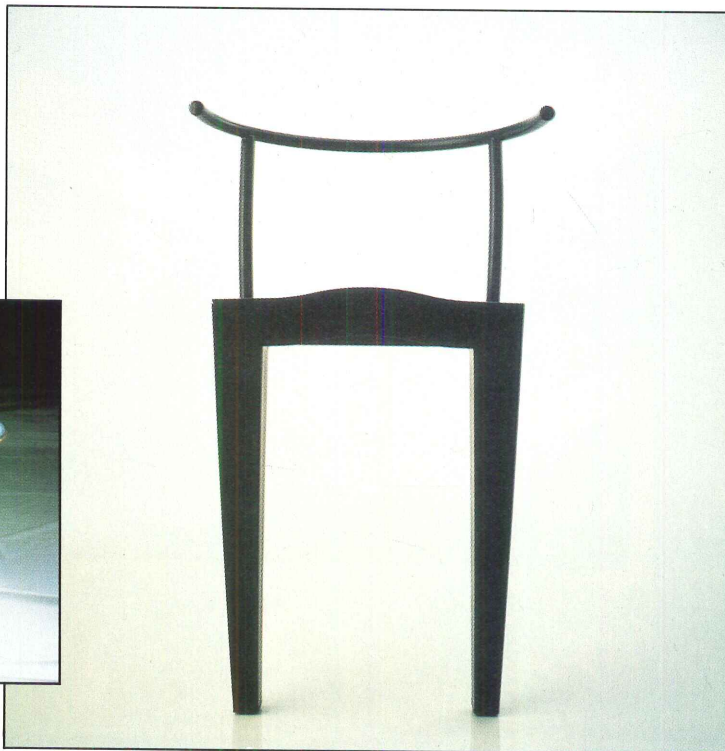
The 1988 Salone del Mobile: making it in Milan

From September 14-19, Milan was host to the 28th annual Salone del Mobile (furniture fair). Although the Salone is recognized by the furnishings industry as *the* trend-setting event of the year, 1988's unofficial theme proved to be the less than inspirational



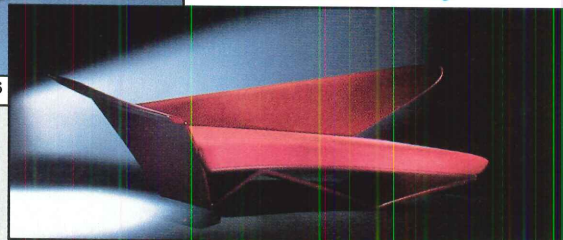
phenomenon of designer-as-superstar. Some 3,000 Americans and 130,000 other visitors mingled with an international lineup of architectural celebrities whose work was on view in airground showrooms by day, and around the city in galleries, shops, theaters, palazzos, and even a slaughterhouse by night. The latest models by Mario Bellini, Antonio Citterio, and Aldo Rossi of Italy; Nigel Coates and Zaha Hadid of Great Britain; Hiro Kuramata of Japan; Mario Botta and Trix and Robert Gansmann of Switzerland; and Oscar Tusquets of Spain were only a few of the items fêted during the six-day event.

Citterio, whose flamboyant *City* sofa collection for B&B Italia was a hit of the '86 Salone (now, two years later, "homages" to his design abound), was at Moroso this year with a more restrained line of seating. Frenchman Philippe Starck typically announced to his fans that his new chair for Kartell first appeared to him in a dream "a small, solid chair that was useful and appealing, it wanted to be plastic so as not to kill trees." Hadid's collection for



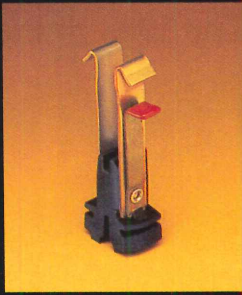
Edra, borrowed from her own design for a London living room [RECORD, Mid-September 1987, pages 84-89], was in the spotlight at a local discothèque, where design-groupies of all nationalities danced around her *Woosh*, *Wavy*, and *Projection* sofas. This year's Salone was also an occasion for those with an eye on the bottom line to kick up their heels, because as COSMIT (the official event organizer) proclaimed in its post-show report, "The recessionary trend that has been a feature in a number of international markets in recent years is now a thing of the past." *K. D. S.*

1. Astrolabio table, designed by Oscar Tusquets and manufactured by Friade
2. Dr. Glob chair, designed by Philippe Starck and manufactured by Kartell
3. Noah chair, designed by Nigel Coates and manufactured by SCP Limited
4. Ready-made seating



5. Lago Dorato mirror, designed by Lella and Massimo Vignelli and manufactured by Morphos
6. Projection sofa, designed by Zaha Hadid and manufactured by Edra

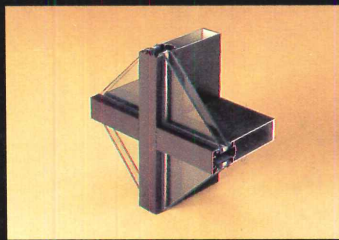
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News briefs

Luis Barragán, the well-known Mexican architect, died November 22 in Mexico City at the age of 86. Among many other honors, Barragán received the Pritzker Prize in 1980.

A **large architectural team** will design a master plan to convert a 28-building mill in North Adams, Massachusetts, into the Massachusetts Museum of Contemporary Art: Skidmore, Owings & Merrill, in collaboration with Frank O. Gehry & Associates, Venturi, Rauch and Scott Brown, Inc., and Bruner/Cott & Associates, Inc.

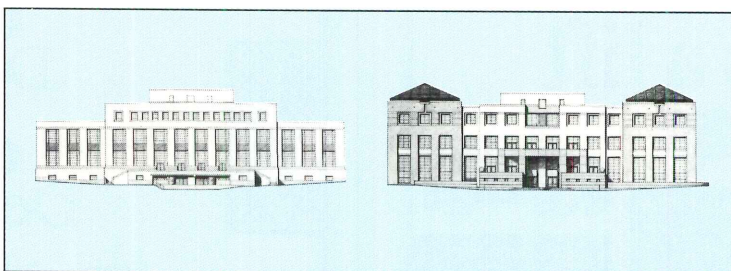
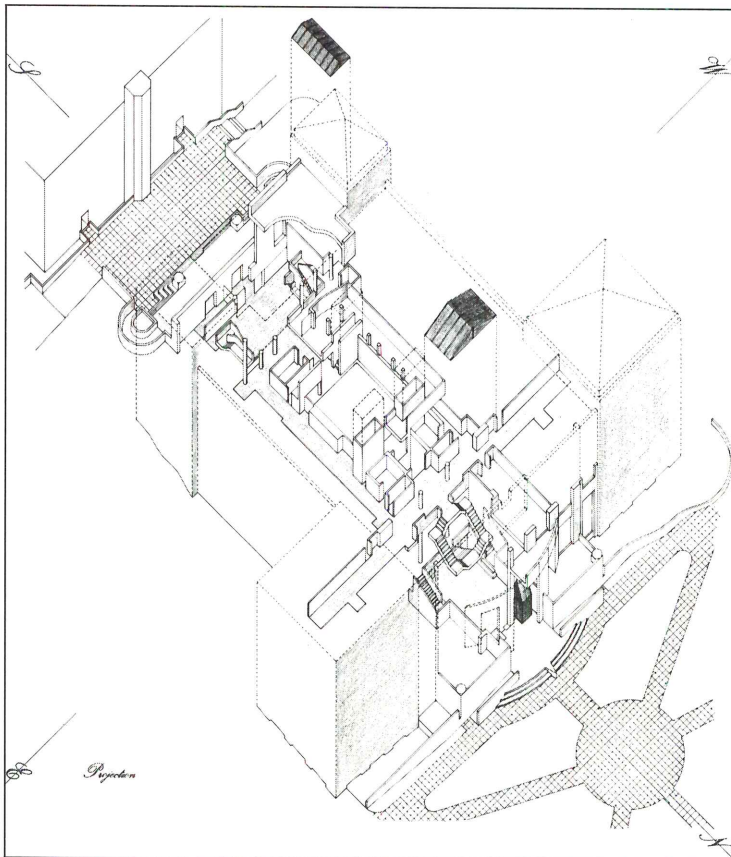
Barcelona, Spain, has commissioned Richard Meier & Partners to design its projected Museum of Contemporary Art. It is planned as part of a city-wide building and city-planning program in connection with the 1992 Summer Olympics, to be held in Barcelona. The **Olympic Hall of Fame**, at the same time, has been assigned to architect Antoine Predock for design. The building is scheduled to open in Colorado Springs in 1992.

Antoni Calatrava, of Zurich, has won the third engineering fellowship competition, which awards \$25,000 for travel and study, from the Skidmore, Owings & Merrill Foundation and the 1988 Fazlur Rahman Khan International Traveling Fellowship Jury.

The **AIA's 100th R/UDAT** took place November 14, when the American Institute of Architects sponsored a Regional/Urban Design Assistance Team to offer a downtown plan to Spartanburg, South Carolina.

The **Seaman's Church Institute** has named James Stewart Polshek and Partners architect of a new building on Water Street in New York City's South Street Seaport historic district. The institute, founded in 1834, has occupied temporary quarters since 1985.

A binary building for arts and letters



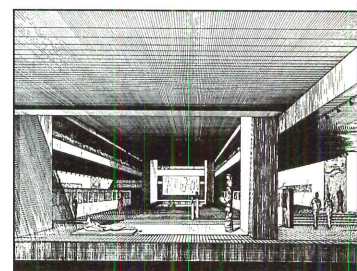
The old Paul Klapper Hall at Queens College in Flushing, New York, has changed its function, though not its name, under the architectural ministrations of Beyer Blinder Belle, in collaboration with Daniel Pang Associates. The old building, once the college library, will remain as the core of the new, but it will acquire heightened towers with new pyramidal caps, new exterior facing and interior partitions, new fenestration, and new mechanical and electrical systems. The project is meant to serve both the Art and English departments, and for that reason

will have two entries, each of different character to give the two occupants separate front doors. The north facade—seen in its 1948 version and in its currently projected version in the drawings directly above—will be fronted with a semicircular porch to receive art students in a new skylit atrium with grand staircase. English students will use the south end of Klapper Hall, which will contain a museum described as state-of-the-art. The \$28.3-million building, to be completed by the middle of next year, is owned by the Dormitory Authority of the State of New York.

Rehabilitating Rudolph

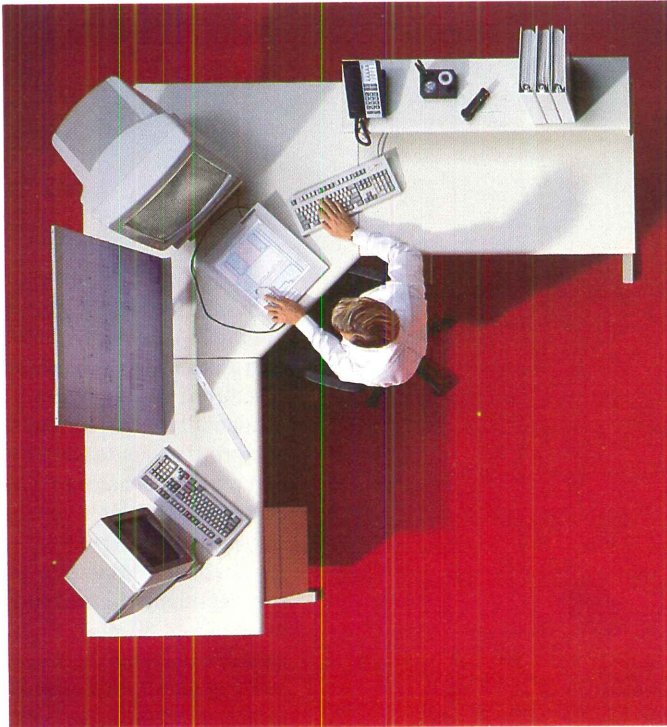
Whether the exhibition "Paul Rudolph: Drawings of the Arts and Architecture Building" (produced largely by Yale students last November) will restore the reputation of this structure is debatable. The power of Rudolph's sectional perspectives affected a generation of students, and reassessment is inevitable. Just as theorists of Modernism simplistically ridiculed the irrelevance of 19th-century styles, so the thinkers of Postmodernism have punctured A & A's "heroic" (Venturi's word) bombast; now comes the reaction to facile historicism.

Nevertheless, Rudolph's sketches still seem to represent an arcane abstract process in which floor "trays" are restlessly arranged around bush-hammered concrete piers. Yale itself has played into the hands of the revisionists by utterly neglecting the building, but restoring Rudolph's vision will not be easy. While the drawings convey idealized planes floating freely, the finished building was always darker and more complex. Multiple levels are so rigidly defined that programmatic needs have always had to be adjusted to fit the building, rather than vice versa. (This is why the turf battles



endemic to any campus have been devastating here.)

A & A today is much like an archeological site: only fragments of Rudolph's vision are visible. The building will likely continue to teach, but not necessarily the lessons Rudolph intended. *J. S. R.*



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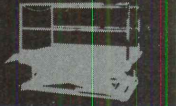
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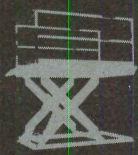
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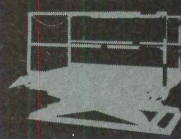
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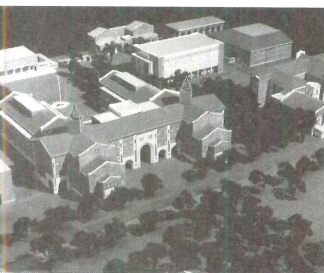
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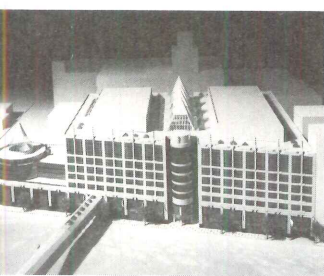
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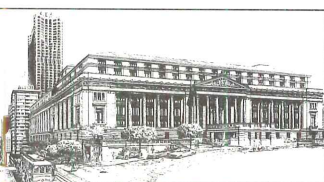
news briefs



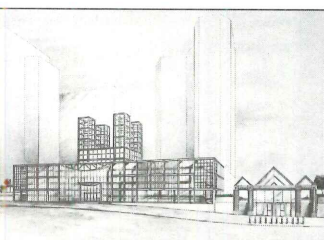
Rice University plans 1990 occupancy of its Biosciences/Bioengineering Research Laboratory Building (1), designed by Cambridge Seven Associates. Meant for highest-tech biological research, the brick and limestone building was also meant to echo Ralph Adams Cram's 1911 Italianate Neo-Renaissance campus style. Thus exhaust outlets are enclosed by rooftop towers to recall Cram's work. Labs in the \$18-million building will be designed by Earl Walls Associates; McKittrick, Richardson, and Wallace are associate architects.



California Mart will expand its fashion marketing facilities in Los Angeles with the so-called D Building (2), to be devoted to menswear. Designed by Gruen Associates, the 702,000-square-foot building will include showrooms, retail space, parking, an 800-seat theater for fashion shows, and a 100,000-square-foot Exhibit Center for trade shows. A pedestrian bridge will connect it to A, B, and C Buildings across the street.

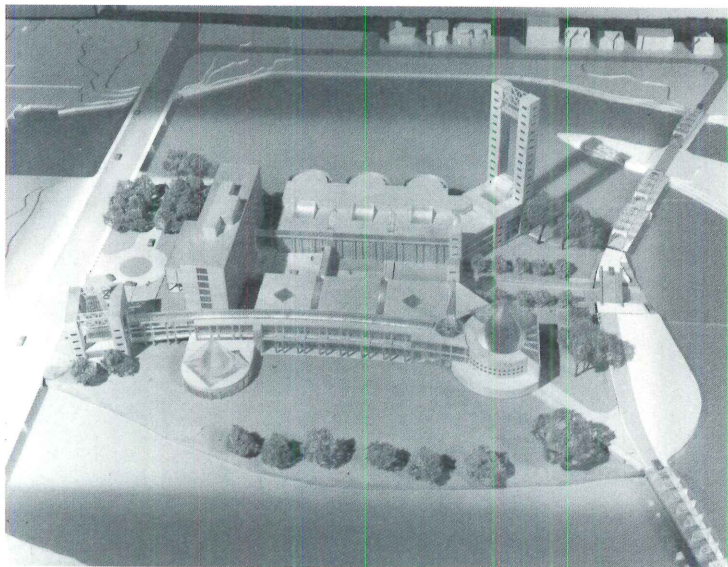


The San Francisco Ritz-Carlton Hotel will occupy the rehabilitated Metropolitan Life Insurance Building (3), a designated landmark on Nob Hill. The 1909 building has had a checkered history: first office building, recently Cogswell College, soon luxury hotel. In addition to designing the 350-room hotel, architects Whisler-Patri will supervise restoration of the terra-cotta exterior and cast-iron casements. Completion is scheduled for next year.



The Sporting Clubs of America have started construction of a \$26-million facility at Chicago's Illinois Center (4). Designed by Japanese architect Kisho Kurokawa, with the Chicago firm Fujikawa Johnson and Associates, Inc., as associated architects, the six-level spa will include dining and meeting rooms, as well as a nursery and athletic courts.

A new hall to house Ottawa's own government



Moshe Safdie, who recently completed the National Gallery of Canada in Ottawa, has won a design competition for the renovation and expansion of the city's New City Hall. Safdie describes the design as "a series of pavilions and gardens," starting with an entrance

pavilion (at left in photo) and continuing with a curving glazed promenade. A twin tower overlooking the Rideau River will become a landmark on the skyline. Members of the winning architectural consortium were Murray & Murray Architects and Moshe Safdie & Associates.

Competition calendar

- An open national design competition for the Women in Military Service for America Memorial calls for the design of both a monument and a visitors' center at the Memorial Gate entrance of Arlington National Cemetery near Washington, D. C. Registration for the two-stage competition is due by March 15. For information: Professional Adviser, Women in Military Service for America Memorial Foundation, Inc., Department 560, Washington, D. C. 20041-0560 (203/533-1155).
- To mark its 100th anniversary, Clemson University will conduct a competition for the design of a

- \$10-million performing arts center; in addition to a 1,000-seat auditorium for students and the general public, the building will include educational facilities. The final date for registration and payment of a \$75 fee is January 16. For information: Clemson PAC Competition, The Moorman House, 115 N. Palmetto Rd., Clemson University, Clemson, S. C. 29634-5951.
- The City of Yokohama is sponsoring an "idea competition" on Urban Design and Architecture, to plan "a facility that pursues the rejuvenation of the city," based on Yokohama's Basha-michi shopping street. Fumihiko Maki is chief judge. Entries for cash prizes, including two first prizes of 1 million yen each, are due March 15. For information: Department of the First Yokohama International Urban Design Competition, Shinken-chiku-sha Co., Ltd., 312, Yushima 2-chome, Bunkyo-ku, Tokyo 113, Japan.

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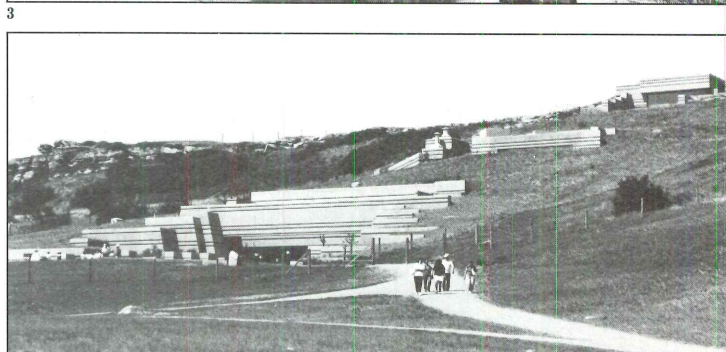
Design awards/competitions: Portland Cement Association 1988 Concrete Building Awards

In its biennial Concrete Building Design Awards program, the Portland Cement Association cited seven new buildings in the United States and Canada. According to PCA's rules of entry, new buildings must have concrete framing, whether cast-in-place or precast. (Remodeled buildings were also eligible, though none was honored this year.)



1. The Vitreous State Laboratory, The Catholic University of America, Washington, D. C. ; Perkins & Will, architects. The research building has a cast-in-place foundation supporting precast bearing walls/skin and precast beams and tees, and the architects note that the long-span precast beams and tees allowed unobstructed flexible lab space. The jury, which called the building "well-proportioned" and "handsomely articulated," said that it "especially admired the laboratory's rear elevation, with exhaust chimneys integrated into the concrete skin."

2. Optima Center, Highland Park, Illinois; David C. Hovey, architect. The mixed-use structure, which contains stores, offices, and apartments, combines cast-in-place columns and 30-ft-long precast beams spanned by hollow-core decking; cast-in-place concrete, filling the void between beam and deck, ties the structure together. "Despite its simplicity," said the jurors, "the building comes across as an elegant structure, thanks to careful detailing." They thought special credit should be given to the precast fabricator.



3. Solo Cup Corporate Office Building, Highland Park, Illinois; Serena-Sturm Architects, Ltd. Expanding an existing factory, the building forms a new corporate entry. Though the observer first notices the precast-clad colonnade, with its deep ornamental precast sills and coping, the architects valued precast concrete because it could be erected in cold weather. The jury considered that "the most significant aspect . . . was the architect's use of textures, i. e., the combination of rough split-faced concrete block, smooth precast, and brick."

4. Head Smashed In Buffalo Jump Interpretive Center, Fort Macleod, Alberta; The LeBlond Partnership, architects. Marking a major archeological site, the center occupies an outcropping over which prehistoric Indians once stampeded bison. The architects, aiming to "recapture the intensity, anxiety, and joy" of the ritual, designed a seven-story underground concrete museum named for the mythical boy who got too close. The jury commended "an excellent background building," which the "naturally colored concrete [allowed] to recede unobtrusively into its setting."

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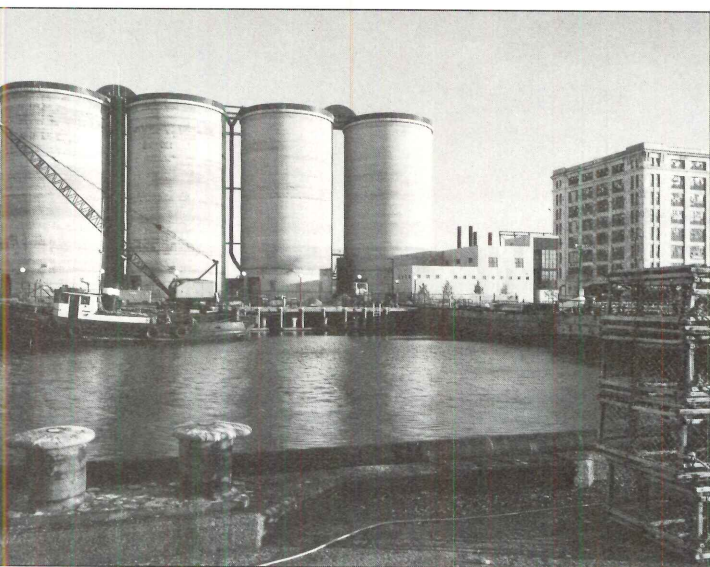
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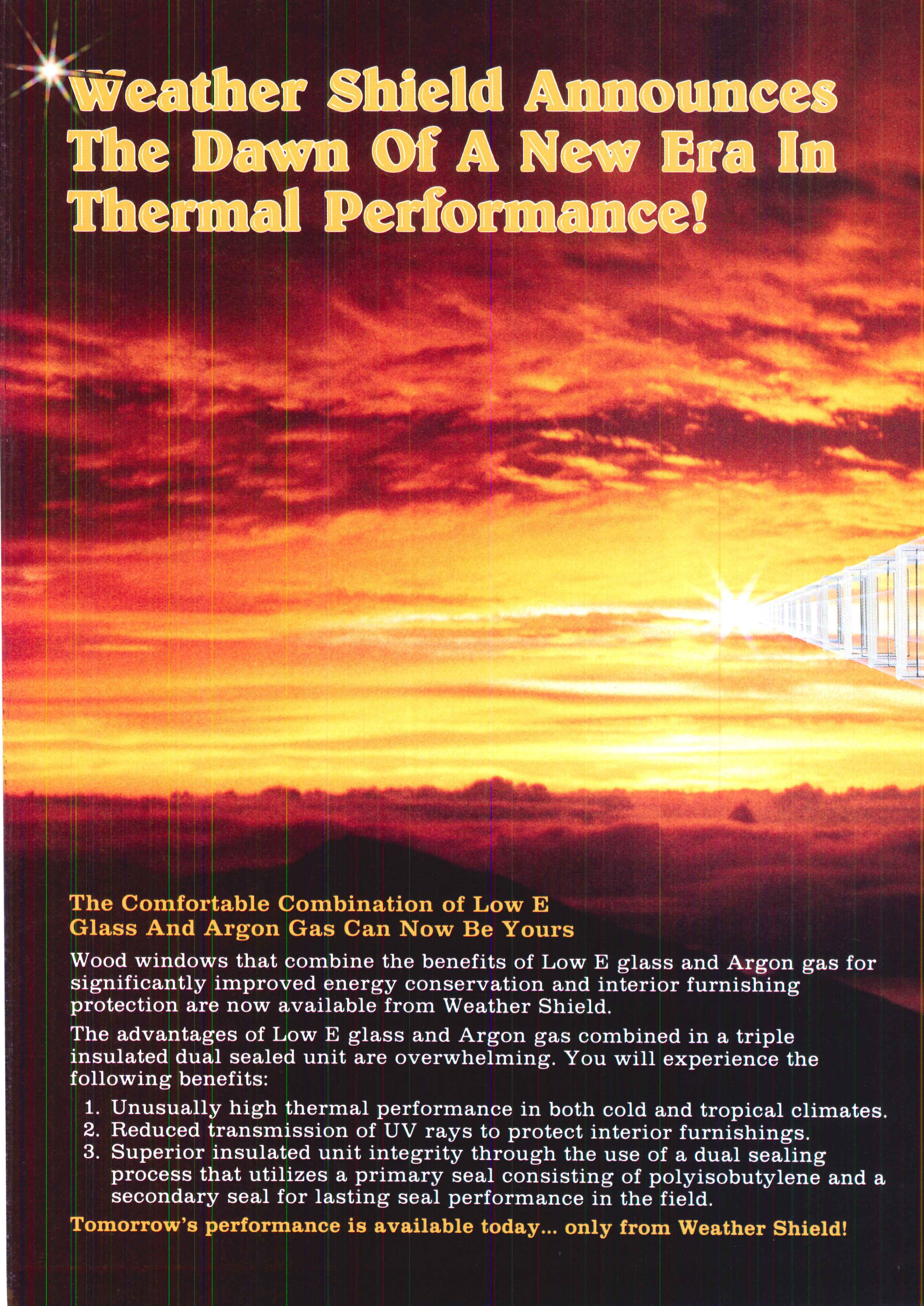
5. Athletic Facility, Ryerson Polytechnical Institute, Toronto; Lett/Smith Architects. Beneath a landscaped campus road, the underground building adds to the school's gym facilities. Having put insulation and waterproofing outside the entirely cast-in-place structure, the architects exposed all interior surfaces, lightly sandblasting only the main public areas. Daylight enters through lenses, mirrors, periscopes, and overstories. Said the jury, "The building seems literally carved from the earth and comes across as an unusually inviting subterranean environment."

6. Coastal Cement Corporation, Boston; HMFH Architects, Inc. Low-rise pink and rose concrete buildings for offices and bagging facilities cluster next to four 120-ft-tall slip-formed silos painted red around the top. The terminal, located in an industrial park on Boston's waterfront, is used for the storage and distribution of several kinds of cement unloaded from ships. The site also accommodates a waterfront park, landscaping, and walks. The jury thought, "There is a daring yet subtle sense of color in the combination of pink, red, and raw concrete."



© Paul Gobeil

7. Blue Cross and Blue Shield of Connecticut Parking Facility, North Haven, Connecticut; Ellenzweig Associates, Inc., architects. The parking garage has textured architectural precast concrete spandrels supported by bracketed columns. A lightwell bisects the garage to admit daylight to parking floors. The jury felt that "the architect made [the building] exceptionally interesting by articulating all the precast-concrete elements It's an excellent example of how a thoughtful designer can take a prosaic building type and visually enrich it."



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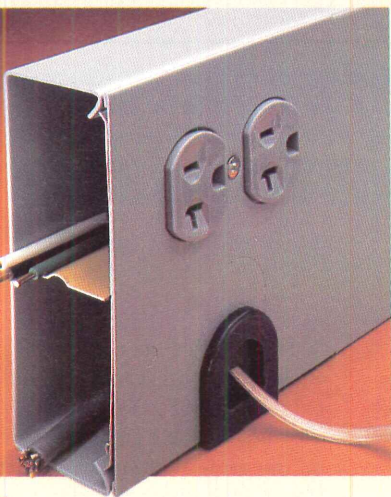
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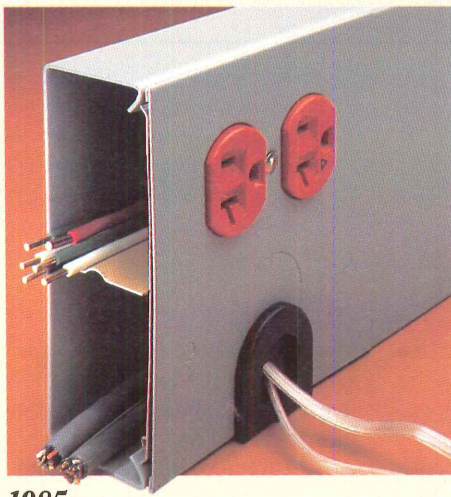
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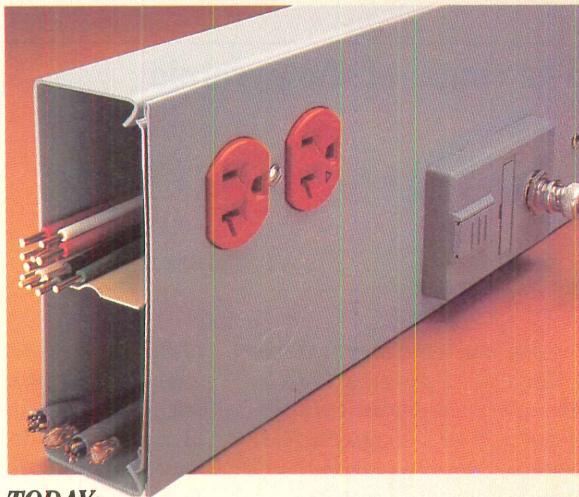
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The riddle of the pyramid

An American in Paris ponders one of modern architecture's most provocative enigmas, I. M. Pei's addition to the Grand Louvre. Besides laying to rest several theoretical ghosts, our correspondent focuses a critical eye on the practical and esthetic reality of the building behind the cause célèbre.

By Roger Kimball

No one was more skeptical than I. The idea of plopping down a glass pyramid—what I always thought of as a “huge glass pyramid” despite repeated assurances of its relatively modest size—in the Cour Napoléon at the Louvre seemed outrageous. How could I. M. Pei’s exercise in minimalist transparency—a realization in a different key of the crystalline modernist fantasies of Paul Scheerhart, Bruno Taut, and Mies van der Rohe—be anything but a snub, an affront, to the Louvre’s stately 19th-century presence? As soon as I heard about the project, I decided it was little more than the latest example of the imperious highjinks that have characterized the recent work of so many of our most prominent architects, highjinks that substitute a crisp technical competence and expensive, high-gloss patina for the more satisfying architectural virtues of commodiousness, integration, and, well, taste.

Clearly, I was not alone in these sentiments. In response to a transatlantic outcry about the design, Pei and two French officials involved in the Louvre project took the unusual step of giving a public relations pep talk at the Metropolitan Museum in New York last May, in which they endeavored to present, explain, and garner sympathy for the “new” Louvre. Despite their valiant efforts to acquaint the audience with the history and context of the project, they did little to assuage my feelings. Pei’s invocation of the French *esprit de géométrie*, his appeal to a spirit “à la le Notre” and “à la Descartes” as precedent and justification for imposing a glass pyramid on the main court

Roger Kimball, a frequent contributor to RECORD, also writes for The New Criterion, The London Times Literary Supplement, Commentary, and other publications.

of the Louvre, was far too ingenious to be convincing. What did a late 20th-century example of abstract architectural bravura have to do with the studied extravagance of Vaux-le-Vicomte or, more to the point, with the palace gardens of the Tuileries? What, except perhaps for inspiring a habit of systematic doubt, did this feat of architectural audacity have to do with the spirit of Descartes? I was equally skeptical about Pei’s insistence that, at a height of 71 feet, the pyramid was really “very small,” unobtrusive, indeed—since it was made of exceptionally transparent glass—all but invisible. Hadn’t he also once lobbied for that other glass tower, the John Hancock Building in Boston, partly on the grounds that its glass facade would lend it an air of transparency?

I remain a bit dubious about the relevance of the ghosts of le Notre and Descartes to Pei’s project. But I am happy to report that my visit to the Louvre this fall convinced me that this ambitious project is one of the great success stories in contemporary architecture. Though the underground complex was still several months away from completion, and my tour was conducted amid the bustle and clutter of workmen, it was clear that Pei’s contribution to the Louvre will be remembered as one of his most stunning achievements. No, the famous pyramid is far from “invisible”: even on the cloudy fall morning I walked over the Pont du Carrousel to see the project, the pyramid was a mesmerizing jewel that drew one irresistibly to the center of the courtyard. But Pei was quite right in emphasizing its relatively modest—one is tempted to say its *symbolic*—role in the overall program.

That Pei’s design for renovating the Louvre was a technical tour de force has been

appreciated for some months [RECORD May 1988, pages 142-148]. Not surprisingly, the main pyramid has received most attention. Its breathtaking clarity and elegant weblike support system—so daringly, so *conspicuously* inconspicuous—make the structure a veritable emblem of the modernist ambition to dematerialize the wall and render the boundary between inside and outside fluid. Its exquisite delicacy betokens the technological progress that has allowed the fulfillment of the architectural dreams of the teens and early ’20s in the 1980s.

But the pyramid is only the threshold to the great mass of Pei’s project: a complex of well over 650,000 square feet devoted to offices, restaurants, shops, exhibition spaces, storage areas, parking, and other museum support facilities, all discreetly nestled under the Cour Napoléon and the Cour du Carrousel. Anyone who has visited the Louvre in recent years knows that this magnificent collection of galleries and transformed palace buildings sorely lacked the amenities we have come to expect from a modern museum. A visit to the Louvre was also an encounter with chaos and inconvenience. Scores of tour buses congregated on the street in a nightmare of traffic and tourists, the restroom or cup of coffee one wanted always seemed about a mile and a half away, the layout of the vast museum was a crowded and nearly unfathomable maze.

Doing something about all this was behind President Mitterrand’s commitment, in the early 1980s, to undertake a major renovation of the Louvre. His decision to move the Ministry of Finance out of the Rivoli wing of the Louvre would allow the entire complex of buildings—now rebaptized the Grand Louvre—to be given over to the museum, freeing some

500,000 feet of floor space in the Richelieu pavilion for additional exhibition space. Yann Weymouth, Pei’s chief designer on the project, summarized the three chief objectives of the transformation of the Louvre as he led me through the site. Most importantly, they aimed “to bring the Louvre into the 20th century” by providing it with adequate support facilities and public amenities: the storage rooms, the conservation studios, restaurants, and auditoriums that the Louvre has always lacked. Second, they wanted to draw attention to the history of the Louvre, its gradual metamorphosis from a fortress and prison in the 12th century to a palace in the 14th to a public art gallery in the wake of the Revolution. And finally, they sought to improve the urban fabric of the neighborhood by providing below-grade parking for those tour buses and tourists. The challenge, of course, was to accomplish all this without violating the architectural integrity of the Louvre.

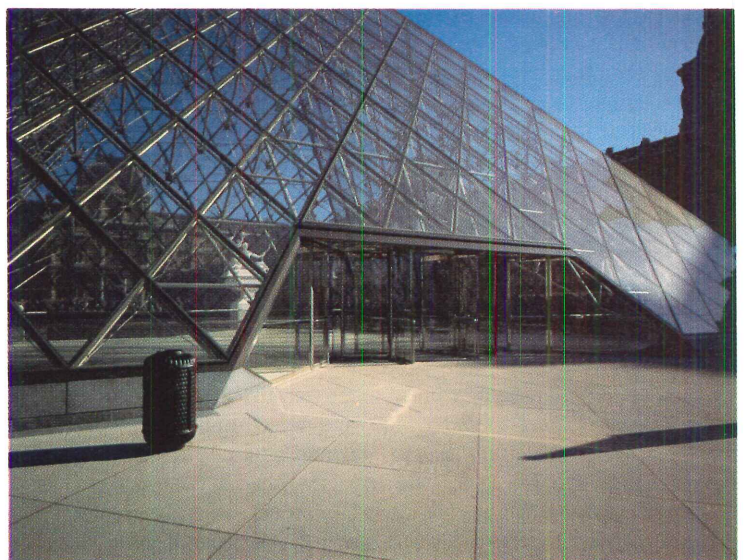
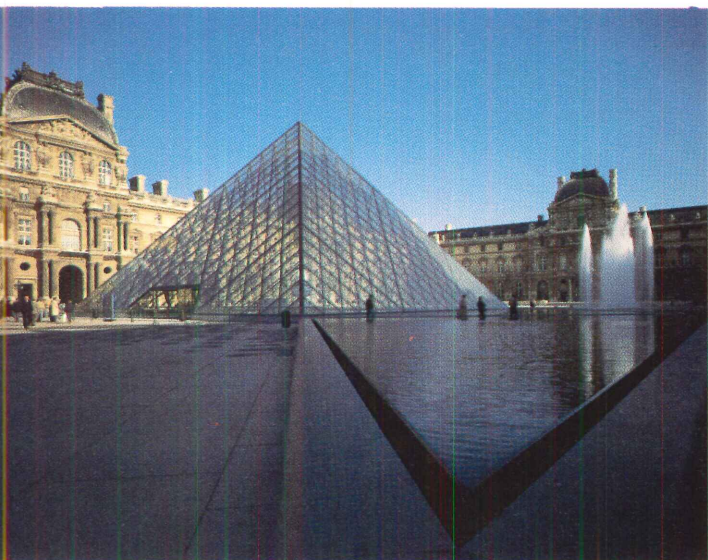
The first phase of the project, scheduled to open to the public this winter, includes the new entrance and the complex below the Cour Napoléon. While Weymouth noted that other entrances to the museum will remain open so that visitors who want to see a particular gallery will not have to go through the pyramid, the large reception area underneath that structure will greatly ease most people’s visit. Not only have the architects provided vastly more space for the public (one can only hope that the long lines waiting to get in are a thing of the past), but by placing the entrance midway between the Louvre’s galleries, they have made getting from one part of the museum to another much less arduous. Three small glass pyramids, 16 feet tall, flank their larger sibling, providing skylights over

Supported by a stainless-steel web, the largest of Pei's four pyramids is at once a skylight, main entrance, and emblem of the new Louvre. Laminated flush-glazed panes used in all the pyramids—the three smaller ones mark

passageways to different pavilions—possess exceptional clarity. Concealed beneath the granite-topped plaza is the underground "building" that connects the U-shaped complex of pavilions and provides over 650,000 sq ft of floor space.



Serge Hambourg photos



passageways from the reception area into each of the three pavilions of the Louvre. Pei brilliantly sited these small pyramids so that the visitor can instantly orient himself toward the part of the museum he wishes to see. He has also—and this is so rare these days, alas, as to require special commendation—managed to achieve an extraordinarily high level of craftsmanship in everything from the bush-hammered granite paving stones on the Cour Napoléon to the sumptuous, velvety precision of the cast-concrete ceiling of the reception area.

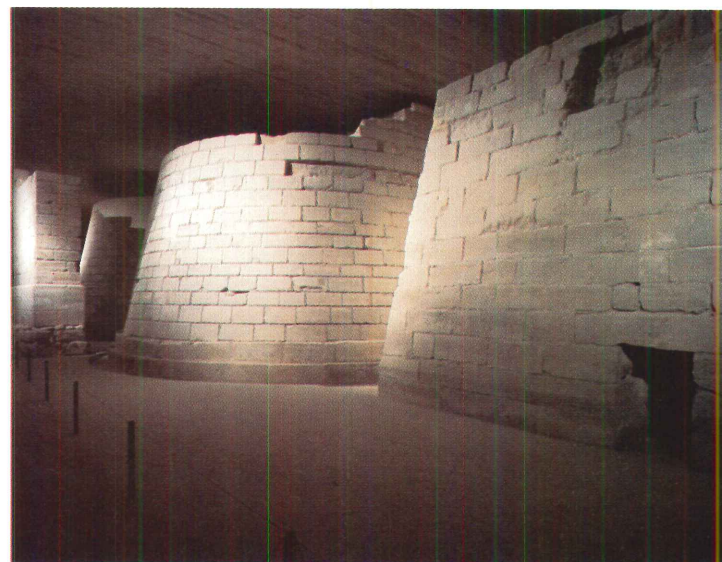
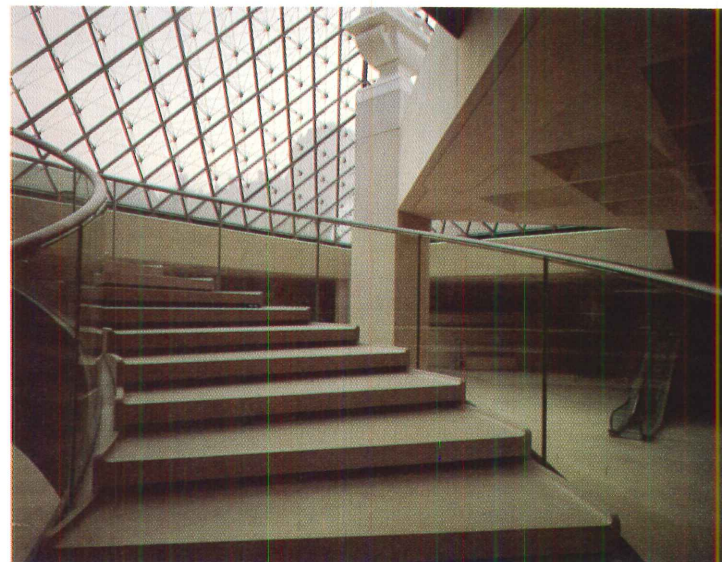
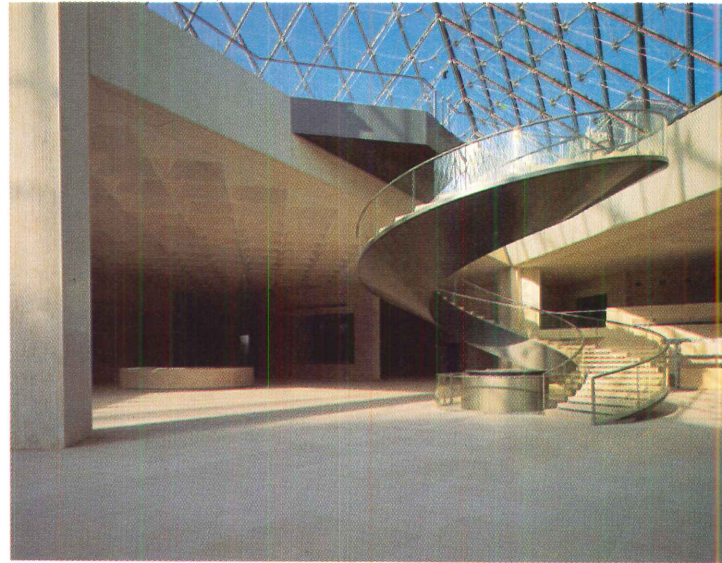
While one must be grateful for the numerous improvements—seen and unseen, from the restaurants and shops to the security system and storage areas—that the renovation of the Louvre is bringing about, there can be no doubt that one of the most spectacular parts of the whole project is a product not of the late 20th century but of earlier eras. When the engineers were doing preliminary drilling on the Cour Napoléon, they unexpectedly encountered something that broke their drill bit. What they unearthed was a wall that had been begun in the 17th century, then abandoned and apparently forgotten. It now forms part of one's tour of the history of the Louvre. But perhaps the most impressive relic reclaimed from the past is the medieval foundation of the old Louvre, all of which will be on view to the public. Excavated when the project got underway in 1984, the 12th-century moat for the original fortress is one of the highlights of the new Louvre. No photograph can convey the heady sense of age, mass, and primitive dignity one feels walking among those ancient walls, a sensation that is heightened by the contrast with the sleek contours of the new reception area.

Naturally, there is no question of Pei's geometrical monument to architectural purity and engineering prowess *blending in* with the 19th-century facade of the Louvre. No genuinely modern architecture could have done that and remained true to itself. But Pei and his associates have accomplished something far more difficult: they have contrived a renovation of the Louvre that frankly declares its modernity without detracting from the grace and integrity of the ensemble it serves. In this sense, Pei's addition to the Louvre is modern architecture at its best: he has thoughtfully exploited contemporary materials and techniques in a way that serves rather than dominates the traditional splendor of the Louvre.

In the midst of this celebration, however, there is one thing that gives one pause. Back at that pep talk at the Metropolitan Museum in May, Pei mentioned that one pressing reason for undertaking such a major renovation of the Louvre was the drastic increase in the number of visitors the museum had to accommodate each year. Currently, more than three million people a year visit the museum; that figure is expected to rise to five million within a few years. If the museum is open, say, 310 days a year, that is 16,000 visitors a day. The chilling aspect of the Grand Louvre is that, like so many of its American cousins and, indeed, like the immensely crowded Musée d'Orsay across the Seine [RECORD March 1987, pages 128-139], in becoming so much more "accessible" it will also become so much more a repository of objects for leisure-time consumption instead of a museum for the serious study and delectation of great art. It would be a pity if Pei's triumph at the Louvre hastened its transformation into an offshoot of the entertainment industry.

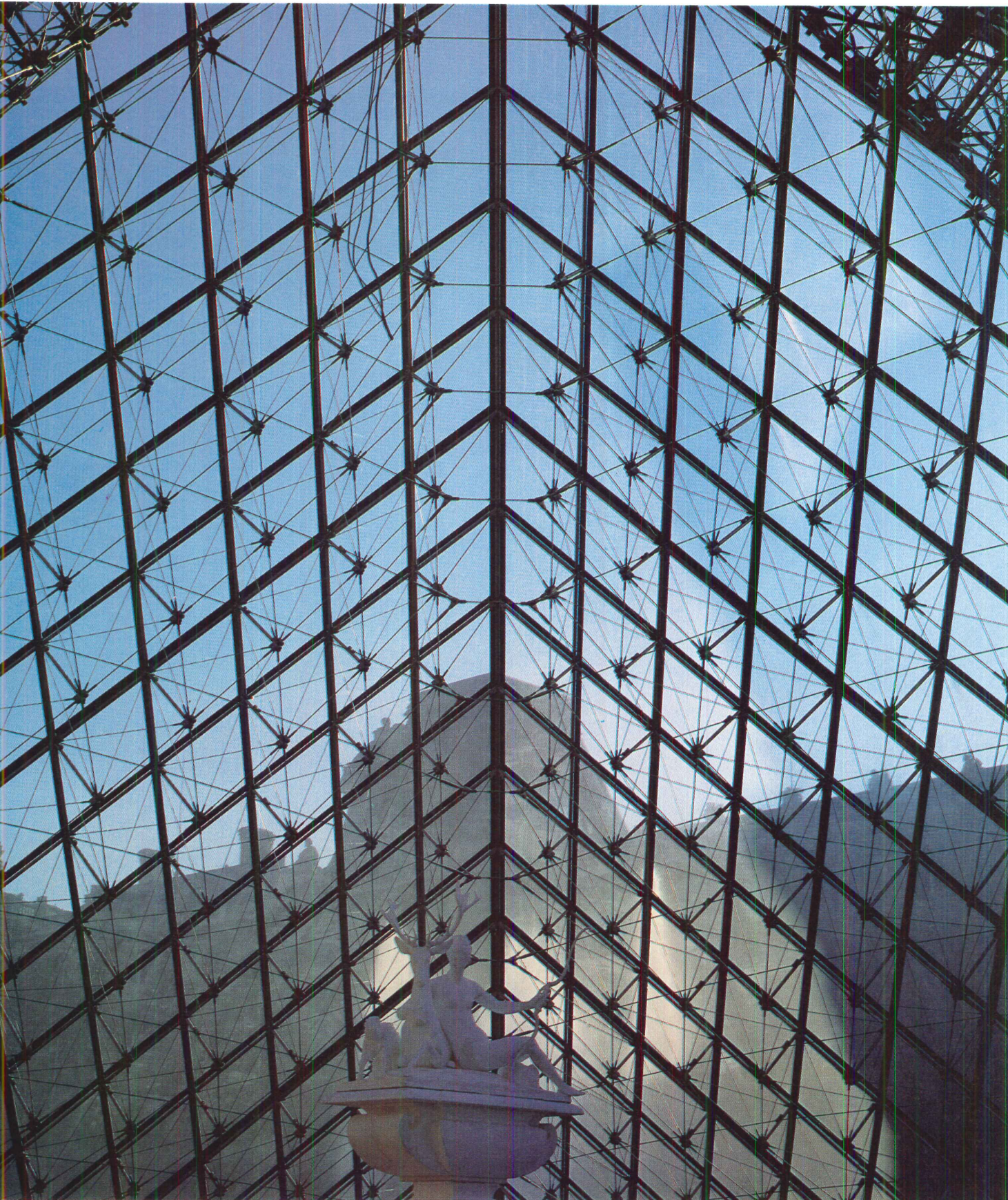
Like the honeycomb ceiling of white concrete, the curved stairway that sweeps grandly down to the reception level beneath the pyramid and the refurbished Cour Napoléon exemplifies the meticulous detailing and superb

craftsmanship that distinguishes Pei's work at the Louvre (top and middle photos below). (Visitors may also descend via escalators or a cylindrical telescoping elevator that rises through the hollow core of the staircase.) Series of cryptlike



ambers, first uncovered by
the archaeological excavation
at preceded building, are
actually foundations for the
columns and moat of the
original Louvre erected as a
fortress in 1190 (opposite
page 60). The ruins will be on

permanent view as part of the
panoramic self-history of the
Louvre. A classical statue of
Diana (below) presides over the
entrance to the pyramid, while
the Second Empire facade of
the old Louvre shimmers in the
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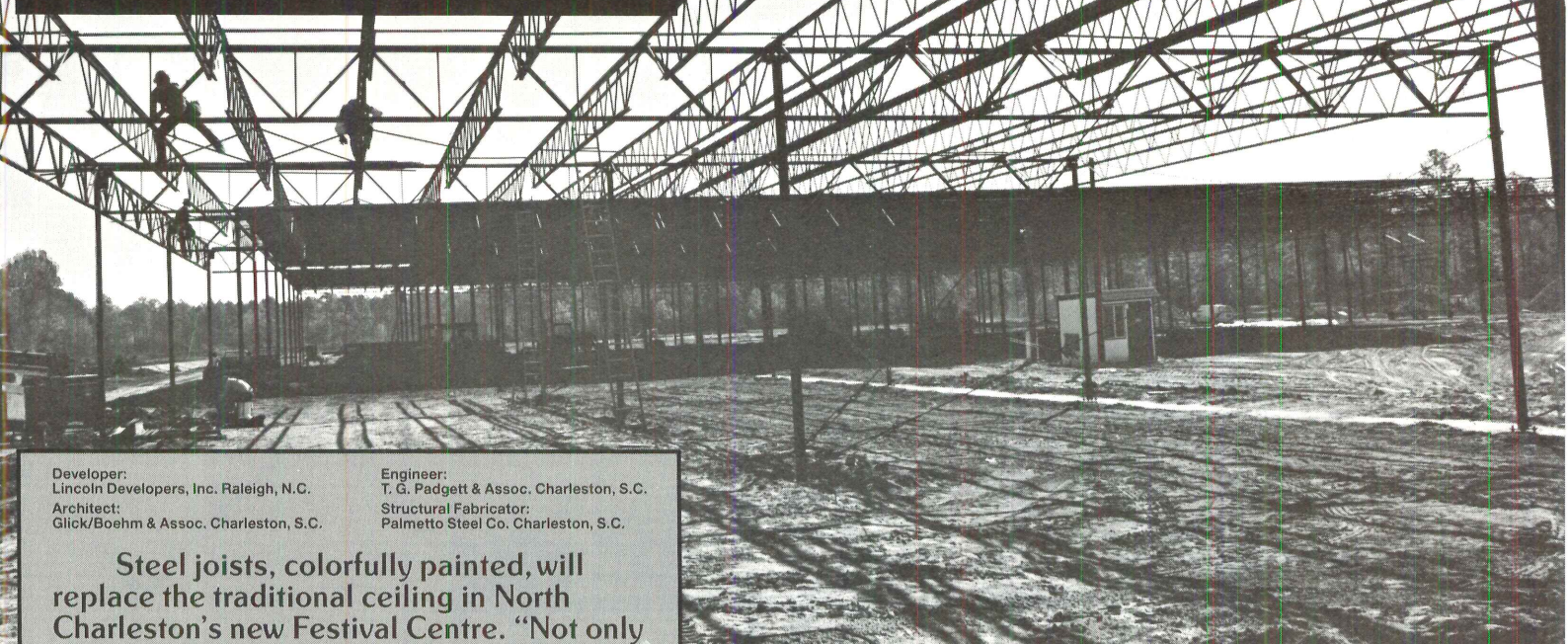


RECORD INTERIORS 1989

The editors of ARCHITECTURAL RECORD announce the 20th annual RECORD INTERIORS issue. Architects and interior designers are invited to submit recently completed interior design projects in all categories; work previously published in other national design magazines is disqualified. There are no entry forms or fees; however, submissions must include photographs (transparencies), floor plans, and a project description—bound firmly in an 8 1/2- by 11-in. folder—and be postmarked no later than April 30, 1989. The winning entries will be featured in the 1989 Mid-September RECORD INTERIORS. Other submissions will either be returned or scheduled for publication in a future issue.

Submissions should be mailed to:
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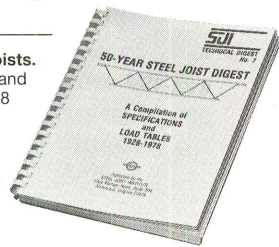
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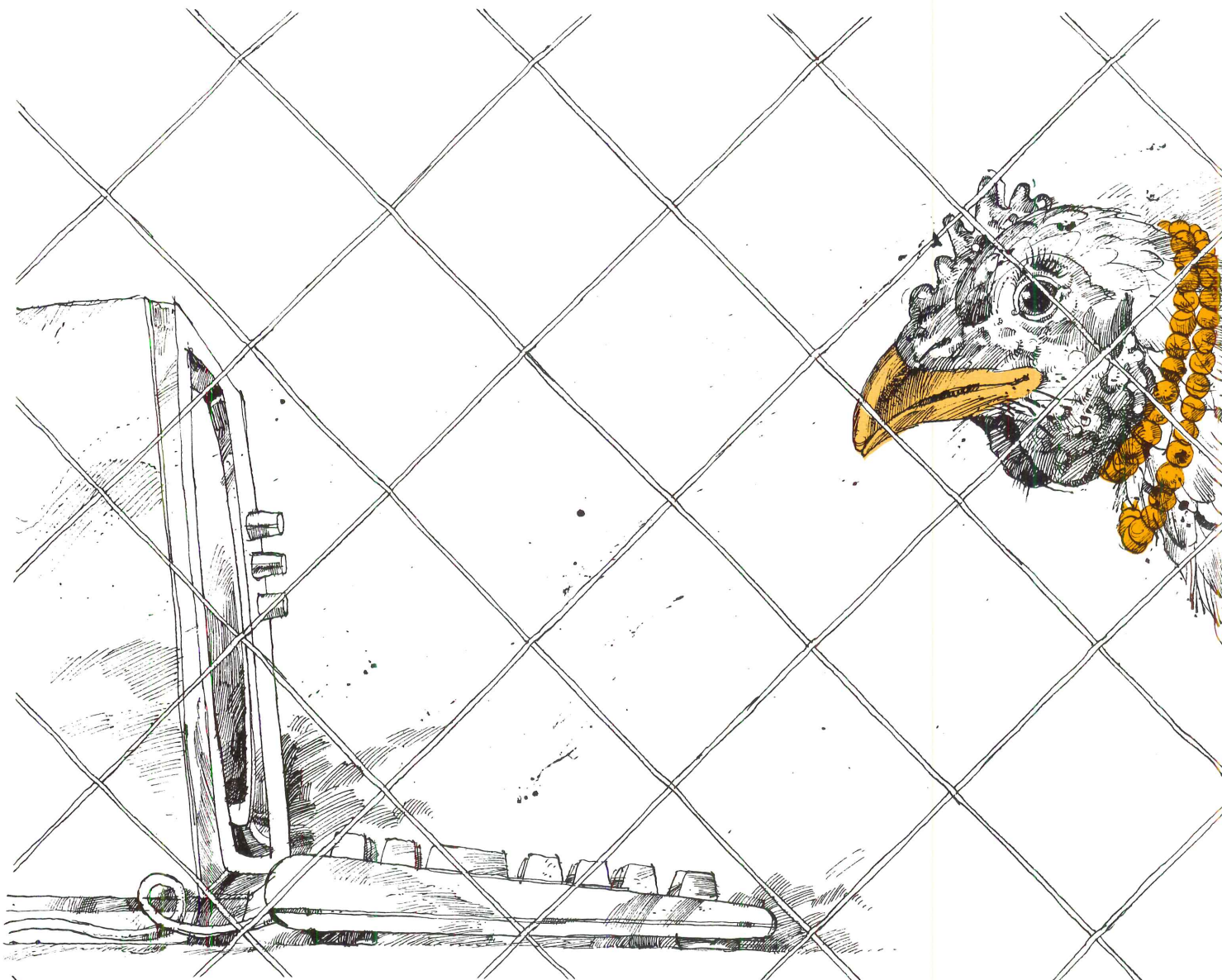
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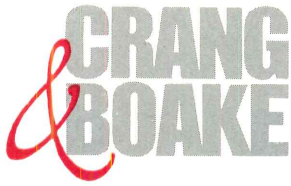


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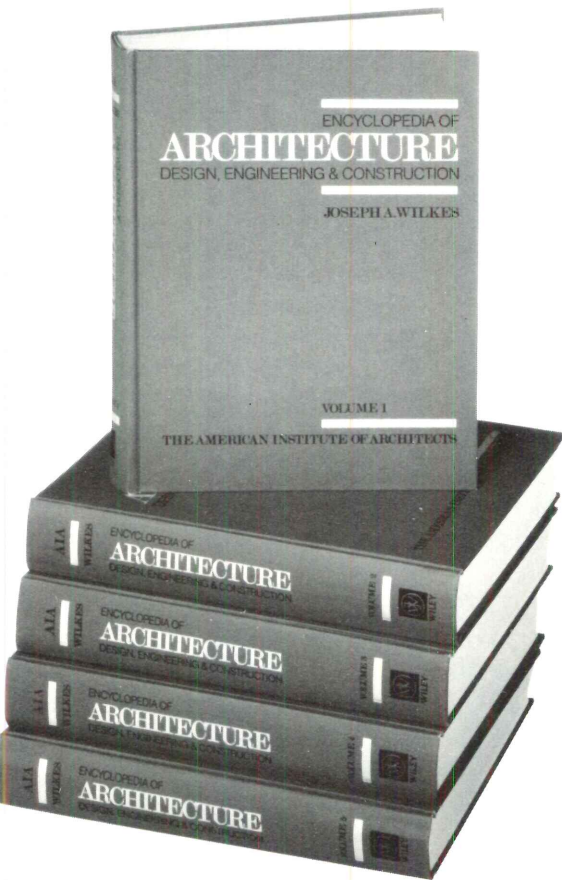
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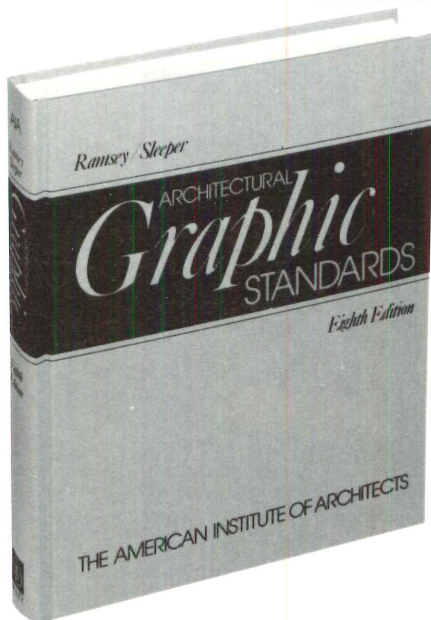
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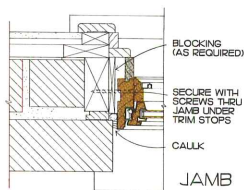
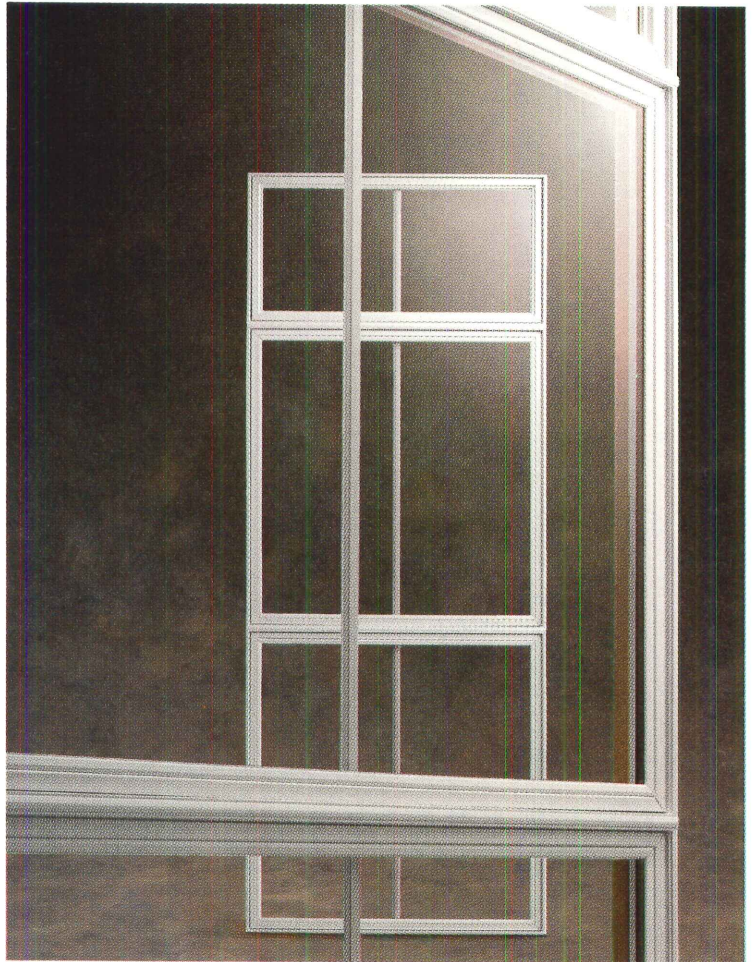
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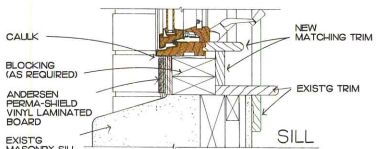
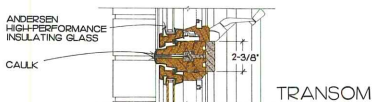
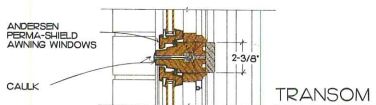
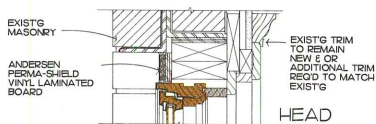
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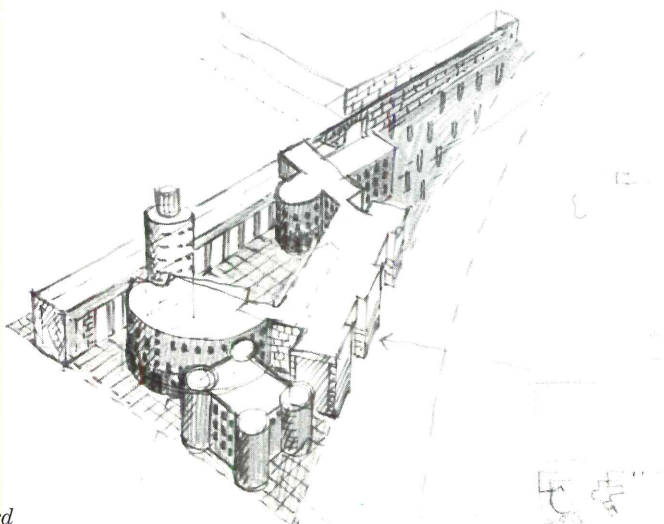
In this issue

With toasts to *auld lang syne* still in the air, it seems a good time to hail an architect whom old acquaintances cannot forget (criticize him though they may) and whom a whole new generation is just “discovering”: Paul Rudolph. As our cover and the article on pages 74-85 demonstrate, Rudolph continues to design and build with unflagging vision and vigor, devoted as ever to the ideals that first made him a Modernist hero in the 1950s. The three projects in our present portfolio are all overseas, and yet they exemplify an approach to architecture now provoking renewed interest in this country.

Though he has traveled a different path from Modernist origins, James Stirling is another architect of global renown whose work remains intensely personal while adapting to specific local conditions. A noteworthy case in point is the research institute he conceived for a bombed-out district of West Berlin—and patiently nursed through a lengthy gestation (the preliminary sketch below is now 10 years old). For an explanation of how the finished building reconciles the “collage city” concept of the late '70s with current demands for a *noninstitutional institutional* setting, turn to pages 94-101.

Strongly held beliefs about ways to kindle a warm sense of community amid what might ordinarily be cold institutional surroundings also inspired several other projects featured in this issue: The Hole in the Wall Gang Camp (pages 86-91) and the trio of city halls gathered in our Building Types Study (pages 102-113). The camp, designed for a rural New England site by Hammond Beeby and Babka, imaginatively mingles folk history and fantasy with compassionate pragmatism in a therapeutic environment for children with life-threatening diseases. The city halls, located in California, Texas, and Connecticut, embody three independent-minded architects’—and municipalities’—refusal to settle for the impersonal blandness that commonly passes for civic-minded construction these days, no matter who is in or out of office.

Out with the old, ring in the new: the human craving for novelty is most overtly mirrored in the world of fashion (though no less effectively in architectural criticism—just ask Paul Rudolph). The clothing shop shown on pages 92-93 is a stylish reminder of how sometimes the slightest gesture can mark a fresh start.



Initial scheme for
Wissenschaftszentrum Berlin,
James Stirling Michael Wilford
and Associates, Architects

Resolutely Modernist

Paul Rudolph does most of his work these days in places where Postmodernism has yet to penetrate, namely Hong Kong, Singapore, and Jakarta. Projects recently completed in these cities signal that he continues to build with his familiar consistency, energy, and passion.

"I don't know any other architect in this country who is so off by himself and so successful." Philip Johnson

Paul Rudolph is indeed successful in the sense that he has remained faithful to the fundamentals of his own abstract, spatial, heroic, romantic, and grandly exaggerated architecture ever since he first invented his style. For the past two decades, this skilled architect's Late Modernist celebrations of form and space have been a major target of Postmodernist polemic and theory, as decorated sheds, be they skyscrapers or cottages, gradually became the establishment style. His own work, a mix of influences among which Wright, Le Corbusier, the Italian Baroque, and High Tech are easily discerned, evolved early as a reaction against the minimalist Bauhaus design that Gropius tried to teach him at Harvard. Rudolph is also successful now in the sense that he continues to attract clients (for the moment mainly in Southeast Asia) who aspire to greatness as patrons, the kind with ambition to contribute architectural masterpieces to the world.

But off by himself? Well, yes and no. Rudolph designs alone, abjuring teamwork in the early stages. In recent years he has been a solitary traveler as well—in Hong Kong for Bond Centre (see opposite and pages 76-79), in Singapore for Colonnade Condominiums (upper right and pages 80-81), and in Jakarta for the Dharmala Sakti Building (cover, lower right, and pages 82-85), while continuing to develop new projects with Chinese and Indonesian developers. Considered so hopelessly off by himself as to be completely out of fashion, Rudolph has been neglected by the critical media, to such an extent that many, remembering the fame he enjoyed in the '60s, assume that he has retired.

But all this is changing. A Rudolph revival is already upon us. This month a retrospective of his work is on view in New York City at the Steelcase Design Partnership (Calendar, page 4). Last fall a group of architectural students at Yale mounted an exhibition (Design News, this issue) of Rudolph's drawings for the university's Art and Architecture Building, appropriately displayed inside that great structure, once heavily damaged by fire and poorly remodeled thereafter. The students' immediate objective was to promote the 25-year-old landmark as a candidate for preservation and restoration, a very laudable undertaking on the part of scholars concerned with history. But the students were concerned with more than history. What else were they trying to tell us by such effort? That they are fed up with slick designer-label architects, bored with Postmodern polemic and pastiche, sick of fashion and hype? That they have repossessed the idea that architecture can be driven by high public purpose? That the architect, indeed, can still sometimes play a heroic role? Yale's new generation of architects apparently sees the 70-year-old Rudolph as a great contemporary, and the Modern Movement—Early Modern, Bauhaus, Russian

Constructivist, Late Modern—as a relevant example for current work. And Rudolph, the committed, stubborn artist, designing his buildings in solitude, is the architect many of them hope to be, at least for now. It would be unfortunate, however, if the young aficionados started to crib directly from Rudolph's formal and spatial vocabulary. Frank Lloyd Wright has never been copied well, nor, so far, has Rudolph. Better just to study the master's thematic goals and means.

Each of the Southeast Asian skyscrapers expresses formal or technological themes that have long engaged Rudolph. He believes, for example, that the first hundred feet or so of a

skyscraper must be given a scale that people can respond to. Then the tower above can be scaleless. The multilevel base of Bond Centre, for example, consists of pools of space cascading, flowing, or swirling around great columns, which range in height from three to eight stories. Similarly layered and curvilinear are the plaza levels of Rudolph's Boston Government Service Center, designed in the late '60s, to include a yet-to-be-built high-rise.

The columns of the Dharmala Sakti Building rise to a height of nearly 100 feet before the tower itself starts. It too has a complex multilevel base, in this case as intricate and many-faceted as a small Indonesian village. It may appear that Dharmala Sakti's great cantilevered overhangs were inspired by Indonesian vernacular roofs, but unlike the Postmodernists Rudolph never appropriates directly from context. While it is evident that the form of the office building has much to do with the hot, humid, equatorial zone where it is located, Rudolph has used canted spandrel overhangs in earlier projects as well, carefully adjusted, as in Jakarta, for sun and climate.

Along with the Metabolists and Archigram, Rudolph has explored the idea of constructing megastructures filled with prefab capsules hoisted into place, but it remains an unfulfilled goal. This has not stopped him, however, from designing buildings that look like megastructures with capsules suspended or inserted. The Singapore Colonnade has a conventional concrete frame with painted masonry infill, but bears a telling resemblance to, and is indeed a reworking of, the unbuilt Graphic Arts Center for New York City, proposed in 1967, which was to have been a genuine module-filled megastructure.

Rudolph, while working on several new projects in Singapore, also starting to build more in the United States. To begin with, he has finally been invited to develop further his first design for the as yet unbuilt tower that was to be the focal point of the Boston Government Service Center. We don't have to ask what it will look like. Because Rudolph, like any architect, must adapt to economic and technological change, it won't be a simple clone of the original. But thanks to his resolute consistency, it will be the same in ways that count. *Mildred F. Schmertz*



Three projects in Southeast Asia
Paul Rudolph
architectural design consultant



Bond Centre Hong Kong

The desire to avoid long corridors and provide direct access from elevator lobbies to offices generated the basic geometry of the Bond Centre towers. As the typical plans (opposite) indicate, every tower floor, whatever its configuration, has eight sides

Bond Centre stands amid the flatlands that separate Hong Kong's harbor from the mountain ranges of Hong Kong island. Surrounded by highways—both raised and at grade—that are interwoven with elaborate overpasses and pedestrian bridges, the setting is charged with energy. The twin towers are highly visible from the south, east, and west against a background of sea, mountains, and one of the world's most densely developed cities.

The skyscrapers are joined for the first four floors only, allowing each shaft to be oriented to take advantage of magnificent harbor views. Facets of the towers help frame, and thereby concentrate and intensify, the vistas.

Both shafts are divided into three vertical segments, breaking massive scale into comprehensible parts intended to signify their nature and use. A single, more intricately faceted story at the top and bottom of each division serves as a "sky floor," incorporating special rooms cantilevered to reveal their floor soffits, roofs, and two sides on the exterior. These projections catch and reflect the constantly changing light, giving the building presence whether seen from a great distance, from the middle distance, or close up.

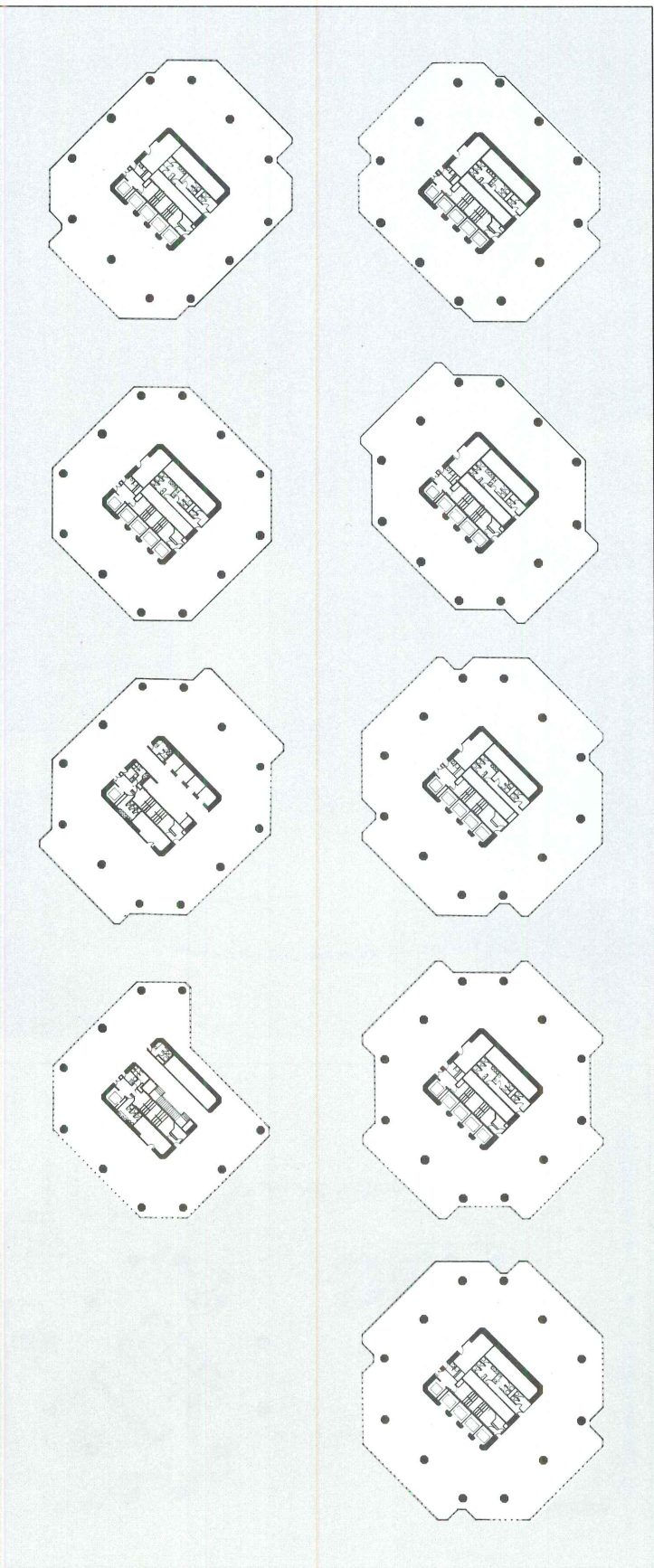
The lower levels form a series of loggias, porches, terraces, stairways, and plazas, all of which afford views of the city, the sky, the undersides of overhangs, and the enclosing glass facades. Large concrete columns disappear into the tower masses at different heights, appearing, in Rudolph's words, "like hydraulic pumps propelling the building into the sky." Because these pedestrian spaces and linkages have been carefully hooked up to the Central District's already extensive footpath system, they contribute significantly to the public life of Hong Kong. *M.F.S.*



© Peter Aaron/ES

four narrow and four wide), maximizing the number of corner windows. Each tower directly faces the other only along one narrow side. All the other facets slant diagonally toward views. Since the towers are entirely sheathed in glass, the faceting of the surfaces

creates multiple reflections of their surroundings, catching light much as a cut gemstone does. Rudolph comments: "It was my intention that the building appear to inhabit the sky, and become dematerialized by reflecting Hong Kong's ever-changing light."



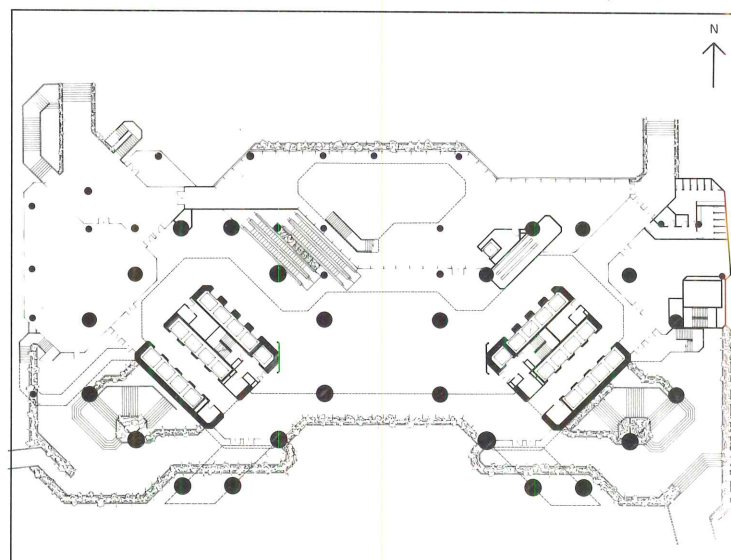
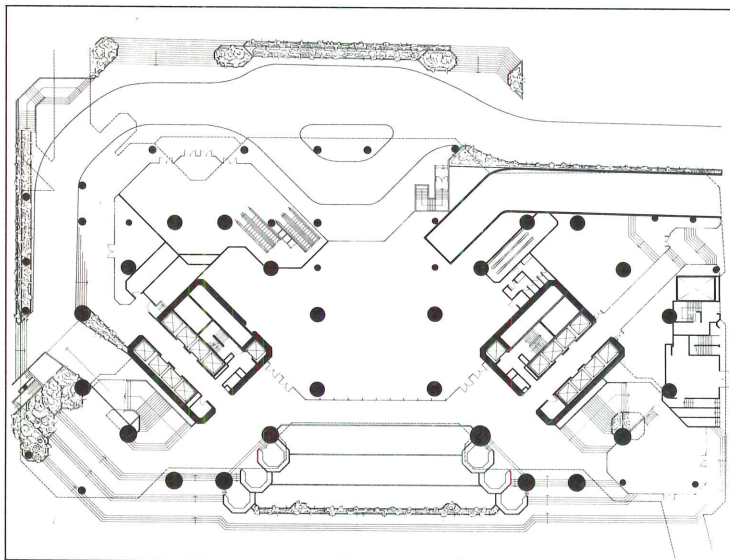
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Four lower floors and two mezzanines join the two towers functionally and esthetically at their base. Below that juncture, indoor and outdoor elements interrelate to form a single large flowing space. One can sense the organization of the whole from within the lobby

(below left). Giant columns over six feet in diameter carry the twin towers. Stairs are sculptural elements, cascading from one level to another, and floors weave in and out according to their functions, sometimes revealing the structural supports and



sometimes hiding them. Floor heights vary, but all the principal spaces enjoy natural light and views. The lobby extends between the building's two cores (plans opposite), facing a plaza to the south and the mountains beyond. Cars arrive on the north side.



Bond Centre
Hong Kong
Owner:
Bond Corporation International Ltd.
Architectural design consultant:
Paul Rudolph
Architect and engineer:
Wong & Ouyang (HK) Ltd. — job captain, Nora Leung

Consultants:
Levett & Bailey (quantity surveyors); William Lam Associates, Inc. (lighting); Campbell & Shillinglaw (acoustics); EBC Hong Kong (landscape); Graphic Communication Ltd. (graphic design)
General contractor:
Hip Hing Construction Co. Ltd.

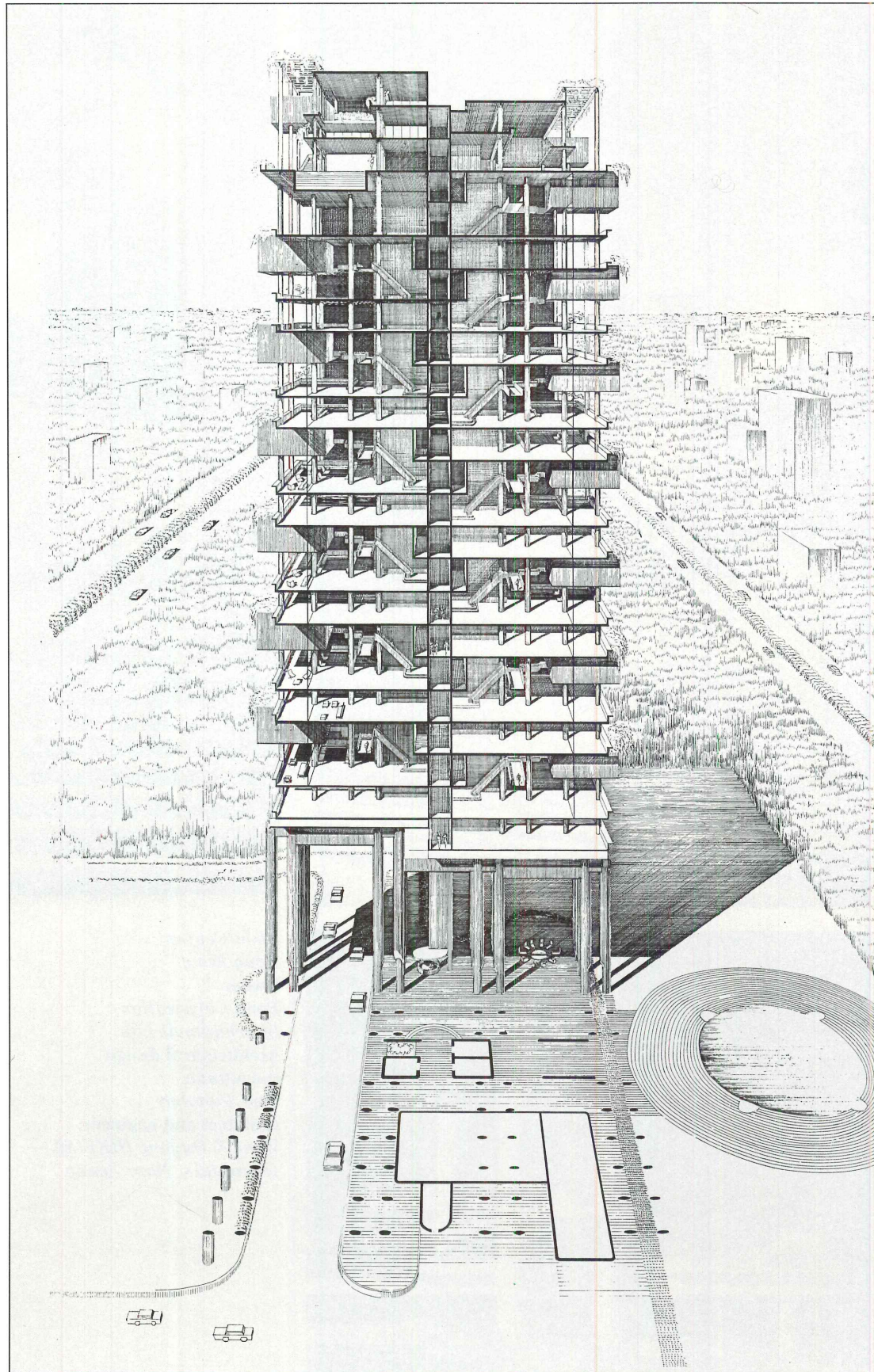
Colonnade Condominiums Singapore

*Colonnade Condominiums
Singapore*
Owner:
Pontiac Land Private Ltd.
**Architectural design
consultant:**
Paul Rudolph
Architect:
Archiplan Team

Although quite conventionally constructed, this concrete-frame apartment building with painted masonry walls looks at first glance like a megastructure within which factory-built housing modules have been hung or inserted. Rudolph has long believed that the mobile-home industry could tool up to make such units; he even went so far as to call them 20th-century bricks. The Singapore apartment tower evokes his most spectacular unbuilt proposal based on this idea, the Graphic Arts Center project of 1967, which was to have been erected over New York City's West Side Highway.

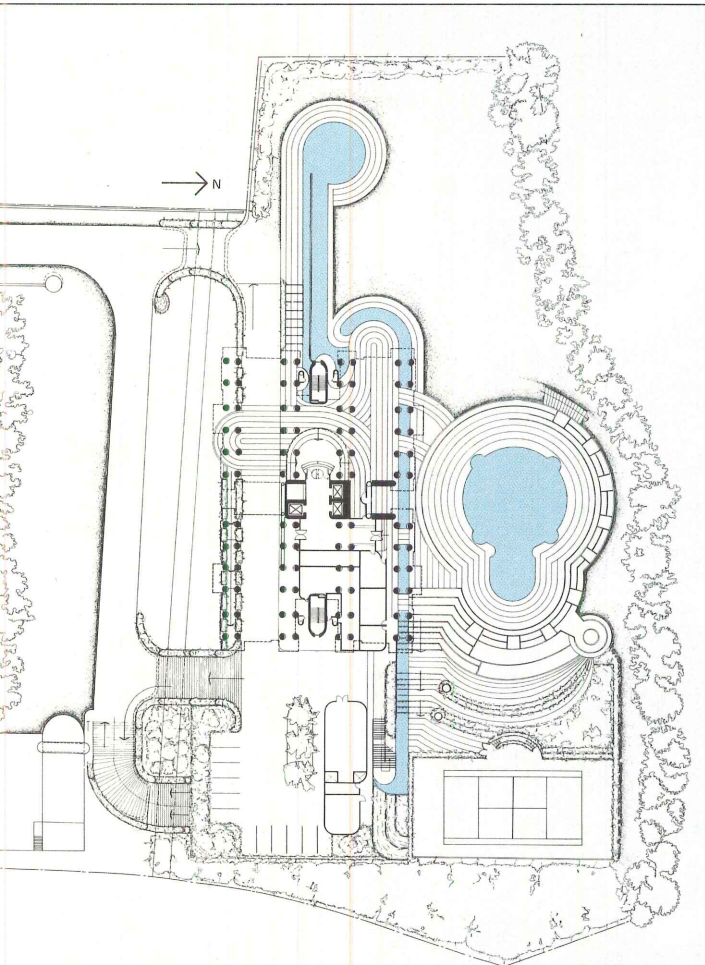
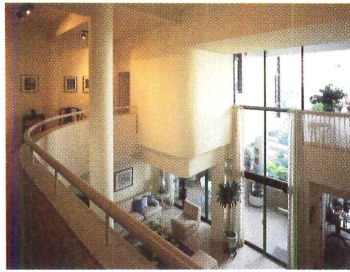
Rudolph is untroubled by his tendency to make his buildings appear more technologically sophisticated than they actually are. Determined to continue expanding upon the ideas that interest him most, he will approximate the formal aspects of a new structural concept even if the requisite technology is not yet feasible.

This apartment tower is divided into four quadrants (plan opposite) carried traylike at different heights. The modular units aligning with the perimeter columns are interrupted at right angles by deep inset terraces and cantilevered sets of smaller modules with narrow corner windows, which contain bedrooms and bathrooms. Villa-sized penthouses (opposite bottom) crowning the peaks of the quadrants celebrate vertical space in two-story living rooms with mezzanines, and are enhanced by generous terraces, gardens, and pools. *M. F. S.*

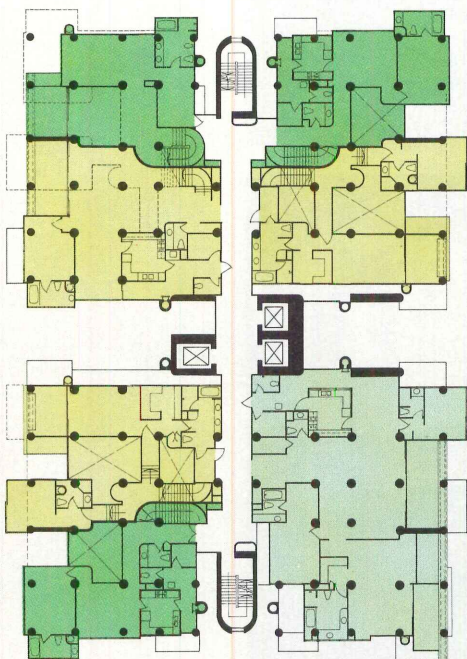


Engineers:
Hokanson Arup & Partners
(structural); *Beca Carter*
Hollings & Ferner (mechanical)
Consultants:
Langdon Every & Seah
(quantity surveyors); *Belt*
Hollins & Associates
(landscape);

William Lam Associates, Inc.
(lighting); *Communication*
Arts Inc. (graphic and
environmental design)
General contractor:
Gammon (HK) Private Ltd.



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Dharmala Building Jakarta

Rudolph wanted this corporate headquarters to have a sense of place appropriate to Jakarta—the antithesis to all the anonymous boxes constructed there since World War II. Indonesian architecture offers a wide variety of solutions to the problems posed by a hot, humid climate. The unifying elements in this rich diversity are the beautiful traditional roofs, spreading shade and catching breezes. As his response to the climate, Rudolph developed deep overhangs that don't directly recall these ancient forms, but serve the same purpose, adapted to a 26-story air-conditioned office building and its supporting functions. Each floor of Rudolph's tower has its own cantilevered sloping spandrel to shield the glass from the direct rays of the sun. There are three typical floors which twist and turn as the building ascends to the top, a geometry that allows the faceted perimeters of glass wall and spandrel to form balconies and terraces for alternating office floors. The interplay between these elements and the paired columns that support them gives the building its unique play of light, deep shadow, and silhouette, the latter perhaps too lively for a building so short. (Originally there were to be more stories.)

The entry courtyard is essentially a breezeway shaded by surrounding stepped-back offices on the lower floors and by the tower overhead. The space of the courtyard expands with each rising floor, forming an inverted funnel to catch natural light. Multileveled, with vine-covered overhangs, terraces, canals, and waterfalls, the courtyard forms the focus for the entire base of the building, and all its special facilities. Rudolph planned this open atrium and its surroundings to be "like a village, with all the ease of access and variety that villages always possess." *M. F. S.*

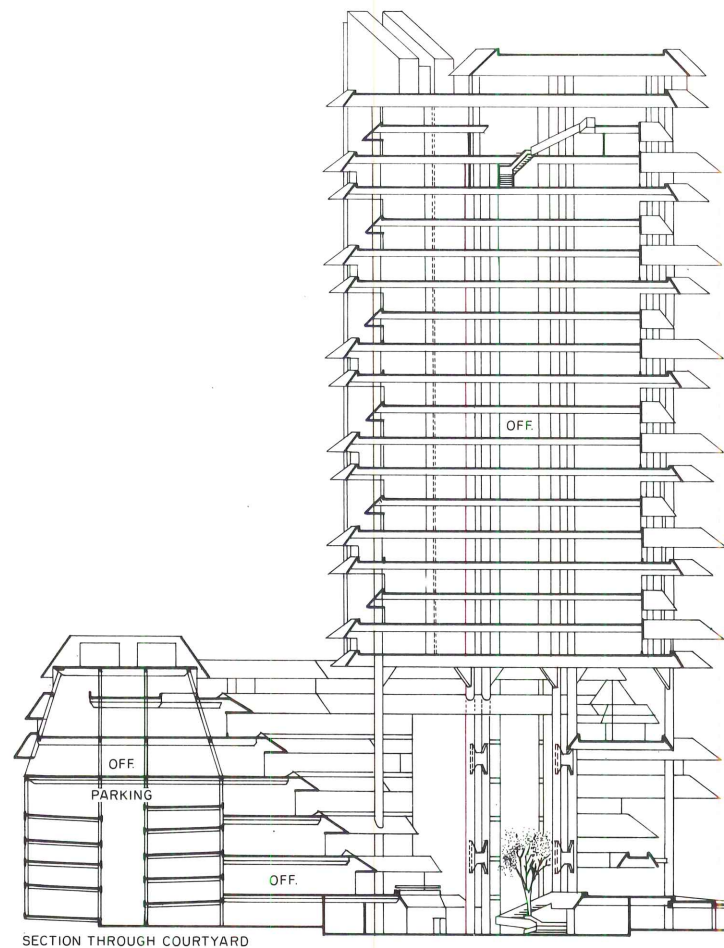
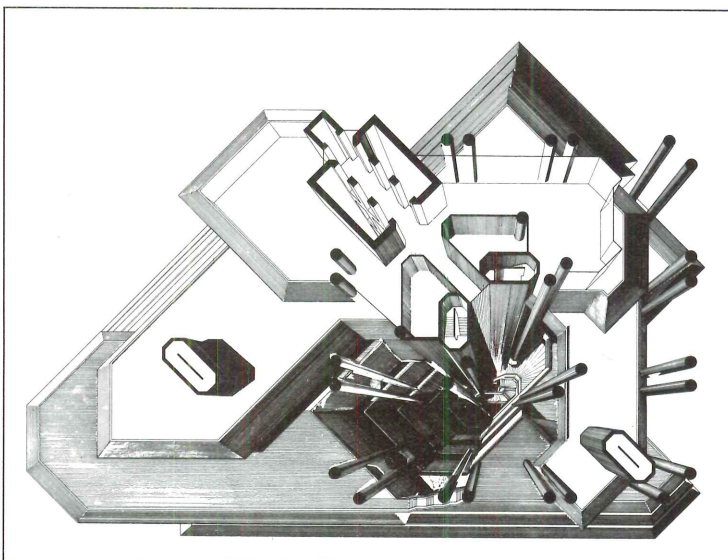
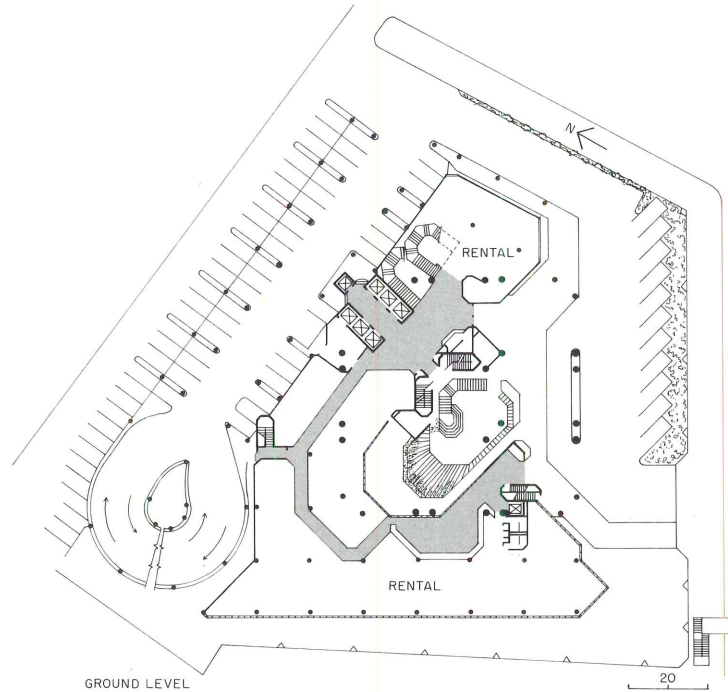
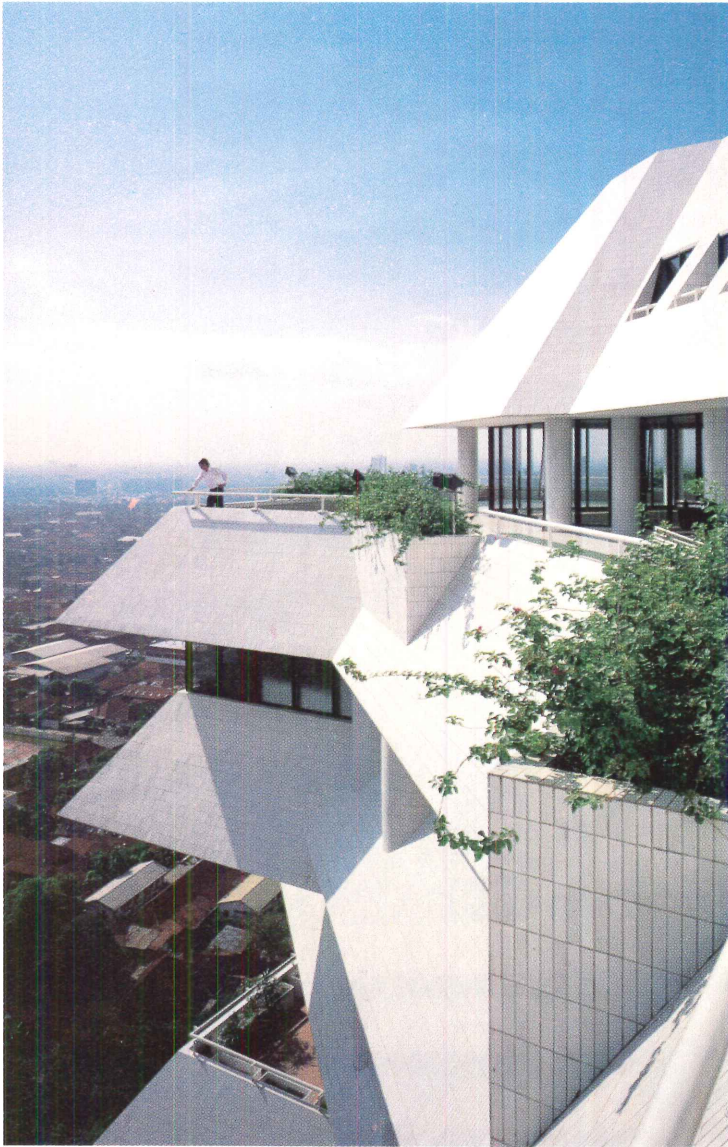


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Underneath the base of the building (site plan and section below), a covered entry leads directly to the main lobby (photo opposite). A six-level parking garage connects to an office floor above and a four-story office tier flanking it. All exposed exterior concrete

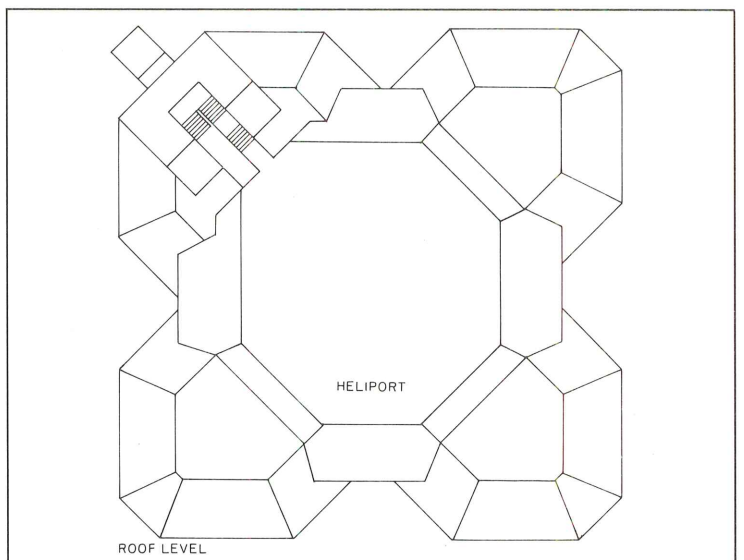
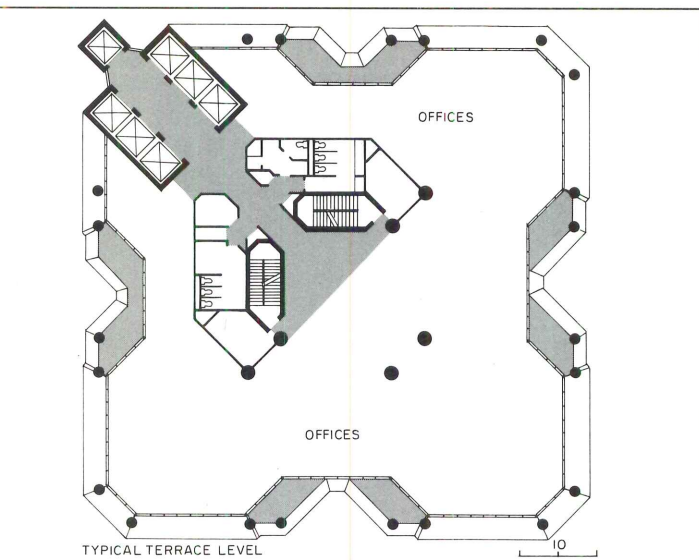
surfaces are protected from humidity-induced mold by a veneer of white tile, a material often used in Jakarta.



Dharmala Sakti Building
 Jakarta, Indonesia
Owner:
 Yamano Utama
Architectural design consultant:
 Paul Rudolph
Architect:
 Johannes H. Gunawan, IAI

Engineers:
 Professor Lee Seng Lip,
 PT Wiratman & Associates,
 Ir F. X. Zanussi,
 PT BMP Indonesia
 (mechanical/electrical)
Consultants:
 PT Woltrowindo/Wolferstan
 Trower (quantity surveyor);

William Lam & Associates, Inc.
 (lighting)
General contractor:
 PT Wijaya Kusuma



New frontier

Sensitively merging Wild West imagery with up-to-date medical facilities, Paul Newman's rustic camp is a dream come true for children with cancer and other life-threatening diseases.

It has all the makings of a G-rated holiday movie. A wealthy entrepreneur decides to use proceeds from a successful business to build a summer camp in his home state for children with life-threatening diseases; to realize his vision, he turns to physicians and architects at a nearby university, who gladly donate time and expertise to the venture; and, after a rapid flash forward, eager youngsters rush out of grim hospitals to romp amid woods, meadows, and storybook cabins. Happily, this scenario is for real. The hero of the drama is actor Paul Newman, whose secret recipes for salad dressing, spaghetti sauce, popcorn, and lemonade have made his seven-year-old Newman's Own label a multimillion-dollar enterprise, with all profits donated to charity. In earmarking \$7 million (toward an estimated total cost of \$11 million) for a 300-acre rural retreat in northeastern Connecticut, Newman's stated mission was to provide "an old-fashioned camp experience—the likes of which I remember so vividly from my childhood," for less privileged children who require the latest in medical care, often on a daily basis.

Dubbed The Hole in the Wall Gang Camp in homage to the band of outlaws in Newman's film *Butch Cassidy and the Sundance Kid*, the camp, which opened last June, was designed to reflect the actor's fondness for the iconography of the Old West. However, as developed by the architect Thomas Beeby, Dean of the Yale School of Architecture, and his Chicago-based firm Hammond Beeby and Babka, the frontier-town metaphor was no simple remake. Beeby and his special colleague for the camp, Dr. Howard A. Pearson, of the Yale School of Medicine, quickly learned from initial research that there were no direct precedents to draw on. As a result, they had to devise their own program for the camp and, in Beeby's words, "invent a building type." To begin with, the architect explored two alternative planning options—a centralized facility housed in a minimum of buildings, and its antithesis, a decentralized layout of small structures scattered around the property's perimeter—neither of which suited the complex demands of this particular community. The town model won out as a compromise between a rural image and the need for close supervision, and provided an opportunity for a tongue-in-cheek exploration of American vernacular that intrigued both architect and client—and fit the site's contours.

Variations on agrarian and Wild West prototypes at the camp include a barn-red polygonal dining hall, a natural focus for social activity, on the crest of a hill bordering the relatively flat "town green"; arts-and-crafts classrooms in a trio of stepped pavilions with Western-style false fronts; an administration building sporting a pint-size courthouse portico; a gymnasium with a more rustic frontispiece of tree-trunk columns; twin wooden apartment towers for the director and staff physicians flanking the gateway to a stockaded compound, where campers retire at bedtime to authentic log cabins built from stripped Canadian red pine. Despite the children's extensive medical requirements (some campers wear catheters, for instance, or must take time out from group activities to visit the dispensary for chemotherapy), Newman was adamant that Hole in the Wall not look institutional. Pointing out the deliberate idiosyncracies of the 35 different building types, Beeby explains, "Newman said that if there was an option to standardize elements [to expedite design or construction], we should always choose to 'make things less the same.'" The same approach extended to interiors. Tannys Langdon (formerly with Hammond Beeby and Babka and now a partner in her own firm) supervised a nationwide flea market search that yielded hundreds of pieces of furniture, most of which satisfied Langdon's basic criteria of "looking Colonial and costing under \$35."

During its first season of operation (which started a record-breaking nine months after groundbreaking), the camp was host to 360 children, ranging in age from seven to 17 years, divided among four 11-day sessions of 90. Campers are chosen on the basis of their clinical needs (the staff is careful to integrate those who require daily care with those in remission) and their tuition approximately \$1,500 is subsidized entirely by The Hole in the Wall Gang Camp Fund. Now, as preparations begin for a second summer, the winterizing of cabins moves ahead so that the camp can stay open year-round. Meanwhile counselors (some of whom have themselves weathered serious childhood illnesses) await news of returning campers. "The coming of summer is a period of hope," remarks one parent. "These children have got to have good times to help get them through the tough times."

Karen D. Stein



©Timothy Hursley/The Arkansas Office photos except as noted

The Hole in the Wall Gang Camp
Ashford/Eastford, Connecticut
Hammond Beeby and Babka, Architects





The main "public" buildings of The Hole in the Wall Gang Camp—the 15-sided circular red dining hall (opposite bottom), the partially underground yellow gymnasium with a tree-trunk portico (above right), and the trio of interconnected arts-and-crafts classrooms with

variously colored Western false fronts (opposite, top right and left)—form a casual perimeter for the "town green" (the lookout tower shown in the drawing above was not built). The director's house and apartments for medical staff occupy paired timber towers (above left and page 87), which serve as symbolic gatehouses to camper settlements. The log cabins, which are grouped in five clusters of three around a shared campfire





(opposite bottom), are architects Hammond Beeby and Babka's variations on the 19th-century dogtrot house. Each gabled cabin shelters twin one-story rooms, on either side of a square center hall (during the summer, front and back industrial-type sliding doors are left open and the hall becomes a common living room). Children follow gravel pathways—on foot or, when necessary, in electric carts—to reach classrooms, playing

fields, a 47-acre pond with adjoining swimming pool and boathouse (not shown in drawing above), animal corrals, and a fully equipped round-the-clock infirmary. Normal vehicular traffic is confined to dirt service roads that encircle the camp.

*The Hole in the Wall Gang
Camp*
Ashford/Eastford, Connecticut

Owner:

*The Hole in the Wall Gang
Camp Fund*

Architects:

*Hammond Beeby and Babka,
Architects—Thomas Beeby and
Gary M. Ainge, principals-in-
charge; Russo & Sonder,
associate architects*

Engineers:

*Getty White and Mason
(structural); Sarracco, Inc.
(mechanical/electrical)*

Consultants:

*Langdon & Woodhouse,
Architects (interior design and
furnishings); Environmental
Design Associates (site
engineering)*

Construction manager:

Konover Construction Corp.



©Judith Bromley photos this page and opposite

"I knew I wanted to avoid a sense of institution," says Paul Newman of his vision for The Hole in the Wall Gang Camp. Toward that end, the interiors of all buildings were furnished with flea-market finds unearthed around the country by a team led by architect Tannys Langdon. To add a homey touch to several rooms, including the administration office (top), Langdon had folk-art patterns hand-stenciled onto walls. The 15 cabins, each of which accommodates six

children and two counselors, were outfitted with old-fashioned accouterments (bottom). Inside the visual centerpiece of the camp, the hilltop dining hall (opposite), youngsters use an eclectic assortment of wooden tables and chairs—a particularly congenial assemblage in a place where individuality is embraced.



Tailor made

Tokyo-based Rei Kawakubo is best known for her Comme des Garçons clothing: minimal silhouettes with maximum theatrical impact. Her signature style takes another form in oversize black-and-white company “catalogs.” Now it is apparent that Kawakubo has mastered the art of understatement in yet another medium. Since the founding of Comme des Garçons in 1969, Kawakubo has attempted to create similarly spare backdrops for her clothing in showrooms and shops around the world, demonstrating that all her work exhibits “the same values.” The latest entry in Kawakubo’s architectural portfolio is a tiny shirt boutique in Manhattan’s SoHo, where for the first time architecture takes center stage. The task of transforming the sort of narrow space the Japanese call “an eel’s bedroom” was inspired by the construction of the shirts themselves. After gutting the 800-square-foot storefront, Kawakubo’s collaborators, Yasuo Kondo and Toshiko Mori, fashioned two display fixtures from steel to create metaphorical “cuffs” that are intricately stitched to the walls. Painted plywood light troughs, reminiscent of Louis Kahn’s Kimbell Art Museum, form a 65-foot-long “collar” and “button placket” along the ceiling. The only accessory atop the pristine marble floor is a cashier’s desk at the rear, adjacent to fitting rooms, and a discreet metal partition that masks a staircase to the stockroom and lavatory neatly tucked in below. *K. D. S.*

Meant to beckon window-shoppers off the sidewalk, the recessed entrance to Comme des Garçons SHIRT is dramatically—and daringly, for graffiti-prone Manhattan—framed in white. Steel portals (shown open in photo below) serve as security gates.



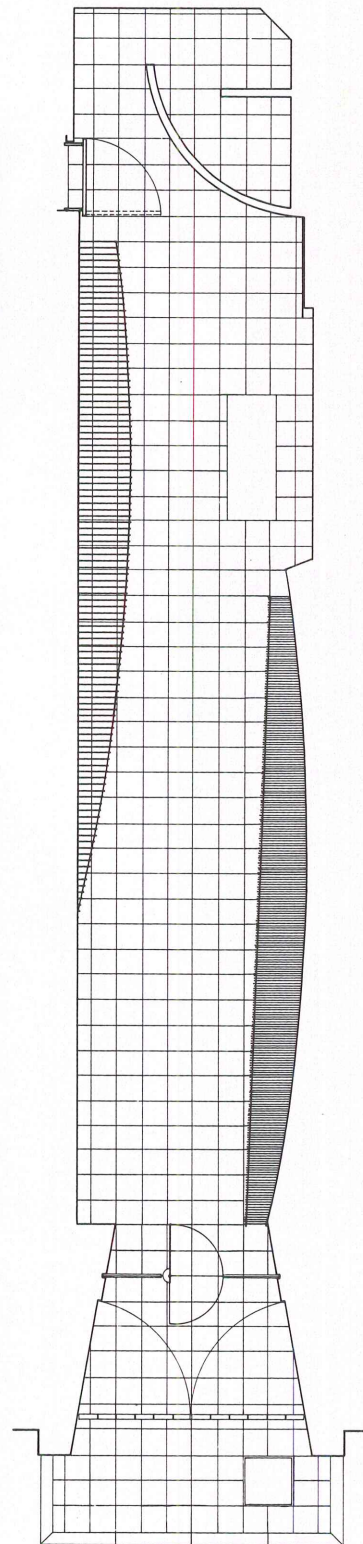
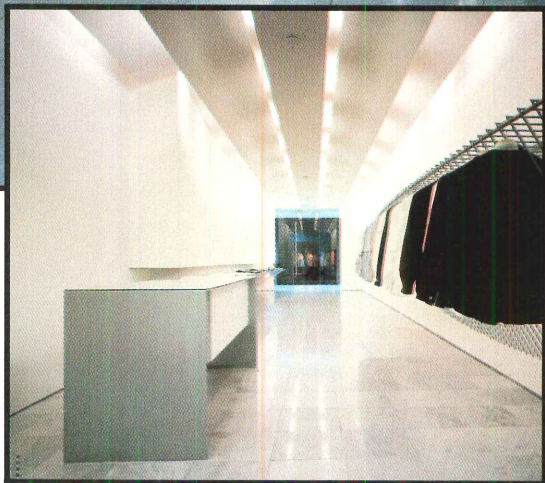
©Paul Warchol photos

Designers:
Rei Kawakubo, concept; Yasuo Kondo, project architect; Toshiko Mori, associate architect

Engineers:
Thomas A. Polise Consulting Engineers (mechanical/electrical); Superstructures (structural)
Consultants:
Silhouette Fabrications (gates, shelving); Mison Concepts (desk); Kaslow Storefront

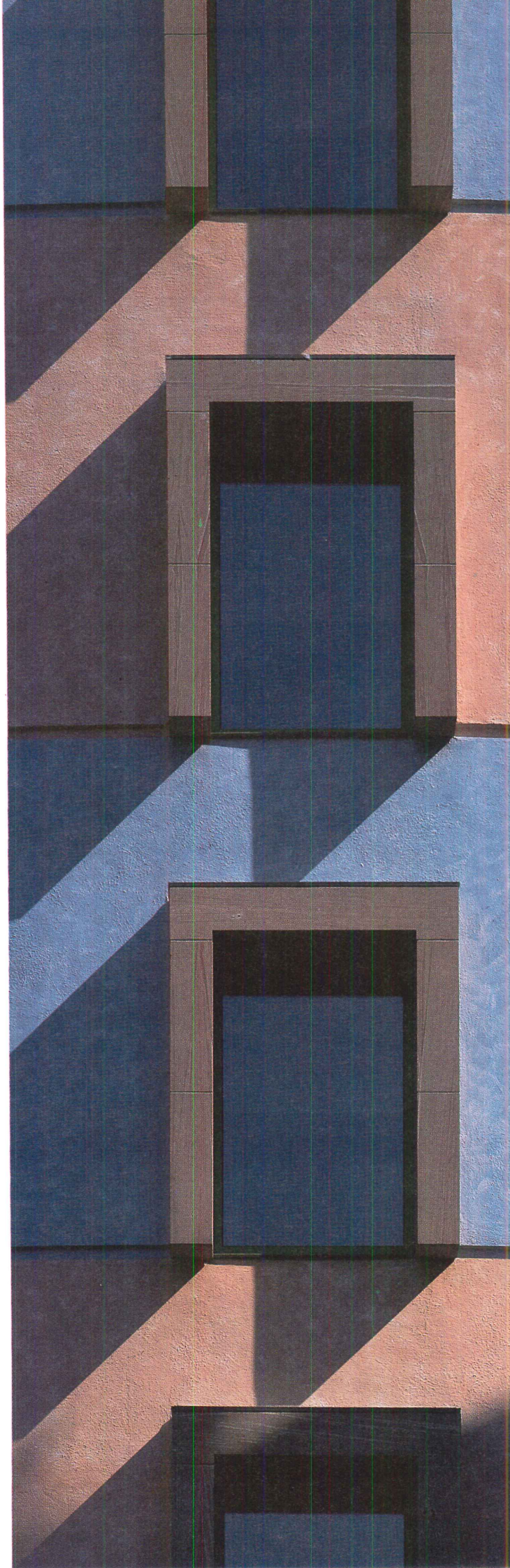
(storefront); Shape & Structures (ceiling); Anthony Galante (paint); Walker & Zager, Inc. (floor)
General contractor:
NYCON Building Corp.

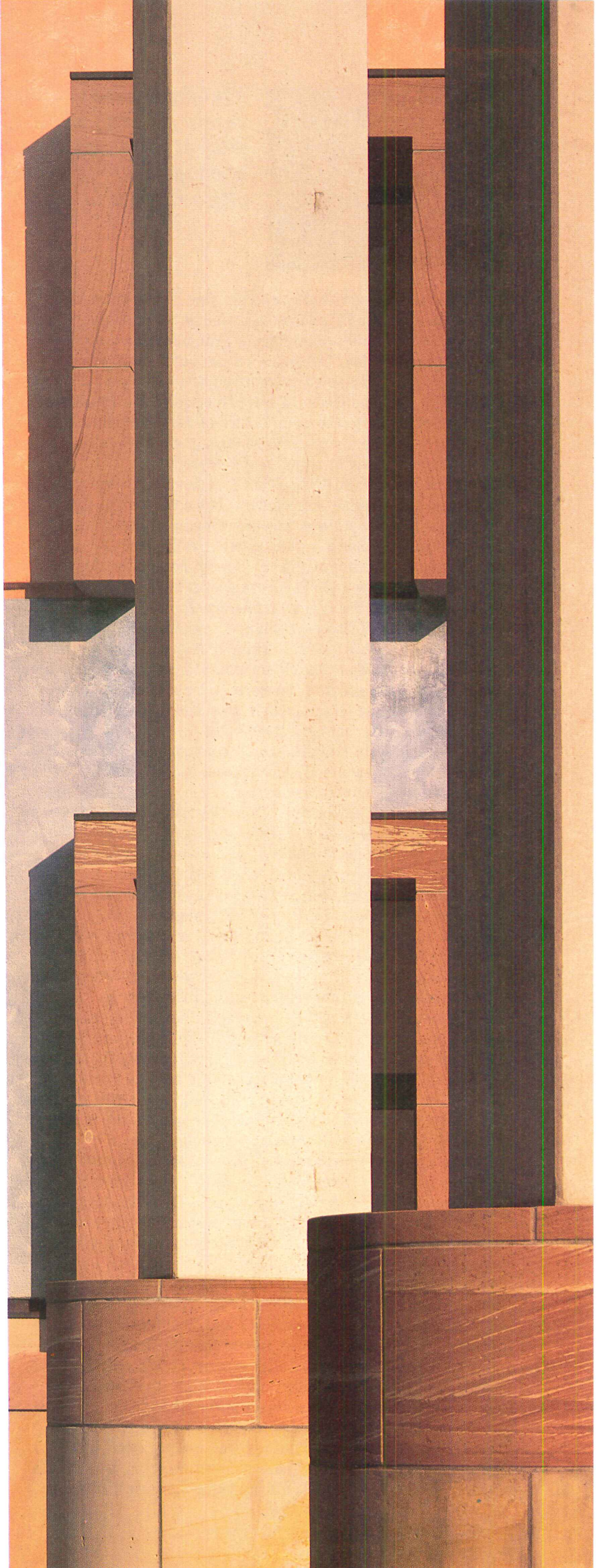
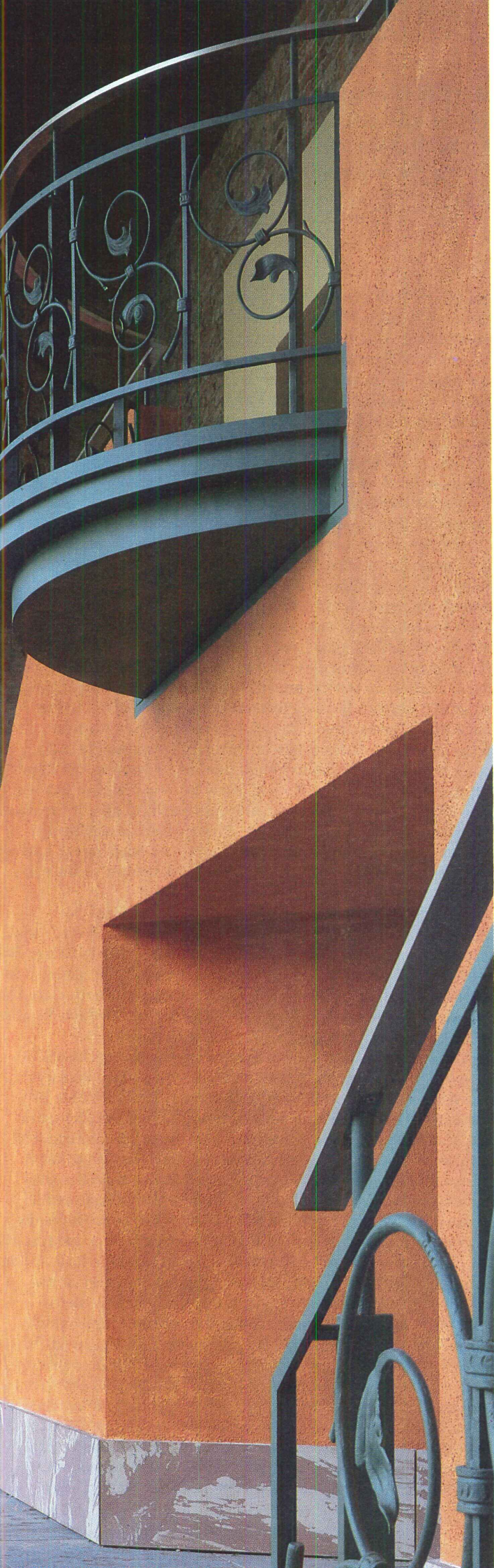
Comme des Garçons SHIRT
New York City
Rei Kawakubo, Yasuo Kondo, and Toshiko Mori, Designers

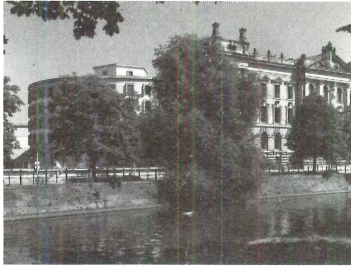




Stirling in Berlin







Finally realized nine years after it was designed, James Stirling Michael Wilford and Associates' project for a research institute in West Berlin is a compilation of historic forms for a war-torn city still seeking an identity.

Soon after the Wissenschaftszentrum was dedicated in West Berlin last May, graffiti artists scrawled on its pink-and-blue striped facade their brusque thanks to the city for a new "birthday cake." Older Berliners, on the other hand, expressed no joy in the building's starkly repetitive rows of deepset windows, which sadly reminded them of Nazi Neoclassicism. Positive or negative, reactions to the architecture of James Stirling Michael Wilford and Associates are always strong, even when the project is as prosaic as an office complex. Of course, the Wissenschaftszentrum Berlin (WZB), or Science Center, is not a speculative commercial development, but a think tank for management, social science, and environmental research, ensconced in West Berlin's self-styled "cultural forum," a heterogeneous collection of the city's most important 20th-century monuments: Mies van der Rohe's National Gallery, Hans Scharoun's State Library and Philharmonic Hall, and Emil Fahrenkamp's Shell House. Designed a decade ago, the Science Center is the result of the first design competition sponsored by the Internationale Bauausstellung Berlin (IBA), which also drew entries by Mario Botta and the Berlin firm of Bangert, Jansen, Scholz, and Schultes (Hans Hollein was also invited but chose not to participate). After many setbacks due to changes in local and federal government administrations, construction of Stirling and Wilford's winning scheme finally started in 1985, and finished in a scaled-down version only last spring.

Though it marks a departure from the firm's recent museum designs, WZB nevertheless reflects Stirling Wilford and Associates' continuing fascination with history. Their skill in infusing past forms with robust modernity and humorous invention, most successfully evidenced at the Stuttgart Staatsgalerie [RECORD, September 1984, pages 140-149], is also present in the new Berlin complex, albeit on a more modest scale. Stirling distinguished the institute's banal program for 300 identical offices by housing them in an ensemble of independent volumes based on historic architectural prototypes: an "arena" (opposite bottom), a "stoa," a "campanile," and a "cruciform." (A "castle keep" on the west corner of the site is planned for the future, its outline currently defined by hedgerows.) On the edge of the site facing the Landwehr Canal, the architect preserved the main portion of the Social Security Building, an 1894 Beaux-Arts courthouse designed by August Busse (above), which serves as a ceremonial frontispiece to the new ensemble.

Stirling's playful composition of skewed forms against a rigid perimeter superficially recalls Louis Kahn's site plan for a Dominican convent in Media, Pennsylvania (1965-8); more fundamentally, it embodies the urban contextualism developed in the late 1970s as a reaction against the rationalism of postwar planning. As reflected by such publications as the 1979 "Roma Interrotta" issue of *Architectural Design*, architects began drawing inspiration for their projects by analyzing the fragmentary layers of historic cities and the "figurative voids" surrounding them, which were judged to influence the quality of urban life as much as did the adjacent structures. Stirling encapsulated this "collage city" idea at WZB by modeling his volumes on archetypal urban forms and utilizing the interstices as a communal garden. "We hoped to create a friendly unbureaucratic place, the opposite of an institutional environment," he says. Flanked by limestone steps, glass-roofed loggias, shaded porticos, and quirky Gothic arches, the grassy

courtyard achieves his intention in evoking the cloistered informality of a college quadrangle (opposite top). The architect ensured the use of this central green by placing the institute's more public functions on the ground floor: conference rooms in the arena, an entrance hall in the stoa, a reading room in the campanile, and a staff dining room in the cruciform.

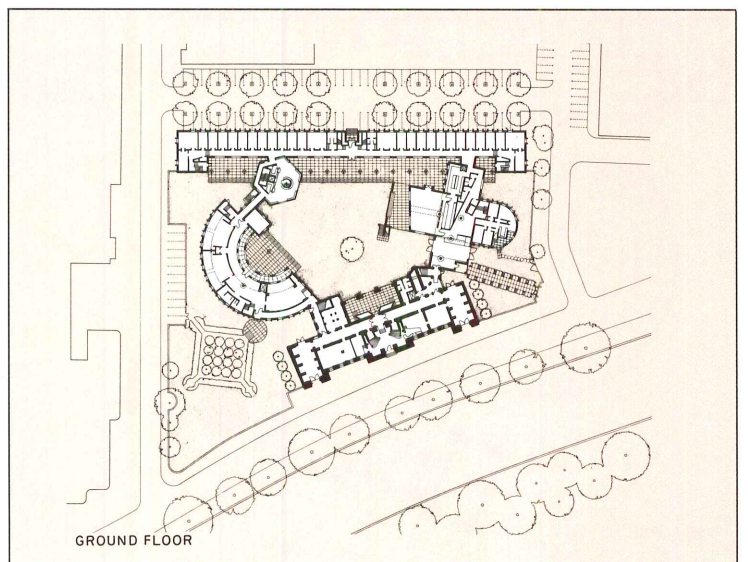
Stirling envisaged the arena, stoa, and cruciform as separately housing each of WZB's three research institutes, with the hexagonal tower containing a central library, but this organizational concept was only partially realized, owing to budget cutbacks and other restrictions. The library in the campanile, for example, was originally to comprise a series of open floors connected by a continuous spiral staircase along the perimeter, but it was altered in compliance with fire regulations to include an enclosed stair at the center, an intrusion which crowds the small rooms. In addition, the cruciform was reduced from four stories to one, allowing only for a caretaker's apartment in the "apse" and a cafeteria in the "narthex," and limiting direct circulation through the complex to the ground level. Stirling, however, remains optimistic that the cross-shaped wing will ultimately be completed to its full height. "In the meantime," he reasons, "we have to be content with this fragment which reminds me of that incomplete single-story palazzo in Venice [Palazzo Venier dei Leoni] housing the Peggy Guggenheim collection. We will plant trees in our roof garden [accessible from a staircase in the courtyard] to give it the illusion of more volume." Unfortunately, the cruciform's diminished stature throws Stirling's carefully composed massing off balance and weakens WZB's otherwise powerful enclosure to the east, facing Mies's National Gallery.

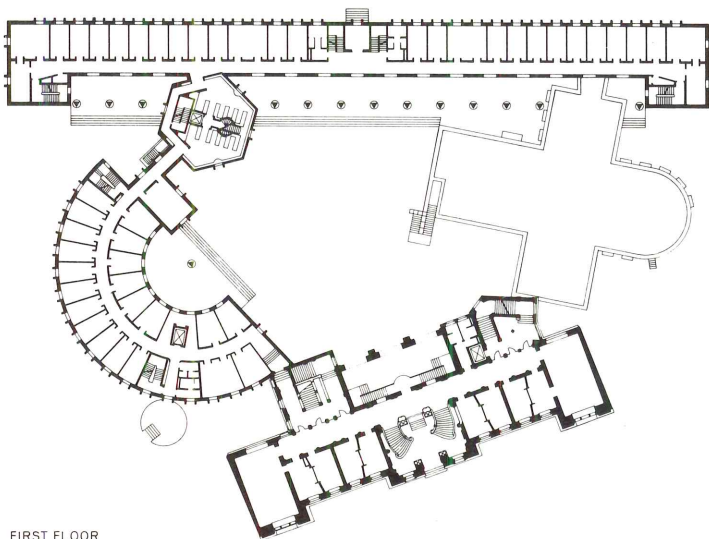
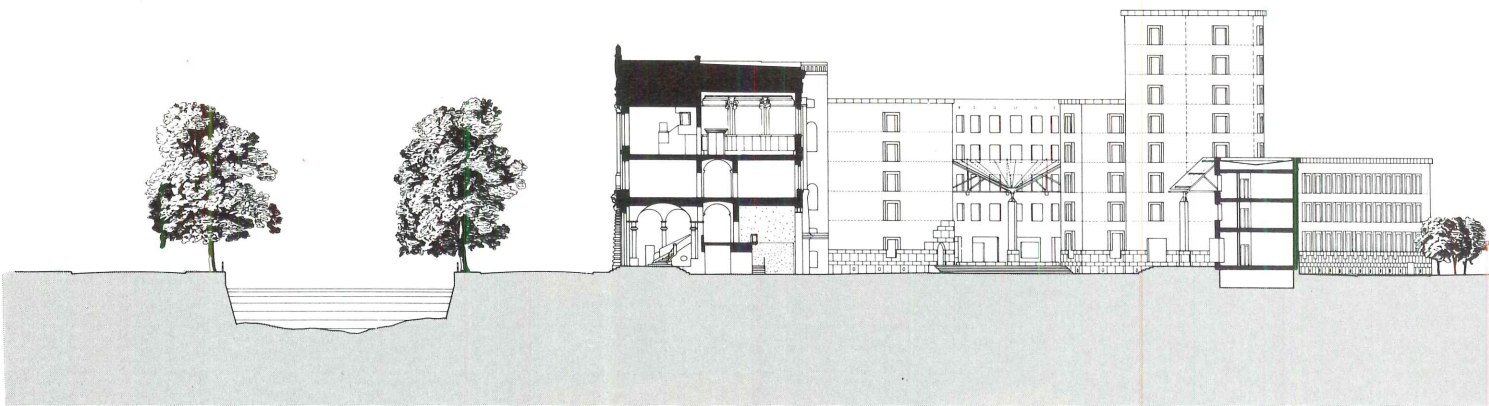
Stirling views the exterior of WZB as "wallpaper," an insistently repetitive pattern of windows and striped walls that tautly binds together the varied components of the building. Both the base and deep window surrounds are exquisitely detailed in sandstone and, as at the Staatsgalerie, open joints articulate the rusticated cladding. Recalling his design for the Sackler Museum [RECORD, March 1986, pages 112-121], the architect has demarcated each level by superimposing alternating bands of color—in this case, bright pink and blue—in stucco, which is brushed on as separate layers, a technique familiar from 18th-century German buildings such as the nearby Charlottenburg Palace. Stirling traces his inspiration to the pastel Neoclassical architecture of Helsinki and Leningrad, and to warm-colored Italian stuccowork. WZB's striped facades also echo the wide banding of nearby Shell House, as well as the polychromatic brickwork of August Stüler's St. Matthäus-kirche to the north. Regrettably, the brashness of Stirling's kindergarten palette (the hot pink and cool blue handrails of the Staatsgalerie look dull in comparison) detracts from the finely grained masonry of the window surrounds and base, and needs uncommonly sunny weather to spark its intensity (as in these photographs) amid Berlin's pervasive gray and black demeanor. All the same, Stirling has managed to establish a strong presence in the Kemperplatz area, which was heavily bombed during the war and still lacks a coherent urban sequence. As the architect aptly told his audience at WZB's dedication, "We have added a colorful new animal to the distinguished architectural zoo of your city's 'cultural forum.'" A carousel zebra among racehorses, perhaps, but an important contribution to the rebuilding of Berlin. *Deborah K. Dietsch*

Wissenschaftszentrum Berlin
West Berlin
James Stirling Michael Wilford
and Associates, Architects



Richard Bryant photos

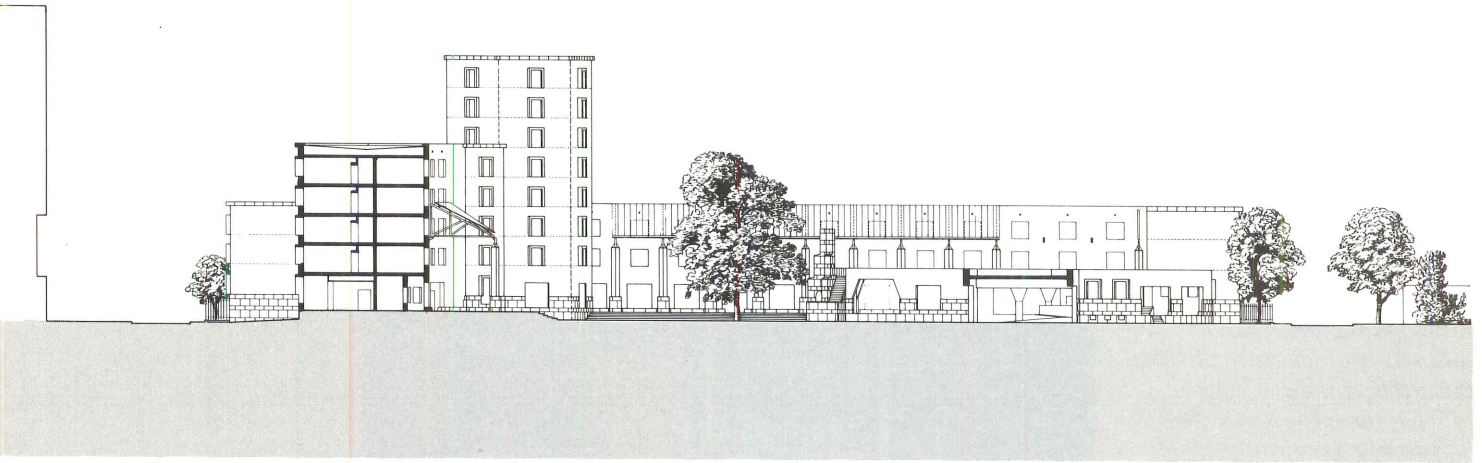




FIRST FLOOR

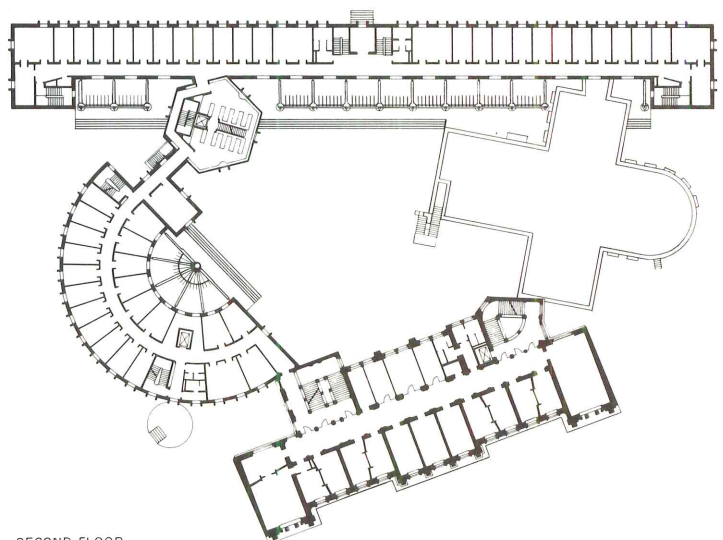
The Wissenschaftszentrum is located in Berlin's "cultural forum," an area of the city's Kemperplatz district populated by such 20th-century landmarks as Mies van der Rohe's National Gallery and Hans Scharoun's State Library (background of photo above right). To create an identifiable image within the otherwise bombed-out neighborhood, Stirling designed WZB as a miniature city of historical building types—stoa, arena, cruciform, and campanile—that he juggled around an existing 1890s structure to form a sequestered courtyard.

Although the WZB staff now enters the complex through the old building for security reasons, the architect designed each wing as an independent entity with its own entrance. He did not furnish separate elevations for the various components, however, but encircled their different volumes with a uniform pattern of tinted stucco bands and stone window surrounds (above and opposite), a brighter and more regimented version of his Sackler Museum. This treatment is interrupted in the courtyard, where the interior faces of the volumes are



rendered in solid colors. Stirling admits he has "an obsession with the theme of the loggia," which assumes several cruciforms at WZB. At the eastern edge of the site leading to the cruciform, he designed a concrete and timber pergola, which incorporates granite columns recycled from the demolished wings of the center's Beaux-Arts frontispiece (opposite left). In the courtyard, the architect shaded the arena with a single-column-supported canopy and stoa (opposite right and above right). Reminiscent of his constructivist canopies at the

Staatsgalerie, triangular precast-concrete shafts and sandstone bases support glass-topped steel trusses that rest on brackets in the wall. Instead of fussing with corner details, the architect abruptly terminated the canopy at the juncture between stoa and cruciform. He also indulged in a bit of whimsy. Rainwater streams from gutters through the columns, which are separately tuned like organ pipes. "So when it's really depressing weather," explains Stirling, "a metaphysical sound—like Japanese music—should be heard from the loggia."



SECOND FLOOR

One enters the cruciform up a ramp decorated with balustrades from the 1894 Busse-designed wing (top right). Although the mushroom columns are signature Stirling, the pivoting wooden door (opposite) suggests a touch of Le Corbusier. All the built-in furniture, such as the counter-topped partition (opposite) and library shelving (bottom right), was architect-designed.

*Wissenschaftszentrum Berlin
West Berlin*

Architect:

James Stirling Michael Wilford and Associates—James Stirling, Michael Wilford, partners-in-charge; Walter Nägeli, Siegfried Wernik, associates; Peter Ray, Peter Schaad, John Tuomey, Volker Eich, Robert Niess, Hannelore Deubzer, assistants; Alois Albert, Hans-Georg Conradi, Alexander Kolbe, Heike Nordmann, Martin Peters, Norberto Schornberg, Jacques Thorin, part-time assistants

Engineers:

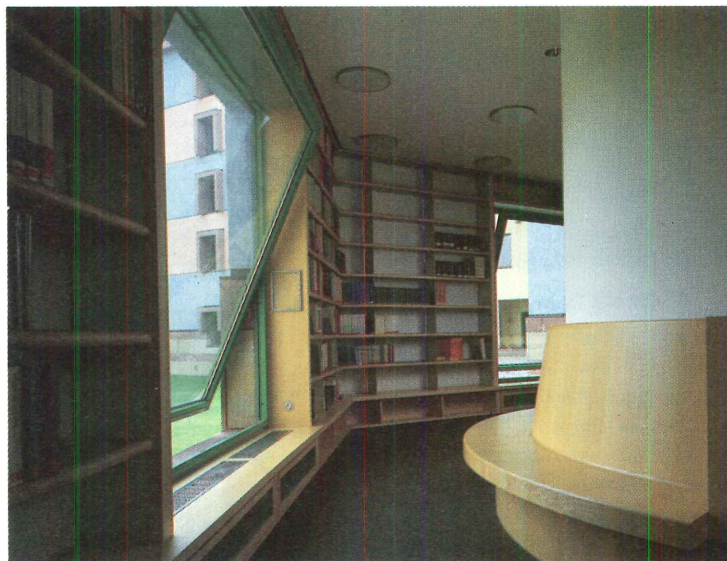
*Polonyi and Fink (structural);
Ingenieurgesellschaft Schmidt-Reuter (mechanical/electrical)*

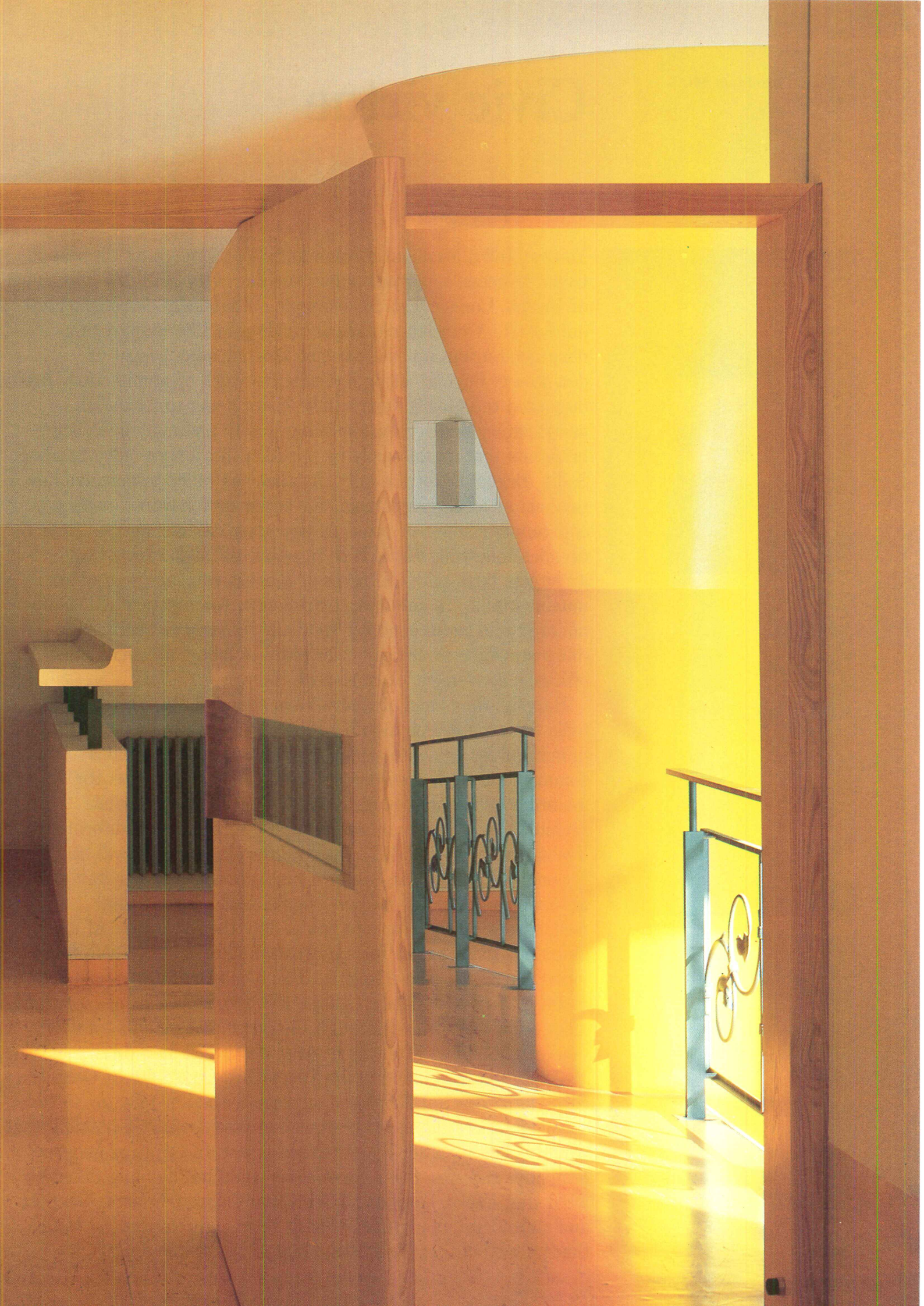
Consultants:

*Akustik-Labor-Berlin (acoustics);
Manfred Flohrer (technical detailing);
Frank Augustin (historic preservation)*

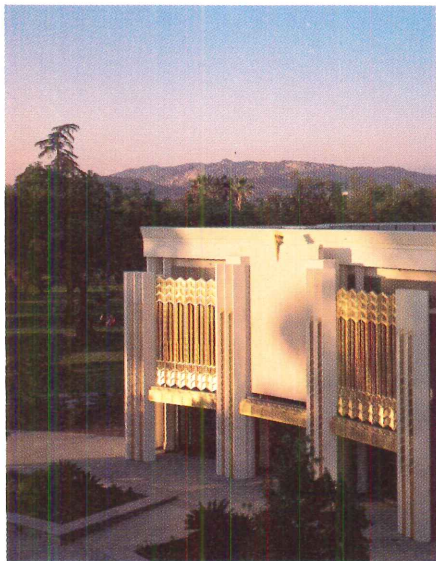
Construction management:

Bauamt Nord Berlin



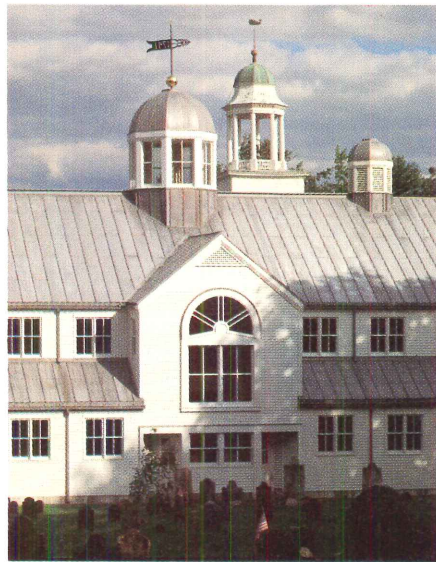


Civic virtue



Escondido

© Wayne Cable photo



Salisbury

© Cervin Robinson photo



Corpus Christi

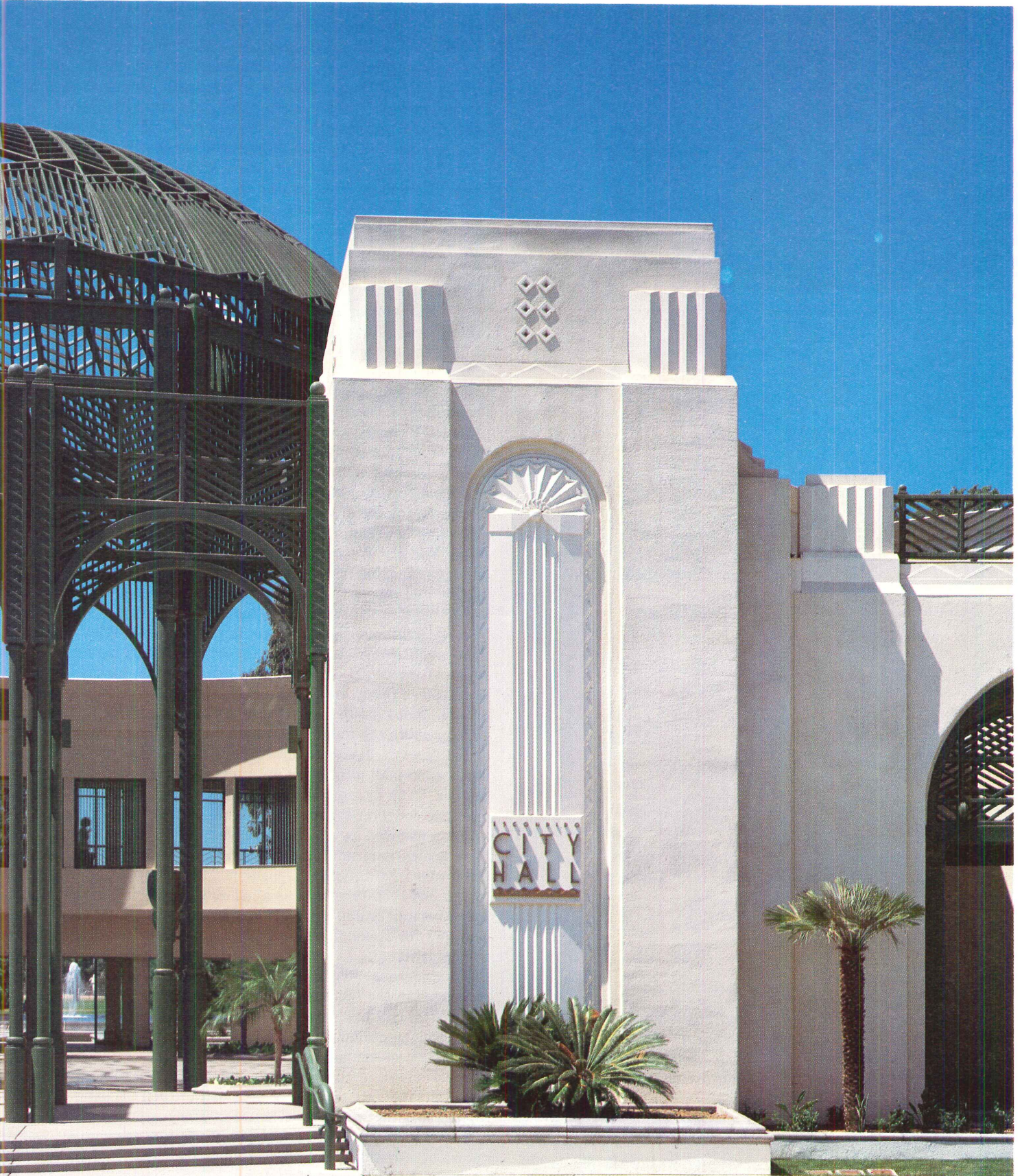
© Paul Warchol photo

You can tell a lot about a community's self-image by the way it treats its most important public building, City Hall. My hometown of Bristol, Connecticut, for example, offhandedly demolished its quirky late Victorian municipal building in 1962 as part of a misguided urban renewal scheme that wiped out most of downtown. Beyond losing a distinctive work of architecture, Bristol discarded the town's most visible historic link to American participatory democracy, replacing it with an anonymous beige-brick box that might easily be mistaken for a spec office building. Sadly, Bristol is not the only city that has failed to perceive how the seat of local government, for better or for worse, defines a community's sense of place. In city after city during the three decades following World War II, public officials, abetted by architects flush with the fever of Modernism, sacrificed urban monumentality to suburban expediency. Architecture's time-honored role as an ennobler was subordinated to serving much more mundane priorities—a brightly lit lobby, air-conditioned offices, a convenient place to park the car.

Happily, times and attitudes have changed. As the three city halls featured in this month's Building Types Study confirm, municipalities are once again starting to recognize that a commodious work environment by no means precludes the generous civic qualities historically associated with public architecture. I began my research in the Southern California city of Escondido (pages 103-107). Once a drowsing agricultural backwater, Escondido is today the hub of a fast-growing metropolitan area—an inland satellite of the Los Angeles-San Diego coastal megalopolis whose new city hall is only the first phase of an ambitious master plan for a downtown civic center. From there I moved on to the placid Taconic Hills of northwestern Connecticut and the town of Salisbury (pages 108-109), a classic New England village that had to live through the trauma of planning a new municipal building after an arsonist destroyed its old town hall in 1985. My trip concluded in the Texas Gulf Coast city of Corpus Christi (pages 110-113), where officials decided in 1984 to consolidate local agencies scattered around town in a building that would befit the nation's ninth largest port. In terms of geography, economy, and size, these three cities could not be more different; what they share, however, is a profound appreciation of the past and an understanding of how built form can reaffirm the values that motivated their founders. *Paul M. Sachner*

*To building type has benefited more from
architectural historicism than the American
city hall. Our portfolio focuses on three
regionally distinctive examples.*

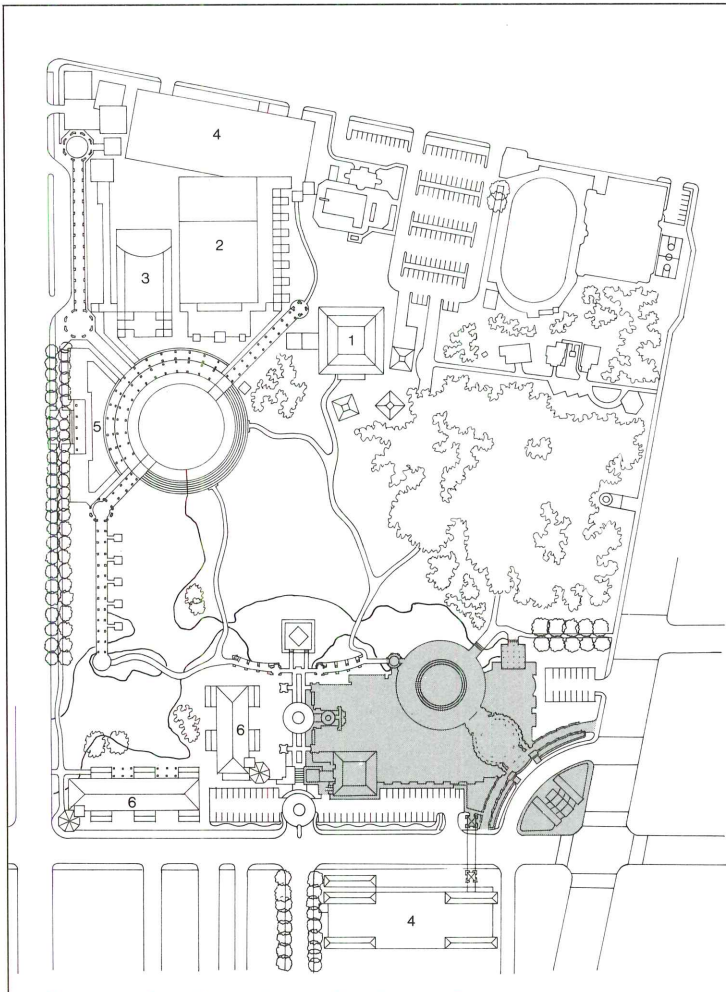
Wayne Cable photo



Sancondido

The turning point

© Wayne Cable/Cable Studios photos



Escondido's new city hall (top photo and shaded area on map above) is the first completed phase of Pacific Associates' competition-winning master plan for a 13-acre downtown civic center, located in Grape Day Park. Other components of the plan, scheduled to be built

as funds become available, include a museum of fine arts (1), a 1,500-seat performing-arts auditorium (2), a 500-seat community theater (3), a 450-space parking garage (4), a conference facility (5), and a building for county, state, and federal agencies (6).

For most of its 100-year history, the Southern California community of Escondido lived up to its name, which means "hidden valley." A quiet agrarian market town and fruit-processing center, it dozed contentedly just outside the urban shadow of San Diego, 30 miles to the south. No more. Although the hot, semi-arid region surrounding the city remains predominantly agricultural, freeways now link Escondido to the Pacific basin, and the town's erstwhile rancho character has been altered in recent years by explosive suburban development. Today, Escondido is the center of a northern San Diego County region that is expected to grow from its current population of 350,000 to over a million by the year 2000.

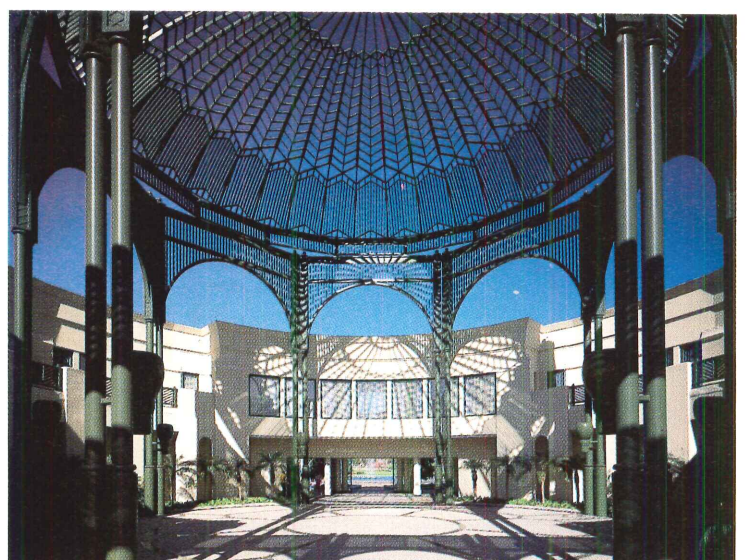
In 1984 the city sponsored a much-publicized architectural competition for an ambitious new downtown governmental and cultural center in Grape Day Park [RECORD, May 1985, pages 78-81]. Many observers viewed the Escondido contest as a prototypical effort by a pleasant, if somewhat faceless, Sunbelt community to create a strong architectural image—and a revitalized central business district—at a critical point in its history. In triumphing over 107 other contenders, the small San Diego firm of Pacific Associates Planners Architects (PAPA) provided Escondido a detailed proposal for a new city hall, now the first completed project of a broader master plan that the city intends to carry out incrementally over the next 10 years.

Escondido City Hall sets a remarkably strong esthetic precedent for the civic center's second phase, a pair of theaters and an art museum, currently in design development by Moore Ruble Yudell. "We wanted to create a building that was friendly and approachable but at the same time conveyed a sense of dignity and repose," says PAPA principal Richard Dalrymple. The architects also had to resolve what Dalrymple calls "the struggle between contemporary planning and traditional style." Toward these ends, PAPA deployed an essentially linear, nonmonumental series of municipal offices behind a deliberately formal frontispiece richly emblazoned with the architectural iconography of arch, pylon, dome, and arcade. By turning this urban set piece 45 degrees to the major downtown intersection of Valley Parkway and Broadway, PAPA meant to draw pedestrians down a landscaped mall into a pair of quintessentially Californian outdoor "rooms." The first of these public gathering places, the building's entrance courtyard (opposite), is a dramatic 60-foot-high domed rotunda inspired by the Botanical Building in San Diego's Balboa Park, which Bertram Goodhue designed for the 1915 Panama-California International Exposition. The second, a fountain terrace (pages 106-107), functions as a sun-filled forecourt to the city council chamber and a double-height space housing service counters for Escondido's planning, zoning, and building-inspection departments.

The generous curves of these and other circular public spaces embedded in the rectilinear office block stand in deliberate contrast to city hall's reticent troweled-plaster facades, whose spare ornament and green-stained trellises owe equal debts to the early 20th-century houses of Irving Gill and to anonymous Depression-era public buildings. "Mediterranean Deco" is the label that the architects have attached to their stylistic hybrid of regional and not-so-regional sources. The citizens of Escondido, less interested in art-historical categorization, are content with the knowledge that they now have the handsomest city hall in Southern California. P. M.S.

condido City Hall has a steel frame with metal-stud walls and plaster stucco. Although the building exhibits an unusually high level of decorative detail, its architects stayed within the city's \$100-a-square-foot budget by specifying fiberglass for the

shallow relief panels adorning the building's entrance pylons (below). Fiberglass was also used to create herringbone-patterned arcade grilles and the filigreed ribs of the rotunda dome, which is supported by structural steel tubes.

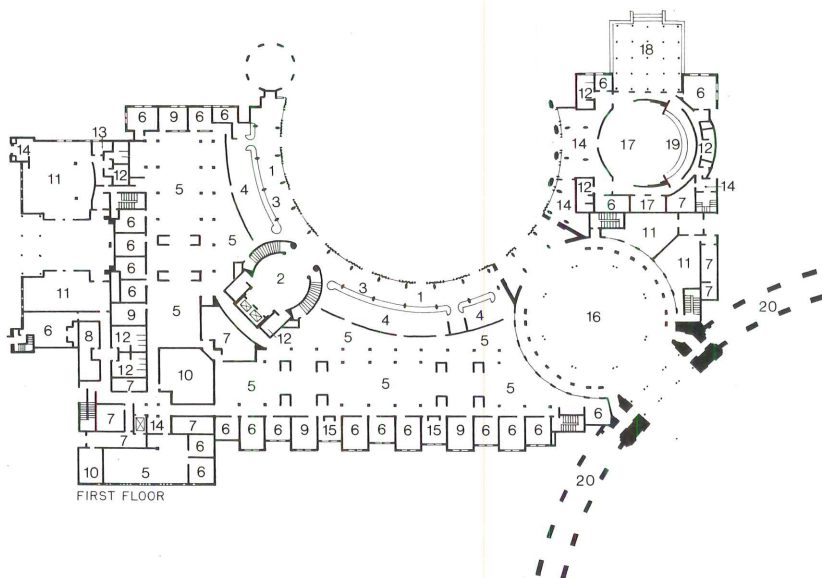


In contrast to its formal street-facing facade, Escondido City Hall's crescent-shaped rear elevation (below and near photo opposite) is sheathed in a transparent wall of green glass that gives visitors a clear view of the interior. Heavily used municipal agencies such as

building inspection, city planning, and community services are just off the fountain terrace, behind polished granite and Honduran mahogany service counters on both sides of a two story lobby (not shown). A circular tower (right in photo)

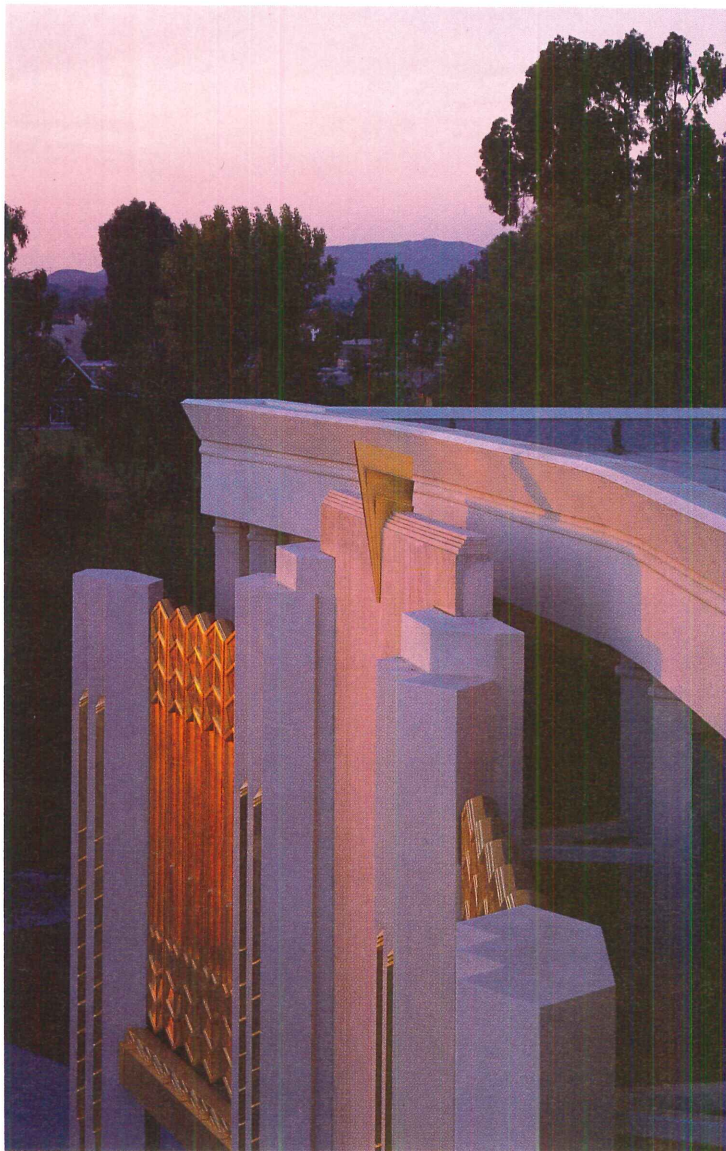


1. Public concourse
2. Grand stair
3. Public counters
4. Counter support
5. Open office
6. Private office
7. Support area
8. Lounge
9. Conference
10. Mechanical
11. Multipurpose room
12. Restroom
13. Kitchen
14. Vestibule
15. Refreshments
16. Domed courtyard
17. Council chamber
18. Terrace
19. Dais
20. Arcade



(below) houses a conference room overlooking eucalyptus trees in Grape Day Park. Gold-leafed fiberglass grilles, stucco pilasters, and a travertine slab (below right) mark the entrance to a 142-seat council chamber, the city hall's most distinctive interior. Seventy feet in

diameter, this public meeting room is equipped with a rear-view projection system. A faceted wall behind the council bench is covered in silk, and the chamber's elaborate patterned ceiling is made of glass-fiber-reinforced gypsum with wood-strip infill grilles.



Escondido City Hall
Escondido, California

Owner:
City of Escondido

Architect:
Pacific Associates Planners
Architects—Jim Leighton,
principal-in-charge; Richard
Dalrymple, principal-in-charge
of design; Richard Yen,
principal-in-charge of
administration; Jeffrey
Erickson, project architect;
Clinton Kisner, project
manager

Associated architect:
Daniel, Mann, Johnson,
Mendenhall—Anthony
Lumsden, design consultant

Engineer:
Daniel, Mann, Johnson,
Mendenhall (structural,
mechanical, civil, electrical)

Consultants:
Cole, Martinez, Curtis and
Associates (interiors); Deweese
Burton Associates (landscape);
Michael Feerer Associates
(space planning); Nicholson
Design (graphics and signage)

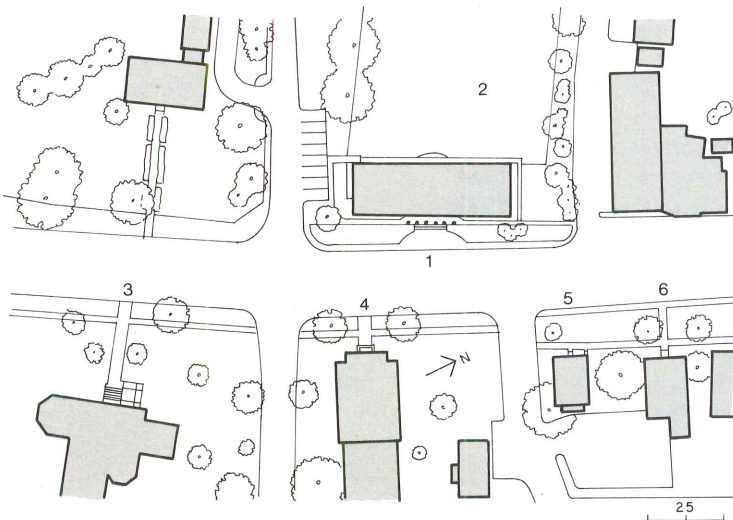
Construction manager:
Nielsen Construction—Mike
Archibald, project manager

Connecticut Yankee

© Cerrin Robinson photos



By voting to build their new 13,500-square-foot town hall (1 on plan below) on the site of the original 18th-century meeting house, the citizens of Salisbury strengthened the town's historic Main Street core. This civic and retail district includes the town's 18th-century burial ground (2), the Scoville Memorial Library (3), the Congregational Church of Salisbury (4), the Connecticut Circuit Court House (5), and the U. S. Post Office (6). Public business is conducted in a 100-seat second-story hall (right) overlooking the Congregational Church.



The 1938 W. P. A. guide to Connecticut characterizes Salisbury as “a proud little hill town, stretching out along an especially neat main street bordered with old homes and shaded by great elms and maples.” Although that description remains accurate half a century later, Salisbury’s pride of place was put to the test on the night of August 5, 1985, when, for reasons that are still unclear, local man burned the community’s Colonial town hall to the ground. With Yankee diligence and dispatch, an advisory board headed by First Selectman Charlotte Reid reviewed the work of some 27 architects before selecting Robert Kliment & Frances Halsband, a small New York City firm known for its disciplined, almost ascetic brand of contextualism, to design a late 20th-century variation on an 18th-century New England meeting hall.

Salisbury’s decision to erect its new town hall on the site of the old stemmed partly from historic sentiment and partly from sensible urbanism. The town’s seat of government had occupied that parcel since 1752, and the old building remained a crucial element in the village’s remarkably cohesive civic core. Kliment & Halsband rightly contended that a new building on the site, slightly larger than the old one but similarly massed, would be a visual linchpin between the stately Georgian-style Congregational Church across Main Street and its 18th-century graveyard to the east. Accordingly, the new town hall’s plan establishes two carefully thought-out circulation routes—one along two first-floor galleries that overlook Main Street and the church, and a second through an octagonal rotunda and up to the stair landing, where an arched window commands views of the cemetery.

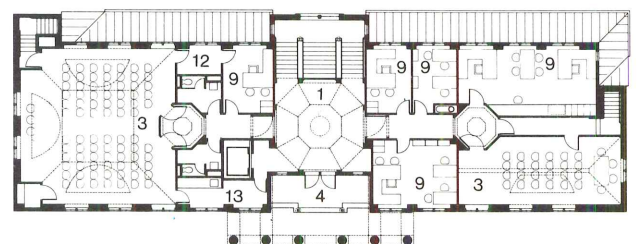
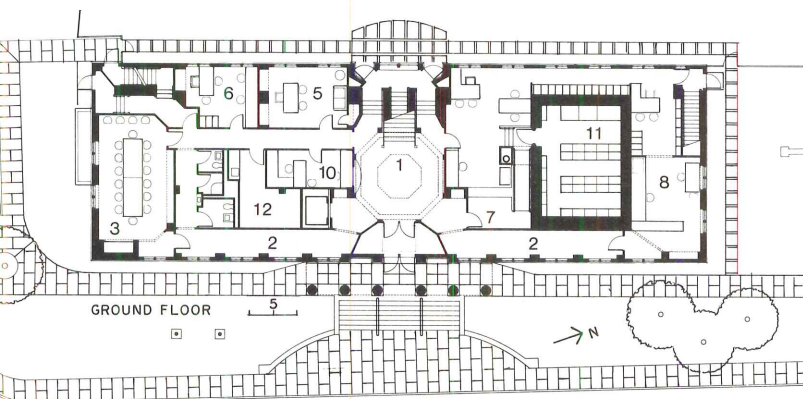
Although the new building’s location raised only token opposition (a few citizens felt that town hall should be moved outside the village altogether, to a spot that allowed more public parking), the question of architectural style sparked considerable debate. At sometimes contentious public meetings held during the project’s design development, it became increasingly clear that what the townspeople really envisioned was, if not a complete reproduction of the old building, at least a resurrection of the familiar Doric portico that had been added to the original meeting house in 1913. The architects agreed, up to a point. “We wanted to develop an appropriately scaled entrance to the building,” recalls Robert Kliment, “but we felt that replicating something done over 70 years ago was false.” The ultimate solution—a hexastyle portico, with columns topped by curving cutout capitals and a triangular pediment dominated by an oversized fanlight—meant, in Kliment’s words, “to have its own idiosyncratic language while preserving the civic imagery of the old town hall. Predictably, the mixture of such allusions with more direct historical recall—e.g., traditional white clapboard siding and rooftop cupolas reminiscent of the Congregational church belfry and the smaller cupola of a nearby court house (top left)—has evoked a mixed reaction from residents. One man told me he found the building “too busy,” while another resident considered it overly austere. The Main Street facade may well be too self-consciously formal for its surroundings. More comfortable, to my eye, is the burial-ground elevation, where shedlike projections and asymmetrical massing suggest the pleasingly ad-hoc vernacular of old barns and mills (top left). Given Salisbury’s modest 18th-century origins as a regional center for the iron-ore trade—and its current dedication to understated rustic affluence—it is these unpretentious elements, more than the grand iconic portico, that best embody the cultural and physical spirit of the town. P. M. S.

Salisbury Town Hall has a steel frame with concrete-filled metal decks and metal stud walls. Sheathed in painted shingled wood clapboard and topped with a lead-coated copper roof, the building incorporates an old records vault that survived the 1985 fire.

Salisbury Town Hall
Salisbury, Connecticut
Owner:
Town of Salisbury
Architect:
R. M. Kliment & Frances Halsband Architects—R. M. Kliment, Frances Halsband, Jack Esterson, Anne Reilly

Fahim, Mark Wright, Paul Harney, project team
Engineers:
Robert Silman Associates (structural); Jack Green Associates (mechanical and electrical)
Consultants:
Howard Brandston Lighting

Design Inc. (lighting); Caroline Pope (plantings)
General contractor:
George E. Emerson, Inc.

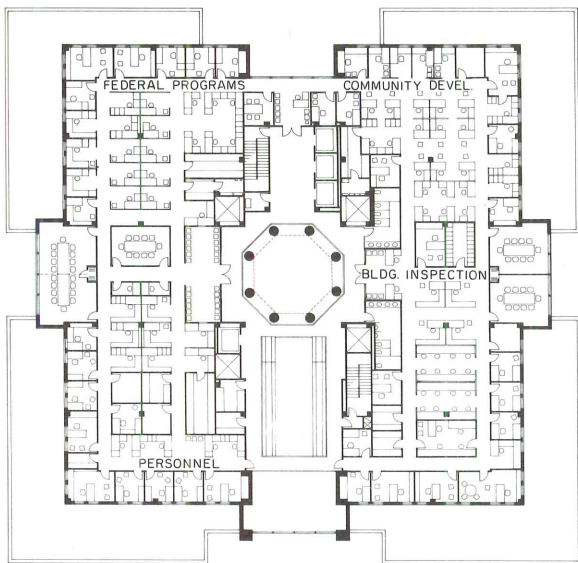
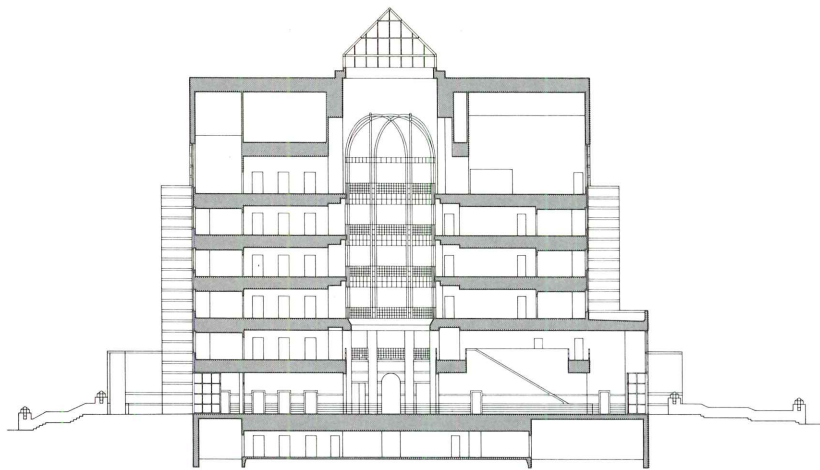


SECOND FLOOR

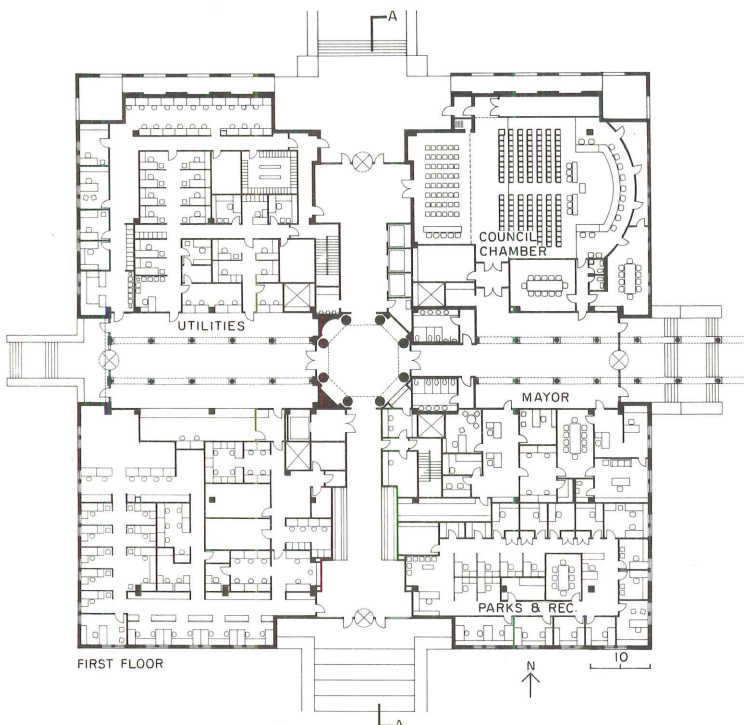
- | | |
|-----------------------------|-------------------------|
| 1. Stair hall | 8. Assessor |
| 2. Gallery | 9. Office |
| 3. Meeting room | 10. Reception/secretary |
| 4. Balcony | 11. Records vault |
| 5. First Selectman's office | 12. Storage |
| 6. Tax Collector | 13. Service pantry |
| 7. Town Clerk | |

Corpus Christi City Hall
 Corpus Christi, Texas
 Taft Architects and
 Kipp, Richter & Associates,
 Associated Architects

Government writ large



SECOND FLOOR



FIRST FLOOR

If ever there were a city seal that embodies the attributes of its metropolis, it is Corpus Christi's municipal insignia: a smiling fish leaping out of blue-green Gulf Coast waters against a backdrop of oil rigs and refinery towers. This incongruous juxtaposition of man and nature is a surprisingly appropriate symbol for a city of 258,000 which, over the past 130 years, has evolved from a lusty frontier settlement into a comely seaside resort and center of the Texas petroleum industry. It is also fitting that this whimsical signet serve as the centerpiece of Corpus Christi's new city hall, designed by Taft Architects, of Houston, in joint venture with the local firm Kipp, Richter & Associates.

During the early 1980s, when it became apparent that the city had outgrown its existing municipal building, an orange-brick bayfront structure built in 1952, Corpus Christi's public officials held a referendum for a new city hall near the site of the old. The voters defeated that proposal, objecting less to the idea of a new building than its suggested location along the water, east of the 40-foot-high bluff that separates Corpus Christi's uptown financial area from its old downtown retail district. In 1984 the city selected a new uptown site for the building, a four-block-square parcel at the corner of Leopard and Staples streets in a down-but-not-quite-out zone of one-story taxpayers, gas stations, and modest vernacular cottages. A new building on this site, it was hoped, might help revive a long-neglected neighborhood.

In choosing Taft as the project's lead design firm, Corpus Christi's city council expressed the desire for flexible office space to house 23 municipal agencies, at that time scattered throughout the city in 11 separate facilities. The council also asked for an authentic "Corpus Christi" building—not an unreasonable request to make of architects who had already demonstrated a keen awareness of history in earlier public-works commissions [RECORD, October 1985, pages 162-165], but a problem nonetheless since no one in Corpus Christi could single out any existing structure that typified the city's style. (For instance, even though half of the city's current population is Hispanic, the council argued that a city hall in the Spanish Mission mode would not represent the community as a whole.) As its point of departure, Taft necessarily turned to a broader regional building type, the 19th-century Texas county courthouse, a source reflected in the new city hall's overriding symmetry and cross-axial plan (left). Besides providing an appropriately monumental urban presence, the cubelike massing of the 150,000-square-foot building minimized exterior surfaces, a crucial consideration in a project budgeted at just \$67 a square foot.

The cross-axial strategy allowed Taft to interlock relatively anonymous private offices, housed in four brick-clad modules, with a strong series of public lobbies and processional passageways articulated on the exterior as gable-ended pavilions faced in matte-finish gray tile. All elements of this composition converge at the building's core, where an octagonal rotunda rises six stories through a steel-tube-framed cage, whose open dome terminates in a pyramidal glass skylight (page 112). Taft acknowledges the 17th-century Italian churches of Guarino Guarini as the formal wellspring of this dramatic 135-foot-high space. Less exotic local sources inspired William Wilhelmi and Greg Reuter, the two area artists who designed the rotunda's ceramic-tile floor (page 113), an illusionistic bird's-eye view of three foreshortened figures striding across the city's seal, framed by sailboats and the Corpus Christi Harbor Bridge. *P. M. S*

craft designed a structure of reinforced concrete, a material whose relative stiffness has made it a favorite along the hurricane-prone Texas Gulf coast. Although the Corpus Christi building relies less overtly on regional architectural precedent than do

the new city halls in Escondido and Salisbury (see pages 104-109), it is subtly grounded in its Gulf Coast location. The building's rose-colored hand-made Mississippi brick, for example, is a popular local material, and the matte-finish blue glaze of decorative tile

bands matches the aqua-hued waters of nearby Corpus Christi Bay. On a more monumental scale, the city hall's cross-peaked crown evokes hip- and gable-roofed Gulf Coast vernacular cottages in the surrounding residential neighborhood.



Paul Warchol photos

Circulation through Corpus Christi City Hall's interiors (plans page 110) revolves logically around a 35-foot-wide atrium rotunda. Taft placed heavily used municipal agencies, such as building inspection and the parks and recreation department, on the

first and second floors, together with tellers' windows (for property tax and utility payments) and the city council chamber (bottom right). The 200-seat chamber boasts an oak council bench and an array of audiovisual equipment, including an electronically

operated projection screen and city map, a video camera and slide projector whose images can be shown to the council and audience on two television monitors, and a presentation dais with built-in overhead projector. The offices of the mayor and city council are

also on the first floor, in a suite accessible to the public from a lobby/lounge (bottom left). Corpus Christi's city manager, by contrast, occupies space overlooking the city on the fifth floor (not shown). City employees enjoy similar views from a sixth-floor dining room.



Corpus Christi City Hall
Corpus Christi, Texas
Owner:
City of Corpus Christi
Architects:
Holt Architects and Kipp,
Richter & Associates,
Associated Architects
Holt Architects—John J.

Casbarian, Danny Samuels,
Robert H. Timme, partners;
Larry Dailey, managing
architect; Suzanne Labarthe,
project architect; Robert
Bruckner, Tom Diehl, Randy
Gay, Michael McNamara, Ken
Roberts, Mark Volpendesta,
support team

Kipp, Richter & Associates—
Robert G. Kipp, David R.
Richter, principals; Ron
Muessel, Samuel Morris,
project architects
Engineers:
Wilkerson Engineering, Inc./
Goldston Engineering, Inc.
(structural); Callins, Haggard

& Associates, Inc. (mechanical/
electrical/plumbing); Goldston
Engineering, Inc. (civil)
Consultants:
Doug Wade (landscape);
William Wilhelmi, Greg Reuter
(rotunda-floor mosaic)
General contractor:
Manhattan Construction Co.



Curtainwalls— present trends and future prospects



John Ming-Yee Lee, of Edward Larrabee Barnes/John M. Y. Lee, P.C., Architects; Michael D. Flynn, of I. M. Pei & Partners, Architects

The chameleon can change the properties of his skin to best suit an environment. I see no reason why, in the future, glass cannot carry that sort of capability. This is what we should come to expect from glass. MIKE DAVIES



Mike Davies, of Richard Rogers Partnership, Ltd., Architects

Many exciting new developments—most of which are still on the drawing board—promise to significantly affect the way curtainwalls and fenestration will look and perform in the future. Last October, RECORD invited a group of architects and designers to participate in a roundtable discussion on the topic of emerging curtainwall technology. Representing diverse specialties within the architectural profession, the discussants were: David A. Button, James Fraser Carpenter, Mike Davies, Barry Donaldson, Michael D. Flynn, John Ming-Yee Lee, Scott Matthews, Alan Ritchie, James A. Rockar, Stephen E. Selkowitz, and Robert Sobel.

RECORD: To spark our imaginations, would a few of you describe fenestration or curtainwall materials that, at this time are merely a dream?

MICHAEL D. FLYNN: What I'd like to see when I look through a window is what I would see if the glass was not there—an optically clear view with no visual distortions. But we also want glass to have a marvelous U-value, a spectacular shading coefficient, and resistance to wind and earthquakes. For this, we must pay a bit of a price, but the key goal is optical clarity.

JOHN MING-YEE LEE: Glass is a wonderful material, and I'm glad people are exploring it. I agree with Mr. Flynn absolutely—the first purpose of glass is to be as if it were not. The elusive quality of glass is what we must always keep in mind.

MIKE DAVIES: The chameleon can change the properties of his skin to best suit an environment. I see no reason why, in the future, glass cannot carry that sort of capability. This is what we should come to expect from glass. I would propose that the next generation of intelligent buildings include an environmentally aware facade that is linked with the servicing system.

LEE: Could glass eventually be used as a structural material?

DAVIES: Glass is capable of being very, very strong. But there is one problem: no one has managed to link molecules so that weaknesses won't run as a crack. This continuity of weakness makes glass fragile even though it is potentially an incredibly strong material. A breakthrough in linking molecules would revolutionize the industry overnight.

RECORD: Straddling the fence between the present and the future, what innovative curtainwall materials and systems currently exist that are not yet commercially available?

SCOTT MATTHEWS: During the next five years, the most exciting advancements in glazing technology will be in the areas of low-emissivity coatings and switchable glazing [*an illustration of switchable glazing appears on page 117*].

JAMES FRASER CARPENTER: There is an entire family of photosensitive glasses, some of which are polychromatic, some photochromic, that is well established technologically, but has rarely been used architecturally. Photochromic glasses are similar to photosensitive sunglasses: they can go from light to dark depending upon their exposure to ultraviolet light. Polychromatic glasses can produce a full range of colored light when exposed to ultraviolet light [*polychromatic glass made with a dichromic film is illustrated on page 118*], or can produce a permanent full-color image. Photochromic products first appeared in the 1930s as permanently shifted photoform glass. Today, these products can be applied to floor glass. If the demand increased, photochromic glass could be integrated into the building skin at a cost equivalent to many of the blind systems whose function they could replace.

Many other exciting glass products exist that are capable of making a remarkable contribution to architecture, both on a human level and a technical level. I would suggest that there are two major avenues for pursuing innovation. One is pioneering technology, which will, of course, require extraordinary capital resources. The other, much simpler approach is to re-address or re-vive existing technologies with a new vision. Architects working creatively with manufacturers can often coalesce new products through existing means with no added cost. It just takes applying intellectual effort to an idea about glass and light. To me, light is the definer of space. If we try to categorize all our efforts with simple strip windows and various types of opaque surfacing, then I believe we've moved away from the intent of humane spaces.

RECORD: Do you find a willingness on the part of manufacturers to develop new products with architects?

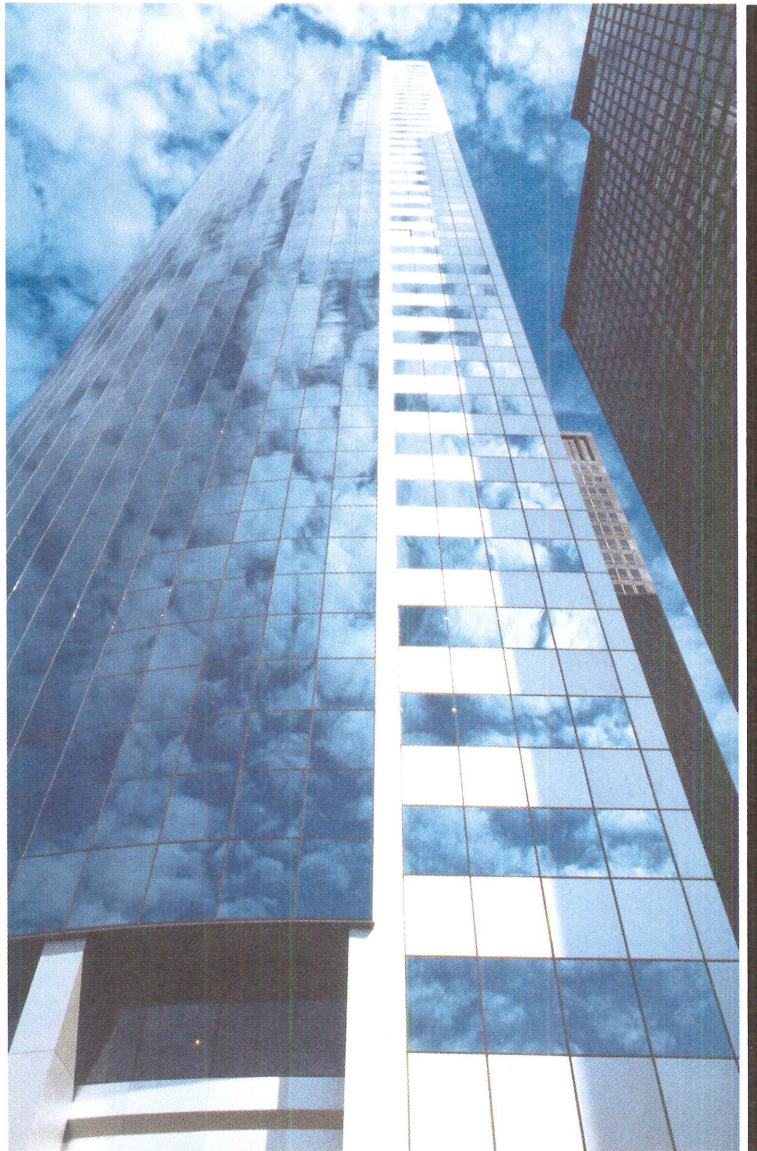
ARPENTER: I think we're approaching a time when manufacturers are more interested in initiating new products, and architects are more interested in using new products—products that do more than just pass fashion, products capable of producing a new range of effects.

RECORD: Would you elaborate on the architectural implications of the new materials and systems?

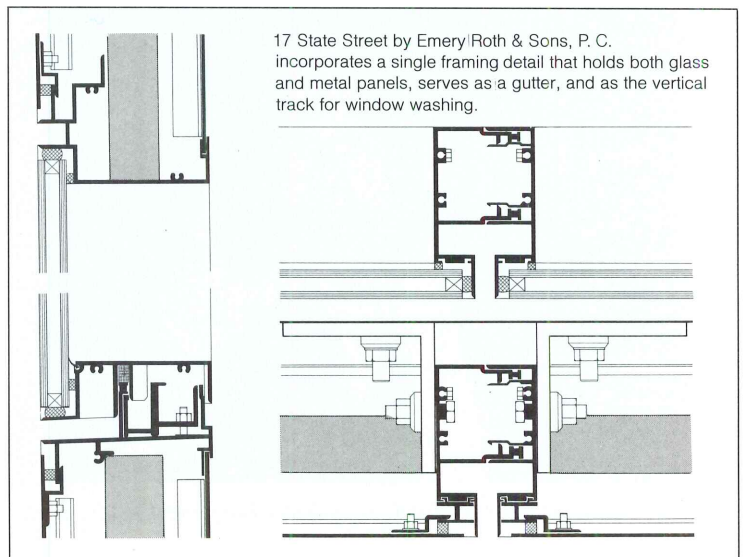
STEPHEN E. SELKOWITZ: There is a tremendous potential for available technology, in both plastics and glass for producing various prismatic and faceted surfaces [*the Billingsgate fish market project by the Richard Rogers Partnership illustrated on page 121 is an exemplary application of this family of material*]. Too, the glass block industry has many techniques for combining patterns and layers, but the whole industry has largely disappeared, apparently because architects haven't made a demand for innovative glass block. One of the most exciting undercommercialized technologies is in the area of holographic coatings. Whatever light effects are available from prismatic or reflective materials can be achieved with holography. For example, the U. S. Department of Energy is currently funding research for a holographic coating that would be applied to clerestory windows above the viewing zone. The coatings would take daylight collected from the upper hemisphere of the sky and reflect it, along the ceiling, deep into the room. Ideally, the projection would occur regardless of the daytime sun position. There have been many attempts to bring daylight deep within a room using reflectors and prismatic materials, but none give adequate light control for a wide range of incidence angles—in principle, holographic coatings can. I emphasize, in *principle*. That is why it is a research topic.

DAVID A. BUTTON: Holographic films could be used to convey information, including dynamic pictures. Imagine glass on the exterior or interior of a building as a communication medium. It becomes especially exciting when you consider holography in combination with such technologies as laser or flat-screen TV.

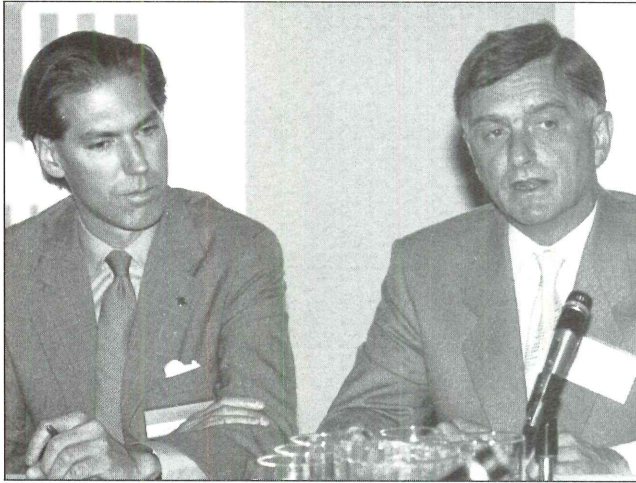
SELKOWITZ: In the area of thermal performance, R-30 windows have been made comprising a double-glazed system made with carbon dioxide, but are not commercially available. Windows are commercially available in the R-7 to R-20 range. These are made with three layers of glass, two low-E coatings, and a gas field. They are, however, expensive given the extra layer of glass, extra coating, and extra gas. At the retail level, they'll cost approximately \$5 per sq ft. If you require that the extra cost for such a window be returned through energy savings within five years, purchasing it is out of the question. If you look at a 30-year



Chung Y Lai



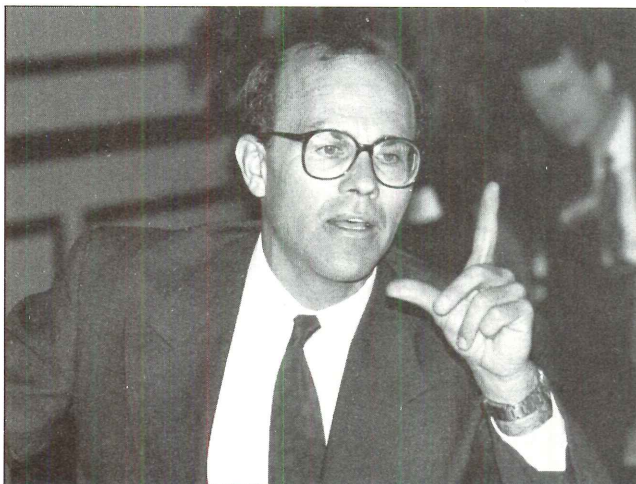
17 State Street by Emery/Roth & Sons, P. C. incorporates a single framing detail that holds both glass and metal panels, serves as a gutter, and as the vertical track for window washing.



James Fraser Carpenter, of James Carpenter Design Associates, Inc.; David A. Button, of Pilkington Glass Ltd.

Many exciting glass products exist that beautifully manipulate light. Unfortunately, prevailing economic factors tend to deny these materials entrance onto the market.

JAMES FRASER CARPENTER



Scott Matthews, of Howard Brandston Lighting Design, Inc.

mortgage, or 50-year investment, or that oil may cost \$40 a barrel in five or 10 years, then the economics change.

RECORD: What forces are driving curtainwall innovation?

BARRY DONALDSON: We are building taller skyscrapers. As that has happened, building materials have had to become thinner and lighter while accommodating greater differential movements, higher wind loads, and worse driving rain conditions. As a result, curtainwall manufacturers and cladding producers have all had to address more extreme, stringent design conditions.

JAMES A. ROCKAR: The recent interest of designers in building multifaceted towers has influenced manufacturers to develop multiple framing systems which facilitate the three-dimensional manipulation of wall surfaces.

DONALDSON: Requirements for greater energy conservation have also influenced technological innovations. I might add that designing for energy conservation requires a strong collaboration between the architect, engineer, construction manager, and manufacturer. The results of such collaborations can be significant. Reduced energy consumption and first-cost savings are possible. For example, more efficient cladding systems have reduced the size, and therefore cost, of cooling and heating equipment.

DAVIES: The speed of construction as it relates to financing costs is driving virtually every specification in the curtainwall. We are now involved in buildings where the panel size is the single most important feature of the curtainwall to solve, apart from specifying the transmission performance of the glass.

ROCKAR: A more rapid construction process pushes the manufacturer to want to get involved in the design earlier. Since the role of the manufacturer is to translate architectural intention into construction details, if we cannot bring our ideas to the table and discuss them at the onset of design, sooner or later everyone will be reacting to, rather than acting on, the situation.

BUTTON: Because time is now such an important element in the design of a curtainwall, many curtainwall manufacturers have been pushed to provide system components that can accept a greater variety of finishes. For example, the early prefabricated stone systems were usually built on steel trusses. Because the manufacturers of aluminum stick-frame systems perceived that they were losing a potential market, they developed single systems that could take both stone and glass—a kind of kit of parts, though still custom. *[In the building by Emery Roth & Sons illustrated on page 115, a sophisticated yet simple system is employed that frames both glass and metal panels.]*

ALAN RITCHIE: As architects, we're very concerned about the appearance of a building. Although the factors that have been mentioned—speed of construction, energy concerns, etc.—do affect technological innovation, I have to believe that esthetics have a major impact on change. Without esthetic success, I don't think the architect has provided the owner with a good building.

Furthermore, I think the building owner has become a key person in the design process. He's much more sophisticated than was a few years ago, and is oftentimes backed with an architectural staff of his own. The owner is often the one who will use the building; and he's always the one paying for it. More than in the past, the owner has a bearing on the way we approach design, and is as important a consideration as all the other factors we've mentioned.

CORD: Do industry standards or governmental regulations play a role in encouraging innovations in products and engineering?

NALDSON: Regulations, codes, and standards tend to be a response to innovation rather than setting the pace for innovation. The fact that codes and standards are revised on a periodic basis reflects the fact that technology changes, and that we continue to move ahead. As building products get better, stronger, more durable, standards come to require greater strength, greater reliability, more precision in design. If anything, regulations tend to limit innovation rather than further it.

THEWS: Taking the example of low-emissivity glass, the energy crunch of the 1970s created an environment in which Pilkington Glass, Ltd., in England could finally get their product out of the laboratory and into the market. It then took five to six years for it to come across the Atlantic. When low-E glass got to the U. S., there was no jurisdiction that would grant energy credits for it.

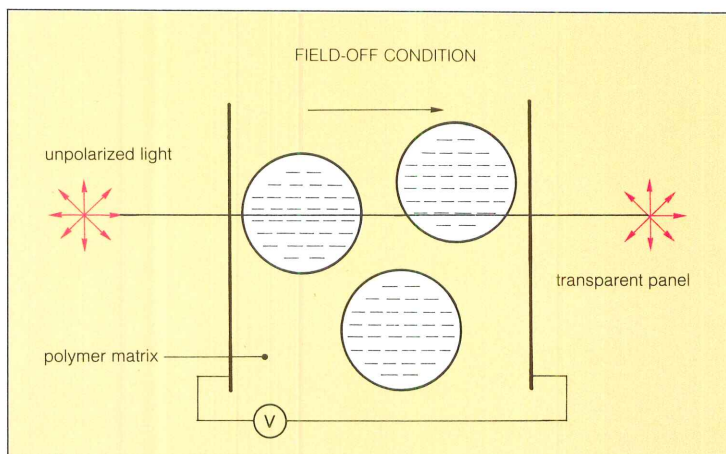
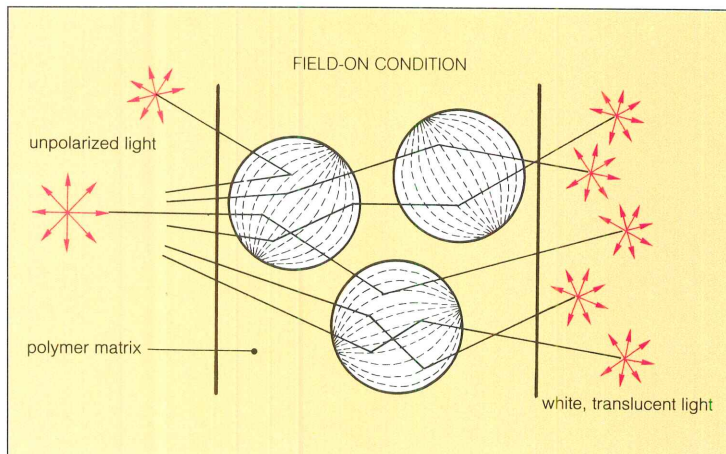
CORD: To what extent is the integration of building systems a relevant design concern today?

BERT SOBEL: I don't think that we should assume that integration is necessarily good. In some ways, we are fighting tooth and nail to avoid integrating many of the components of our buildings. Just think of the competition for the space above the ceiling in an office building. There is a mechanical engineer, a structural engineer, and a lighting engineer all fighting for the same few inches. We usually handle it the way traffic is controlled at airports; we give each service a zone and require its equipment to stay within it. This is not easy to do without creating interference, or having to cut holes in the structure, or setting up a situation that requires the services to make undue bends and turns. The trade unions also contribute to the difficulty of integration. When you design a building component you have to know which trade is going to put it together and exactly what conflicts you are creating between two trades that claim the same space.

So in many ways, integration is not only undesirable, it is to be absolutely avoided. As things are in the field today, the dependence of systems is not a negative at all, it is really a plus in terms of putting a building together.

YNN: Relative to the stratification Mr. Sobel has been describing, it's worth mentioning what that means to the curtainwall. Today, curtainwalls are larger per square foot of floor area than in the past, in part because of stratification. A few years ago an office building would perhaps be 12 ft floor-to-floor; now there is a 13-ft, or more, distance between floors. The greater height is indicative of the greater number of services required by office buildings. There is a desire to keep all the trades in their own corral, not just to make things simple but most of all to save time. Completing the building on the agreed date is the overriding concern.

NALDSON: I think the issue is not so much integration as it is the interdependency and coordination of all the elements within the design process, and ultimately throughout the construction. Greater floor-to-floor heights were driven by the need to accommodate computer and communication technologies which involved the use of access floor systems. This in turn has affected the way we design curtainwalls. It ultimately affects the net retail floor area of the building and, therefore, the economic feasibility of the project itself.



Photos courtesy University of California, Lawrence Berkeley Laboratory



Sloped glazing in the illustrated café shows the off (right photo) and on characteristics of "switchable" glazing. The glass is coated with a flexible polymer film encapsulating tiny spheres of liquid crystals. The liquid

crystals scatter incoming light when the spherical walls of the cells are nonaligned (topmost diagram). Light passes uninterrupted through a panel when a rheostat-controlled electric field aligns crystals within cells.



The window above was created by James Carpenter for the Christian Theological Seminary chapel in Indianapolis. Carpenter's commission came from the architects for the chapel, Edward Larrabee Barnes/John M. Y. Lee, P. C., Architects. The structurally glazed and gridded glass has a dichromic coating on its horizontal members. The coating works like a prism, reflecting and transmitting a complex pattern of colored light that changes in conjunction with the position of the sun—the light is meant to be spiritual and ephemeral.



©Balthazar Korab

RECORD: What are the potential benefits of integrating the light environment with the thermal environment?

BUTTON: With respect to integrating curtainwall design with the building services, I find that the typical architect perceives this integration as an unnecessary process. One could easily fault the architect, but that would only be part of the story. I think industry has a responsibility to offer services by skilled engineers, who become a welcome member of the design team. I don't think architects have sufficient support from industry.

MATTHEWS: As a lighting designer, I'm usually asked about the glass for a building many months after the curtainwall contract has gone out. At that point, the only thing that can be discussed is the color of the glass. As it happens, the integration of the light environment, structural system, thermal environment, and appearance of the building are typically part of a conceptual design by the architect. With every early decision made solely by the architect, a few doors close in terms of integration. By the time I'm usually called in for consultation, there is little I can do with the glazing to affect the light environment.

SELKOWITZ: I want to push Mr. Matthews's comments a few steps farther. If you want to use daylighting as a strategy to get around some of the building-code requirements, then you have to consider the integration of electric lighting with daylighting. We have been involved in monitoring a number of buildings where the pieces of the system were all there, and each piece was correctly specified, but the system as a whole didn't work for reasons as simple as a misplaced photocell. There was clearly a need for better integration at that level.

There are some important cost issues associated with system integration. The factors include first costs and maintenance costs over time. If an architect today discovers that upgrading a particular curtainwall will add \$5 per sq ft to the system, he may not upgrade. But in so doing, he may be ignoring the possibility that by upgrading the glazing he may be reducing the hvac system costs. There are a few airflow window systems available in Europe that can eliminate perimeter heating and cooling systems, but they absolutely demand a complete integration of the hvac and curtainwall systems at the supplier and design levels. Airflow windows exemplify the great potential for providing better spatial and functional amenities that would be missed if we pursued the direction of system separation.

RECORD: How, and to what extent, does the integration of the curtainwall with other building systems serve a strategy for energy conservation?

DONALDSON: With respect to energy savings, the daylighting strategies offered by glazing systems can be significant, far more significant than their thermal performance. Whereas the thermal performance of an envelope may offer savings of 5 to 10 percent, daylighting can provide savings of 30 to 50 percent.

MATTHEWS: Yes, I think roughly half the energy used by all buildings goes for lighting. Architects are often surprised to learn this. On one hand, it is quite easy to substantially reduce the amount of energy that goes into lighting; however, it is very difficult to reduce energy consumption while maintaining the quality of the lighted environment such that people feel good about themselves, their skin tones are rendered in an expected way and if they work near the perimeter, they don't suffer a gloom-and-glare syndrome. It takes design, not just specifications, to ensure quality. For five years, the design community has been trying to

develop a smart control system for daylighting that building occupants find reliable. We haven't developed one yet, and until we develop a technology that makes a simple connection between glazing and the quality of the light environment, average practitioners will have to hire lighting consultants to help them. However, even when such a technology is perfected, it will be no substitute for good design.

SELKOWITZ: Going back to Donaldson's comment, I agree with him that the incremental energy benefits of going from an R-6 to an R-8 or R-10 window are relatively small. On the other hand, windows with superior thermal performance can liberate an architect from burdensome codes. High-performance window systems that reduce heat loss, control heat gain, and use heat effectively can be better than an insulated wall. When an architect demonstrates this to an official, the onus of energy codes is lifted from his shoulders. He can provide glazing, and therefore transparent views, wherever he wants without paying an energy penalty. One of the things we're claiming, and are attempting to demonstrate, is that higher-R windows facing north in a cold U. S. climate will do better during the winter than an insulated wall. If that is true, all the building codes that, say, limit windows to 8 percent of the floor area, will no longer make sense.

Of course, the technology costs something. The question then is: Is getting a window the size and shape that you want for the client worth it? Sometimes the answer will be yes, and many times it probably will still be no.

The other comment I wish to make about energy and daylighting is that one needs to consider the cooling-load implications of light coming through windows. Our studies show that if you use daylight effectively, you can frequently reduce cooling loads. If you are not careful, though, you can end up increasing the cooling loads. For example, if you design for afternoon daylighting under peak conditions, your first costs will be greater because you'll need a larger chiller. Then, year by year the building operators will be paying excessively high utility costs—I assume that in, say, New York City, one pays a real premium for electricity during peak demand on a hot summer afternoon. If you don't have the right lighting controls or good design to begin with, you've created costly problems.

There is glazing available that has selective transmission; that is, it transmits relatively more daylight for equivalent shading coefficients. It performs, in a way, as the new green glasses do; however, it does it more effectively while extending the range of control. Unfortunately, my sense is that it is not widely used even though the technology is immediately available.

QUESTION: Where might problems occur in the curtainwalls currently under construction?

SELKOWITZ: I am concerned about the curtainwall systems used in the typical developer's building, not so much the surface materials—stone, glass, etc.—but what's behind them. Unlike the very expensive systems that use stainless steel, all sorts of questionable materials are typically being used for commercial development. We have seen case studies in Canada where moist air flowing through cracks in the building condensed on and corroded the steel that attaches the facade to the structure. The whole curtainwall as a unit may hold together, but it may separate from the structure of the building.

SELKOWITZ: During the next 20 years, I think severe problems could



Stephen E. Selkowitz, of the Center for Building Science, Lawrence Berkeley Laboratory; Robert Sobel, of Emery Roth & Sons, Architects

The electronics and biotechnology industries in the U. S. provide models for joint research among the public sector, private sector, user groups, and developer groups. Unfortunately, the building industry has yet to fund a common body of fundamental research which is then dealt with by individual companies for private benefit. STEPHEN E. SELKOWITZ



James A. Rockar, of Cupples Products Division, H. H. Robertson Company



Mike Davies; Barry Donaldson, of Tishman Research Corporation

With respect to energy savings, the daylighting strategies offered by glazing systems can be significant, far more significant than their thermal performance. BARRY DONALDSON



Alan Ritchie, of Alan Ritchie/David Fiore, Architects

surface with very thin stone cladding systems. They have come onto the market rapidly, before their bonding agents are fully understood. I am comfortable with glass; a 400- or 500-year lifespan seems reasonable. One doesn't really know silicon's lifespan—I think it might be quite long.

MATTHEWS: Glazing sandwiches may give. We don't build buildings with monolithic glass. Window units are usually sandwiches comprising a frame, polymer sealants, and two sheets of glass, generally with a coating inside which is quite fragile either to moisture or to touch. It is not at all clear how a glazing sandwich subject to raking and thermal stress will last over the next five years. The glass will be there, but it may discolor or lose its thermal performance, and it may start to leak or fog, all of which happened in the residential area when we first started incorporating heat mirrors and other high-performance glass technologies five or six years ago.

DONALDSON: There are four insulation concerns that come to mind. For panelized systems, the question is how to keep pre-insulated panels dry during installation so that the insulation is not ruined. The nightmare in site-installed insulation is maintaining the continuity of the insulation and vapor barriers. We are finding that the performance of insulation with respect to its R-value is unpredictable over time, this is coming to be an especially big concern with isocyanurate insulations. Lastly, the toxicity of most insulation material during burning is not fully known.

BUTTON: Whatever new materials we develop, a common problem will still exist: the joints between these superb materials. Joints are subject to quality control and human nature, both in design and craftsmanship. It seems to me that insufficient research is devoted to joinery, which is the Achilles' heel in curtainwalls and window units.

RITCHIE: In America, we have not done enough experimentation to stop heat from entering a building—our stance has been to handle it once it gets in. The Europeans have been more aggressive in developing forms of exterior shading. There, for example, mechanical shades have been very much in vogue since the early '80s. These systems are used extensively in Belgium and France and have become an important element in dictating the outside appearance of a building. In the late '70s and early '80s, European manufacturers tried to get American architects interested in these systems, but were turned down. Current trends in the U. S. may stir greater interest than was previously expressed.

RECORD: Who should take responsibility for a system's shortcomings?

FLYNN: In the past few years we have seen fewer large companies take responsibility. In fact, fewer have the in-house capability for doing walls. Today, subcontractors farm out the engineering, the fabrication, the finishing, the trappings, and the installation of walls. So the question then becomes: Who is minding the store, and where is the overriding intelligence for this design?

On paper it is the subcontractor, but is that really the case? I don't wish to paint this as a major problem, but it is a condition that architects have to deal with on an increasing basis.

DONALDSON: Unclear lines of responsibility occur on the design level too. There is greater fragmentation of design interests among the curtainwall consultant, the glazing consultant, the roof consultant, and the project architect.

The question is: Who is responsible for what, and who brings it all together?

RECORD: How should the architectural community approach research and development?

DEBEL: Our firm has every wall we design tested under test conditions. For testing, the wall is put together by a contractor's team differently from the way it's going to be put together on the building. I don't think the results of our own testing can be assumed to be the results we're going to get when the wall is installed by a subcontractor under field conditions over a much larger sampling and a much longer period of time.

DONALDSON: Yes, I don't know of any extensive work that correlates laboratory-simulated tests with actual on-site test data. This should be done.

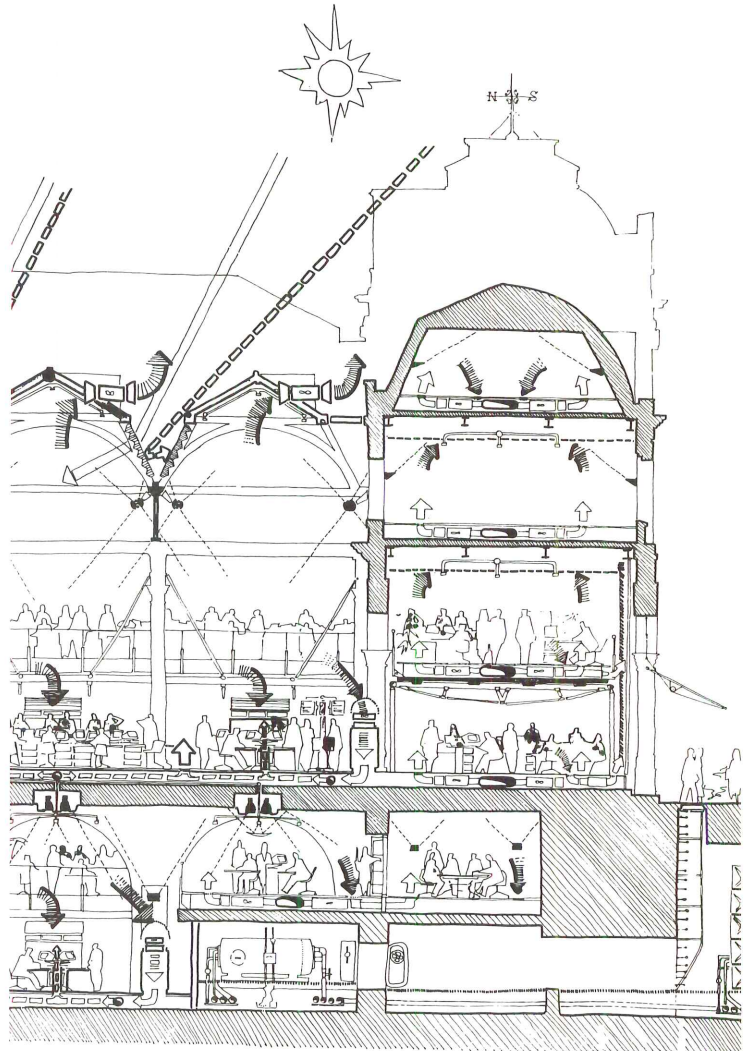
BLKOWITZ: I think an area for predicting field results that has tremendous potential is sophisticated computer modeling. After all, we do some pretty amazing things with computer modeling such as space-shuttle missions and human habitats in space, both of which have to be 99.999 percent right the first time or there is a costly mistake in lives and dollars. We don't normally use that degree of computer simulation with building components even though there is no reason why, in many cases, it couldn't be done. So, we can do that modeling of space stations, but we have a difficult time predicting the water penetration of a crack in a wall. I think the issue is: Have the appropriate people made the decision to invest the resources to accurately predict the performance of new building technologies? Clearly, the answer is that they haven't. There is great potential for computer modeling which could raise the credibility and reduce the risk for both the manufacturers and the users. Well-developed computer models that have been validated with laboratory and field testings can also allow you to play "what-if" games with significantly greater economy than building mock-ups.

UTTON: We should seek opportunities to form ad-hoc groups comprised of designers, industrialists, and government which could develop specific cutting-edge technology. Such formulations are quite unusual in the building industry, but are commonly found in other industries.

BLKOWITZ: Yes, there are excellent models for jointly funded research among the public sector, private sector, and a variety of different user and developer groups. The electronics and biotechnology industries have been successful in forming consortia that define problems and find solutions. By and large, the American building industry does not operate that way; that is, it does not fund a common body of fundamental research which is then used by individual companies for private benefit. Most of the research in our industry is fragmented—the D.O.E. funds energy research, someone else funds earthquake research, and another separate group funds fire-safety research—yet, from the standpoint of the architect or the occupant, all the concerns work cooperatively.

RECORD: Mr. Button, perhaps you will offer a final comment on research and development?

UTTON: As we've all agreed, we in the Western world have underinvested in research and development. In this area, the Japanese offer a leading example. We too must come to believe that research and development are key instruments for pursuing a future, and appropriately invest in construction technology as a function of our foresighted market objectives. *D. R.*



The Richard Rogers Partnership is currently designing the renovation of London's Billingsgate fish market for use as a trading facility for New York-based Citicorp (partial section above). The market was originally covered with skylights that

inadequately restrict sunlight to the new trading floor. To replace the old glass, the architects have developed a multiple-layer glass of 1-ft square segments comprising two layers of glass sandwiching a layer of slatted, prismatic plastic (photo below).

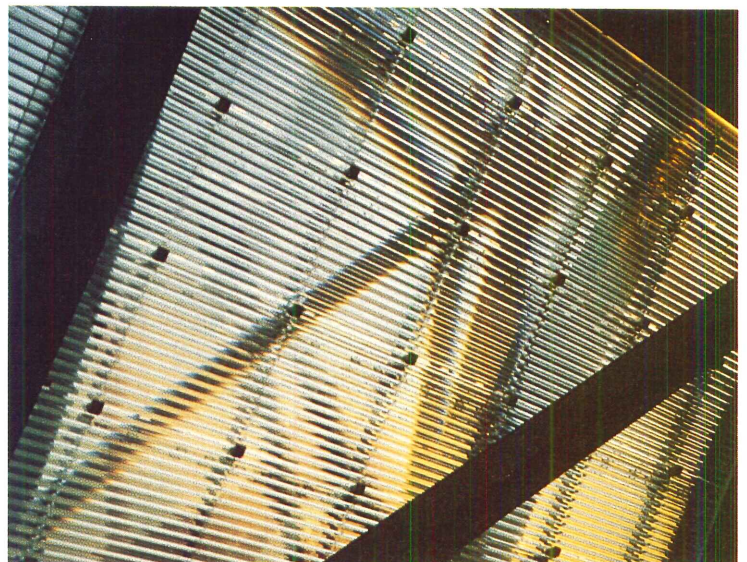
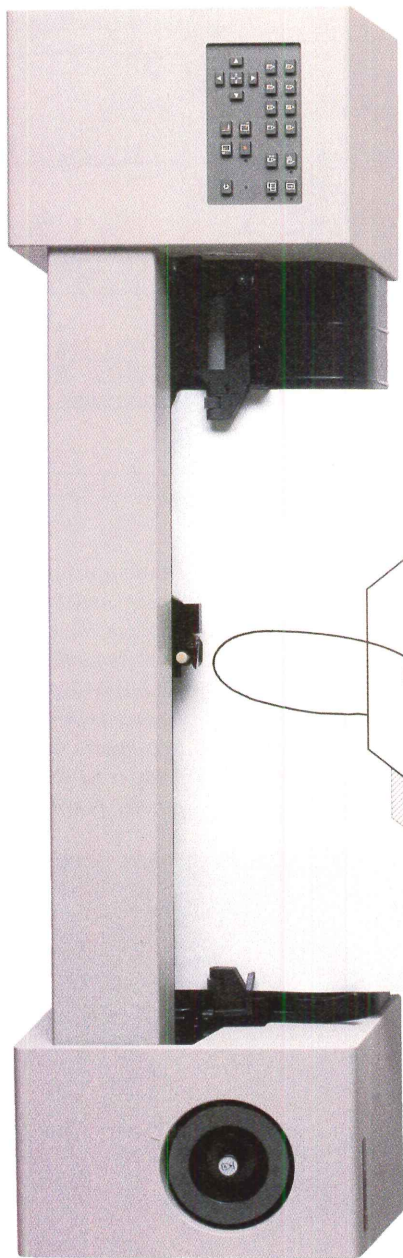


Photo courtesy Richard Rogers Partnership, Ltd.

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Software reviews for architects

by Steven S. Ross

Dreams 1.0

relatively inexpensive 2-D CAD software for the Macintosh, from the company that created MacDraft, the most popular Macintosh drafting program. Dreams is designed to be modular, with separate add-on software promised—including better drivers, file conversion to and from DXF and IGES, and several libraries of architectural symbols (conversion to and from MacDraft files is included now). Dreams makes excellent use of Macintosh II color capabilities. Dreams is a layer-based program, with the number of layers limited only by available memory.

Equipment required: Macintosh (2 megabytes of RAM recommended), SE, or Plus. System and Finder 6.0 or higher (reviewed with V. 6.0.2). Hard disk.

Vendor: Innovative Data Design (IDD), 2280 Bates Ave., Suite A, Concord, Calif. 94520. 415/680-818. \$500 (\$200 for registered MacDraft users). Extra modules priced separately.

Summary

Manual: Excellent. The tutorial manual helps Macintosh novices get used to the "point-drag-click" Macintosh mouse interface, then goes on to provide practice with most of the drawing tools. The reference manual, also clear and well organized, offers information in greater depth.

Ease of use: Good. In particular, those used to MacDraft will find Dreams a natural extension. One does have to get used to changing defaults before or after adding an element, rather than during the process, because the user cannot release the mouse button until the process is completed. On-screen help is

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

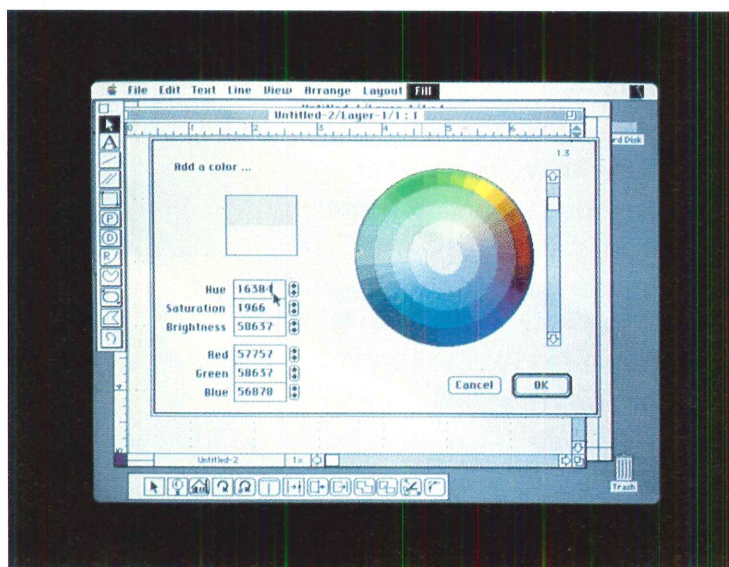
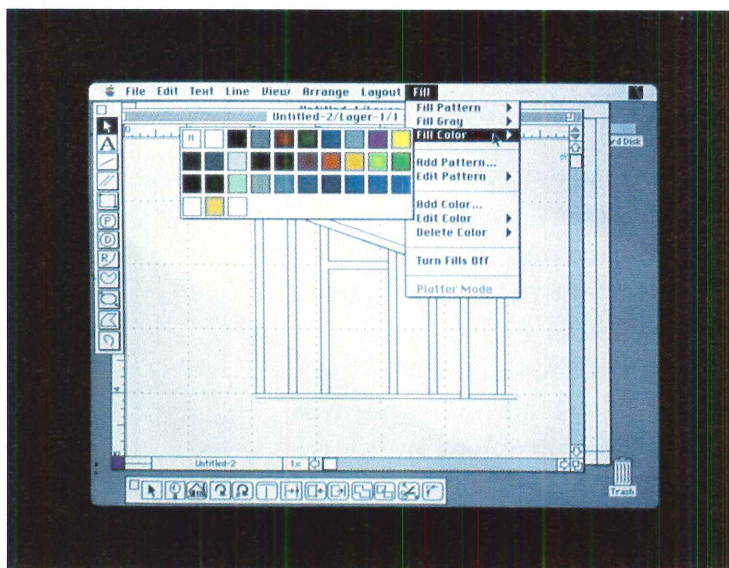
adequate. Palettes, as with most quality Mac software, can be dragged to convenient spots on the drawing.

Error-trapping: Good. Installation is straightforward. There's no copy protection, but the user's name (and, optionally, user organization) must be permanently added to the program file during the process. It is possible (but not easy) on a computer with lots of random-access memory to create a file too big to store in available disk space. Users are warned if they try to leave a document without saving it. Other than deliberately creating a huge drawing and trying to save it, we were unable to upset the system.

Review

IDD has made an excellent start toward a full-featured CAD system. It is fast and easy, almost intuitive, to use. It is also easy to customize. With its ability to translate (imperfectly) and use files originally created with MacDraft, it is also a logical step up for those who need more capabilities than MacDraft can supply. Architects will have to await various promised add-on modules, however, before Dreams can meet all their requirements.

Most importantly, Dreams lacked a plotter driver at review time. One is promised soon for Hewlett-Packard, Houston Instruments, and CalComp plotters. In the meantime, Dreams can save drawings in the popular PICT format, for which many companies already supply drivers. But because not all attributes are translated to PICT, the user must also save the drawings in Dreams' own format. Thus, a 40-megabyte hard drive is about the minimum users should consider. Also due imminently are three volumes of architectural symbol libraries (one for preliminary design, another for residential construction, and a third for



light commercial construction), and two file conversion modules, one for DXF and another for IGES. Eventually, according to IDD, users will be able to integrate database functions, such as bill-of-materials processing, into Dreams through promised modules. A 3-D module is also anticipated. Architects should not be misled, however. Dreams must add a lot of capabilities to match full-featured DOS software (although it is faster than most), and even to match VersaCAD for the Mac.

As a drafting tool, Dreams has impressive capabilities. Text as

The Dreams package allows editing or adding colors from the Macintosh color palette (top), up to 256 per drawing or 10 shades of gray. A dialog box (bottom) permits color blending as well as hue, brightness, and saturation changes.

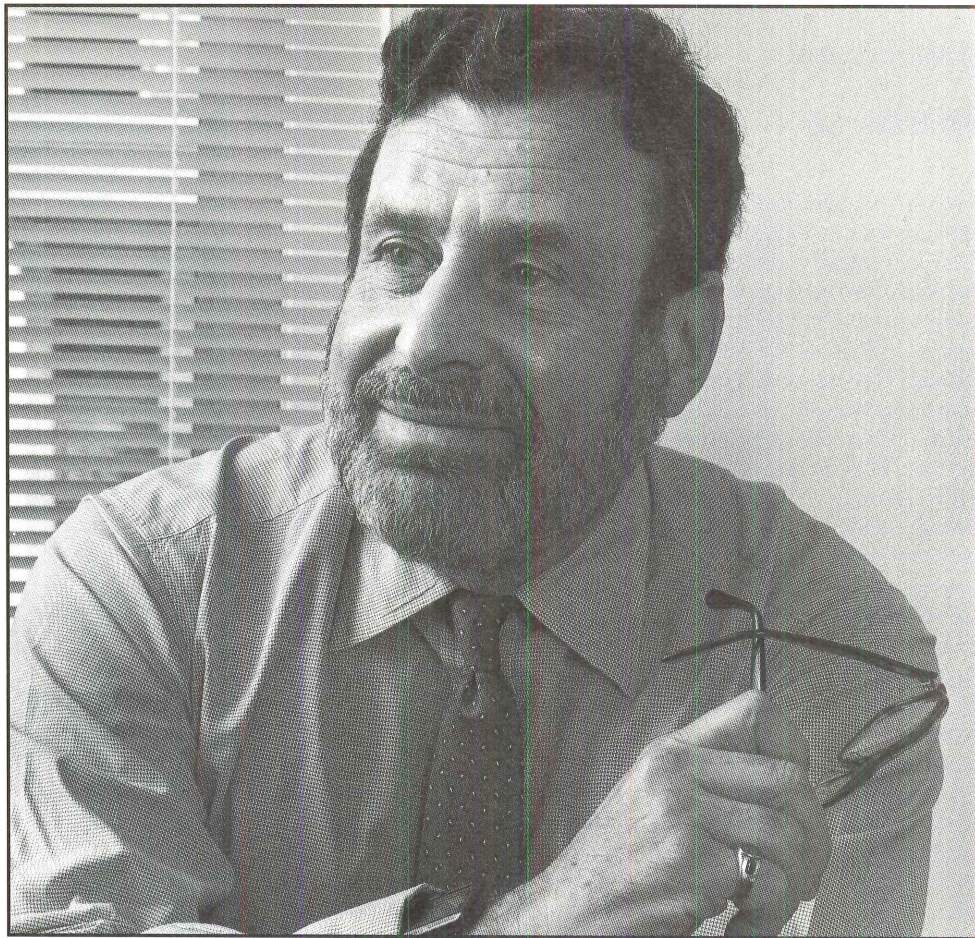
well as objects can be rotated. A variety of end caps and corner treatments can be added automatically to double lines (great for drawing walls). Bezier and spline curves are easy. Rounded and rectangular shapes are automatic. One particularly nice touch: Layers are truly independent. They can use different scales, displaying in various English and metric units. That makes Dreams a good choice for multipractice offices that combine, say, architects with mechanical and civil engineering—each discipline needing its own measurement

Continued on page 125

“None of us studied architecture expecting to be defendants in a lawsuit. Most architects are creative people—they may or may not be businessmen, although the better they are in business the better it is—but few expected to be defendants in this changing profession. It’s something that has affected me personally, and, I expect, the growth of many architectural firms. It’s caused me concerns, maybe burned me out, in spite of the fact that we’ve won every one of our suits.

In the middle ’70s to the early ’80s, I felt insurance was the biggest problem architects faced—that and litigation. And it’s a continuing problem, no question about it. But I think that today DPIC Companies is with us for our entire future. Although we had only had two other insurers in 69 years, we really moved away from our previous insurer without any hesitation. DPIC was the first insurer that ever discussed loss prevention. And they were the first insurer that ever gave a damn about how we practiced architecture. That makes us very comfortable. Because, really, they are the most important partner in this firm. They provide us with the assurance we need to know they are going to be there. They assist us in undertaking contracts and procedures necessary to try to keep out of trouble in this litigious world. They provide us with legal counsel when there’s a problem brewing. In fact, we took advantage of their Early Warning program just this week.

I feel very good about them.”



Martin David Dubin

Dave Dubin is a principal in Dubin, Dubin and Moutoussamy, a 75-year-old architectural firm based in Chicago. He is past president of both the Chicago and Illinois AIA. We value our relationship with his firm and thank him for his willingness to talk to you about us.

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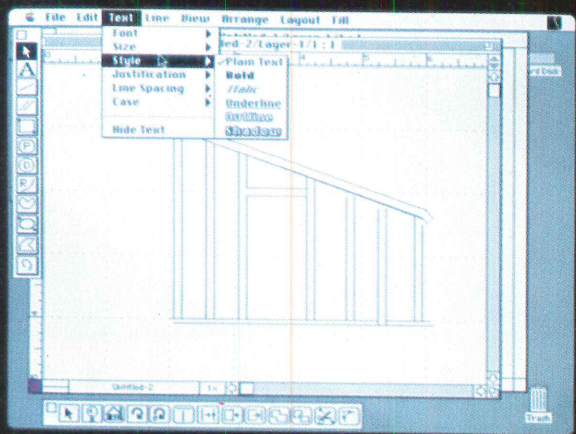
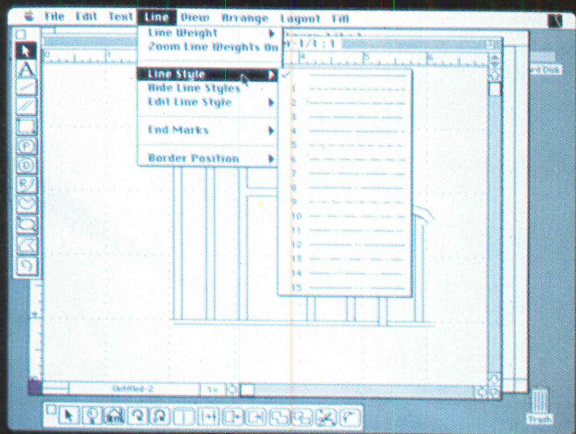


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Typically, pull-down menus lead to other choices (line weights in this example, top). The standard Macintosh fonts are more posterish than architectural (bottom), but the basic needs are met and there is a font editor.



system and tolerances. Dreams calculates dimensions automatically, and can display them in a number of drafting cycles.

In general, it is easy to edit elements after they are laid down in the drawing. That makes up for the inability to change defaults in the middle of element-placing. For instance, if one draws a set of parallel lines and wants to change the distance between them, it can be done after completing the lines themselves. Lines, curves, and entire objects can also be resized once they are placed. By the way, our testers usually found

this easier to do with keyboard commands than with the mouse.

Zoom factors of as great as 32X are possible on a one-page drawing (compared to 8X in MacDraft). The largest possible physical drawing is approximately 8 ft by 8 ft. The basic module supports printers using Postscript graphics language, such as the laser printers Apple sells as companions to the Mac. The printer automatically "tiles" a large drawing so that it can be printed on a number of 8 1/2- by 11-in. sheets. An 8-ft by 8-ft drawing takes 154 sheets!

DataCAD 3.6e with DC Modeler

A remarkably fast, full-featured MS-DOS-based system with 3-D capabilities and an excellent AEC add-on. DataCAD makes few demands on computers with low-cost graphics boards, allowing users to take work home with them. DataCAD has a number of features that help automate complex drawing chores, including a command for hidden-line removal that affects an entire perspective view of a model (reducing recalculation time when the view is changed), and a good "macro" programming language for chaining many commands together.

Equipment required: IBM AT and compatibles, or PS/2 series. 640K (additional random-access memory can be used as a RAM disk, but not as extended or expanded memory), hard disk, math coprocessor (8087, 80287, or 80387, depending on system), MS-DOS or PC-DOS 3.1 or above, two serial ports (one for plotter, one for mouse or digitizing tablet). Graphics boards include CGA, EGA, PGA, Hercules, and compatibles, as well as high-resolution cards such as the Artist I and II. Supports most digitizers and plotters, and can send screen dumps to an Epson-compatible dot-matrix printer when used with EGA card.

Vendor: Microstructure, 1224 West Main St., Charlottesville, Va. 22903. 804/295-2600, 800/722-8983. DataCAD, with AEC module, \$3,495; DataCAD DC Modeler alone, \$495. Site licenses are: \$975 for each additional copy of DataCAD, \$150 for each additional copy of DC Modeler.

Summary

Manual: Good. There is a complete reference manual for DataCAD itself, and for the AEC option, and the DC Modeler

option. Installation instructions do not begin until page 18 of the reference manual. That is followed by details of each command. There is a good section on organizing an office for CAD. The tutorial, a thorough one, is in the DataCAD AEC manual. The manuals' indexes are adequate as far as broad topics are concerned. The three separate manuals have separate indexes and tables of contents, too. The index for the reference manual does not include all command names indexed alphabetically as it should. "DrwHidn" is thus indexed under "H" for "hidden line removal" rather than under "D," making the reference manual difficult for novices to use. The AEC manual does arrange commands alphabetically, but not all commands are listed, because some are 3-D commands from the separate module.

Ease of use: Good. Add-on modules are integrated into the main menu. The menus (especially the drawing-edit menu and the utilities menu) are long, with many choices. The advantage: users don't have to wade through too many sub-menus after making a choice on the original menu. One can create views and add them to the menu. Some users may wish DataCAD came with a digitizer overlay containing all commands as separate "buttons."

The system refused to start after we configured it with no plotter (because one of the test computers did not include an attached plotter.) The software evidently insists on looking for a plotter driver. We got around the problem by telling DataCAD there was a plotter. It happily loaded the driver, and we went on from there.

Error-trapping:

Excellent. DataCAD automatically saves work in progress, in a file with the .ASV extension in its *Continued on page 127*



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With DataCAD's DC Modeler, 3-D views can be edited; 2-D views are automatically updated. Complex 3-D shapes can be built up from primitives such as domes and cylinders, or by sweeping 2-D contours through space.

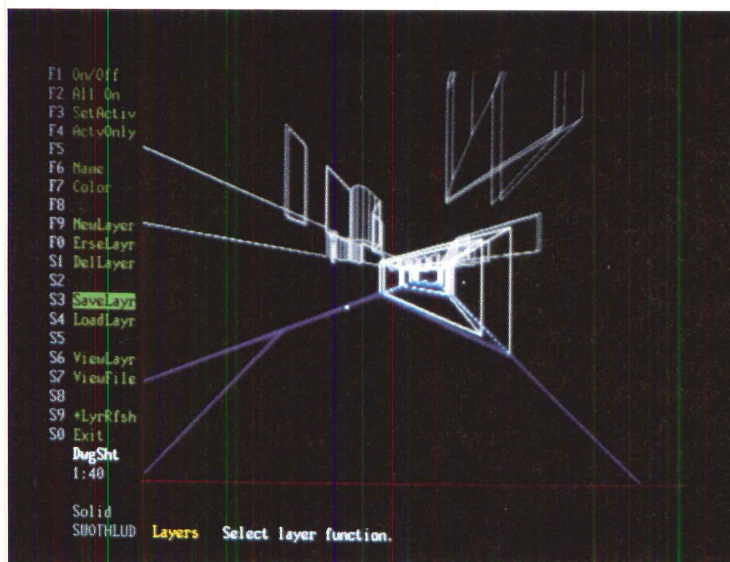
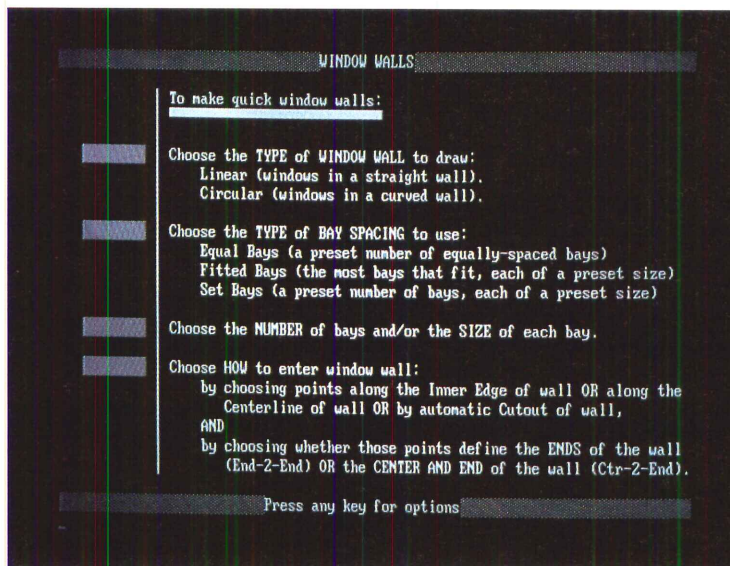
name. DataCAD also keeps a backup file that contains a complete record of the file as it exists before the current editing session began. Details such as intersecting lines that overshoot can be cleaned up after the fact, even if automatic cleanup was not in effect when the lines were drawn.

The documentation warns of several possible conditions that can cause the system to fail. But we were only able to duplicate one: a symbol that's been mirrored in a drawing saved as a DXF file cannot be read directly by AutoCAD 9.0's DXF transfer command. We were nervous about one programming shortcut in DataCAD: the software speeds up apparent hidden-line removal by saving the hidden-line image as a separate temporary "layer" in the drawing. This layer can be added to the permanent drawings if the user requests it, and can then be "translated" to other software, where it might not reflect the latest updates to the drawing as a whole. But neither of our test users got into trouble—although they both used the shortcut because it saves so much time.

view

This full-featured CAD software starts with a basic 2-D module that allows extruding 2-D plans a third axis. Additional modules allow 3-D viewing and editing. Purchase of these modules is strongly recommended, because using them speeds up the entire process. DataCAD clearly deals with 3-D objects as single entities. Constructing a 3-D object from lines, then extruding them, is possible but forces DataCAD instead to deal with many separate "entities" making a single object.

The 3-D module allows reframe viewing in orthographic, parallel, perspective, and oblique



projections. It also contains the hidden-line removal system. The DC Modeler allows editing 3-D views, with automatic updating of the 2-D drawings. Complex 3-D shapes can be built up from primitives such as domes and cylinders, or by sweeping 2-D contours through space.

DataCAD's underlying database keeps track of symbols as they are used in the drawing. This allows easy, almost automatic compilation of such reports as door and window schedules. The database is tightly connected to the drawing. For instance, "redefining" a symbol (changing a window

style, let's say) will not only change it in the entire drawing (if you wish), it will also update the database. Care is needed, of course, if you then use the database to create, say, a bill of materials, because no software can read manufacturers' catalogs to divine prices and labor costs.

Defining a perspective projection is easy. Just specify an eye point and a center of view. Two-point projections are defined with the help of an on-screen globe, the center of projection coinciding with the center of the globe. Select one point on the globe's surface as

an eye point, and another point to define the line from eye to center of view. You can then walk through the model, or around it. Parts of the model that are behind the viewer are clipped away. The clipping operation is one of the few that is painfully slow in DataCAD. But once a view is calculated, it can be saved for quick recall.

Getting used to relatively "pure" 3-D processing does require some unlearning of old habits, and learning a wealth of special commands. For instance, our testers regarded cutouts in walls and slabs as separate entities. But DataCAD includes such commands as Cutout (to cut a wall for window insertion), Cut Wall (for openings without jambs) and an entire menu for making "voids," in the DC Modeler. A wall or a slab with cutouts can thus be constructed as one entity in the drawing, not many. This speeds processing and makes the plotted representations more accurate.

Users can learn the macro language interactively. Just ask for HELP while trying to draw specific repetitive entities such as stairs or windows.

DataCAD offers many ways to partially automate drawing tasks. In the top example, the first HELP screen tells users how to draw window walls. In the second example, using the DC Modeler, 3-D is well integrated; the menu bar on the left constantly changes as the drawing progresses.

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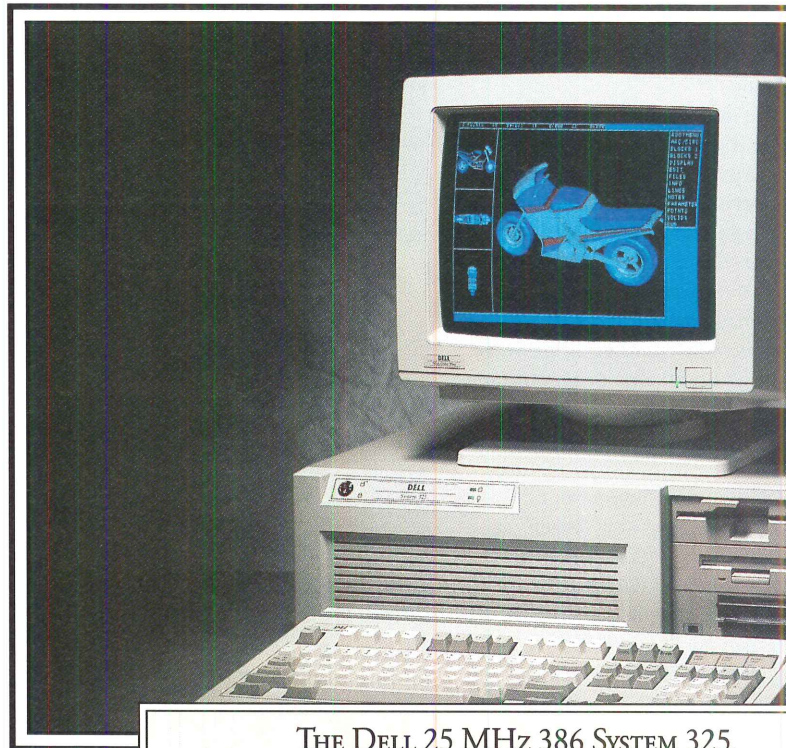
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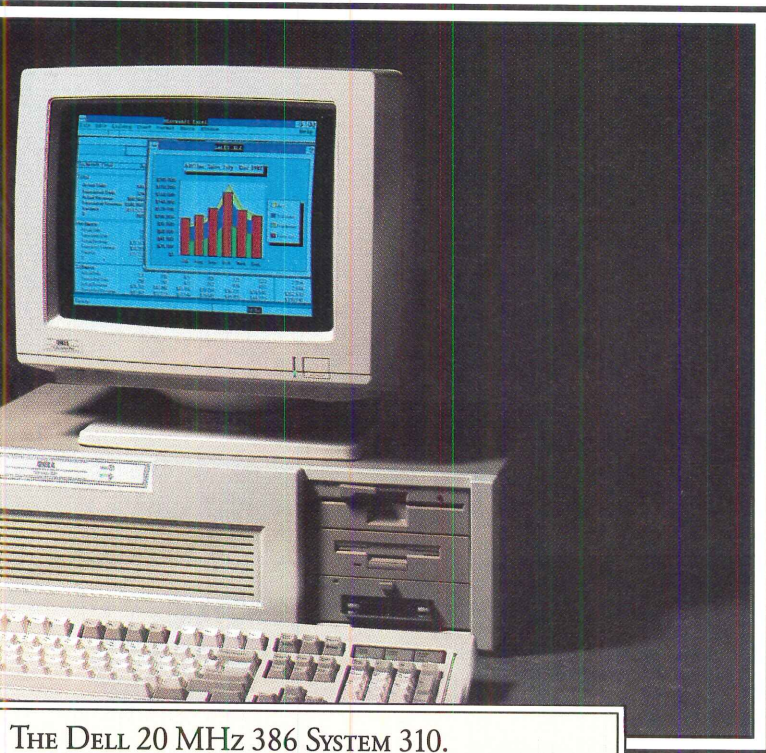
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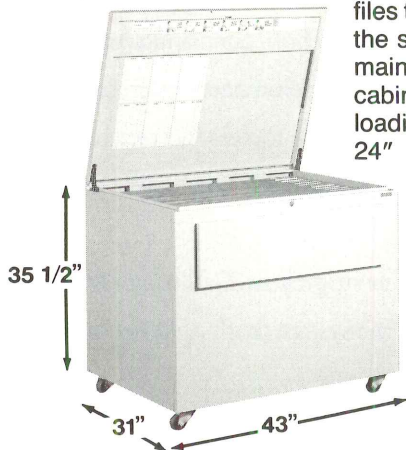


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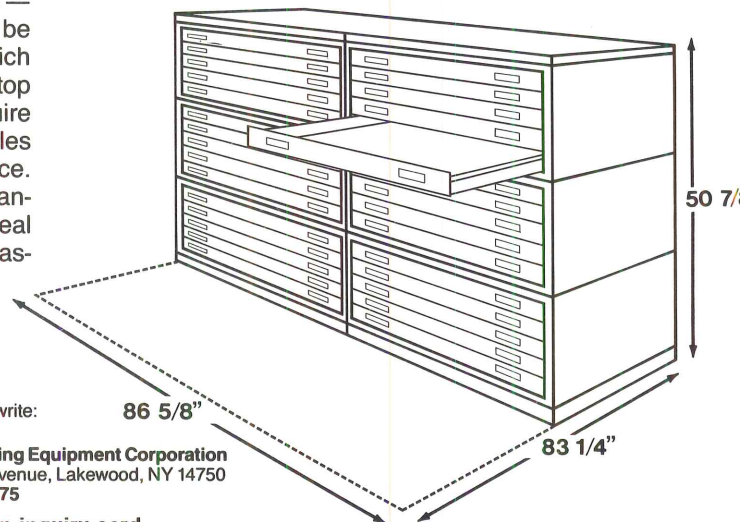
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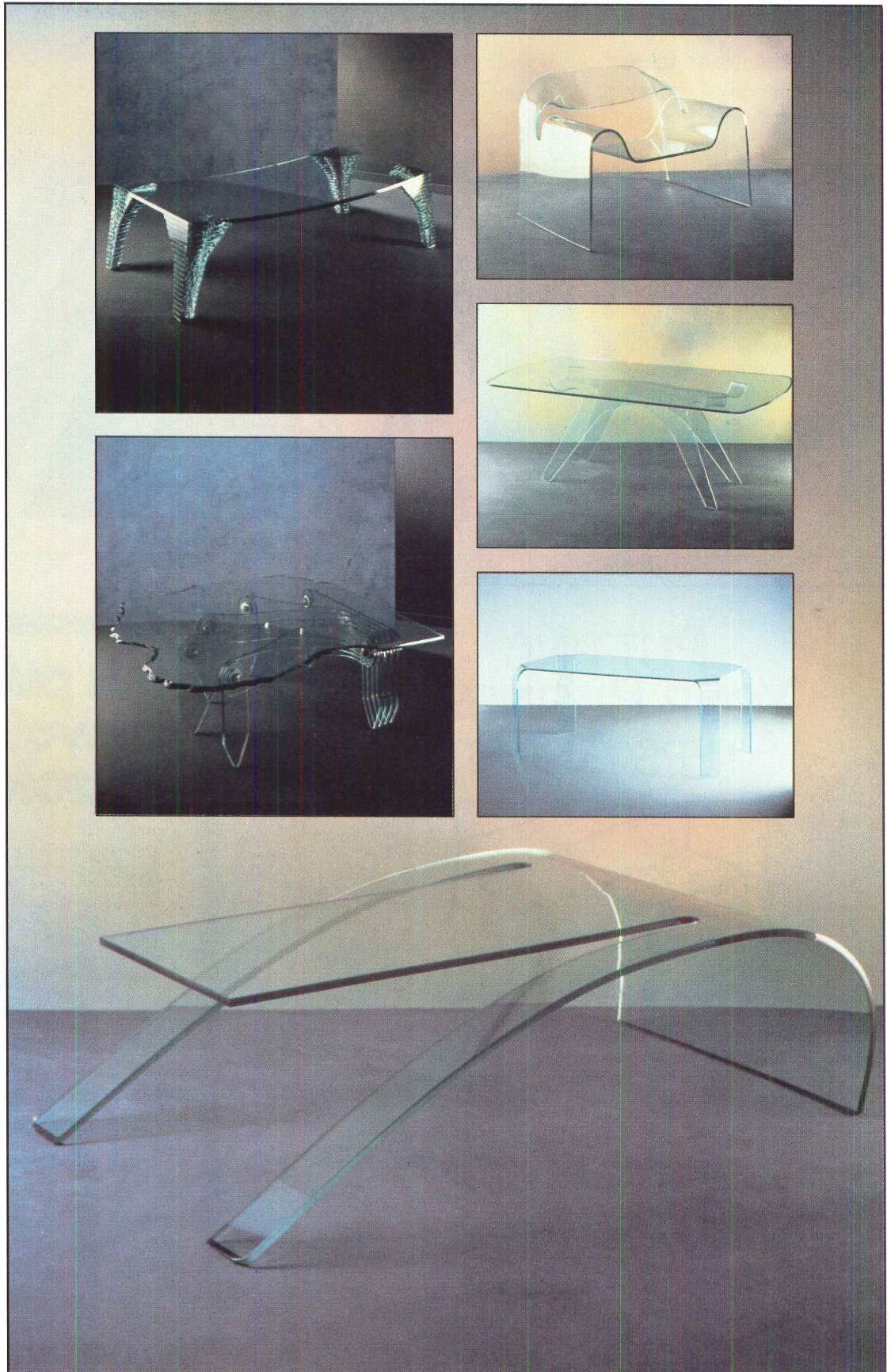
New products

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Novelty to look at

An exhibit of FIAM sculptured glass furniture at The Pace Collection, in New York City, included pieces introduced at this year's Milan Furniture Fair (see *Design News*, this issue). The tables and chair are made in a variety of bent, curved, and hammered float glass, shaped over a mold created for that particular design. A prototype for the sculptured glass concept, Vittorio Livi's 1984 Ragno table (bottom right), is made of a single 1/2-in.-thick slab of glass bent over a form made of 80 separate components (it took hundreds of tries to get the mold right). After the glass has assumed the desired shape, it is slowly cooled, a polariscope ensuring evenly distributed compression within the tempering glass. The glass shapes have both the strengths and the limitations of high-quality tempered glass—and are quite heavy, despite their ethereal appearance.

A pencil set on the curved top of the Atlas Table (top left) will fall to the center, but a wine glass will not spill, asserts designer Danny Lane of London's Glassworks. The table rests on legs made of stacked pieces of glass with hand-shaped edges. Also by Lane, the Shell Table (bottom left) has a curved edge finished with alternating hammer blows. Cini Boeri and Tomu Katayanagi's Ghost chair (top right) is a structural shape formed of one piece of 1/2-in.-thick glass. The Taurus table (middle right), designed by Vittorio Livi, has a monolithic base bent in double opposing curves. Another monolithic piece, the New Ton table (large photo) by Maurizio Castelvetro is cantilevered off a gracefully curved base. FIAM furniture will be offered at prices ranging from \$2,975 (for the New Ton table) to \$3,500 (for the Atlas table). The Pace Collection, New York City. Circle 300 on reader service card. More products on page 135



Why you should specify Accuride slides

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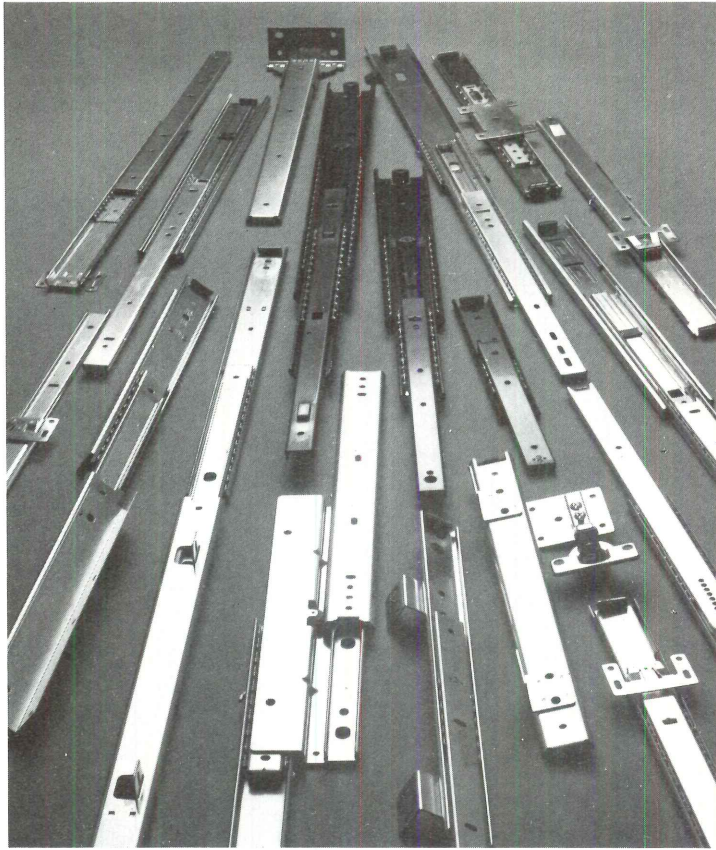
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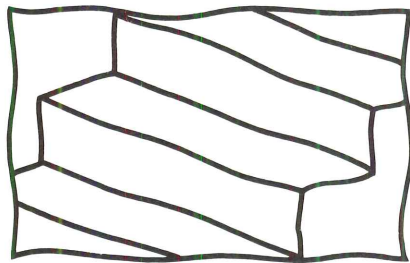
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Interactive graphics CAD

A new product line for architecture/engineering/construction applications, the Entry Level Sales program is described by Intergraph as offering the powerful graphics and network capabilities of high-end CAD systems at a price compatible with the needs of smaller, 2- to 25-member firms. Components of the system include a UNIX V-based InterPro 120 workstation, MicroStation 32 core graphics and AEC project/file management software, and a plotter. Application-specific programs include architectural design, and structural, electrical, and civil engineering programs.

The photorealistic 3-D view shown here, designed by The Allison Partnership, was generated by ModelView, a mode of the interactive Architecture program. Price for the complete CAD package, under \$28,000, includes access to local Intergraph consultants for hands-on training. Intergraph Corp., Huntsville, Ala.

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Red cedar bollards

A low-level exterior fixture designed for individual site requirements, lighting bollards are custom made of kiln-dried western red cedar. Fixtures can accept incandescent, fluorescent, or low-watt HID sources.

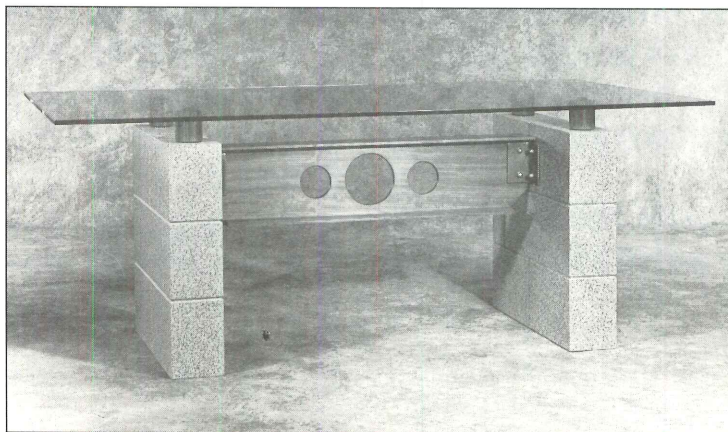
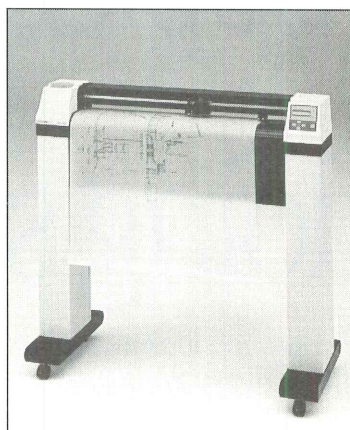
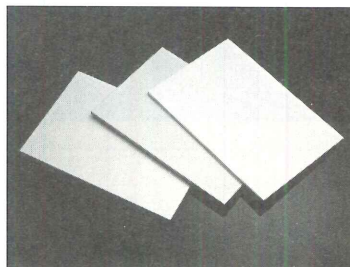
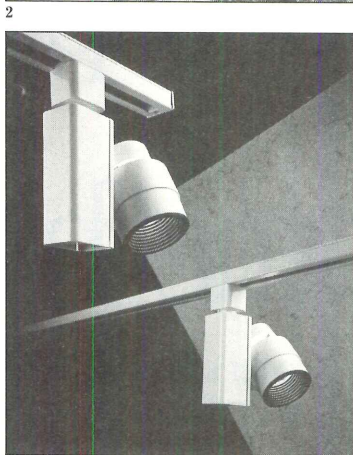
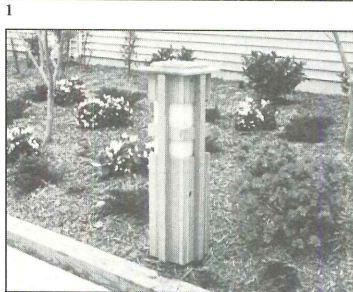
Pyther-Purdy Lumber Co., Inc., Old Saybrook, Conn.

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Low-voltage lampholders

An extension of the Power-Trac line, L2711 and L2720 lampholders are intended specifically for MR11 and MR16 lamps. Both are available in narrow spot, spot, and narrow flood-lamp configurations. The L2720 will accommodate two lenses, for greater design flexibility to shape light and to use Dichroic color filters. Halo lighting, Elk Grove Village, Ill.

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For more information, circle item numbers on Reader Service Card

4. Crystallized glass panels

A glass product manufactured in Japan at extremely high temperatures, Nippon Electric Glass's Neoparium is now available in a lighter, 8 mm thickness for use on interior and exterior walls. The material is described as impervious to moisture, and extremely stain-, frost-, and abrasion-resistant. An opalescent white and beige are standard, with a range of light and dark shades offered on special order. Panels come in sizes up to 36 by 48 in., and may be curved. Forms + Surfaces, Inc., Santa Barbara, Calif.

Circle 304 on reader service card

5. E-size plotter

A new line for this manufacturer of flatbed plotters, the E-size GRX-400 (shown), and a smaller, A-D size GRX-300, are drum-type pen plotters capable of a maximum speed of 20 in. per second. The units employ efficient micro-stepper motors, a technology said to produce a drawing resolution as high as 12.5 microns; the plotter automatically selects the appropriate pen speed and pressure for the different types of pens. An 18K buffer is standard. Roland Digital Group, Div. Roland Corp. U. S., Los Angeles.

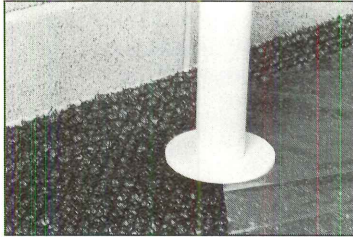
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6. Architectonic table

As part of a collection of architecturally oriented furnishings, designer Lewis Dolin assembled the base of this glass-top table from a pierced beam of solid padouk wood hung from Zolatone-coated concrete block pedestals. The glass top comes in 30- by 72-in. and 42- by 96-in. sizes. Lewis Dolin, Inc., New York City.

Circle 306 on reader service card

More products on page 136



Radon control

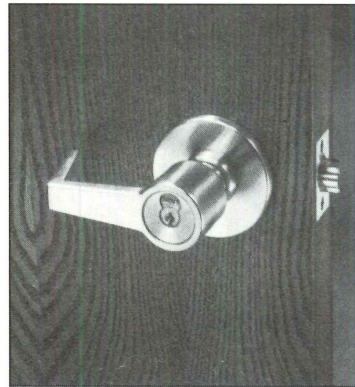
Intended for under-slab installation in new homes, Enkavent three-dimensional matting has reportedly been proven to lower radon gas to safe levels in tests sponsored by the manufacturer. The demonstration installation illustrates placement of the mat, which is hinged to connect the foundation wall to the subslab. Enkavent is laid fabric-side down, and covered with a vapor barrier. Flanged vent pipe is set over the mat, and the slab is poured over the system, forming a channel that collects and vents gases before they can penetrate the foundation. Akzo Industrial Systems, Asheville, N. C.
Circle 307 on reader service card



Reception seating

Introduced to meet the space limitations of the smaller office, the competitively priced American Business Sofa Group includes a

tailored New York settee, by Raul d'Armas and Edward F. Weller III, of Skidmore, Owings & Merrill. Stendig, New York City.
Circle 308 on reader service card



Lever-handle lock

The model 8K lock cylinder is said to be the first lever-handle lock to have all the functions of a keyed cylindrical lock; it also meets most states' handicap and accessibility codes. Handing of the lockset can be changed easily. Best Lock Corp., Indianapolis.
Circle 309 on reader service card



Rectilinear plumbing fixtures

A mid-price line offered in several colors, geometrically shaped Square fixtures (a siphon-jet toilet is pictured) feature sharper lines and angles. Pedestal and counter-top lavatories and a bidet are included in the new plumbing collection. Laufen Sanitaryware Stamford, Conn.
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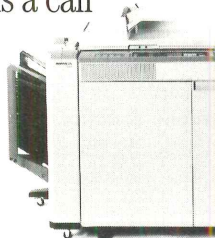
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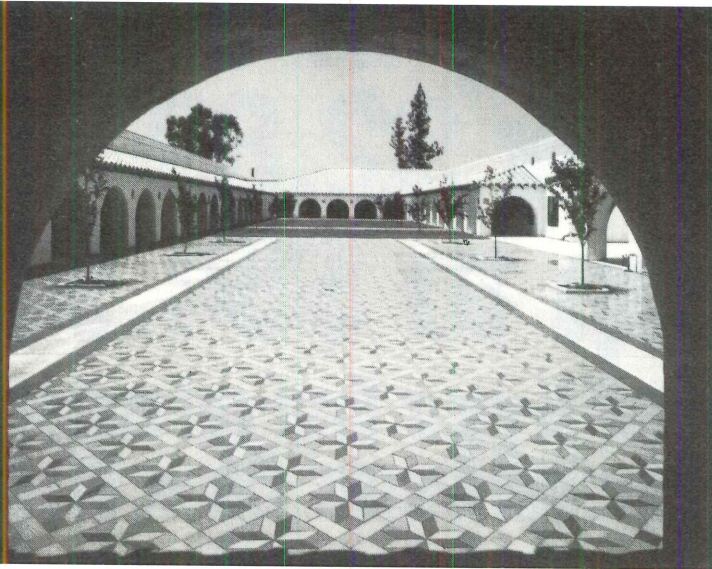
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Pavers, available in 16 warm earthtones, are laid over a rigid sub-base, and locked together by sweeping sand into the joints. Higgins Brick Co., Redondo Beach, Calif.
Circle 311 on reader service card
Products continued on page 145

Manufacturer sources

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

Pages 102-107

Escondido City Hall
 Pacific Associates Planners Architects, Inc.
 Curtain wall, storefronts, and entrances: Pacific Aluminum Corp. Tinted glazing: PPG Industries (Solex). Ceramic tile dome: Quamagra Tile. Clay tile: Craycroft. Gold decoration: Crescent Bronze Powder Co.
Page 107—Auditorium seating: J. G. Furniture Systems. Silk wall fabric: Gretchen Bellinger. Custom casework: Ganahl Architectural Millwork. Paints: Frazee Paint. Council chairs: Knoll International. Media lighting: Fresnelite. Carpeting: Bentley Mills, Inc.

Pages 108-109

Salisbury Town Hall
 R.M. Kliment & Frances Halsband Architects
 Redwood clapboard, trim, and columns: Hartman-Sanders Co. Paints: Benjamin Moore & Co. Lead-coated copper roofing: Revere Copper Products; installed by Premier Roofing Co., Inc. Double-hung windows: Marvin Windows. Custom fixed windows, entrance doors: Doane & Williams.

Pages 110-111

Corpus Christi City Hall
 Taft Architects, Kipp Richter & Associates, Associated Architects
 Face brick: St. Joe. Tile: Elgin. Concrete tile: Monier Roof Tile. Pole-mounted luminaires: Hi-Tek Div., Lithonia. Curtain wall, aluminum entrances: Hendrix Glass Co. Glass: PPG Industries. Locksets and closers: Yale. Exit devices: Von Duprin. Acoustic tile: Armstrong World Industries. Grid: Donn Corp. Paints: Glidden. Vinyl wall coverings: Genon. Laminates: Wilsonart. Ceramic and quarry tile: American Olean Tile Co. Carpeting: Bigelow Carpet Co. Reception seating: Bernhardt. Fixed seating: Irwin Seating Co. Fluorescent lighting: Lithonia.

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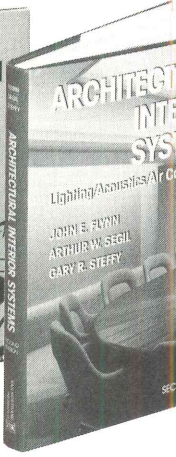
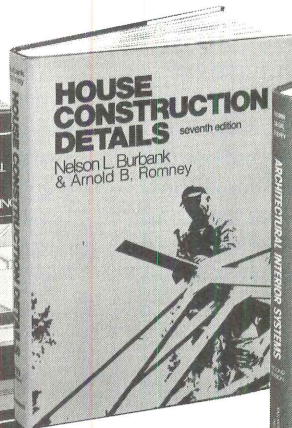
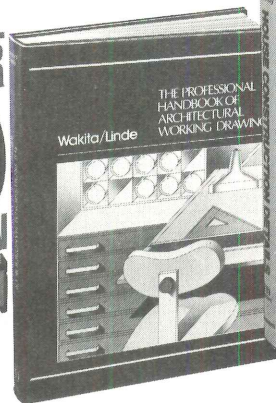
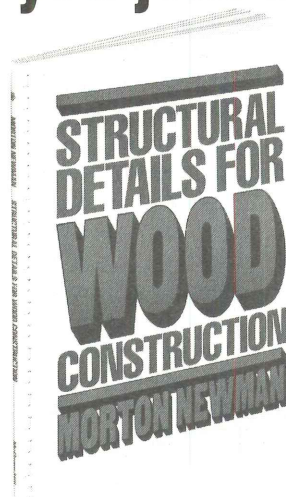
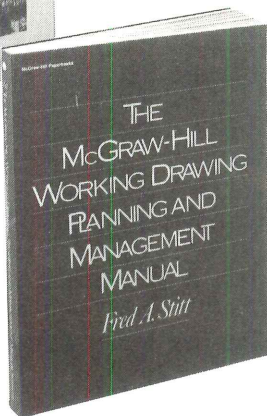
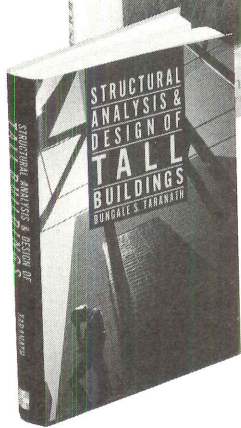
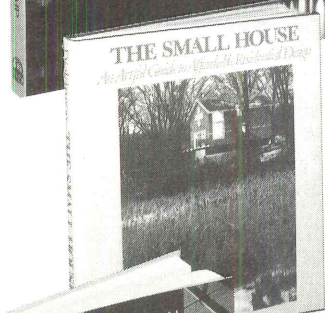
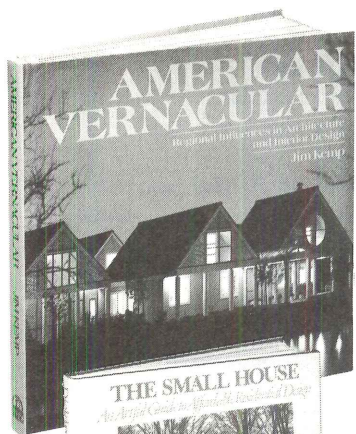
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584572-5 Pub. Pr., \$21.00 Club Pr., \$17.95

**AUDITORIA:
Designing for the Performing Arts**
By M. FORSYTH. 220 pp., 325 illus., out-sized 8½ × 12 format

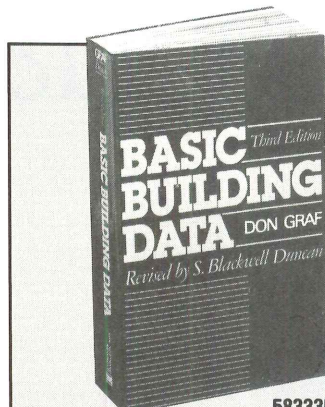
This book is not an encyclopedia, although it includes all types of auditoria from around the world. Nor is it simply a "how to" guide, although you will find much emphasis on technical information. Rather, it's a personal selection of more than 40 buildings that offer imaginative solutions to problems. All are instructive for their eloquence—and will provide inspiration and stimulate your creativity.

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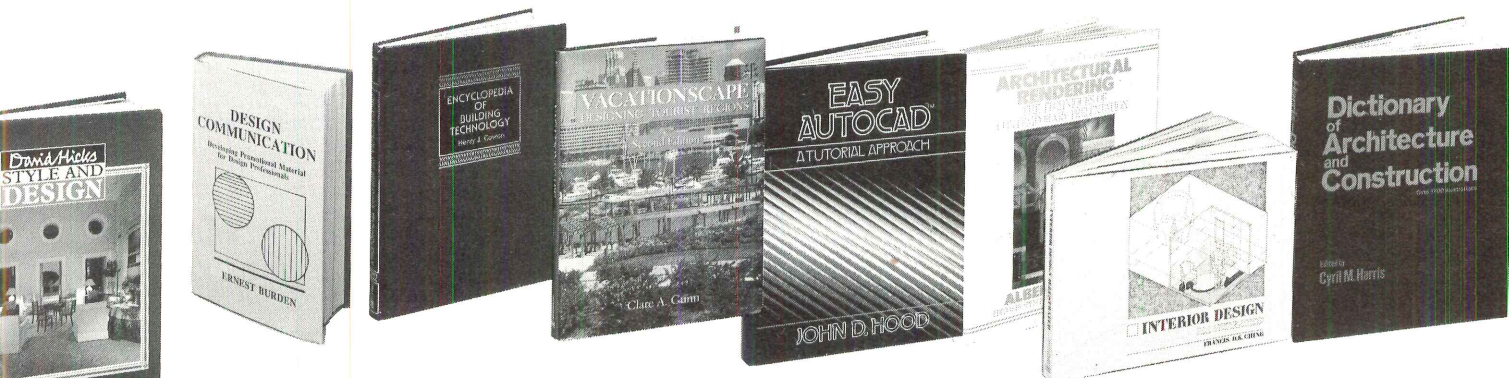
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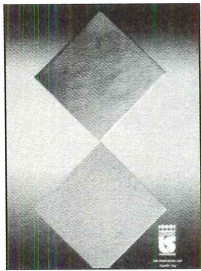
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Ceramic tiles

A color brochure covers two new commercial products: glass-bonded Traffic Tiles, available in 19 clear colors, and Craftsman handmade ceramic tiles in 10 rustic shades. Ludowici Stoneware Co., New Lexington, Ohio.
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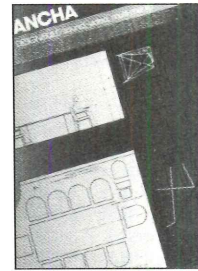
Healthcare lighting

A 21-page catalog includes design data and project photos of special purpose lighting for hospitals and institutions. Products range from RFI-shielded surgery lights to high-abuse fixtures for psychiatric wards. Alkeco, Franklin Park, Ill.
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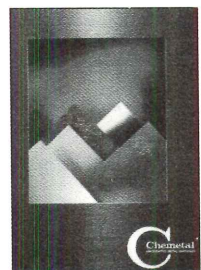
Architectural hardware

Solid brass door pulls, knobs, levers, hinges, backplates, bolts, and switchplates are shown in a 22-page trim hardware catalog. Styles range from baroque to high tech. Omnia Industries, Inc., Cedar Grove, N. J.
Circle 401 on reader service card



Multimedia systems

An architectural guide goes step by step over design procedures for paging, sound reinforcement and masking, video projection, teleconferencing, and multimedia systems. Ancha Electronic Inc., Rolling Meadows, Ill.
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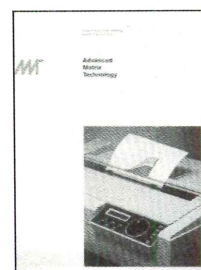
Decorative metal surfaces

A binder-format catalog contains samples of brass, copper, chrome, and anodized aluminum laminates, suitable for interior applications such as walls, ceilings, columns, and doors. Chemetal Corp., Norwalk, Conn.
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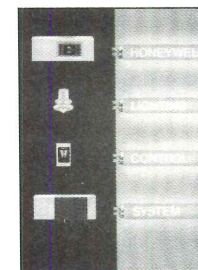
Concrete roof tile

A design brochure explains the long-term advantages of cement roofing tile, guaranteed not to crack, shale, or become porous. Two styles and 11 colors are shown. Marley Roof Tiles, Ltd., Madison, Conn.
Circle 408 on reader service card



C-size ribbon printer

A brochure discusses a cost-effective seven-color graphics printer with features such as three print speeds, four type fonts, and AMTplot, a program that converts HPGL data. AMT, Inc., Newbury Park, Calif.
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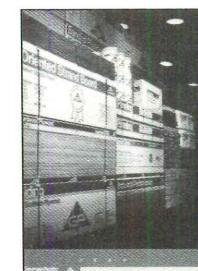
Fluorescent lighting control

An economical solid-state Control System, which modulates illumination and electrical power consumption of new and existing fluorescent light fixtures, is covered in a brochure. Honeywell Inc., Golden Valley, Minn.
Circle 409 on reader service card



Low-voltage lighting

A brochure introduces low-voltage snap-together Lumere lights, described as a compact and flexible system that eliminates dark spots and glare under cabinets, stairs, and soffits. Task Lighting Corp., Kearney, Neb.
Circle 404 on reader service card



Wood building products

A comprehensive catalog covers 11 product types, including decorative panels, siding, lumber, and new sections on molding/millwork and hardwood plywood. Georgia-Pacific, Atlanta.
Circle 410 on reader service card



Bullet-resistant glazing

Security glazing for banks, prisons, hotels, and retail outlets is described in an eight-page specification guide. UL listings show various levels of protection for 21 glazing configurations. Insulgard Corp., Hyattsville, Md.
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Window treatments

Written for the design professional, colorful specification brochures present window treatments and ceiling systems for commercial applications. Levolor Lorentzen, Inc., Parsippany, N. J.
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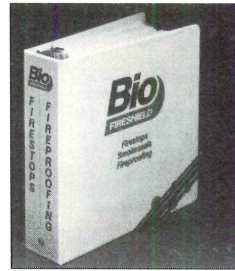
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Financial software

A brochure outlines the documentation and ease-of-use features of a financial analysis program specifically for architects. A demo disk may be ordered. Wind-2 Research, Inc., Fort Collins, Colo.

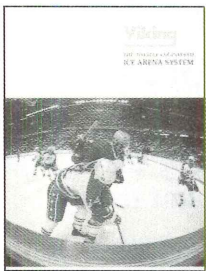
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Fireproofing materials

A 285-page design manual has technical and test data, color illustrations, installation instructions, and typical details for 18 different fireproofing, firestop, and smoke seal products. BioFireshield, Inc., Concord, Mass.

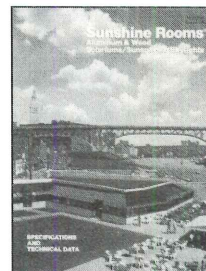
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Turnkey ice rinks

A booklet describes how Viking provides everything needed for an ice rink—design, financing, construction, and maintenance—and introduces Glice, a polyethylene icelike gliding surface. Viking, Wayne, Pa.

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Solariums

Residential and commercial solariums are shown in a 12-page color catalog. Options include interior and exterior shading that fits in tracks built into the aluminum frame. Sunshine Rooms, Inc., Wichita, Kan.

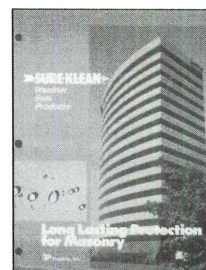
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Drywall products

Construction materials including Gyproc gypsum board, taping and finishing products, shaft walls, demountable partitions, and door frames are featured in a 12-page technical catalog. Domtar, Inc., Oakland, Calif.

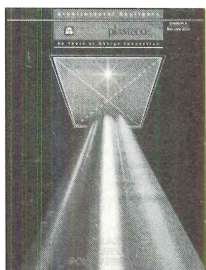
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Masonry protection

Weather Seal siloxane and other types of water repellents and sealants for concrete and masonry are explained in a six-page brochure. A chart matches product to problem. ProSoCo, Inc., Kansas City, Kan.

Circle 420 on reader service card



Structural skylights

A full-line architectural catalog supplies design, test, glazing, and dimensional data for unit and monumental skylights glazed with glass, polycarbonate, acrylic, or Danpalon insulating panels. Plasteco, Inc., Houston.

Circle 415 on reader service card



Rain-carrying system

A brochure on an all-aluminum one-piece gutter/fascia for residential and light commercial buildings illustrates the clean appearance of the large-capacity rain-carrying system. Omni Products, Addison, Ill.

Circle 421 on reader service card



Exterior finish system

A color brochure explains the appearance and thermal advantages of Ful-O-Mite decorative finish and insulation, illustrating the system used on hotels, hospitals, and schools. H. B. Fuller Co., Palatine, Ill.

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Industrial door

The Hydrarol roll-up door offers superior insulation, space and maintenance economies, and fast and safe hydraulic operation, according to a four-page color catalog. ASI Technologies, Inc., Milwaukee.

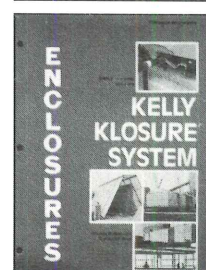
Circle 422 on reader service card



Perlite insulation

A technical brochure details the properties of perlite insulating concrete for roof decks, and covers testing and approvals, thermal values, and over 30 UL-listed fire-rated assemblies. Perlite Institute, Inc., Chicago.

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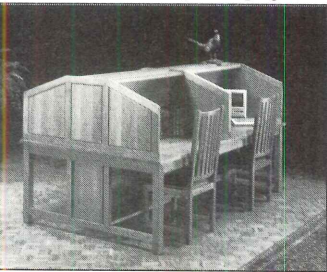


Weather enclosures

A booklet shows how a modular reusable construction enclosure system is easily assembled using interlocking steel-framed metal or translucent fiberglass panels. Kelly Klosure Systems, Inc., Fremont, Neb.

Circle 423 on reader service card

Products continued from page 137



Library furnishings
A four-place study carrel, designed for the Trexler Library at Muhlenberg College by GBQC Architects, is an example of this maker's custom furniture capabilities for large institutional installations. Solid cherrywood pieces reflect a Shaker esthetic, while accommodating wiring for lighting and computers. Thos. Moser Cabinetmakers, Portland, Maine.

Circle 312 on reader service card



Environmental control
The Network 8000 system, based on distributed direct digital controllers with integral communication, supervises building automation functions on a scale previously available only

from separate central-processing-unit-based systems. Scope includes fire alarm, security, and access control, as well as hvac functions. Barber-Colman Co., Rockford, Ill.

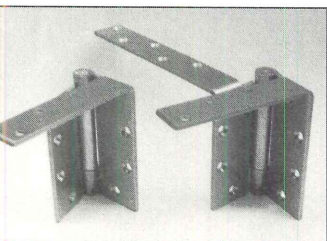
Circle 315 on reader service card



Molded chairs

The resin-impregnated felt back of Gaetano Pesce's I Feltri chair may be folded into a flaring, erect cape, or turned down. The colorful quilted upholstery is removable. Atelier International, Ltd., Long Island City, N. Y.

Circle 316 on reader service card



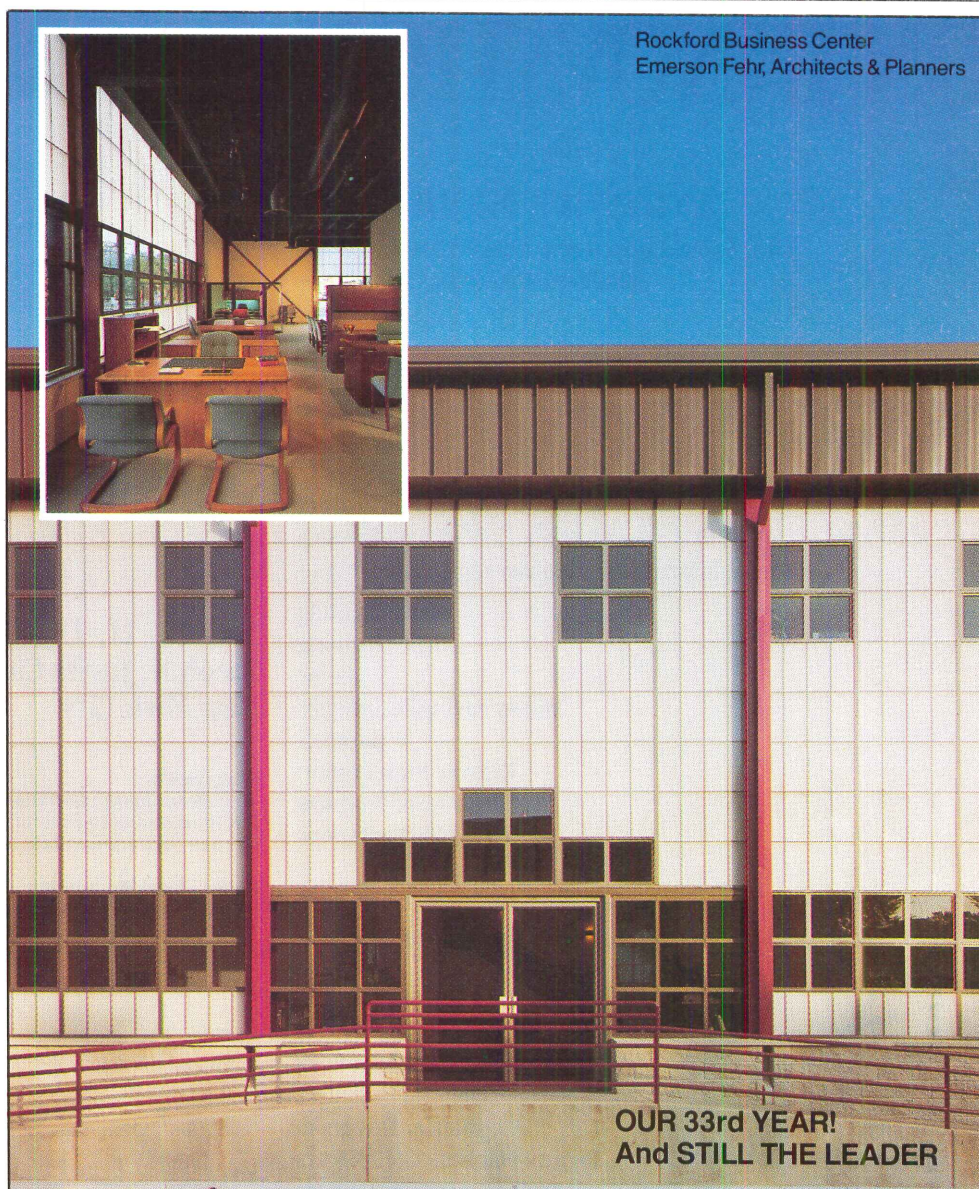
Full-mortise anchor hinges
For use with concealed operating devices, hinges for heavy, high-traffic wood or metal doors have two-piece anchor leaves that put screws in both shear and tension, preventing the hinge from pulling loose from either door or jamb. McKinney Products Co., Cranston, Pa.

Circle 313 on reader service card



Fire-resistant paneling
In addition to the Flame Test of interior paneling, FirePine comes in two-tone white or gray, grooved 4-in. on center and debossed in a woodgrain pattern. Masonite Corp., Chicago.

Circle 314 on reader service card



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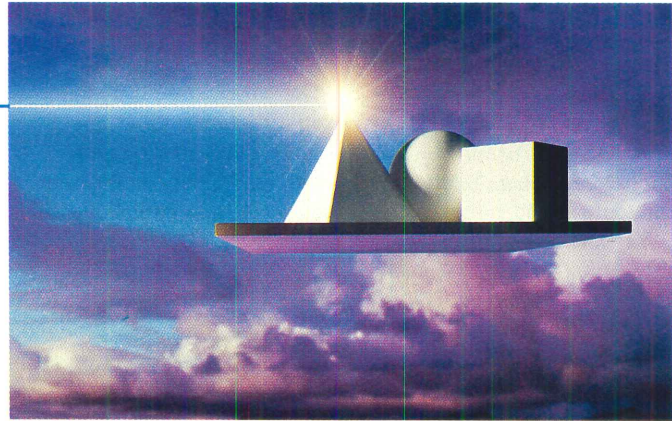
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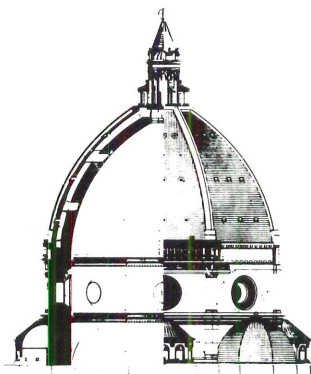
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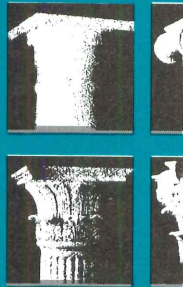
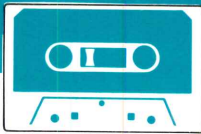
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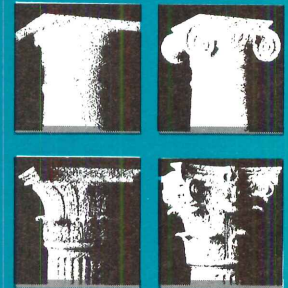
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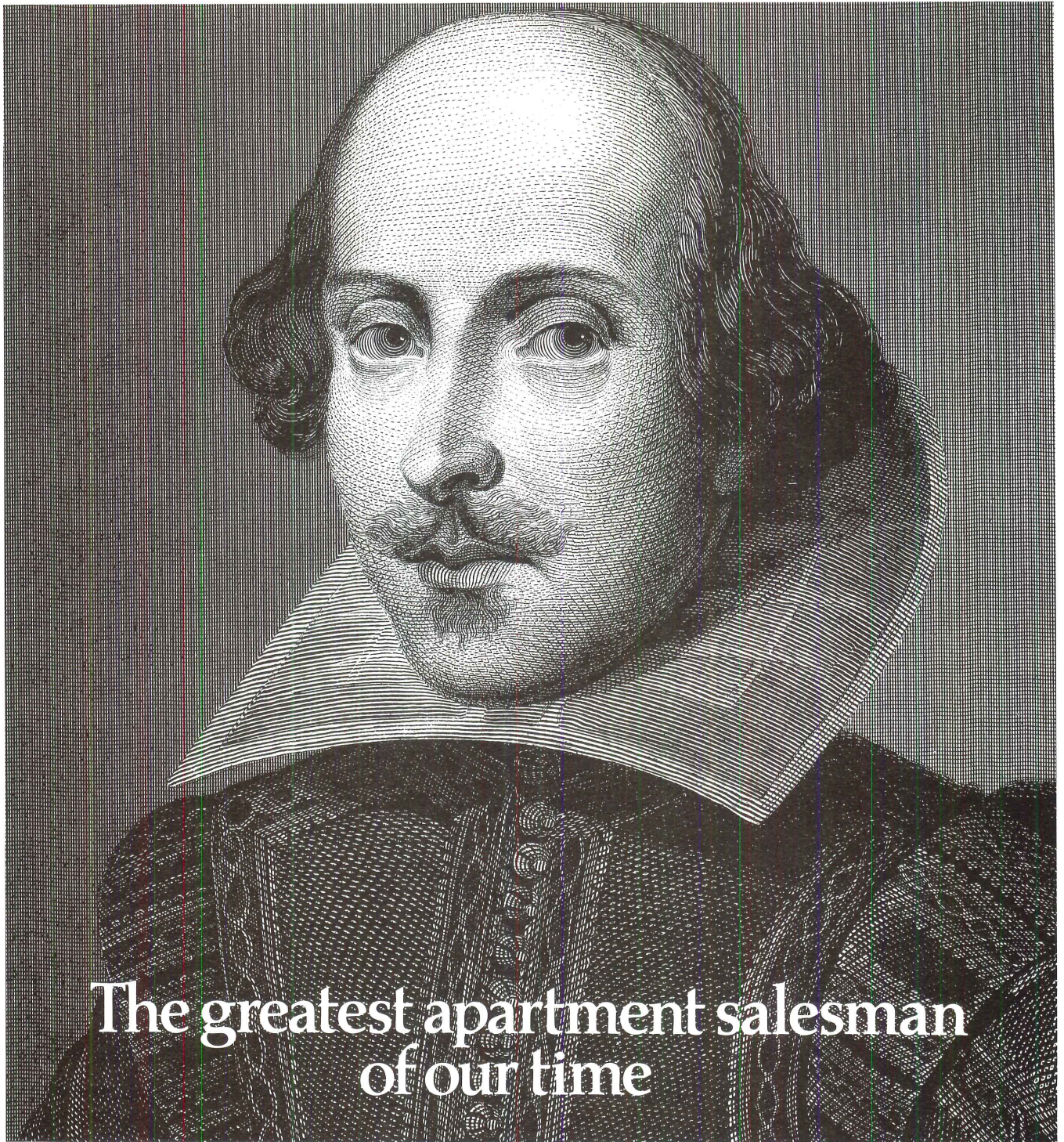
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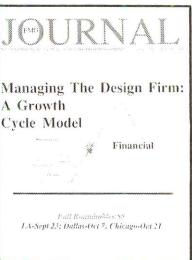
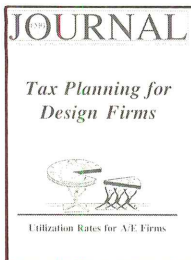
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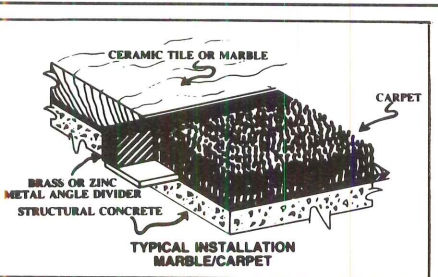
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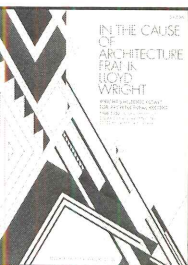


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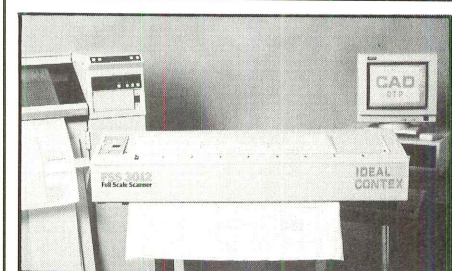


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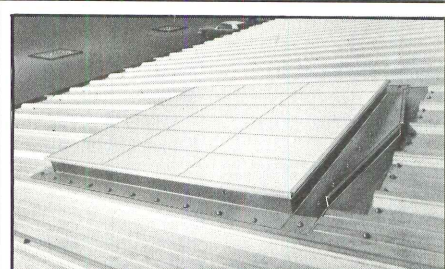
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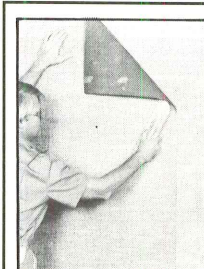
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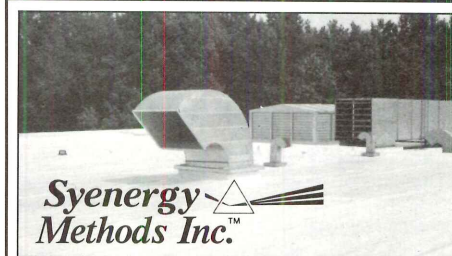
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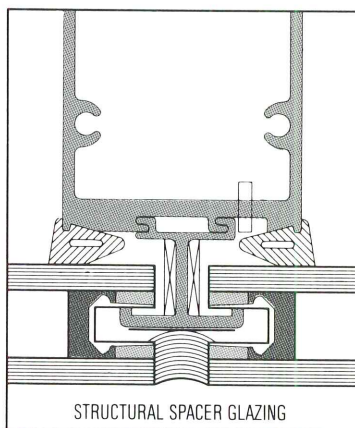
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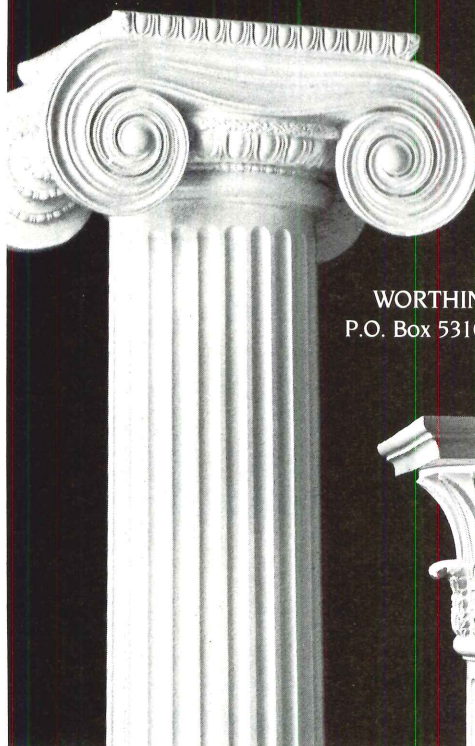
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