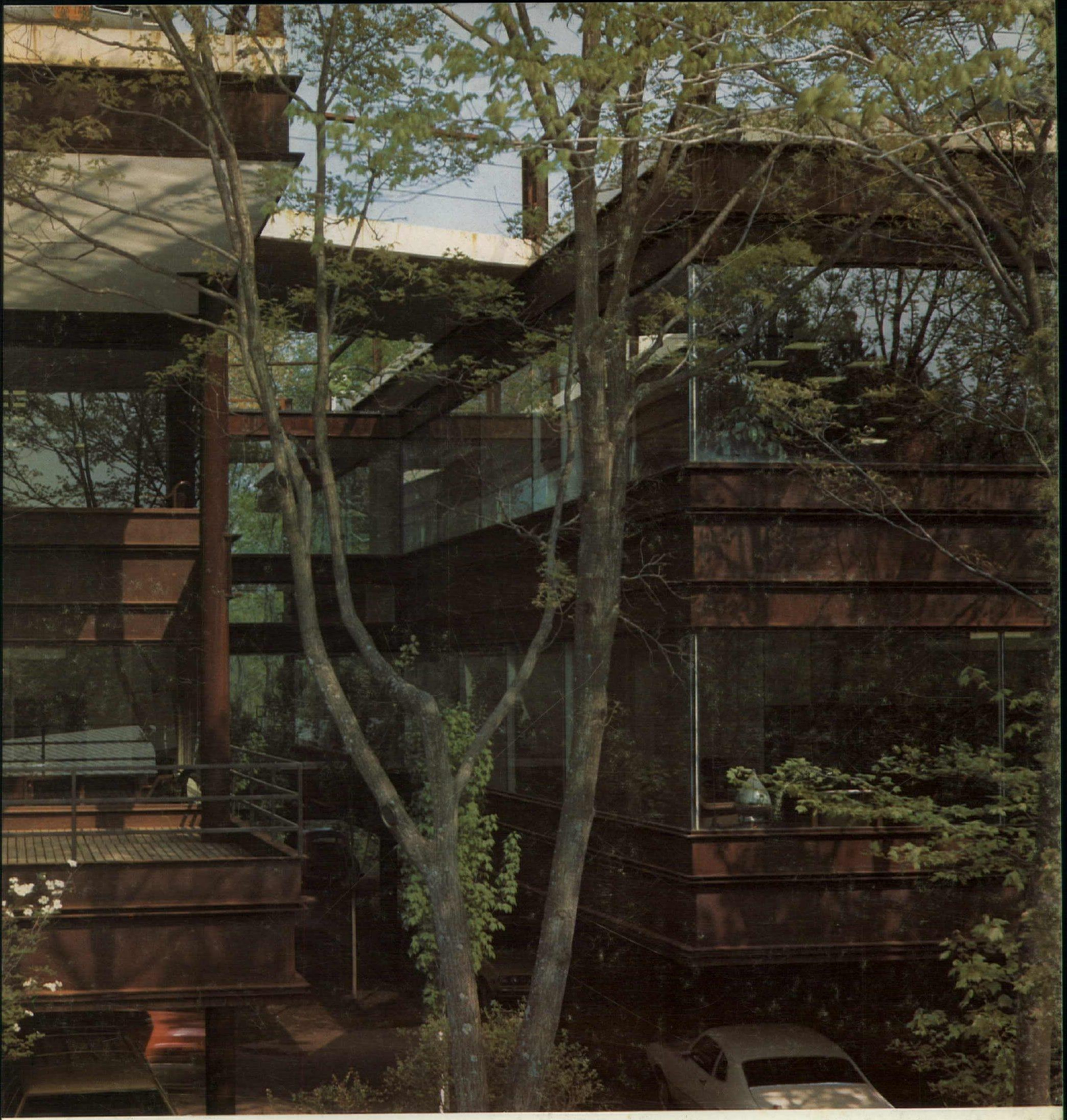

RICHARDSON-MERRELL CORPORATE HEADQUARTERS, BY ROCHE DINKELOO AND ASSOCIATES

DENSITY: THE ARCHITECT'S URBAN CHOICES AND ATTITUDES, BY HERBERT McLAUGHLIN

A VISITORS CENTER FOR A NEW TOWN, BY BENNIE GONZALES

BUILDING TYPES STUDY: NEW OPPORTUNITIES IN THE DESIGN OF HOTELS

ARCHITECTURAL ENGINEERING: EXPLODING SOME MYTHS ABOUT BUILDING ENERGY USE

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

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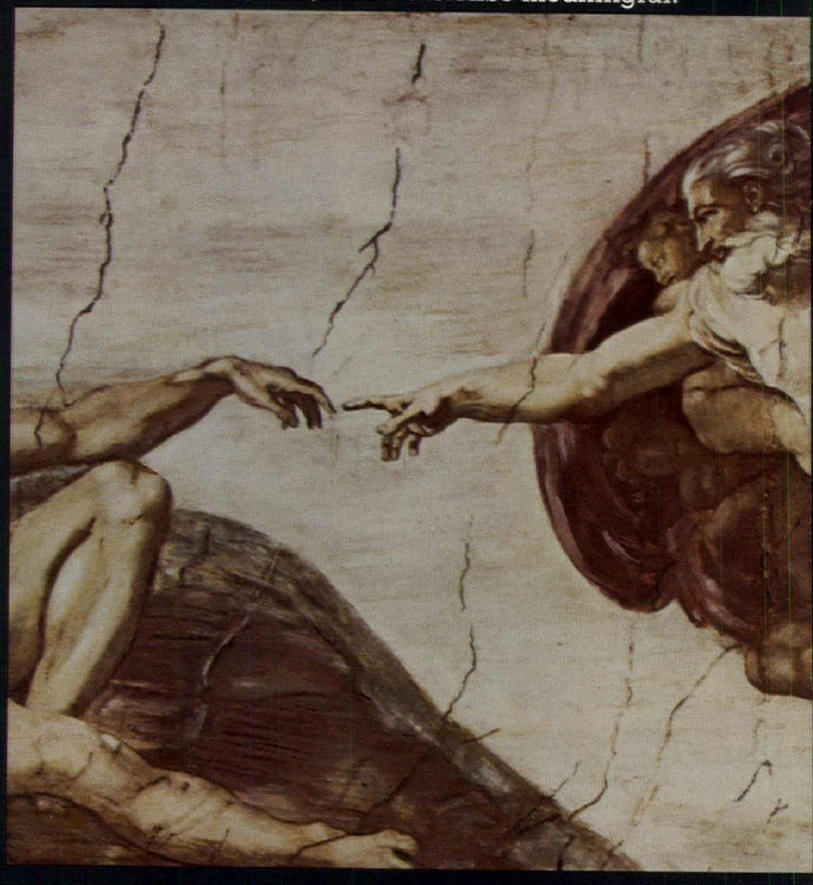

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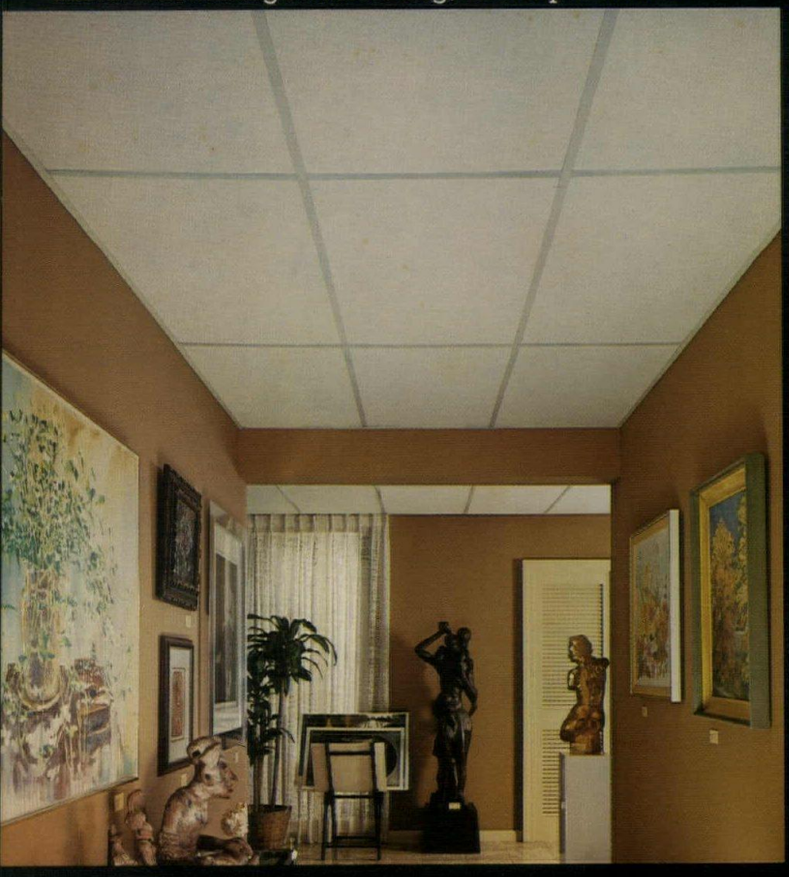

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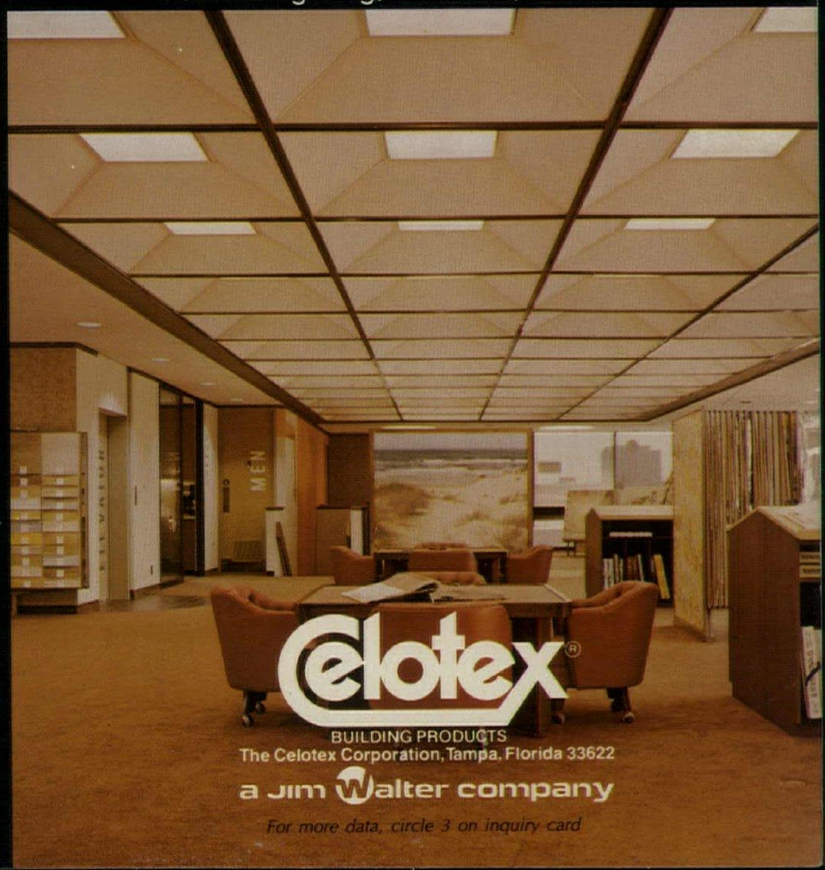

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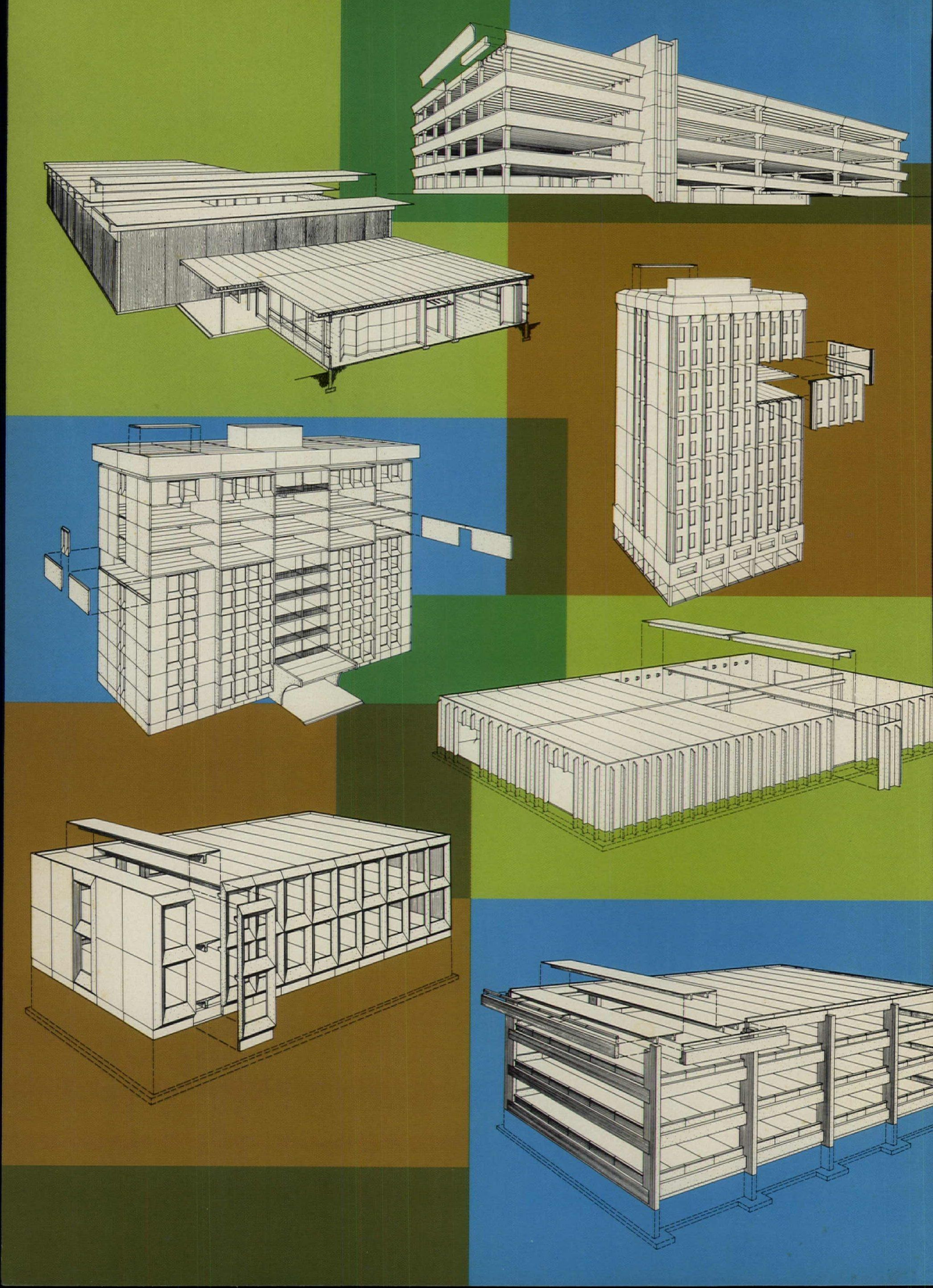

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Letters to the editor

Your excellent December 1975 coverage of the re-use subject acknowledges the timely merging of critical concern to all of us.

Increased preservation of American architecture has a recognized cultural importance, now covered by a multiplicity of legislation and enjoying a Bicentennial popularity. Now we add the matters of energy conservation, recycling, transportation, and sound urban planning. I hope you can stress the design opportunity this offers. What better way to enrich the visual environment than to celebrate America's architectural heritage by integration of the great textures and structures of the past with new construction as a design necessity, offering the ultimate refinement of our now built-up and troubled town centers and neighborhoods.

Donald B. Myer, AIA, Chairman
Committee on Historic Resources
Washington, D.C.

In answer to your October editorial regarding more productive buildings—yes!

We must always consider in building design the ratio of "usage" time to "non-usage" time. The philosophy of "adaptive re-use" must be ever-present throughout the design process.

These, however, are terms and ideas not only to be used by today's professionals, but clarified and adopted by architectural schools today. Design critics must undertake the responsibility of emphasizing the flexibilities we might consider in the initial evaluation of programs for our school projects, so that we, the architects of tomorrow, can guarantee that concern will be realized. We must be aware of our role in budget and cost control, terms that architectural schools tend to play down. We must be creative but not without consideration to finance.

The efficiency of energy, space, labor and materials must be a standard all can adopt. Perhaps the early introduction of those ideals will help all future architects in the design of productive buildings.

Craig Livingston,
Senior, School of Architecture
Pratt Institute, Brooklyn, New York

As architects, we have recently opened a practice in Saudi Arabia and are presently located in the Eastern Province, in the community of Al Khobar.

Our principal, Mr. Lee Scarfone, architect, had been researching the Saudi Arabian market during the months prior to your June issue, and had supplemented his fact-gathering via several journeys to the Arabian peninsula. Based on our own accumulated information of this area we determined Mr. Hoyt to be sincere and straightforward in his assessment of the Middle East market.

When considering the seemingly inexhaustible amount of projects intended for this area and the concomitant supply of funds for implementation, many experienced persons could possibly become irrationally awed by the prospects. Since we had done a certain amount of "homework," we were aware of the many difficulties and frustrations that we would soon be facing. With this knowledge in mind we very much appreciated the lack of "sugar coating" on the part of Mr. Hoyt.

Stephen F. Lazar, Architect
Scarfone Al Bassam Architects
Dhahran Airport, Saudi Arabia

Wayne Soverns, Jr.

The above photograph of the Methuen High School in Methuen, Massachusetts designed by Earl R. Flansburgh Associates, Inc., which appeared on the December 1975 cover of RECORD, was erroneously credited to Steve Rosenthal. Credit should have been given to photographer Wayne Soverns, Jr. We apologize for the confusion.

Calendar

FEBRUARY

12-14 Land Use: Rights of the Regulated, a conference sponsored by The Pacific Legal Foundation, University Extension at the University of California, San Diego. Contact: University Extension Q-014, University of California, San Diego, La Jolla, California 92093.

15-17 1976 Architecture for Justice Conference, Hotel del Coronado, Coronado Island, San Diego. Sponsored by The American Institute of Architects. Contact: American Institute of Architects, 1735 New York Avenue, NW, Washington, D.C. 20006.

MARCH

24-25 Symposium on building construction, for public and private building owners, National Bureau of Standards, Gaithersburg, Maryland. Contact: Harry Thompson or James Haecker, Center for Building Technology, NBS, Washington, D.C., 20234.

31-April 2 National Conference, "The Conservation of the Older Courthouse: Some Practical Solutions," St. Louis. Sponsored by the National Trust for Historic Architecture, the National Clearinghouse for Criminal Justice Planning and Architecture, the University of Illinois Department of Architecture, the National Association of Counties, and the National Endowment for the Arts. Contact: Cheryl I. Krieger, Program Assistant, National Trust for Historic Preservation, 507 South Dearborn Street, Suite 710, Chicago, Illinois 60605, or Elmer Edwards, conference coordinator, University of Illinois, 116 Illini Hall, Champaign, Illinois 61802.

31-April 3 The Ninth National/International Sculpture Conference, "Monumental Sculpture for Today," New Orleans, Louisiana. Sponsored by the National Sculpture Center, University of Kansas. Contact: National Sculpture Center, The University of Kansas, Lawrence, Kansas 66405.

APRIL

7-9 Conference on creative play environments for children, University of Wisconsin-Milwaukee campus. Sponsored by The University of Wisconsin-Milwaukee, School of Architecture and Urban Planning in conjunction with the University of Wisconsin-Extension, University of Wisconsin-Milwaukee, Department of Physical Education, and the Wisconsin Park and Recreation Association. Contact: University of Wisconsin-Milwaukee, School of Architecture and Urban Planning, Milwaukee, Wisconsin 53201, c/o Thomas Lenchek.

MAY

2-6 Annual convention, American Institute of Architects, Philadelphia.

31-June 11 Habitat, the UN Conference-Exposition on Human Settlements, Vancouver, British Columbia. (The Exposition will include an exhibit at the Vancouver Art Gallery of submissions in the International Design Competition for the Urban Environment of Developing Countries Focused on Manila, conceived by ARCHITECTURAL RECORD and *L'Architecture d'Aujourd'hui* and sponsored by The International Architectural Foundation.)

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER)

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Flooring Contractors: St. Paul Linoleum & Carpet Co., St. Paul.

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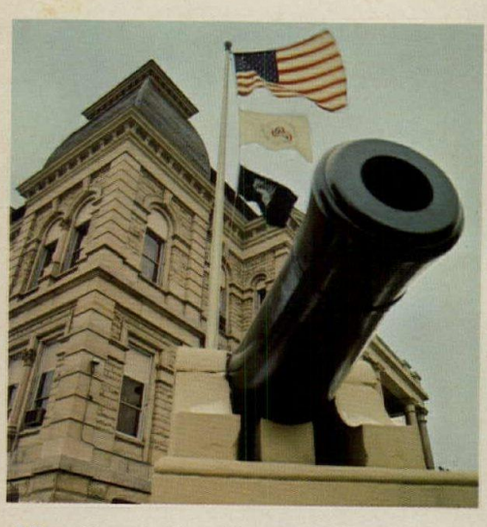

Allen County Courthouse objection overruled. Drab, weathered sashes and frames made this Lima, Ohio courthouse look shabby. *NuPrime** extruded aluminum window units by Season-all, with DURACRON thermosetting acrylic coatings from PPG, improved the appearance and reduced heating and maintenance costs.

Huntington VA Hospital rehabilitates more than people. At this West Virginia VA hospital, the leaky old windows were letting weather in and comfort out. Season-all *NuPrime* units pre-coated with DURACRON enamel stopped all that.

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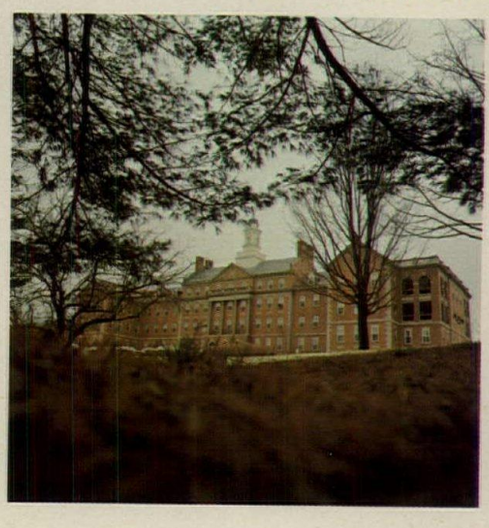

Garfield Junior High learns a lesson in economics. Aging windows in this Johnstown, Pennsylvania school were costing the school system money for maintenance and heat loss. New Season-all units with DURACRON enamel now hold comfort in and keep maintenance costs down.

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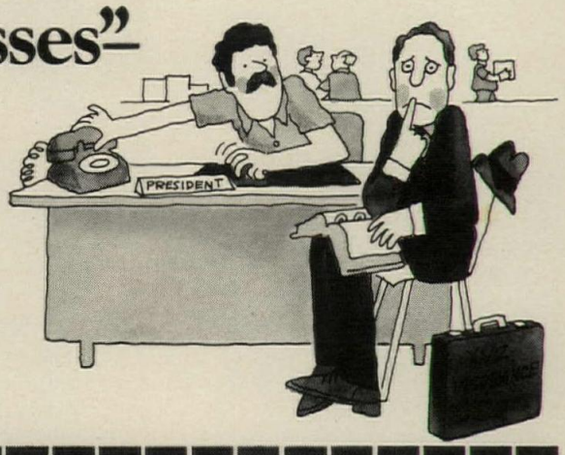

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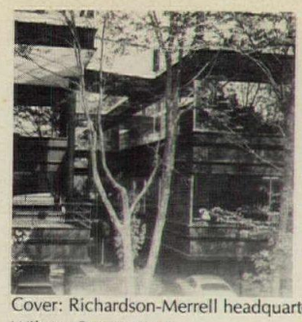

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Tom Martinson

ARCHITECTURAL BUSINESS

FEATURES

d'Estrube Industrial Photography

BUILDING TYPES STUDY 485

ARCHITECTURAL ENGINEERING

NEXT MONTH IN RECORD

Building Types Study: Vocational schools

There has recently been a marked increase in the design and construction of vocational schools in the United States. With it there has also been an increase in design and construction innovation, and next month's Study will show some of the most interesting examples.

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Lou de Moll on economics–and ethics

Last month, as has become our annual custom and habit, the editors sat down with the new president of the AIA—this year, of course, Louis de Moll of Philadelphia—to talk about the AIA and "whither architecture."

We talked briefly about AIA programs ("slimmed down") and about the most effective way AIA could help practitioners in this disastrous period (probably by keeping up the pressure at the national level to get funds unimpounded, and keeping up the relatively new effort at the state and local level to direct at least some of their revenue-sharing and other funds into construction programs).

But we pretty quickly got into some real nitty-gritty: should the AIA—as has been suggested by more than a few members—revise its ethical standards to allow architects to become design-build firms; indeed, "to let the architect do anything he wants to do on a project as long as he discloses to the client what his position is." In case you didn't know, there's a task force debating just that question right now, and that question is going to be asked and debated hotly (at least I hope hotly) across the country at the Grassroots meetings.

Is this debate necessary? Sadly, I guess it is. Design build firms, while they have not made significant inroads in most building types, do account for about 25 per cent of industrial work—much of it closely related to specialized process design; much of it simple and straightforward plant and warehouse design. Nonetheless, their time and cost guarantees are a siren song to client executives who seldom get credit for a fine building, but often get the boot when the job for which they are responsible goes over-budget. (Even Harvard University, for Pete's sake, has insisted on a design-build [TAC-Turner] deal for its new $17 million athletic facility; and if Harvard and TAC and Turner can do it . . . why, where will it all end?). CRS's Bill Caudill, in a recent speech to the Florida Association put the standard argument into his usual colorful language: "People are damn tired and disgusted with the building industry. They attributed to architects much of the indecisiveness, time-consuming complexity, and expensive manner of getting a building up. . . . The public is demanding accountability. Many owners think they can get it—not through the usual architectural services—but through construction management, fast-tracking, even through total services relating to design, construction, and financing [in short, design-build]. The buying public doesn't give a tinker's damn about the prerogatives, the safeguards or the limits of architectural services, or about ethics. It just wants to get the job done efficiently and economically—no matter who does it or how."

What are the alternates? One, of course, is for architects to perform their traditional services in the traditional way—and a great many, many architects are doing just fine, thank you very much, getting buildings built—on the fast track, if necessary—within the budget and on time and at the very best level of planning and design and quality they know how to give the client. Myself, I think that's the ground the profession should fight for (see reasons, below).

Nonetheless, Lou de Moll (as he should be) is intensely interested and concerned in "facilitating change in the profession to meet the demand for new delivery processes." He spoke of the alternates—while not predicting what his (or the AIA Board's) response will be:

"I've been telling architects around the country that if they don't have the expertise in managing a construction job, or fast-tracking, or estimating in today's inflationary economy, they should suggest to the owner that he get a contractor, negotiate, put a team together, and let them get on with the building job. Even on a $3 million job—or for that matter, a $500,000 job."

Lou feels that this approach can cut down on the number of owners who say, "The only way I can get my building built is to go to a design-and-build firm." It is, of course, a kind of design-and-build approach—with the important (indeed critical) difference that the architect is still an agent of the owner; an independent entity. "Even if the contractor has guaranteed the price, if my contract is with the owner, I'm still his advisor, I'm still representing his interest."

What if the owner *demands* single responsibility? There's the rub—and a rub that will be much discussed in the year ahead. De Moll explains: "The only way to offer the 'team approach' I've described, *and* to offer single responsibility, is for me to become a subcontractor to the contractor. *That's* ethical—because now my client is the contractor. But I'm totally removed from the owner [the real client]. I'm not even in a position to tell the owner that he's getting a bad construction job. And that's not good. . . .

"Conversely, under ethical standards, I'm not allowed to be the prime contractor, to guarantee the price, and hire the contractor. And in a way that's crazy. . . .

"On one side: I'm beginning to wonder 'Why shouldn't we be the prime contractor? As an architect and responsible professional, am I not as good a person as the contractor to guarantee that price?"

"BUT . . . The problem is, of course, if I as an architect move into the position of a prime contractor who has guaranteed a price . . . and I say I'm a professional and I'm going to give the owner a beautiful job . . . and then it gets down to the nitty-gritty and I have a decision that could cost me $200,000 . . . what am I going to do???"

"And that is why," Lou de Moll concluded, "we have a task force wrestling with those questions now."

One editor's advice to the profession: Go slowly. Don't give up professionalism lightly. And I believe that is exactly what is at question here.

I believe that if the architect gives up his role as agent of the owner, he becomes an entrepreneur. I think that if the architect takes the prime contract for a building job—no matter how honorable his intentions (indeed, no matter how honorable and skillful his performance), he is no longer a professional but an entrepreneur. It does not require a questionable *act* to destroy professionalism—all that is required is the *possibility* of conflict of interest.

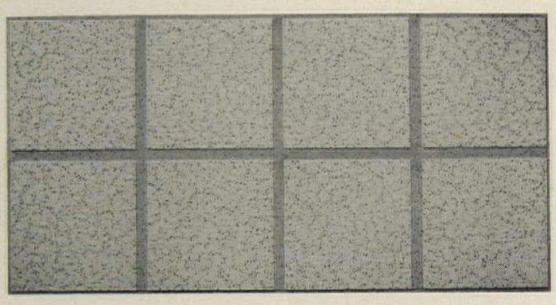
Is this too purist a view? I hope not. I'm well aware of the problems and "realities" involved. There is indeed a fair number of clients—mostly corporate clients who build regularly and who have on staff architects and engineers who can serve as the owner's "agent"—who have elected to go the design-build route. (As mentioned above, perhaps 25 per cent of industrial plant and warehouse work is now design-build.) But I would argue that the vast majority of clients—most of whom get involved in a major building job once or twice in a lifetime—need and want the protection of architects working under a strict standard of ethics. Most of those clients understand the values involved, and are well served. Let's remember that under the "traditional" methods, most buildings *are* completed on time and within the budget. The professional system has real values—and they are primarily values for the client, not the architect.

For architects, I think the questions are no less than "What are we?" "What are *our* values?" And I don't think there are any compromise answers.—*Walter F. Wagner Jr.*

The Second Look® ceiling from Armstrong. The look of expensive tile. Without the tile and without the expense.

What else could you call a ceiling like this except Second Look? So beautifully made to duplicate tile, you have to look twice to discover it isn't.

That's what makes Second Look such an artful ceiling. It's made from 2′ x 4′ lay-in panels that we've scored to look like 12″ x 12″ or 24″ x 24″ tiles. We've even taken the exposed grid and made it blend with the board finish. So once your panels are suspended, the visual impression gives you what looks like a vast expanse of tile. But without the high cost of tile. What's more, since installation is the economical suspended grid system, Second Look goes up fast, provides easy access to the electrical and mechanical systems contained in the ceiling.



If you agree that a tile ceiling has the look your project needs, we think you'll be duly impressed with Second Look. Because it gives you the tile ceiling you want with ingenuity instead of tile.

To learn more, write Armstrong, 4202 Rock Street, Lancaster, Pa. 17604. In Canada, write Armstrong Cork Canada, P.O. Box 919, Montreal, H3W 3E5, Quebec.

For more data, circle 1 on inquiry card

FROM THE INDOOR WORLD® OF Armstrong

When you want a ceiling system that gives your ingenuity full rein, come to the source. Armstrong.

More architects use Armstrong Luminaire Ceiling Systems because what they get is more than just a ceiling.

They get flexibility. Flexibility that translates into the kind of freedom they need to carry out their most innovative ideas. The kind of freedom that makes it relatively simple to design, specify, control, coordinate, and install a dramatic ceiling in any building. Like the four striking solutions shown on these pages.

Midland College, Midland, Texas, Architect: Preston M. Geren Architect & Engineer and Associates, Fort Worth, Texas. Ceiling System: Armstrong Symmetry Luminaire

What you get with Luminaire is truly a system. A system that combines lighting, air diffusion, fire protection, and acoustical control in one integrated assembly. But what you also get is versatility. Versatility that allows you to handle these functions in many different ways.

Datacenter/The Equitable Life Assurance Society of the United States, Easton, Pennsylvania. Architects: Kahn and Jacobs, New York City. Ceiling System: Armstrong C-60/60 Luminaire

There are five Luminaire Ceiling Systems: C-60/30, C-60/60, AW 3600, Symmetry®, and Pentaflex™. Each is basically scaled to a 5′-square module but is also available in custom variations to meet just about any requirement.

Each can offer you not only a choice of lighting patterns and a wide range of illumination but a flexibility of module, troffer, and panel arrangement that

Security National Bank, San Antonio, Texas, Architects: Environmental Professionals Corporation, San Antonio, Texas, Ceiling System: Armstrong AW 3600 Luminaire

results in almost unlimited design possibilities.

For instance, you can choose from three vaulted systems as well as two flat-type systems that provide either exposed or concealed grids. You can vault your entire ceiling or mix your vaults with flat types. You can light all the vaults or space your lighting to meet specific requirements of the job. Within a vaulted system like the C-60/60, you can even choose various light options—including square light fixtures 2′ x 2′, 2½′ x 2½′, 3′ x 3′, or rectangular fixtures 1′ x 4′ and 2′ x 4′. All of which adds up to a freedom of choice you'd be hard put to match.

Also available from Armstrong, of course, is the Armstrong man—bringing you the technical assistance that can help put your entire design into focus.

Add this kind of people support to the most advanced ceiling materials available, and you can see why Armstrong Luminaire provides you with the esthetic and performance characteristics you require in any building environment that bears your name and displays your talent.

To learn more, write: Armstrong, 4201 Rock St., Lancaster, Pa. 17604.

In Canada, write: Armstrong Cork Canada, P.O. Box 919, Montreal 101, Quebec.

Palmyra Area High School, Palmyra, Pennsylvania, Architects: Lawrie and Green, Harrisburg, Pennsylvania, Ceiling System: Armstrong C-60/30 Luminaire

For more data, circle 2 on inquiry card

FROM THE INDOOR WORLD® OF Armstrong

Owner: City of Syracuse, Syracuse, New York.
Architect: Christ J. Lemonides, North Syracuse, New York.
Structural Engineers: Eckerlin, Klepper, Hahn & Hyatt, Syracuse, New York.
Builder: Sarkisian Brothers, Inc., Binghamton, New York.
Steel Fabricator: Rome Iron Mills, Inc., Rome, New York.
Steel Erector: J. G. S. Construction Services Binghamton, New York.

One more time, the steel-framed, long-span concept proves economical in a parking garage.

Economy, without sacrificing aesthetics or accepted fire-safety criteria, motivated the design of the new Crouse-Irving Memorial open-deck parking structure in exposed structural steel.

789 tons of USS EX-TEN 50 high strength steel (ASTM A572-Grade 50) went into this 227,000 sq. ft. structure. The handsome 685-car, 7½-level facility serves the Syracuse Medical Center and provides the continuous parking needs of staff and visitors.

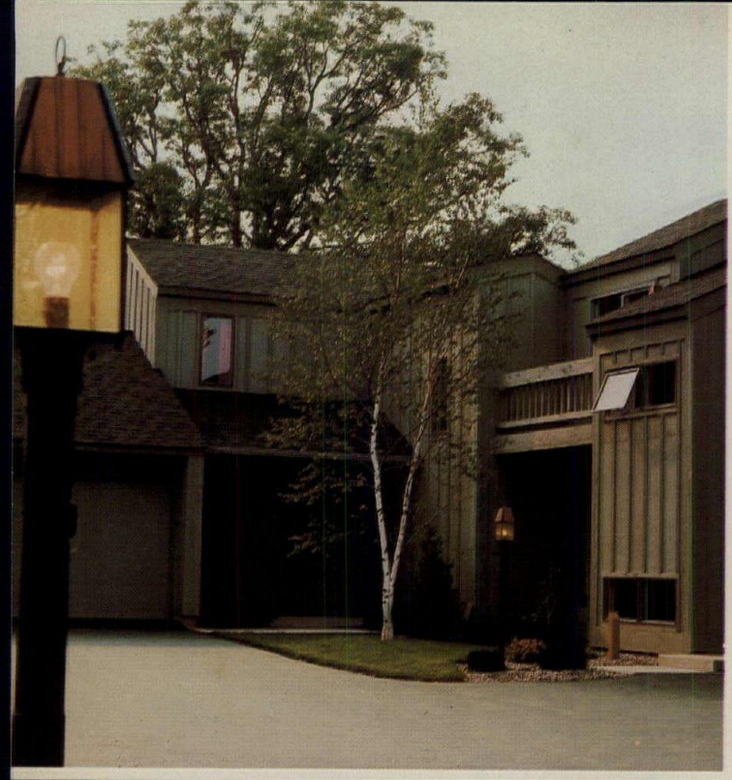
High land costs in metropolitan areas make a multi-story off-street structure like this especially logical and feasible. The use of long-span rolled shapes provided large areas unobstructed by columns—making self-parking easier.

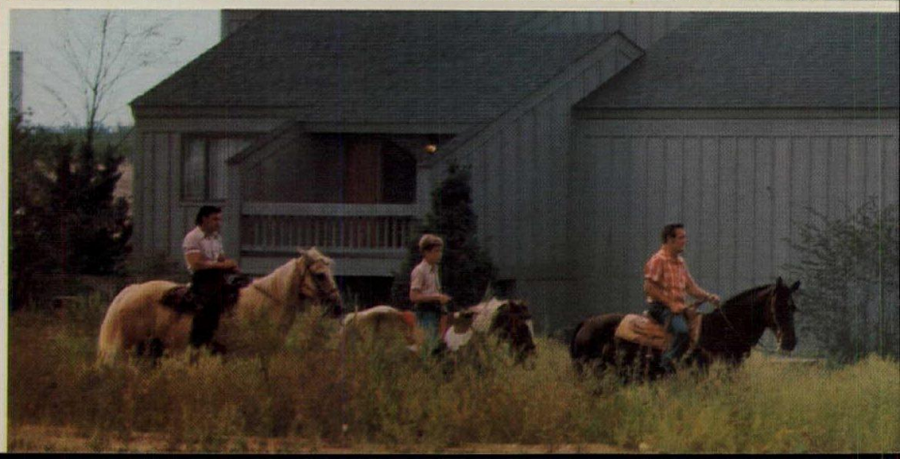
If you're planning a multi-level parking structure, remember: 1. The low fire risk of open-deck steel-framed garages has been proved in actual tests: and with little or no fireproofing necessary, costs can be cut considerably. 2. These structures are lighter, with more useable space. 3. Erection of steel structures will be faster. 4. Faster construction will help you generate cash flow sooner.

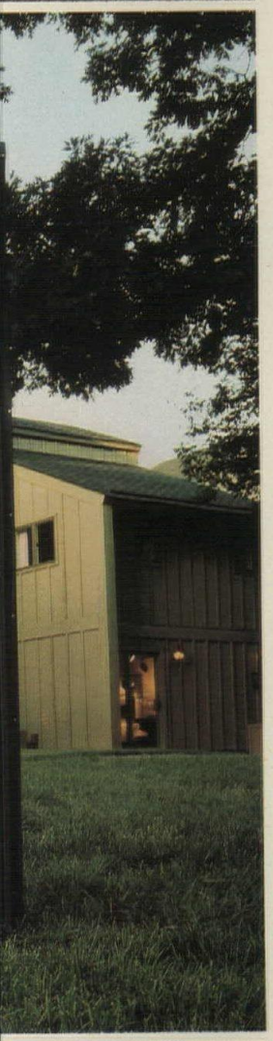
When you're ready, United States Steel is ready to help with your design of a long-span, open-deck garage. For more information, or for more specific details of the Crouse-Irving Memorial parking garage, write for Bulletin G 5/1 to P.O. Box 86 (C521), Pittsburgh, Pa. 15230. Or contact a USS Construction Representative through your nearest USS Sales Office.

USS and EX-TEN are registered trademarks.

USS **United States Steel**

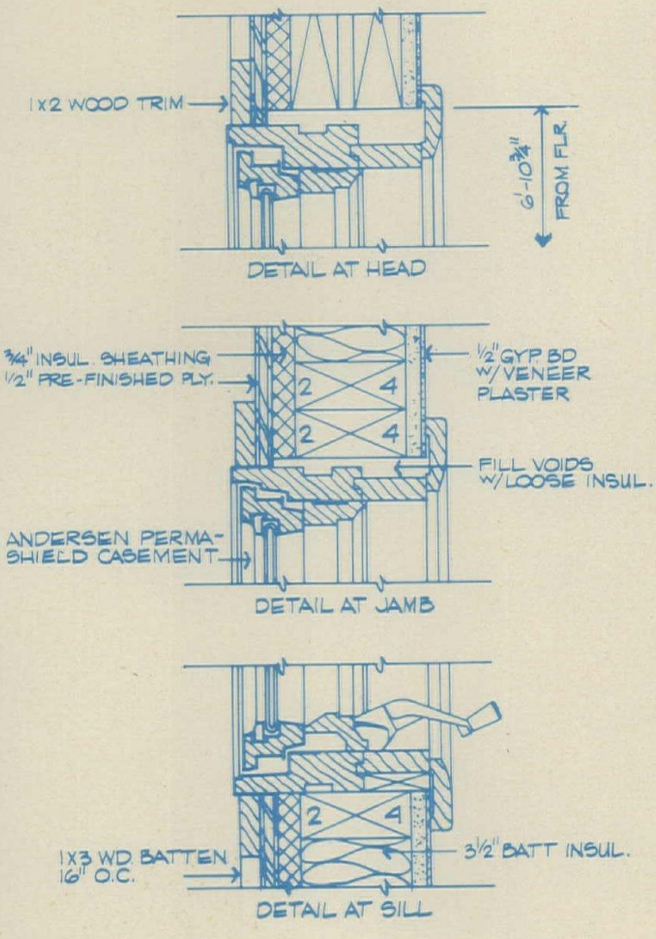






But will it play in Peoria?

Critics say "yes"...applaud Andersen's colorful new role.



Timberedge Townhomes of Charter Oak Village
Charter Oak Development Company
Peoria, Illinois
Architect: John Hackler and Company
Peoria, Illinois

How well you play in Peoria has become a legendary yardstick of how well you'll perform across America.

So, when the architect for Peoria's largest Planned Unit Development (PUD) chose Andersen® Windows specifically for their Terratone color, we were understandably apprehensive.

We knew our dramatic, new, earth-tone color would be under critical review.

But our Perma-Shield® Casement and Awning Windows in Terratone color won the praise of both the architect and the homeowners.

The architect liked how naturally Terratone blended with the wood exteriors of the townhouses. And the beautiful match this rich, warm earth-tone made with brick, stone, masonry and the surrounding landscape.

The townhouse owners applauded how well Perma-Shield complemented their leisure life-style.

Perma-Shield Windows are sheathed in carefree, low-maintenance rigid vinyl that's designed not to rust, pit or corrode. Not to chip, flake, peel or blister.

They're also made of wood—one of nature's best insulators—then built two times more weathertight than industry air-infiltration standards.

And double-pane insulating glass provides a major part of the fuel-saving benefits of single-glazing with storm windows, plus the convenience of no storm window bother.

So, add color to your next performance. Specify Andersen Perma-Shield Casement and Awning Windows in new Terratone color.

For more details, see Sweet's File 8P. And contact your Andersen Dealer or Distributor. He's in the Yellow Pages under "Windows." Or write us direct.

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Use actual sample for building specifications.

Quiet.

How to build silence into a busy office without blowing the budget

Turn down the volume with Gold Bond® Solitude® Ceiling Panels and Gold Bond Tectum® Interior Wall Panels.

Solitude acoustical ceiling panels are ordinarily installed in exposed or semi-concealed suspended grid systems.

They come in fissured, needle-perforated, textured nondirectional and embossed coral patterns. You can also order them with a scrubbable plastic-coated finish. With NRC's up to .60 and STC's up to .42, Solitude Panels work beautifully in stenographic pools, open office plans, conference rooms and congested work areas — anywhere busy people congregate.

For walls, try Tectum Panels. These good-looking panels are easy to work with, easy to install and, best of all, are inexpensive. They soak up 80% of the sound that hits them, depending on the mounting used, and can be used in new or remodeled offices. Tectum panels require no finishing. Handsome as they are in their natural state, they can be spray-painted with any alkali-stable flat latex paint with no loss of acoustical qualities.

See our movie, "Tectum Interiors," by calling your local Gold Bond representative for a showing, or write Gold Bond Building Products, Division of National Gypsum Company, Dept. AR-26CT, Buffalo, New York 14225. You'll find Gold Bond Solitude Panels and Tectum Panels in Sweet's Catalog File, 9.1/Go.

We're gypsum, and then some.

Gold Bond®
BUILDING PRODUCTS

For more data, circle 12 on inquiry card

depend on Bethlehem

Preliminary frame analysis showed a steel core would provide significant savings

A preliminary frame analysis, conducted by Bethlehem's Sales Engineering Buildings Group, helped the architects of First Federal Plaza Bank building in Rochester, N.Y., to achieve optimum framing economy.

At the outset of the building's design, a concrete core was considered. But the preliminary framing analysis, requested by the project's structural engineers, Rupley Bahler Blake, showed a steel core would provide significant savings.

John Goodman of the consulting engineers says, "The structure was designed in steel with four wind bents in each direction. Two are located at the exterior face of the tower and two at the interior face of the core."

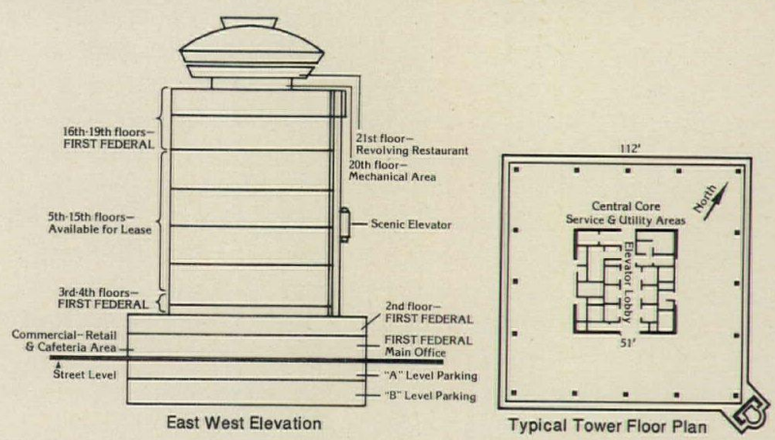
These rigid bents are used to resist the horizontal force of the wind. Because of the spacing of the columns within the two interior bents, vertical X-bracing was needed in two of the bays in each bent to limit total sidesway at the tower roof to five inches.

A control joint, surrounding the tower and low rise, isolates the tower so that low-rise columns will not have to resist tower movements, Mr. Goodman said. At each of the tower's exterior columns there is a second column supporting the two levels of the low rise. These double columns are joined to a common concrete pier below the plaza.

Bethlehem Steel provided 3,050 tons of structural shapes and 40 tons of high-strength bolts for the building frame. The floor system is lightweight concrete slab on steel deck.

Early involvement helpful. Our preliminary framing analysis program can be most beneficial to you and your client if the study is conducted before finalization of architectural parameters. This way, our Buildings Group and your structural engineer can develop an optimum frame design with minimum restrictions.

We'll be happy to tell you more about our preliminary framing analysis program along with the other technical and advisory services we can offer. Just ask for the sales engineer at the Bethlehem Sales Office nearest you. Bethlehem Steel Corporation, Bethlehem, PA 18016.



Owner: First Federal Savings & Loan Association, Rochester, New York; *Architect:* Corgan & Balestiere, P.C., Rochester, New York; *Project Manager:* Balcor Assoc., Rochester, N.Y.; *Structural Engineer:* Rupley Bahler Blake, Rochester, New York; *Fabricator-Erector:* F. L. Heughes & Co., Inc., Rochester, New York; *General Contractor:* Stewart & Bennett, Inc., Rochester, New York.

Architect's rendering depicts the First Federal Savings and Loan office building in Rochester, N.Y. When completed in late 1976, the structure will feature a revolving roof-top restaurant, an outside glass-enclosed elevator, and a mirror exterior which will reflect the surrounding community.

Architectural building description

Rising twenty-one stories on the west bank of the Genesee River, the $20-million First Federal Plaza adds its unique statement to the skyline of Rochester, New York. It acts as a terminal at the south end of the attractive Genesee Crossroads Park. With its completion, it will make this park accessible to pedestrians from Main Street, one of the main arteries across the City. The project site is located within one of Rochester's Urban Renewal Districts.

With more than a dozen easements, it created a structural and architectural challenge. Adequate access to the park from Main Street was one of the main concerns to the architects, Corgan & Balestiere, P.C., of Rochester. To accommodate this, almost one third of the site would have to be dedicated as park access. This turned out to be impossible since the remaining space would not have been adequate for placing a high-rise building, or it would be within 30 ft of a six-story building to the west of the site. To provide the desired leasing area and maintain adequate access to the park from Main Street, the architect provided a covered arcade on the Plaza level with parking below and second floor overhang above.

In order to retain unobstructed views from the neighboring buildings to the west and the lower tower floors, the architect rotated the tower 45 degrees to Main Street. Contributing to this strong design solution are the diagonal shapes in the park to the north and a Y-shaped pedestrian bridge across the river.

The exterior of the two story base will be clad with precast concrete with tan aggregate, and glass.

The tower skin consists of bronze reflective insulating glass with matching spandrel sections. The skin is interrupted every three floors by a recessed colored band that matches the curtain wall mullions and extends to support the precast concrete shaft that contains an exterior glass-enclosed elevator cab. A circular revolving restaurant cantilevers above the nineteen-story tower, separated by a mechanical floor.

The reflective insulated mirror exterior is more than an aesthetic item, says Richard Cott, representative for First Federal. "It has great energy saving qualities. This glass reduces the amount of heat transmission by two-thirds. Thus, there is much less heat loss in the winter and much less heat gain in the summer."

Glenbrooke at Century Hills Apartments, Rock Hill, Connecticut. Frazier & Vigneau, Architects.

Red cedar makes an apartment complex simple.

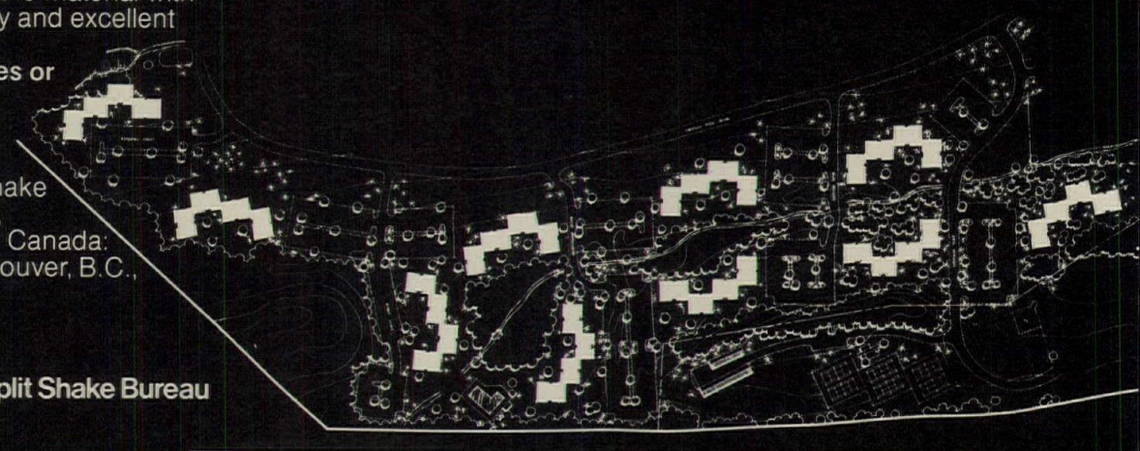
When the architect designed *Glenbrooke at Century Hills*, he wanted a flexible-use sidewall material that would unify both the various structures throughout the grounds and each individual unit of the complex. A material that would remain attractive over an extended useful life, and with minimum maintenance.

So he specified red cedar handsplit shakes. For elegant yet rustic simplicity.

Next time you're looking for a distinctive exterior or interior solution, consider the material with unique texture, natural beauty and excellent insulative qualities.

Consider red cedar shakes or shingles. A natural solution.

(For information on "How to Specify", write Red Cedar Shingle & Handsplit Shake Bureau, 5510 White Building, Seattle, Washington 98101. In Canada: 1055 West Hastings St., Vancouver, B.C., V6E 2H1.)



Red Cedar Shingle & Handsplit Shake Bureau

These labels under the bandstick of red cedar shingles and handsplit shakes are your guarantee of Bureau-graded quality. Insist on them.

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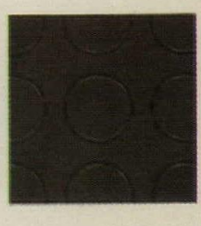
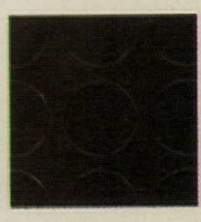
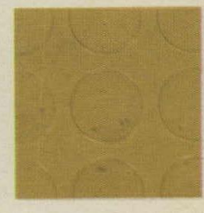
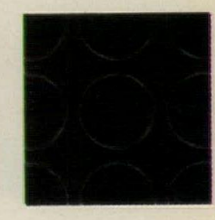


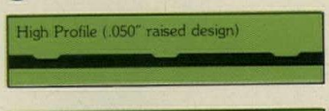


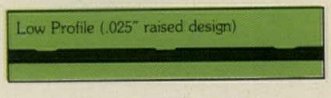


Radial Rubber Tile



For safe footing and good looks in high traffic interiors...





This unique new rubber floor tile is designed especially for interior floors where safe footing is required and handsome, easy to maintain appearance is desired. 1" diameter raised studs molded onto a special compound of tough, extra resilient rubber provides greater traction by allowing dirt and spilled liquids to drain off the walking surface. Extra resilience contributes substantially to safe footing.

Radial rubber tile is recommended especially for high traffic areas such as air terminals, shopping centers, ramps, elevator lobbies and stair landings. It is made in two profile designs and in overall thicknesses of 1/8" and 3/16". The high profile (.050" raised design) is ideal for areas where exceptionally safe footing is desired. The low profile (.025" raised design) is recommended for areas where light vehicular traffic such as shopping carts are used.

For samples and complete technical information write to Flexco, P.O. Box 553, Tuscumbia, Alabama 35674, or call (toll free) 1-800-633-3151.

FLEXCO™ division of **TEXTILE RUBBER COMPANY, INC.** TUSCUMBIA, ALABAMA 35674

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We tested theatre Cushioning foam of

TEST ONE: DU PONT NEOPRENE
Time: 20 seconds after ignition.

Time: 1 minute, 30 seconds.
Flame ignites center chair.

Time: 3 minutes, 00 seconds.
Center chair involved.

TEST TWO: HR POLYURETHANE
containing flame retardants.
Time: 20 seconds after ignition.

Time: 1 minute, 30 seconds.
Flame ignites center chair.

Time: 3 minutes, 00 seconds.
Five chairs in two rows involved.

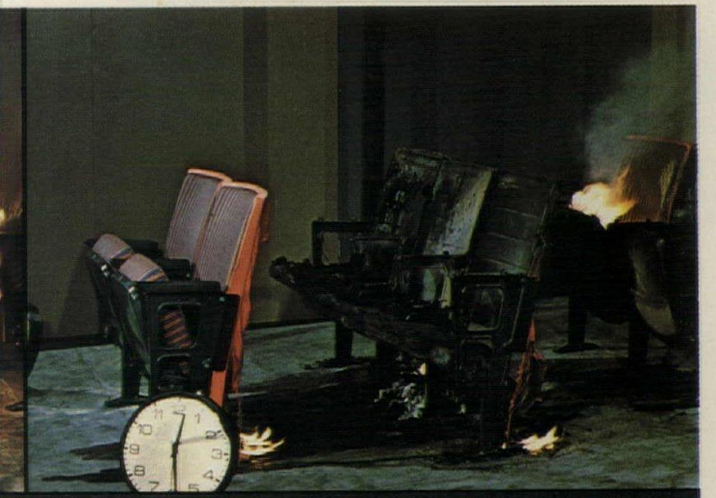
TEST THREE: STANDARD POLYURETHANE
Time: 20 seconds after ignition.

Time: 1 minute, 30 seconds.
Flame ignites center chair.

Time: 3 minutes, 00 seconds.
Five chairs in two rows involved.

seats against fire. Neoprene performed best.

Major flames out. Time: 6 minutes, 00 seconds.
Damage: 1 chair involved, fabric melting and smoldering on two adjoining chairs.



Major flames out. Time: 29 minutes, 30 seconds.
Damage: 5 chairs in two rows involved.

Major flames out. Time: 40 minutes, 00 seconds.
Damage: All seven chairs involved.

We conducted three burn tests at Factory Mutual's Burn Test Center.

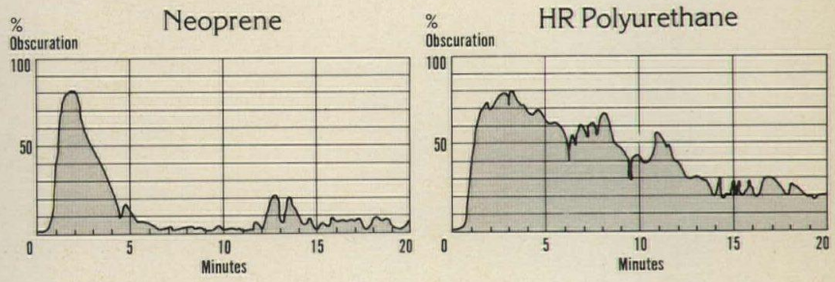
In each test we used seven theatre chairs in an environment intended to simulate that found in a typical theatre or public auditorium. Our fuel source was typical theatre trash—popcorn boxes, drink cartons, cups and napkins—placed under one of the chairs.

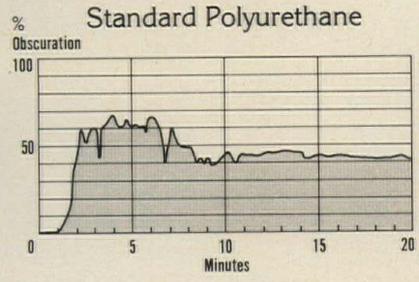
We found considerably less flame damage among the chairs cushioned with deep foam of Du Pont Neoprene than among two other sets of chairs cushioned with other common cushioning foams.

The Test Chairs: Tests #1 and #2 used cushions of deep Neoprene foam and high resiliency (HR) polyurethane foam containing flame retardants, respectively. These chairs were otherwise identical, with upholstery fabric and plastic seat backs containing flame retardants. Test #3 was conducted with a standard type polyurethane cushioning foam in chairs with untreated components.

The photographic sequences at left document the actual test results.

Smoke Obscuration: Throughout each test, the amount of light obscured by smoke was measured with photo cells six feet from the floor over the center chair. The three graphs show smoke obscuration recorded over time was considerably less in test #1 (with Neoprene) than that recorded in test #2 or #3. The chairs with Neoprene produced less total smoke because **only one chair was consumed by the fire.**





Summary: In this comparative test, the chairs containing Neoprene cushioning foam performed best. Combine this with the resilience and comfort afforded by Neoprene foam, and it is easy to see why this versatile, durable material has been widely specified for years in ships, schools, theatres, trains and hospitals—wherever public safety is at a premium.

For test data plus information on suppliers of Neoprene foam cushions or finished seats, write: Du Pont Co., Room 24372, Wilmington, DE 19898.

Cushioning Foam of DuPont Neoprene

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THE COMPUTER PROGRAM THAT NOW DOES MORE TO SAVE ENERGY AND MONEY.

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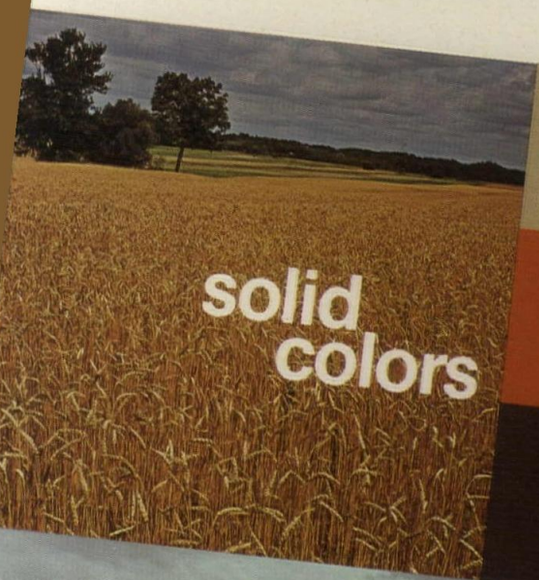

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D55 Saffron

D16 Inca Gold

D64 Autumn Glory

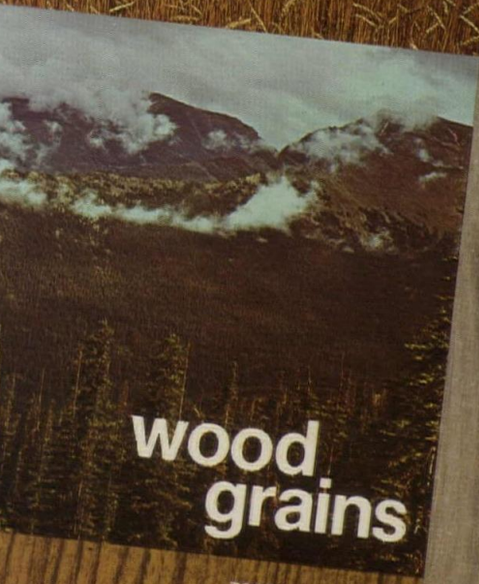
D65 Terra Cotta

D12 Regimental Red

D91 Slate

D81 Vibrant Green

1527 Chateau Blue



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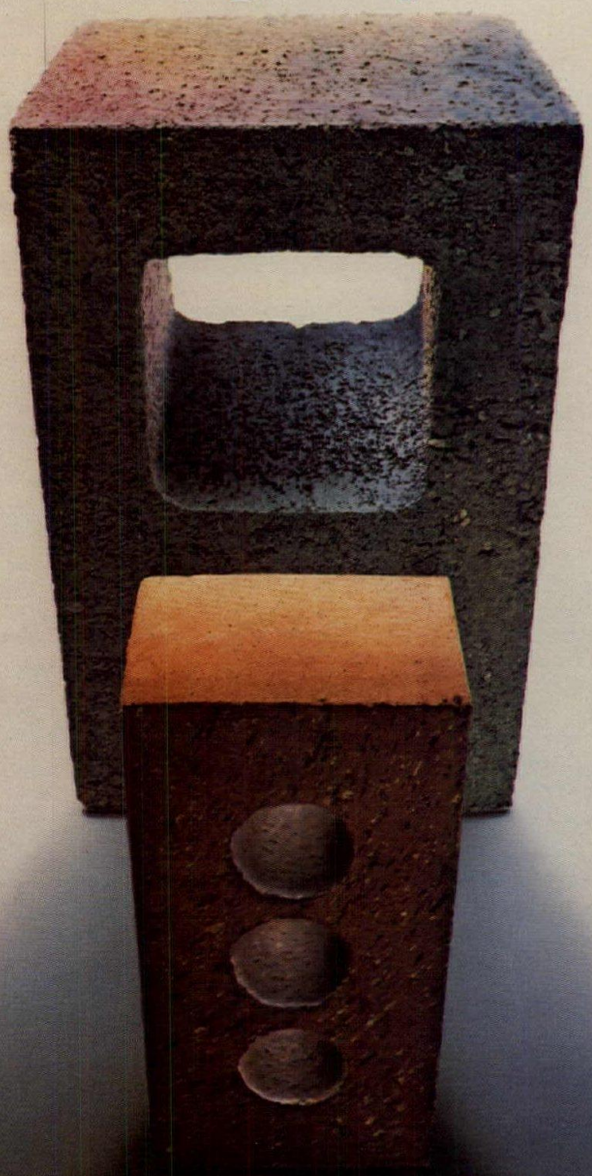

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President Ford's veto of the common-situs picketing bill prompted the resignation of Labor Secretary Dunlop and the labor members of the Collective Bargaining Committee in Construction, and earned him the bitter anger of the construction unions as well. Details on page 34. W. J. Usery, Jr., has been nominated for the Labor post.

Alaska intends to have a new capital city by 1980. Three potential sites have been offered to voters for study through the year and final approval at the November 1976 elections. Details on page 34.

For the third consecutive month, contracts for future construction in November 1975 dropped below 1974's level; new contracts totaled $5,572,581,000, 6 per cent less than November 1974. Dodge economist George A. Christie attributed most of the decline to a fall-off in energy-related construction. Residential contracts, at $2,404,329,000, were up 30 per cent, but, says Christie, "it should be kept in mind that we are now making year-to-year comparisons against the very worst homebuilding conditions in decades." Nonresidential building, at $1,859,033,000, was 25 per cent lower than a year ago, though schools and hospitals held close to 1974 levels.

The cost of construction materials and labor rose an average 9.3 per cent over the 12-month period ending September 30, according to the Dodge Building Cost Services Department of McGraw-Hill Information Systems Company. The rate of inflation was nearly the same as the 9 per cent increase registered a year earlier. Further, the rate of inflation appeared to accelerate in the last half of the year: 3.9 per cent from October through March, 5.2 per cent for the last six-month period. Regionally, costs increased 11.4 per cent in the Pacific Coast and Rocky Mountain States, 10.0 per cent in the Northeastern and North Central States, 9.8 per cent in the Mississippi River and West Central States, and 7.8 per cent in the Southeastern and South Central States.

The FTC, continuing its fight against professional ethics codes it considers in restraint of competition, has attacked the American Medical Association for forbidding its members to advertise prices and services. The suit specifically names the Connecticut State Medical Society and the New Haven County Medical Association.

New York City has revived its interest in a major convention center for Manhattan, and is presently arguing the merits of two sites: one at Battery Park City, the other, for a building designed by Poor, Swanke, Hayden & Connell, for midtown. Details on page 35.

Grand Central Terminal recovered its landmark designation and escaped threats of a 55-story tower on top when the Appellate Division of the New York State Supreme Court in December reversed an earlier ruling that the landmark designation constituted "a taking of property." Though conceding that the railroad might suffer some economic hardship, the court wrote that "such hardship, in the proper exercise of the city's police power, must be subordinated to the public weal."

Jury chairman for the R.S. Reynolds Memorial Award will be William Marshall, Jr., FAIA, immediate past president of the American Institute of Architects. Other jurors are Gustav Peichl, Vienna, who received the 1975 award, and Ehrman B. Mitchell, Jr., FAIA, of Mitchell/Giurgola, Architects, Philadelphia and New York. The award program offers $25,000 and an original aluminum sculpture for distinguished architecture using aluminum.

Herbert L. Berger, F.ARA, was installed as president of the Society of American Registered Architects at the association's recent convention. Berger is with the firm Law/Kingdon, P.A., Architects, Engineers and Planners, of Wichita. Other new officers: president elect—Jerome Salzman, Chicago; vice presidents—Donald S. McKerchard, North Palm Beach, Florida; Richard Shields, York, Pennsylvania; G. Robert Johnson, Glenview, Illinois, and Gayle Daniel, North Hollywood, California; treasurer—Sidney Epstein, Chicago; recorder—Bertrand Johnson, Plainfield, New Jersey; and archivist—Chester A. Stark, Glenview, Illinois.

A Building Design Conference for Fire Control and Safety, planned for architects, engineers and fire marshals, will be held February 26-27 at the University of Kentucky, Lexington. For information: Ms. Woodward, Office of Continuing Education, University of Kentucky, Lexington, Kentucky 40506 (606/258-5949).

Nominations are sought for the $5,000 LeBrun Traveling Fellowship, open to U.S. citizens with 1½ years of architectural experience and between the ages of 23 and 30. Nomination forms are available from Traveling Fellowship Committee, New York Chapter, American Institute of Architects, New York, New York 10018.

The 1976 competition for the Rotch Traveling Scholarship, which carries a stipend of $11,000, is open to U.S. citizens under the age of 35 who have earned architectural degrees and/or architectural experience in Massachusetts. Requests for applications must be made in writing to Hugh Stubbins, Secretary, Rotch Traveling Scholarship, 1033 Massachusetts Avenue, Cambridge, Massachusetts 02138 no later than February 20.

Alaskan voters will choose a site for a new capital city

Three potential sites for the location of a new Alaskan capital have been selected, in accordance with an August 1974 initiative passed by voters to relocate the capital from its present site, Juneau, to a location in Western Alaska. Voters will determine in November which of the three sites will be the home of the new capital.

The reasons for the move are multifarious. Until the 1900s, the population centered in the Juneau area, capitalizing on the state's commercial fishing and forest products industries, but today, 90 per cent of the state's 350,000 people live in the area known as Western Alaska. The discovery of oil at Prudhoe Bay, off the Arctic (or North) Slope, and the construction of the Trans-Alaska oil pipeline stirred the desire to have the capital more accessible to those involved with this new industry, and to the majority of the population. Also, the state's climate is widely variable, and access to Juneau is diminished during winter months because of snow, cutting off service by air for long periods of time and leaving the city accessible only by water from Western Alaska.

The August 1974 voter's initiative prescribed a timetable for selection of sites and set forth that a committee be designated to select not more than three sites by December 11, 1975. The sites had to be located beyond a 30-mile radius of Anchorage and Fairbanks (so that neither city would influence the character of the new capital); each site would consist of at least 100 square miles, be accessible by roads and 24-hour airplane service; and the land should be already owned by the state or procurable without cost.

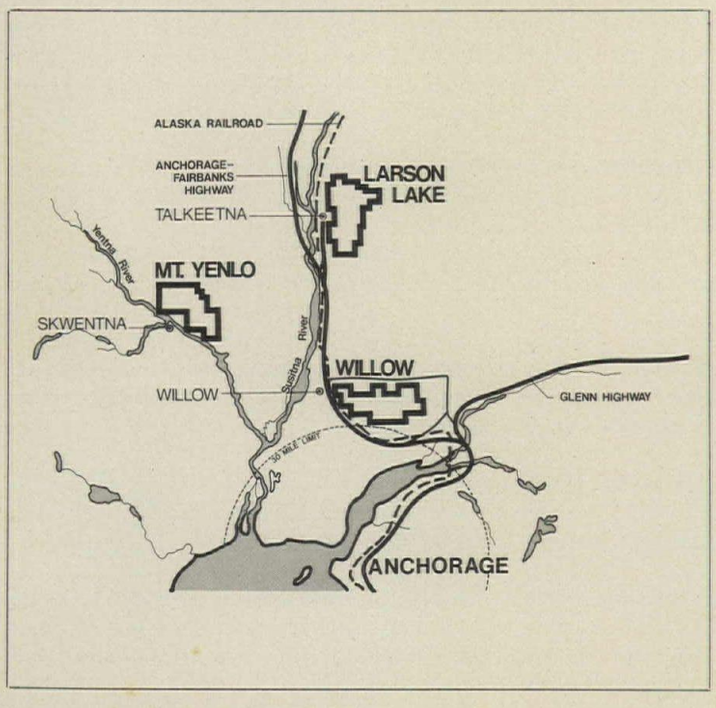
Governor J. H. Hammond appointed a nine-member Capital Site Selection Committee (CSSC) to conduct studies and select sites. The CSSC selected the firm of Crittenden, Cassetta, Cannon/Hellmuth, Obata, Kassabaum (CCC/HOK) as prime consultants; and the project team included Dames & Moore for environmental and applied earth science studies, and Alan M. Voorhees & Associates for transportation studies. Alaskan scientists from the universities and state agencies assisted the CSSC and consultants in gathering data.

A complex site selection process included analyses of environmental factors (including land limitations and opportunities), year-round transportation access, utility requirements, natural resources potential, scenic qualities, regional impact, site feasibility and construction costs.

The three sites recommended by the CSSC and project team are called Willow, Larson Lake and Mt. Yenlo. According to architects CCC/HOK, "The three sites represent the most desirable locations meeting the criteria, and provide clearly different options for the Alaskan voter."

Willow is 65 miles by road north of Anchorage (center of the largest population), and thereby involves the lowest development cost of the three areas. Larson Lake is approximately 115 miles north of Anchorage, on the western slopes of the Talkeetna Mountains. It was selected because of its dramatic natural features, its proximity to an existing railbelt, and its nearness to the small town of Talkeetna, allowing construction costs to fall between those of the Willow and Mt. Yenlo locations. The Mt. Yenlo site is located approximately 120 miles north of Anchorage in the western Susitna Valley, a totally undeveloped area. While costs of developing this site are the highest of the three, it affords the opportunity to create a new town and open up the region, which is rich in natural resources.

Public information/workshop sessions will be held up to November. Construction of all buildings at the final site is expected to be completed by October 1980.—*Janet Nairn.*



Dunlop resigns labor post after situs-picketing veto

President Ford's veto of a bill that would have broadened the picketing rights of construction unions and established a wage stabilization panel for the industry has cost him the services of Secretary of Labor John T. Dunlop and won him the enmity of organized labor. The immediate outcome is likely to be a very troublesome spring for the industry, when contracts covering at least 500,000 construction workers come up for renewal.

The veto came as the building trades were on the brink of victory in their 25-year fight to reverse a Supreme Court decision which held that a union having a dispute with a single contractor or subcontractor on a job site could picket only the employer directly involved and therefore could not shut down the entire site. President Ford, at the urging of Dunlop, had promised to sign the bill, provided it were accompanied by a companion measure setting up the Construction Industry Collective Bargaining Committee, a joint labor-management-governmental panel which gave international unions and national contractor associations a mechanism to intervene directly in local contract disputes.

After the Senate combined the two measures and sent the bill to the President, Ford came under withering pressure from construction industry, business, and right-wing political groups to veto the law. The most effective pressure was applied through the President's Campaign Fund Raising Committee, with a number of major contributors threatening to withhold donations if he signed the bill. Admitting that he was going back on an earlier promise to sign the bill, President Ford said he was doing so "reluctantly" because he was persuaded by the arguments of those who said it would increase the problems of the industry, rather than alleviate them.

Dunlop invested a great deal of his considerable prestige in supporting the bill. But he said he resigned not out of pique at the President but because the veto had irreparably damaged his ability to deal with organized labor as the President's agent.

In arguing against a veto, Dunlop warned that the result of such action would be "unmitigated hell" in construction labor relations "this year and for several years thereafter." There already are indications that that may come true. Shortly after the veto, the nine labor members of the Collective Bargaining Committee in Construction, an interim panel which drafted the Stabilization Bill, resigned, leaving the Administration without any formal mechanism to deal with construction disputes. Committee Chairman D. Quinn Mills, of Harvard University, said it was extremely unlikely that the committee, which has existed under various names since 1969, could revive any time soon.

Mills warned that the collapse of the committee could have serious consequences for bargaining. "Perhaps some observers in government and industry have forgotten what it is like to be without a national forum in which representatives of labor, management and government meet on a regular basis to examine problems in construction," said Mills. "The collapse of this national body threatens a return to the chaotic situation of the late 1960s in the construction industry, with all the unfortunate consequences that suggests for the American economy and labor relations generally." Maurice L. Mosier, executive vice president of the National Constructors Association, expects there will be "a period of vindictiveness" in construction industry labor relations.

Robert A. Georgine, president of the AFL-CIO Building & Construction Trades Department, made it clear that the anger of the unions is directed not only at the government but at management, which it feels put ideology over rationality to the detriment of the industry. "It is clear that management has been operating behind a facade," he said. "When the chips were down . . . the contractors folded and fled. When the means to effect the cures to many collective bargaining difficulties finally were at hand, the contractors abdicated their responsibility to determine policy in the construction industry to the National Right to Work Committee, The National Association of Manufacturers, The Business Roundtable and the U.S. Chamber of Commerce."

Government observers say that it is this anger at the contractors that presages a difficult time in labor negotiations. But with the Administration's credibility with labor at such a low point, there appears to be little the government can do to prevent trouble or to correct the situation if "unmitigated hell" does ensue.—*Stephen Wildstrom, World News, Washington.*

HUD will put $3 billion into multi-family housing

The Department of Housing and Urban Development is moving to perk up the Government's faltering apartment building effort, and in the process is revealing a shift in emphasis in the community block-grant program. Secretary Carla A. Hills has ordered a new, $3-billion program to finance the construction of multi-family apartment projects—an effort expected to result in the construction of 120,000 new units.

HUD officials are clearly worried over the multi-family program. As recently as November, starts were running at an annual rate of only 349,000 units—far short of goals. Secretary Hills cited this statistic in announcing the new program, saying, "It is prudent that additional mortgage-purchase assistance be directed to stimulating multi-family starts."

The Federal funds will be made available at 7½ per cent, several

points below the market rate. The funds will be used to finance FHA-insured apartment developments, including developments assisted under the HUD rental subsidy program for low- and moderate-income families.

Concurrent with the announcement of the new apartment support effort, HUD released a report on cities and counties spending $2 billion a year under the Community Development Block Grant (CDBG) program. The report indicates a swing away from urban renewal projects toward smaller-scale neighborhood improvement programs.

The change has had significant impact. For example, under urban renewal during 1966-70, for every $1 spent on rehabilitation loans and grants, $13 was spent on acquiring properties for demolition. But now for every $1 allocated to rehab loans and grants cities are budgeting only 90 cents to buy property for demolition.

According to the first annual CDBG report to Congress, under the old system cities spent about two-thirds of all their HUD grants on urban renewal type projects. Now that figure has dropped to about one-third.

The report finds cities slowing programs that require use of the right of eminent domain; starting fewer large-scale, long-term projects; concentrating on residential areas showing early signs of decay; and emphasizing the use of rehabilitated housing.

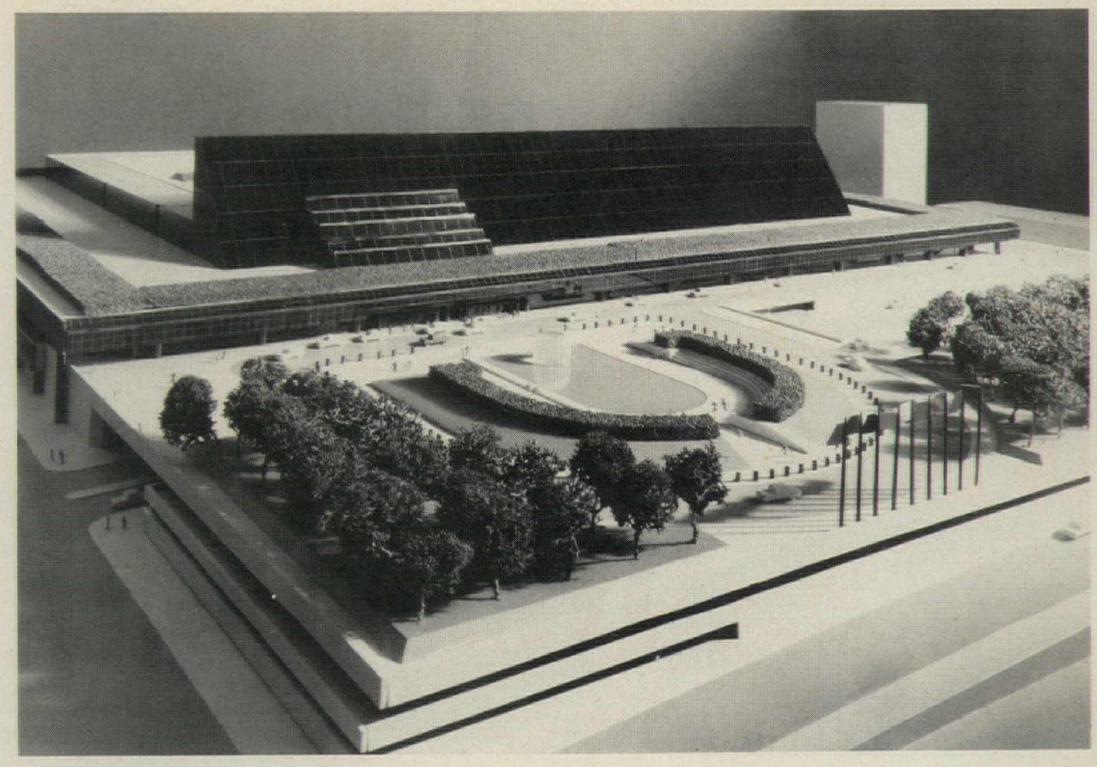
The CDBG program, which became law in August 1974, began making a total of $2.5 billion available in January 1975. $2 billion is allocated on a formula basis to about 1,300 cities, towns and urban counties; the balance is distributed according to a "hold harmless" provision to localities with programs begun under the categorical grant system, under a discretionary fund of the Secretary.

Responding to a HUD questionnaire, 880 cities listed among their "highest priority needs" as follows: improvement or expansion of housing stock, 26 per cent; community services and facilities, 19 per cent; water and sewer projects, 15 per cent; economic development, 10 per cent; street construction and repair, 5 per cent; and revitalization of central business districts, 4 per cent.

However, 29 per cent of the urban counties listed construction and improvement of sewer and water and other public facilities as their top priority, with housing second at 28 per cent.

According to HUD figures, the largest share of the $2.5 billion—41.9 per cent—goes for "clearance related" projects.

While upgrading residential neighborhoods—through urban renewal and smaller-scale projects—gets about 45 per cent of the $2 billion, projects to revive central business districts get 8 per cent and neighborhood improvement activities in nonresidential areas 3 per cent.—*Donald Loomis/William Hickman, World News, Washington.*



New York City studies two sites for a new convention center in Manhattan

New York City, in the midst of its financial ordeals, still looks to a future as one of the nation's foremost cities—the present evidence being a revival of serious interest in a major convention and exposition center. Both the city and the state have assigned high priority to this undertaking.

Earlier plans for a convention center on the Hudson River between 43d and 47th Streets, which was designed by Skidmore, Owings & Merrill, have been abandoned for reasons of cost: estimates range from $231 million upwards, much of the expense necessitated by site and highway work.

At the end of December, however, two new proposals for convention centers were put forward within a week.

The first was a project suggested by the city, the state and the Port Authority of New York and New Jersey for a convention center site at Battery Park City, a landfill commercial and residential project at the lower end of Manhattan near the World Trade Center. No detailed plans for this site were offered, but critics immediately raised several objections, among them reported financial difficulties at the Battery Park City Authority and the remoteness of the location from hotels, restaurants and good transportation.

The second proposal, made by developer Donald Trump, was for a 50-acre site at the Penn Central railroad yards near the Hudson River in midtown; the site is bounded by 33d and 37th Streets and 11th and 12th Avenues. This proposal was accompanied by a master plan from architects Gruzen and Partners and by a project design (shown here) from Der Scutt of Poor, Swanke, Hayden & Connell, Architects.

Among the advantages of the site argued by the Trump Organization: the site is untenanted; it is readily accessible by rail, water and mass transit, and automobile traffic in the area is low; streets, sewers and electrical systems are already available; the estimated cost is only $98 million.

The building suggested for this site is envisioned as a block 800 feet square running from 34th to 37th Streets, and providing a 500,000-square-foot convention-exposition hall as well as ancillary meeting rooms, offices, restaurants and sports facilities. A new plaza will serve the main entrance and will preserve the westward vista across 34th Street, a major cross-town artery, to the river.

Canadian government, fighting inflation, imposes reductions on architectural fees

The architectural profession has been singled out for specific restraints by the Canadian government's anti-inflation program. And initial reaction has been less than ecstatic.

One of the key elements of the program provides that a firm can only increase its fee rates by an amount necessary to cover cost increases prior to October 13, 1975, and also directs that architects and engineers providing professional services based on the value of the transaction or asset involved must reduce their fees by one per cent of the rate in effect last October 13. A government Anti-Inflation Board official said that the board is currently in the process of deciding if this reduction must be made effective October 14 or can be postponed for three months.

The wording of the guidelines has raised the question whether a similar reduction must be made every three months during the life of a job. A consensus of architects believes this is the AIB's intention, but a spokesman for the Board said that it "appears" the reduction will only have to be made once, and "probably" on the date a contract is signed.

The AIB "believes" that a Canadian domiciled architect working outside Canada will be covered by the guidelines, but a firm with a foreign office hiring non-Canadian resident employees to work outside Canada will not. Non-Canadian firms working in Canada will not be covered unless they are "employees" of a Canadian firm.

Salaries are also controlled. A firm, which can be one person, can only add to its cost pass-through fee an amount necessary to increase the income of each practitioner by the lesser of 10 per cent or $2,400 per year.

Building contractors' prices and profits are also controlled. Prices can only be increased by an amount sufficient to recover higher costs by companies employing 20 persons or more, except on contract obtained by arms-length bidding by a firm with fewer than 500 employees. Profits must generally be held to 95 per cent of gross margins over the past five years.

The OAA says it is looking at the control program "with a great deal of intensity," but declined further comment pending clarification of details.

Boris Zarafa, senior partner of Webb Zarafa Menkes Housden, was more forthright: "There is now no incentive for any of us who want to do a little bit more or do a little better. We will now be looking for greener pastures in other countries, and we have already taken some steps in this regard."—*Robin Neesham, World News, Toronto.*

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Supreme Court considers discriminatory land-use cases

The U.S. Supreme Court—obviously anxious to get the burgeoning litigation challenging local land-use decisions settled on a jurisdiction-by-jurisdiction basis in state courts—is for the first time taking on the emotionally explosive issue of how to judge zoning rules that unarguably keep poor urban blacks out of white suburbs. If the Justices uphold the local rules, the surge of Federal court involvement in land-use matters clearly will wane.

For more than four decades after the 1926 Supreme Court ruling—in a case involving Euclid, Ohio—that zoning was not an unconstitutional taking of property, the U.S. Supreme Court did not look at a land-use case. But recently, an alliance of builders and advocates for the poor has sought to raise novel constitutional objections to slow-growth devices. By limiting the number of housing units in a particular area, or by writing laws that effectively exclude low-cost housing, are not local governments building unfair barriers to Americans' right to move throughout the country and settle wherever they want?

Lower Federal courts have often been sympathetic to those arguments, and have handed down ground-breaking decisions that have plunged the Supreme Court once again into land-use matters. The Justices ruled in April 1974 on the first zoning case since the Euclid decision, and then spoke on the issue again this year and have promised another decision by next spring.

"The Supreme Court is groping its own way, as are a lot of other people," says Herbert Franklin, a lawyer specializing in such cases. "The Supreme Court doesn't know a lot about land-use decision making." The signal it is giving out to the lower Federal courts, however, is to try to stay out of the controversies.

The impact of those signals is clearest in what is probably the most publicized of the new wave of land-use cases—the attempt by local builders to break a 500-units-a-year ceiling on new housing imposed by Petaluma, California.

Because more persons clearly wanted to live in Petaluma (the whole idea of the building curb was to stem the growth that had seen the town treble in size since the '50s) and because the town had great trouble showing that it did not have the resources to handle a larger population, the trial court judge called the plan a clear violation of the constitutional right to travel. But after that decision, the Supreme Court upheld the zoning ordinance of a suburb of Rochester, New York, against claims by a home-builder's group and others that the ordinance in effect kept out the poor. The majority in the 5-4 vote said that builders had no right to bring to court the claims of hypothetical residents who might arguably have wanted to live in the suburb had low-cost housing existed. Following that lead, the U.S. Court of Appeals in San Francisco, reviewing the Petaluma decision, in August overturned the trial court.

But the Appeals Court also looked at another recent High Court case on zoning, in which it upheld a ban by a small Long Island community on several unrelated persons living in the town's large houses. "A quiet place where yards are wide, people few, and motor vehicles restricted are legitimate guidelines in a land-use project," William O. Douglas wrote. The West Coast Appeals Court had already used that ruling to okay one-acre lot zoning in Los Altos Hills, California.

In Petaluma, it said, the reasoning meant that even though the builders did have the right to attack the building curb as arbitrary, the attack would fail because the plan had the rational basis of trying to preserve some of the small-town charm of Petaluma, within the authority delegated to the town by the state. "If the present system of delegated zoning power does not effectively serve the state interest in furthering the general welfare of the region or entire state," Judge Herbert Y. C. Choy wrote for the Appeals Court, "it is the state legislature's, and not the Federal courts', role to intervene and adjust the system." The Petaluma ruling is being appealed to the Supreme Court, but since it is so carefully tailored to recent rulings, betting is that the Justices will decline to review it.

The Court has promised to hand down an opinion on another zoning case, however, that will spell out more clearly whether the yardstick used by Judge Choy is the proper one in all land-use cases. The U.S. Court of Appeals in Chicago decided that in this particular controversy much more stringent standards are required. The case revolves around a 15-acre parcel in Arlington Heights, Illinois, owned by the Clerics of St. Victor and leased by the religious order to the Metropolitan Housing Development Corp. Metro planned to build a subsidized 190-unit townhouse project on the property, aimed at low-income families who would be primarily black Chicagoans. But in 1971, the government of the all-white village turned down the request to rezone the area from detached-home status, saying it would do so only when there was a buffer zone between such homes and higher density use.

The Appeals Court said that since the rezoning refusal excludes blacks, the decision is inherently suspect of being unconstitutional. The judges said the question therefore is not whether not granting the variance is arbitrary and capricious—the standard in the Petaluma case—but whether a "compelling public interest" made the curbs absolutely necessary. And they went on to say that merely wanting to adhere to a set land-use plan and to protect property values does not make a "compelling" case.—*Dan Moskowitz, World News, Washington.*

Oasis clinic will examine and treat 100,000 patients yearly

At al-Hasa Oasis in Saudi Arabia near the town of Hofuf, the Arabian American Oil Company (Aramco) will begin construction this month on an outpatient clinic capable of handling 100,000 patients a year.

The clinic, designed by the New York City firm Haines Lundberg Waehler Architects Engineers and Planners, is part of Aramco's health care delivery system.

Because the ratio of physicians to patients in the area is low, the clinic was planned to allow the nursing staff to treat many cases without reference to physicians. The octagonal building, 185 feet in diameter, centers on a screening area, where nurses will perform preliminary examinations. Patients will then be sent to one or more of the medical services offered—general practice, emergency, maternal and child care, dentistry, immunization, radiology or pharmacy.

The individual services are housed in wings circling the screening area, with access provided by a 12-foot skylighted corridor. The architects took special care to give visible clarity to the building's organization, since most patients will find the clinic an entirely new experience. To enable patients to find the proper departments, HLW devised a color-key system for signage and for tickets: a patient requiring, say, maternity and pharmaceutical service will be handed a red and yellow ticket which she will match to corresponding signs along the corridor.

Although the clinic will serve only outpatients, eight observation/holding beds will be provided for maternity and emergency patients. Acute cases will be transferred to the Dhahran Health Center, 60 miles away. (A heliport will be built on site.)

The clinic will also contain a laboratory and administrative offices.

In addition, the project includes staff facilities—10 two-bedroom houses, 40 apartments, a recreation building, swimming pool, tennis courts and parking. These facilities, which form a self-contained residential community, follow traditional local architecture; buildings are arranged around private courtyards, protected from desert winds and sun.

Because ease of construction and minimal maintenance were essential design considerations, the structure is straightforward: slab on grade, with concrete post-and-beam framing for the concrete-block interior walls and demountable metal partitions. Exterior finish is stucco on concrete block. In the clinic interior flooring, because of the heavy traffic expected, is quarry tile in the lobby, central screening room and ring corridor, vinyl asbestos tile elsewhere. All wall surfaces are vinyl covered. The clinic will be entirely air-conditioned.

Because designing a facility to the standards of U.S. practice for a location 8,000 miles away posed some problems of supply, HLW, besides its architectural services and medical planning, provided equipment planning and procurement services.

The general contractor is Fuller/-Shuwayer (George A. Fuller Company, of New York City, and Abdullah Hamud al-Shuwayer, of Damman, the Kingdom of Saudi Arabia.)

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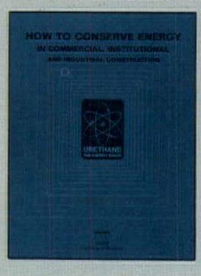
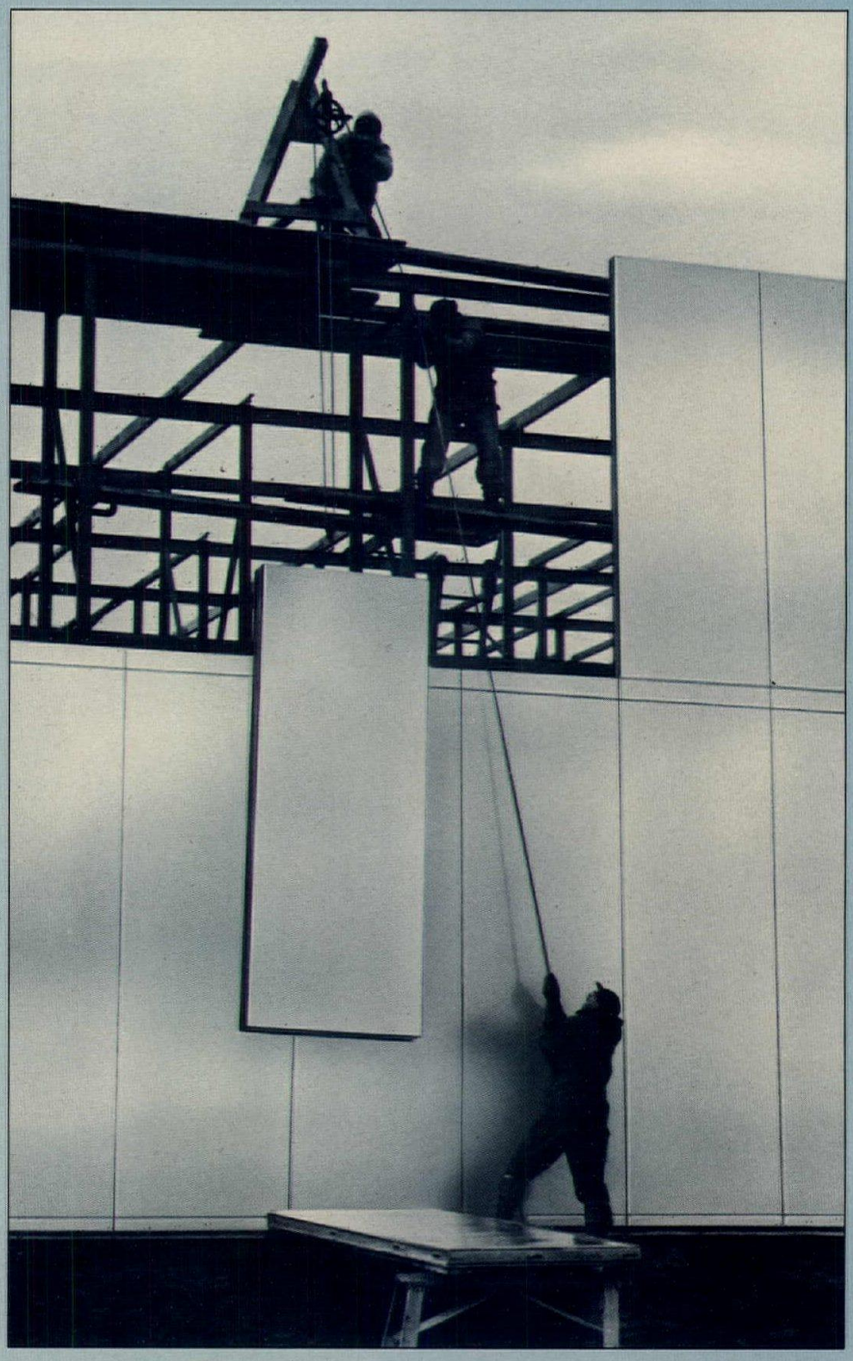
For the full story on how urethane foam insulation can save you time, energy and money, ask for our fact-filled manual: "How to Conserve Energy in Commercial, Institutional and Industrial Construction." It's from the Mobay People who wrote the book on polyurethane chemistry.





Refer to Sweets Architectural File 15.20/Mo

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MOBAY

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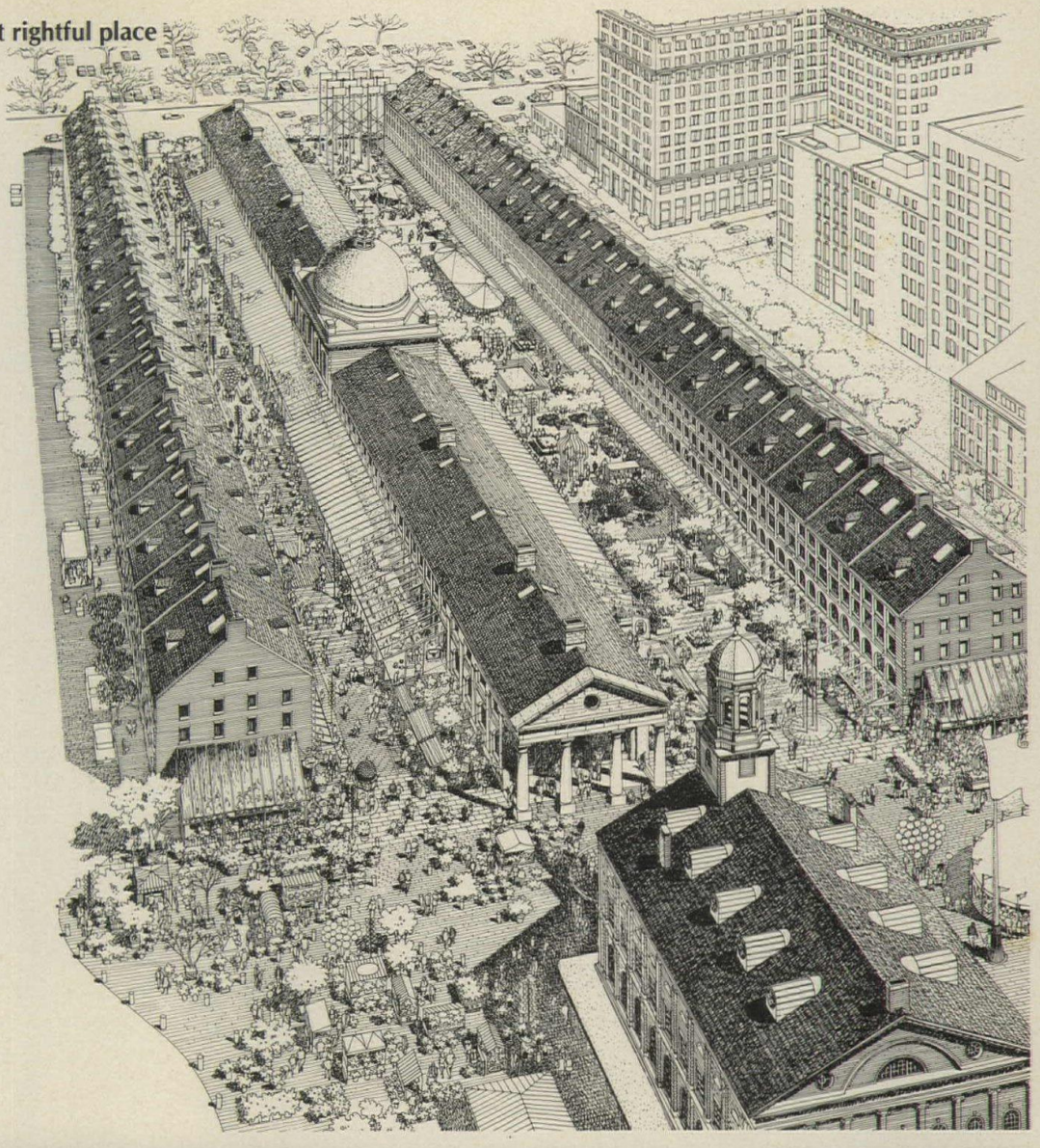
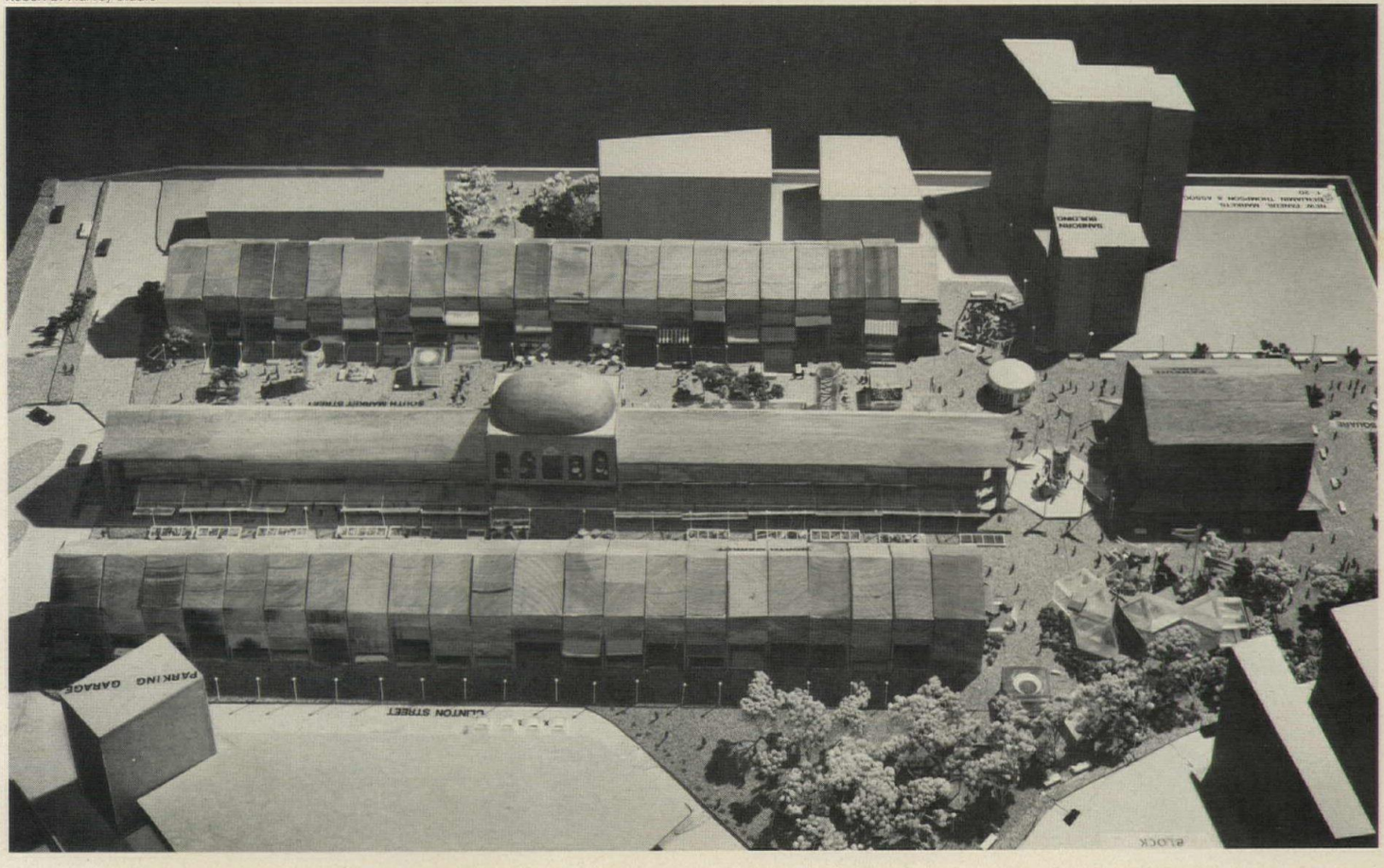
Boston's Quincy Market resumes it rightful place as a purveyor of good food

Designed in the 1820s by Alexander Parris as the city market, Boston's imposing Quincy Market—a 535-foot-long domed arcade—had in recent years fallen into disuse and disrepair, as had two flanking rows of brick and granite offices and warehouses. Now the entire complex, situated near Faneuil Hall, is being revived as a commercial center by architect Benjamin Thompson and developer James W. Rouse. The design, says Thompson, is an effort to honor the claims both of urban vitality and of sensitive architectural preservation. The Quincy building will revert to something like its original use, with stalls for retail food vendors inside and beneath exterior canopies. (The central dome, whose coffered ceiling was recently revealed when a subceiling was removed, presently houses a bicentennial exhibit, *The Revolution*.) The 45 buildings along North and South Market Streets will be leased to restaurants and retail shops for clothing, crafts, antiques and the like, while the streets themselves, closed to vehicles, will accommodate cafes and pushcarts.



Robert B. Harvey Studio



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Tom Martinson photos

6

A touring exhibit and a new guidebook focus on Minnesota architecture

Although Minnesota did not join the Union until 82 years after the signing of the Declaration of Independence, the University of Minnesota Gallery and the Minnesota Society of Architects stuck close to home for their American bicentennial celebration, an exhibition of historical and contemporary architecture in Minnesota. The ambitious survey of noteworthy buildings in the state, undertaken by David Gebhard of the University of California at Santa Barbara and Tom Martinson of the Minnesota Society of Architects, is an attempt to "place our regional style within the framework of American culture" and to "awaken a new appreciation of the contribution of the Upper Midwest to the development of American art and history." An exhibit of 80 photomurals and architectural ornament will be on view February 10-March 6 at Dayton's department store in Minneapolis, and will thereafter tour the state throughout the year. (The exhibit, along with a collection of Minnesota painting and sculpture, will be transported by a specially equipped 42-foot van and will be set up in community centers.) The fruits of this architectural research have also been published by the University of Minnesota Press in a 320-page illustrated *Guide to the Architecture of Minnesota*. A sampling of the Minnesota architecture to be exhibited is shown here: 1. Anderson House, Mineota, ca. 1892; Cass Gilbert, architect; 2. First National Bank, Dawson, 1892; architect unknown; 3. House, Winona, 1913; Purcell and Elmslie, architects; 4. Portland Prairie Methodist Church, Eitzen; 1876; architect unknown; 5. Post Office, New Ulm, 1913-1917; architect unknown; 6. Bahneman Barn, Afton, 1869; architect unknown.

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Park Avenue is almost all right (maybe)

APARTMENTS FOR THE AFFLUENT, by Andrew Alpern; McGraw-Hill Book Company, New York, 1975, 166 pages, illustrations, $19.95.

Reviewed by Robert A. M. Stern

Andrew Alpern's book *Apartments for the Affluent* should be regarded as a first step toward the explication and rescue of the spatial, formal and sociological ideas which mark pre-Modern, high-density, multi-family housing design. Regrettably, Alpern's book is short on theory (it is in fact just plain short on text), but it is a wonderful, if somewhat idiosyncratic, scrapbook that makes accessible some quite extraordinary material previously available only in specialized libraries. It contains a foreword by Harmon Goldstone, whose father, Lafayette Goldstone, was one of the more prolific and inventive designers of apartment houses in the first quarter of this century in New York City. This introduction might have been a rewriting of this architect-son's memoir about his father's career, one that would shed light on the methods, practice and ideas of a leading figure in this area of practice. Unfortunately it is little more than a study in generalities about the rich and their style of living, taking us no further than the inevitable quotation from Edith Wharton, dovetailing only too easily with the syndrome of "the rich are different from us . . ." which infects Alpern's text.

Goldstone's foreword is followed by an equally bland introduction by Alpern, mired in anecdotal detail and irrelevant in its overly long account of an anomalous 102-foot by five-foot-wide apartment house which used to stand on Lexington Avenue at 82nd Street. This introduction, in turn, is followed by the principal part of the book, a chronologically arranged selection of typical plans and photographs (or in some cases renderings) of the exteriors of apartment buildings built in Manhattan, mostly, but not always, for an affluent clientele. More often than not the views of the apartment houses chosen are contemporary with their construction, and one cannot but be grateful for such glimpses into aspects of an earlier Manhattan, seemingly more relaxed and in some ways lovelier (though not necessarily livlier or more stimulating) than the troubled events of today would suggest possible.

Occasionally Alpern includes cross-sectional drawings of whole apartment buildings and interior views of "public" spaces in them (there is an interesting selection of views of lobby interiors), and there is a detailed presentation of Mrs. E. F. Hutton's 50-room triplex apartment, a chunk of real estate that appears to be distinguished principally by its size and cost—or so one is forced to assume from Alpern's breathy text which might bring tears to the eyes of the editors of *Architectural Digest*, but leaves this reader, at least, grasping for straws of architectural analysis. Alpern tells about the rent on this triplex, about the terms of its lease, about the inclusion of separate rooms for the storage of wine, silver, flowers and furs—but nowhere does he discuss the qualities of its spaces, the sizes or proportions of its rooms or the heights of its ceilings. In fact, as in so many of the plans presented, no graphic or architectural scale is provided for the reader's reference, nor are compass points clearly indicated.

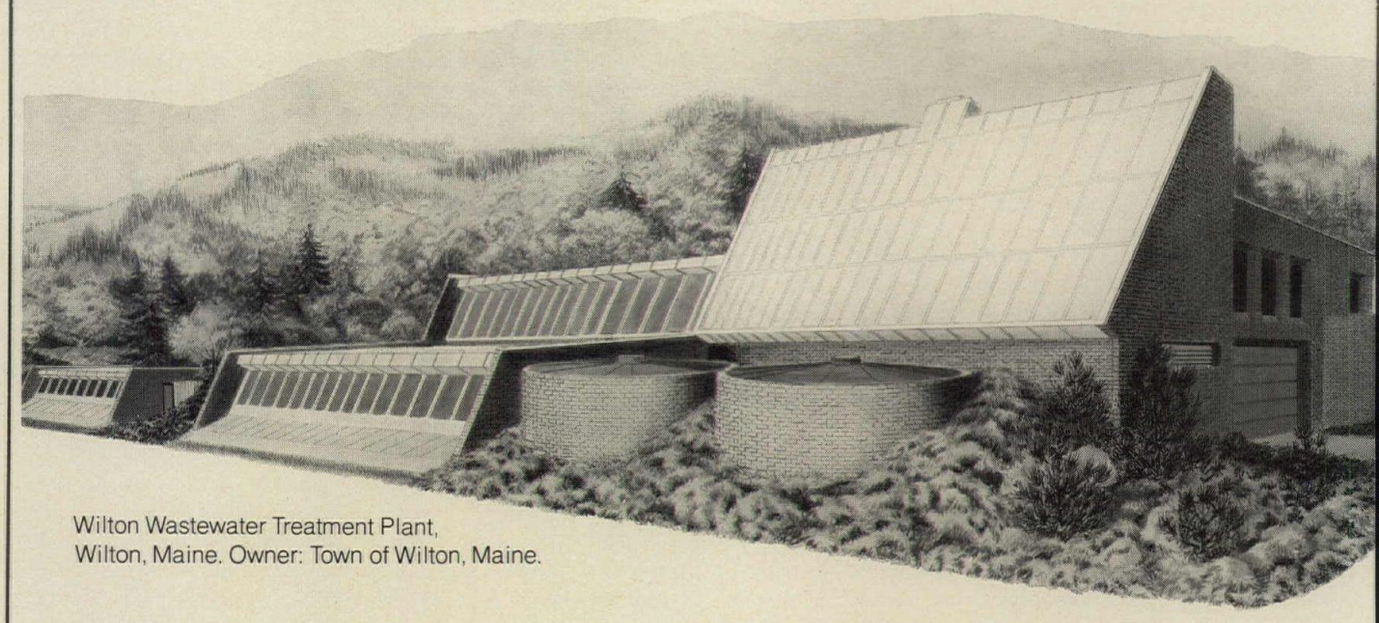
The chronological range of the material included is as broad as possible, beginning with what is generally regarded as the first apartment house in the United States, Richard Morris Hunt's Stuyvesant Apartment of 1869, and concluding with SOM's Olympic Tower now under construction. While chronological organization is a logical device, an organization by plan type (courtyards vs. "solid" blocks, duplexes, vs. flats vs. hybrids) or at least a systematic analysis of these and other types of arrangements, as well as of the patterns of pedestrian circulation and of deliveries from the street to individual apartments would really have made a contribution to our understanding of the successes of these buildings. For successes they clearly are, since they have survived enormous economic and sociological and stylistic upheavals, and most of the ones shown in the book are still highly desirable residences—not only when judged against the New York scene, but also when measured against other such dwellings built in the last 75 years in major cities of the western world. Surely one would expect from the author, who is an architect, the kind of drawings, diagrams and text that would give the book that dimension of insight and analysis, which cannot be found in either Pease and Elliman's *Catalog of Apartment Plans* of 1922 or in the remarkable book *Apartment Houses of the Metropolis*, published in and about New York in 1905 by G. G. Hesselgren (and in which so many of the plans in Alpern's book can be found).

There are other aspects of the book that are troubling. One is the decision to limit it geographically to New York, or in effect to the island of Manhattan. Another is the decision to restrict the book's scope to those apartments intended to accommodate the affluent class, the group made so much of in the book's off-putting title. Not only do these decisions deprive us of a wider view of apartment house design in the United States (there is some marvelous early work in Boston and Chicago and probably in other cities as well), but they also lead Alpern to some very questionable decisions of inclusion and exclusion. For example, why are we shown Heathcote Hall, a rather undistinguished building on West 114th Street in Manhattan (an address that was never more than middle-class with pretensions) and then told by Alpern that it really isn't a very good building (which it isn't)? How strange to show this and not to show Andrew Thomas's magnificent Dunbar Apartments designed for black families of the middle-class and built on Seventh Avenue and 150th Street in 1928, or his Thomas Gardens in the Bronx. Nor are we shown model tenements by Ernest Flagg, other apartments and large-scale groupings by Thomas and by Henry Wright and Clarence Stein (especially their Hillside Homes)—to cite three of the most innovative architects of the same period whose work is automatically excluded because of Alpern's urge to categorize according to arbitrary notions of economics. And at the other end of the chronological scale, why are we shown University Plaza by I. M. Pei (subsidized housing for university faculty—hardly an affluent group) and not shown the far more innovative Riverbend Houses by Davis, Brody Associates, or their more recent, if somewhat less innovative, Waterside Apartments built at the same time under similar subsidy programs for similar markets?

The answers to these questions lie in the area of judgment, and judgment in an argument presumes a point of view based on the kinds of theoretical underpinnings, which this book's text (but not, I insist, the work illustrated) so sadly lacks. Nonetheless, Alpern has opened the door of perception for us; we await more incisive scholars and critics to dig deeper, to show us more and to say more about what is shown. But for the moment, all of us should buy the book, feast our eyes, be grateful and frustrated at once. All of us in this vastly urbanized world would do well to heed the book's implicit message: there is much more to the problem of high-density multi-family housing than the sages of the CIAM let on (or knew); housing is not so many wine bottles in a rack; minimal style breeds minimalist solutions. Now that the Museum of Modern Art has permitted us to see Beaux-Arts design as something other than architectural pornography, who knows what Alpern's book may lead us on to? Maybe, after all, Park Avenue is almost all right.

Robert A. M. Stern, who practices architecture in New York in partnership with John S. Hagmann, is the author of New Directions in American Architecture *and* George Howe: Toward a Modern American Architecture.

Announcing the 1975 Owens-Corning Energy



Wilton Wastewater Treatment Plant,
Wilton, Maine. Owner: Town of Wilton, Maine.

When Owens-Corning initiated its Energy Conservation Awards Program in 1971, our first year's winners conserved energy by concentrating on ways to be more energy efficient.

Our two winners this year—plus a third building receiving honorable mention—go beyond that. They set out to be *energy independent.* At most, only 20% of their power comes from outside sources.

Read on for details. You may find a way your company can save energy.

Wilton Wastewater Treatment Plant, Wilton, Maine

Three solar collectors set at 60° southern exposure supply a large portion of the thermal energy needed by the plant. In addition, methane gas, created as a by-product of the waste treatment process, is collected and stored to power a gas boiler and an electric generator on cloudy days.

The plant is built into a hillside. This provides gravity flow for the waste treatment process, reducing energy requirements. The hillside also maximizes solar energy gain and reduces heat loss.

The plant's unusually compact design helps retain heat.

Heating costs (using solar energy, methane gas and occasional outside sources) are estimated to be 80% less than for a conventional structure heated by oil.

Design by Douglas A. Wilke, Architect and Engineer, Glen Head, N.Y., and Wright, Pierce, Barnes, Wyman Engineers, Topsham, Maine.

Terraset Elementary School, Reston, Virginia

A 7,000-sq.-ft. solar collector plays a primary role in supplying energy to heat and cool this 60,000-sq.-ft. structure.

The solar collector is complemented by a double bundle heat reclaim water chiller plus a variable-volume air distribution system. In addition, a 60-ton absorption chiller will be connected in series to a 100-ton electric-driven reciprocating water chiller unit for maximum cooling efficiency in summer.

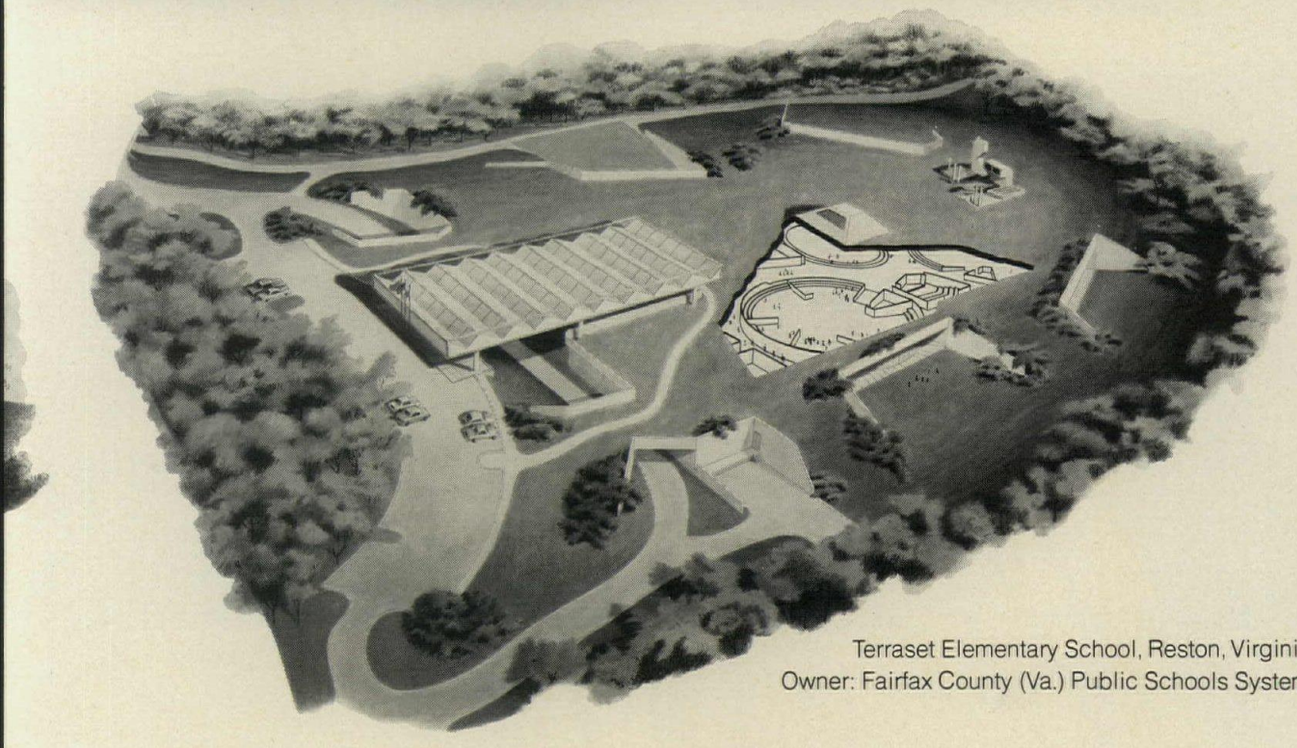
Both the solar and mechanical systems are computerized to optimize energy efficiency.

The structure is mostly below ground, which provides efficient, natural insulation. Only 20% of the wall area contains glass, with the glass recessed to minimize heat loss and gain.

Energy costs for the first year of operation are expected to be $31,600 *less* than for an all-electric system. And $19,400 *less* than for a fossil-fuel system.

Design by Davis, Smith & Carter,

winners of the Conservation Awards



Terraset Elementary School, Reston, Virginia.
Owner: Fairfax County (Va.) Public Schools System.

Inc., Architects. Mechanical system design by Vinzant Associates. Both of Reston, Virginia. Hankins and Anderson, Inc., Richmond, designed the solar energy system.

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William L. Porter, Dean, School of Architecture and Planning, MIT, Cambridge, Massachusetts.

Robert R. Ramsey, V.P., Leo A. Daly Company, Omaha, Neb.

Richard E. Masters, Partner, Jaros, Baum & Bolles, New York, N.Y.

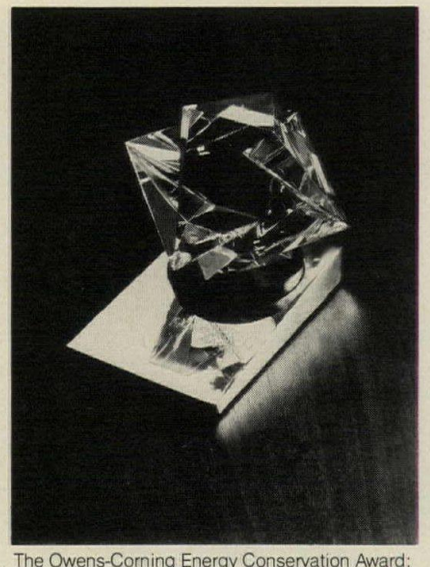
Dr. Robert Wehrli, Chief, Architectural Research Section, National Bureau of Standards, Washington, D.C.

Chih-Chen Jen, Principal in Charge of Design, Kahn and Jacobs/ Hellmuth, Obata & Kassabaum, P.C., New York, N.Y.

Free Energy Conservation Awards Program brochure

For more information about the winners and their designs, write:

Owens-Corning Fiberglas Corporation, Att. B.C. Meeks, Fiberglas Tower, Toledo, Ohio 43659.



The Owens-Corning Energy Conservation Award: "Triangles," a multi-faceted Steuben Crystal sculpture that captures and reflects light from triangular planes.

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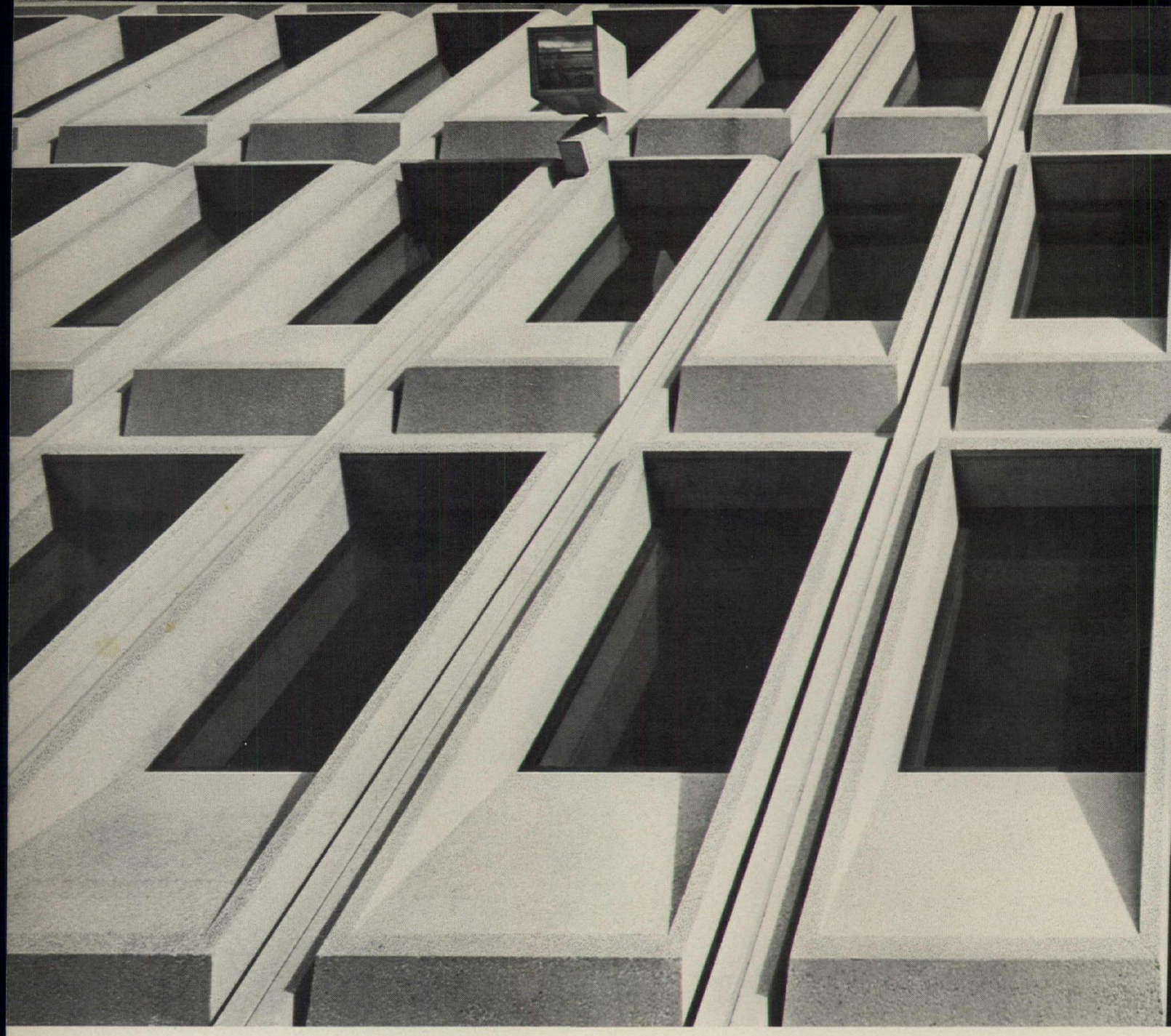

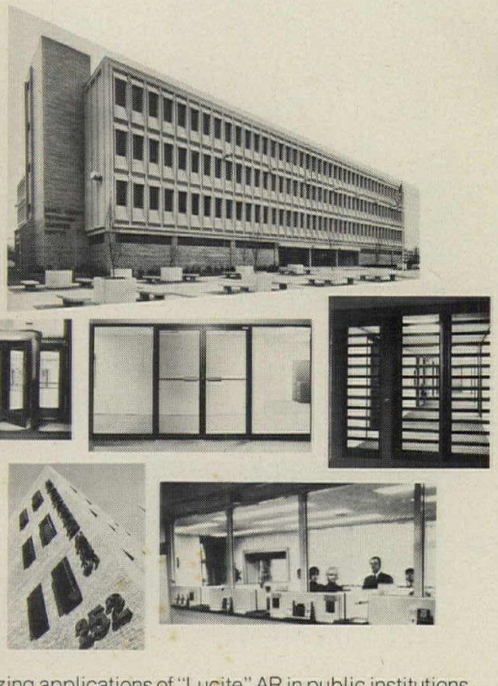

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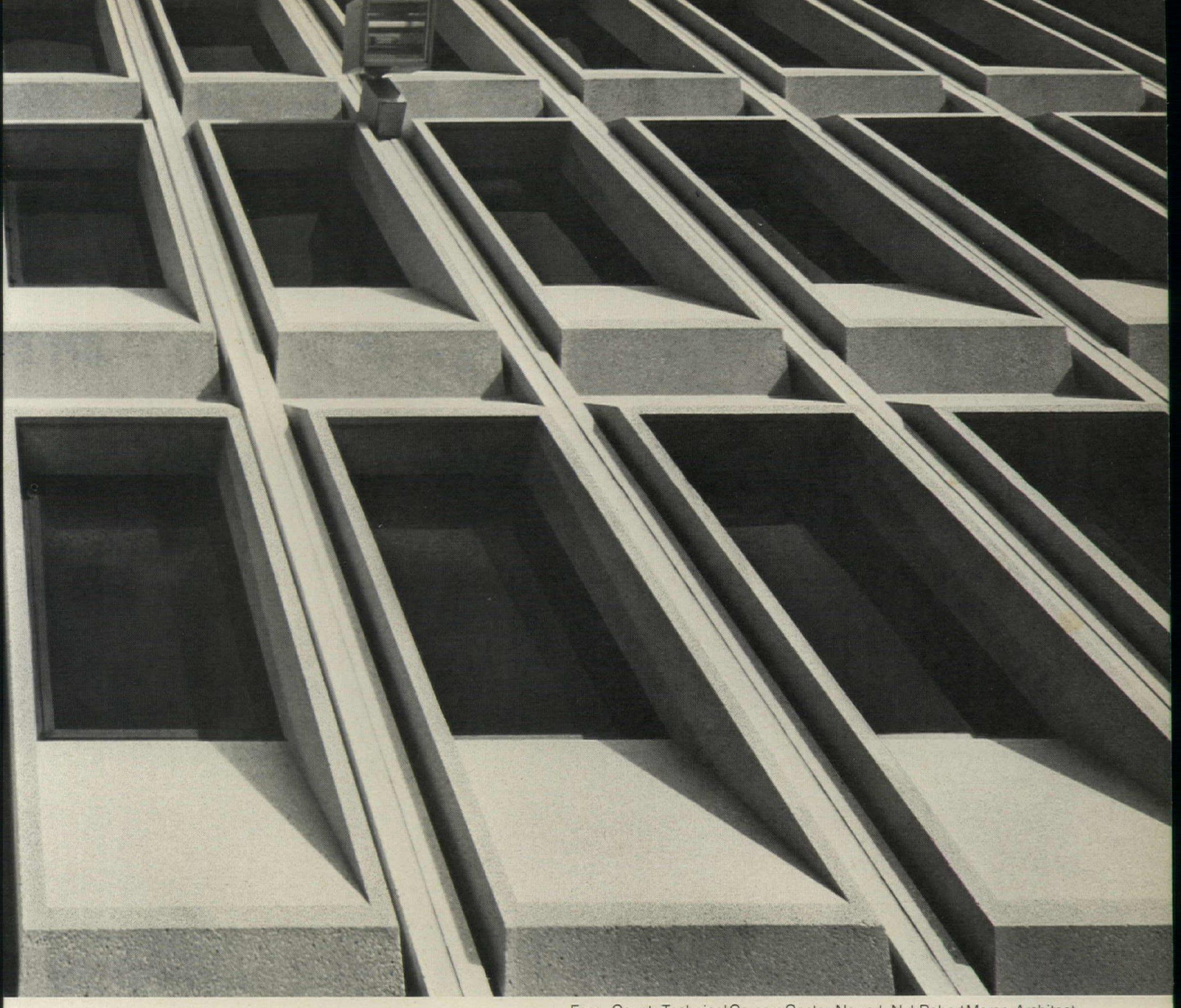

Essex County Technical Careers Center, Newark, N.J. Robert Moran, Architect

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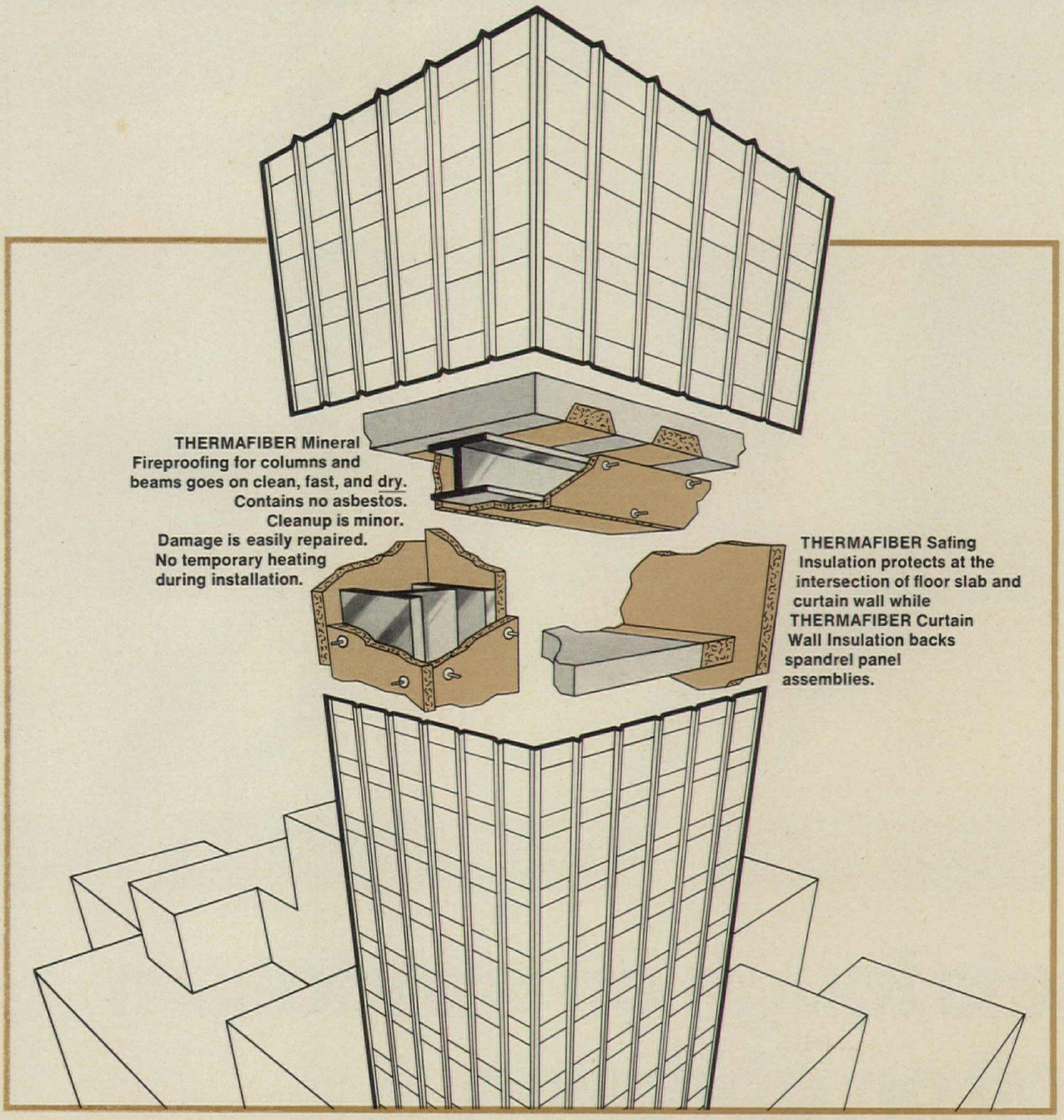

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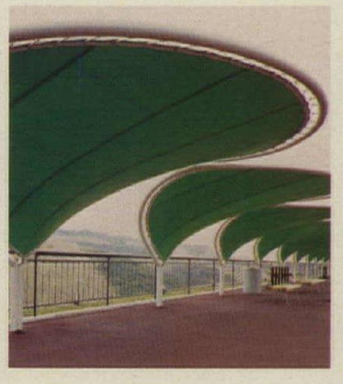

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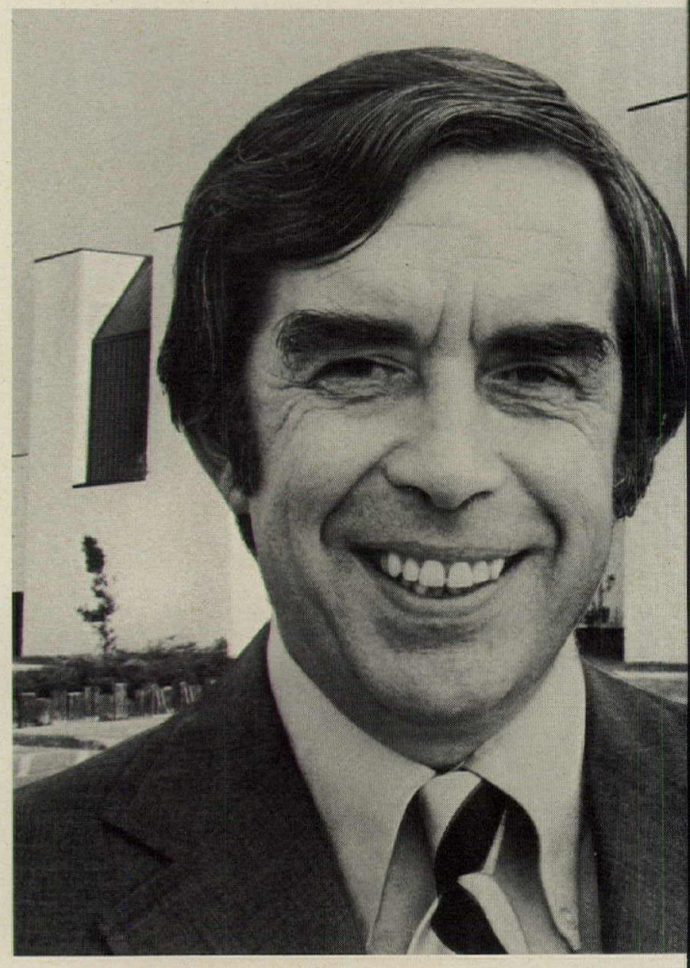

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Ken Miller and the Westwood Fashion Place Mall in Houston, Texas. Mall covers 750,000 square feet.

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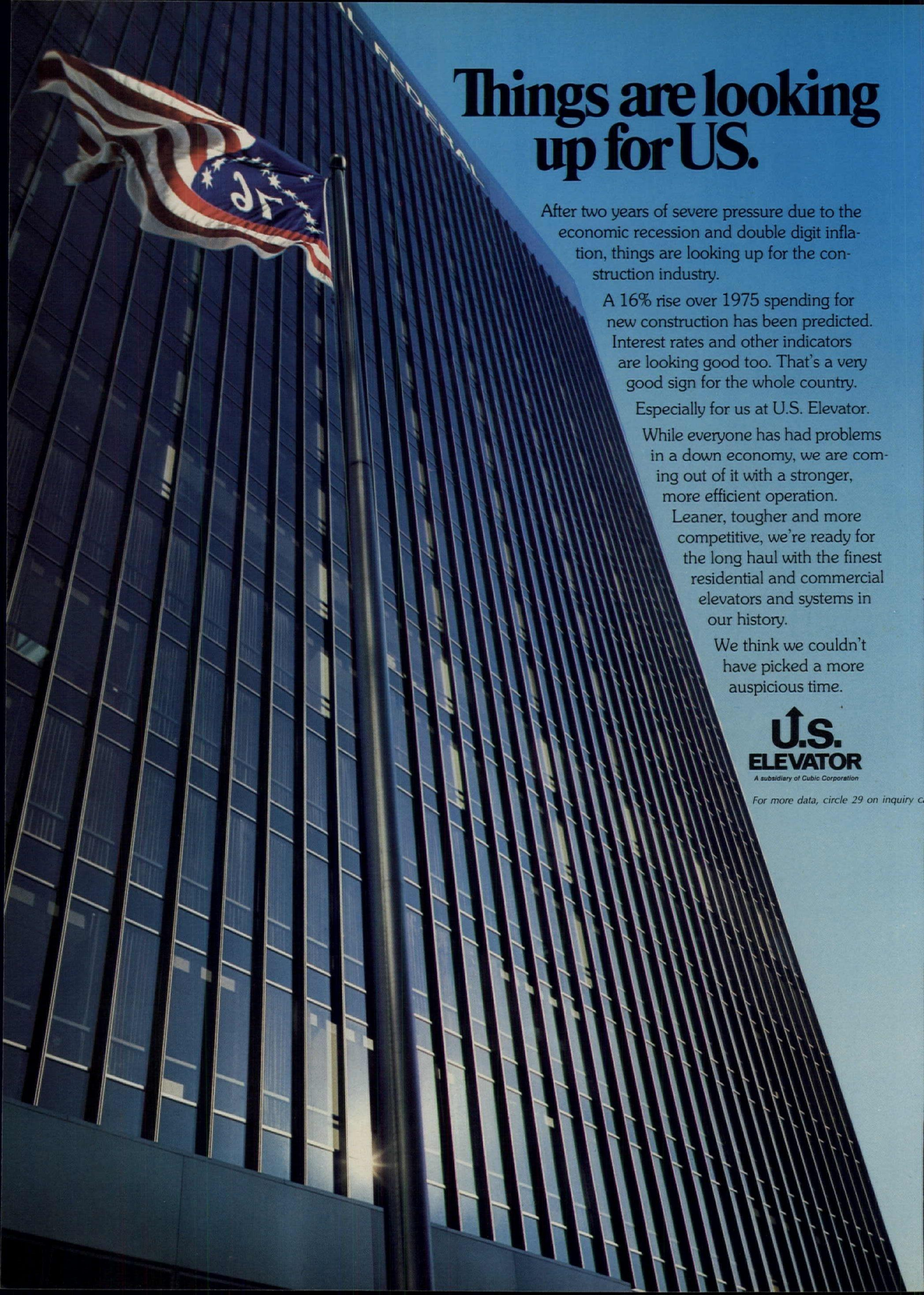

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Changing of the guard: a human and business problem

by Bradford Perkins, Llewelyn-Davies Associates

The current recession may be accelerating the development of another watershed period in the management of many design firms. Forty-five years ago the Great Depression brought a far more abrupt end to another period in the development of the design professions and made possible the beginning of another. One founder of a major firm stated that "one of the few benefits of the Great Depression was that it wiped out the established competition, giving new firms such as ours a chance." Today, the established firms are in some cases doing far better than new firms, but the strains of this period are encouraging an equally important change.

The majority of today's established firms began after the Depression or World War II. As a result, the founding principals are in their late fifties to early seventies and today's strains are encouraging both them and their younger colleagues to think about a changing of the guard. The economy is not necessarily a valid or even a primary reason for change, but it is accelerating a trend begun over 10 years ago when firms such as Skidmore, Owings & Merrill; Perkins & Will; Caudill Rowlett Scott, and many others began this process.

In spite of the fact that many firms face this issue, and in spite of its critical importance to the future of most established firms, few have dealt with it in a successful manner. Too many have felt that the only problem to be solved is how to get rid of "the old man"—or men.

If it were that simple, then C. Northcote Parkinson's suggestion might suffice. In *Parkinson's Law* he outlines a standard ploy of sending the head of the firm to a continuous series of distant conferences or presentations. When he begins to show signs of normal fatigue, the rest of the staff begin to say it looks as if the old man doesn't have the drive anymore. More importantly, the old man begins to believe it himself and retires.

If this were all that was required, the results would be better. In reality, the results have ranged from unintentional organizational suicide to a handful of successful cases of rejuvenation. There is no universal formula for achieving the latter happy result, but there are some general guidelines that will take a firm partway toward successful transition.

Successful transition begins with identification of the problems

Before one can understand the full transition task or the partial implementation guidelines, it is necessary to review the major problems that must be faced during the transition period. Among the most important are the following:

1. Let's face it. There is a high correlation between strong personality and success as a leader in the design professions. This is particularly true among first generation principals, the entrepreneurs who built the firm.

When it comes time for a changing of the guard, however, the design professions have followed other types of organizations undergoing transition. The strong leader is replaced by managers. Anthony Jay noted this common trend in *Management and Machiavelli:* "In states and corporations, the end is the same: the powers of government pass away from the dynasty to the professional meritocrats, to the politicians and top civil servants; the powers in industry pass away from the family to the professional managers. In politics it is called 'the century of the common man', in industry 'the managerial revolution'."

The problem is that design firms, unlike some manufacturing organizations, cannot fully shift from the somewhat egotistical entrepreneur leaders to professional managers. The assets of a design firm are not machines; they are people whose talent must be encouraged, channeled and led. Even new clients, the life blood of any firm, must be able to recognize the leadership of the firm, for they too will respond primarily to the personality they hire rather than to the firm as an institution. Good management itself has little sex appeal either internally or externally. The first problem is who will replace the missing leadership. Often the second generation are good lieutenants but mediocre generals.

There is an old saying, related again by Anthony Jay—that Frederick the Great lost the battle of Jena—a battle that took place 20 years after his death. His successors had perpetuated his once successful military organization instead of adapting to meet the changes in the art of war. Modern candidates for the same anecdote, drawn from second generation design firms, are not hard to find.

2. The problem is often deeper than the intangible loss of "leadership." Incompetent as many of the first generation may appear from below, they almost always still have great value to the firm. In some cases, they are still the main factor in, or the best at, new business development. In other cases the "old man" may be the only person with a loud enough drum to get the army marching in unison toward the chosen battlefield. And in still other cases, the first generation are the only ones with enough perspective to keep the second generation out of trouble.

3. Even if the first two characterizations of the value of the first generation are inaccurate, there is at times of leadership change almost always a difference in firm personality, goals, strengths and weaknesses, and other factors, which together mean that a major re-orientation of the firm is required.

4. Then, of course, there are financial problems. Most established firms have substantial value both as an organization capable of generating future profits and as companies with substantial accrued assets, usually in the form of accounts receivable and other working capital. The problem comes when it is time for the new management to buy out the first generation's investment.

In theory, *ownership* and *management* should not be confused. The management transition should be able to take place without confusing it with ownership transition as well, but that is nearly impossible in a relatively small business. First of all, the first generation would be trusting most of their personal net worth to a new group without the power to control its stewardship. And second, most effective managers of professional firms expect to have, and can usually command, a substantial management interest.

Therefore, the ownership must change. The problem of the buyout, however, is this: Where does the new management get the purchase cash?

5. Combined with the financial issues are a host of legal problems. Among the most serious is the inevitable professional and financial liability exposure shouldered by both generations during the transition period. Neither is likely to feel comfortable about these without some limitation or control of this exposure.

Dealing with these general issues—as well as the many other problems unique to each firm—requires a carefully thought-out plan. Moreover, this plan must deal with both the technical business issues and with the human ones.

On the technical side, the plan must cover every major aspect of the firm already discussed in "Why and How to Plan Professional Firm Management" (RECORD, March 1972). These include: organizational, marketing, financial, personnel, operations, etc. As was noted earlier, the firm that comes out of the

transition period will be very different from the one that goes in. Thus, it must re-examine its goals, its strengths and weaknesses, and its professional and business environment—and then chart a course that reflects the changes inherent in the transition.

But in addition to the technical business issues, this course must pay particular attention to how the firm will effectively and equitably deal with the first generation and the fact of their departure, whether immediate or phased.

Both aspects must be incorporated in a specific action plan for the transition itself. And, as with any plan, this too must reflect the particular circumstances of every firm. No general formula can be applied because of the variations in size, ownership distribution, personality, type of practice and many other factors, which make each firm unique.

The transition action plan can include some proven approaches

There are a number of proven approaches or basic alternatives that can be assembled as appropriate, to form the transition action plan. They should not be taken as dicta, but they do represent the consensus of many of the people who have gone through this process.

1. The first generation must decide whether it wants the firm to continue or whether it would prefer to see it end with his or their retirement. Most people prefer to see the firm continue for reasons of ego, fairness to the employees, and money. In some firms, however—specifically those built around a single personality—it may not be worth the effort.

2. Recognize that the changeover is not something that should be just turned over to your attorney to sort out. As our firm's financial advisor put it, "It is primarily a business and human problem, not a legal one. If you can solve the first two, a good attorney can make it legal."

The use of an external, objective advisor is extremely useful. This person must not be identified with either the first or second generation, for his role must be to work with both generations to sort out each group's objectives and requirements while providing business advice on the development of a feasible transition plan.

3. If possible, plan far enough ahead to permit a gradual, rather than abrupt change. There must be a specific time frame, but few firms could successfully weather a sharp or immediate break. The second generation usually has not had enough training or had enough time to build up sufficient financial resources to absorb the full responsibilities without a transition period. This transition period can be as short as two or three years, and normally should not be longer than eight or ten if it is to be believable to the second generation.

4. There must be a specific training program for the second generation. Many people change radically (or worse, don't change at all) when given management responsibility. Both the first and second generation must have a chance to see how the new group responds to a more senior role. In some larger firms, this can be done by assigning people to the management of branch offices or subsidiaries. In others—and in most small firms—it can be done through gradual delegation of major roles such as business development, financial administration, or design.

5. There should be a buyout program—usually one that has some financing mechanism that makes it possible for the new management to afford the purchase in accordance with the planned schedule. A few first generation individuals or groups have given away ownership but this is usually not realistic. As for the mechanics of the buyout, there are many variations—to wit:

Some firms have arranged for bank loans to finance the buyout. This rarely proves attractive enough, however. Too many people resist incurring debt, especially if there is a reasonable uncertainty about their ability to repay it.

Several firms have gone public, placing many of the firm's shares on the market. This, however, is open to only a few firms and many of them are reconsidering it for the reasons noted in an earlier issue of RECORD (November 1974, page 14).

At least one firm has an outside investment banker set a value on the firm, and for the succeeding 12 months the ownership shares can be bought and sold by any member of the firm at that price. This is only a minor variation on the going public approach; it is primarily limited to large firms, and does not really provide a full vehicle for a buyout.

Several hundred firms have, of course, sold out to either public or private firms. This option, which will be covered in more detail in a future article, can be selected as a solution to all of the problems noted at the beginning of this article. But again, acquisition is not a route open to many firms, nor one acceptable to many second generation groups. So, there is still another option.

Many first generation owners have chosen to give away the rights to future profits but not the ownership of the net worth of the firm. The assignment of the rights to future profits is usually accompanied by controls that call for the gradual replacement of the net worth with funds generated by part or all of the second generation's profit share.

For example, the senior partners might agree to sell a new partner a 5 per cent share in the future profits of the firm. In addition, they might estimate that the 5 per cent share is worth $25,000. Both the senior and new partners would agree that this price would be paid for from the profits due to the new partner's share. And thus, assuming annual after-tax profits of $100,000, these shares would be paid off in five years.

There usually are also controls on the percentage of future profits that the second generation receives. While this may be loosely tied to "performance," formulas do not work. The first generation must administer this aspect and make the final decision on the allocation of profit shares.

Probably the most common buyout approach, however, combines the last one described above with a purchase program for the shares. Again the net worth at the time of sale is sheltered and gradually replaced; distribution is controlled, but a value is set on the profit shares and they are sold rather than given away. The actual purchase is then carried out for cash or over time in return for the profits due to each share.

6. The value set on the shares is critical to the success of any purchase plan. It almost always must be related to the future earning power of the firm, and it should be a "fair" price. A value equal to four to six times the pre-tax net profit is used by some of the more experienced firms. This, of course, makes it mandatory to separate out a true net profit free of the many special perquisites and tax shelters common in closely held firms.

7. The amount distributed, the pace, and some of the key provisions of the purchase agreement must be carefully considered. Most second generation management want eventual ownership as well as management control (at least 51 per cent), a meaningful percentage (usually a function of how much income it will generate, but in the short term devices are used to disguise small percentages by, for example, calling them shares or points), and many have buy-back provisions (at cost, book value or some negotiated amount) in case a shareholder leaves the firm.

8. The liability issues are, of course, a function of the type of firm, the location of the practice, the form of legal organization (professional corporation, corporation, partnership, etc.) and other factors. In general, though, the first generation controls consist of an agreement for maintenance of adequate insurance, legal structuring of corporate or other barriers to financial liability, and some veto powers on basic firm policies, particularly in such areas as the type of service the firm will perform, the nature of the contingent liabilities accepted (especially if the firm goes into real estate development), and approval of new principals.

9. There is the need to come up with an acceptable role for the first generation principals during and after the transition. During the transition, many first generation principals phase out of day-to-day management and concentrate on business development or other specific assignments from positions on a board of directors or its equivalent. After the transition, many want to retire, but the problem is those who do not want to completely stop work. They are typically kept on as consultants with specifically defined responsibilities.

10. Whatever plan is finally developed, it should be structured so that both sides think it is fair and equitable. If the second generation does not think so, it will breed resentment, turnover among the abler individuals, and/or nonacceptance. If it is unfair to the first generation, there will be continuing strains caused by an unhappy first generation and by a mixture of loyalty and guilt on the part of some of the second generation.

So, in the final analysis, it is more than just a technical business problem inextricably interwoven with the human issues that can make or break any professional design organization. To solve the business problem alone, without dealing with the issues associated with personality and life of the firm, will probably leave the firm with the strength, character and creative ability of an artist after a lobotomy.

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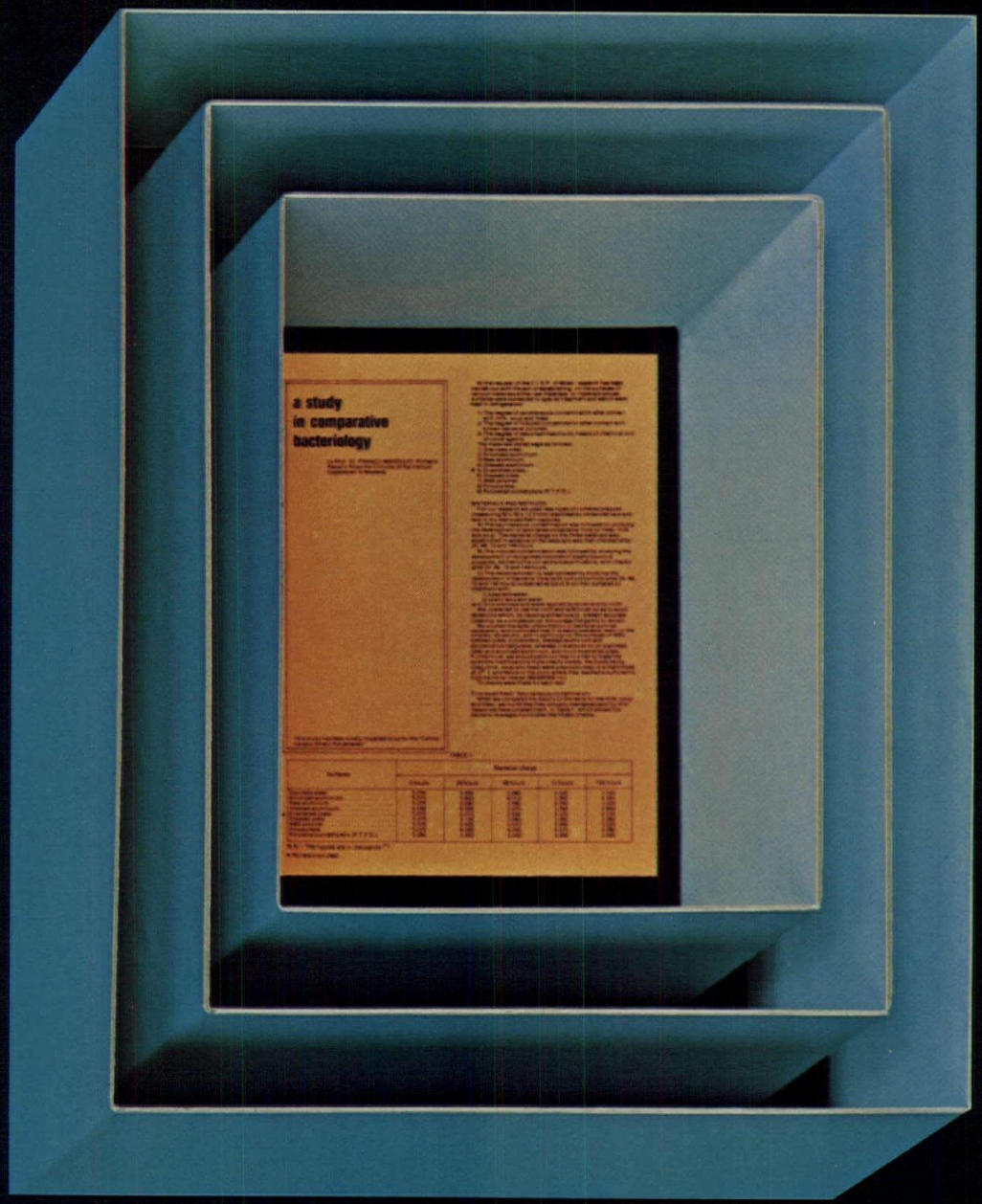

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Architects and graphic designers: how to make the best of a potential partnership

By Jan V. White

In today's competitive situation, it is folly not to take advantage of every available opportunity, however unimportant it may appear, to improve the visible excellence of the firm's services. And one of those highly visible but too-often ignored opportunities lies in the graphic image of your firm. That does not mean just the material you actually *intend* to be represented by (like your letterhead or your out-of-date brochure). It means everything with the company name on it—from mailing label to exhibition panel, wrapping paper through #10 envelope, drawing title block through report cover.

"Corporate image" or "master plan?"

If you want to project a personality as an office—an immediately recognizable "self," you have to establish a style. That is just another name for corporate image—but let's not call it that. Instead, let's stick to our own professional jargon and call it a master plan, since that is exactly what it is: a logically thought-through framework into which the various elements can be slotted comfortably.

Such a master plan consists of a series of basic decisions about the raw graphic materials that will be used by your firm for all future graphic purposes. Raw materials? Things like typefaces (the most obvious, of course); but also things like shapes; proportions; spaces between standardized elements; modules; colors; textures; paper stocks.

There is an unlimited range of materials at the designer's disposal nowadays, and more being introduced daily. But if you have "your" materials, you can relax. You avoid the temptation of introducing new elements into the accepted set of standard ones ("for a change of pace") and that way you avoid broadening your system and thereby weakening it.

What is the master plan based on?

Nobody need tell an architect that a college master plan is 90 per cent underlying analysis of everything else, and 10 per cent architecture (if that). So it is with graphics. The graphic designer does, indeed, design "graphics," but that is the final facade. His deeper function is to act as catalyst. Questioner. Gadfly. Because he has to get you to make up your mind about what you, the client, want to accomplish by means of the graphic design process. Because, to make any long-term sense at all, graphics must serve a purpose greater than just looking pretty. The designer's function is to develop a solution that is right for the client, not to build a monument unto his own cleverness.

To accomplish this, he must ask his architect client to answer these questions:

- Who are we? Are we (i.e. *ought we to be*) just plain "architects" or are we expanding to an A/E or an A/P or an A/E/P—or what?
- What is our corporate goal and how far along the road toward it have we come? Do we want to continue that way or should we grow in a different direction?
- What achievements are we proudest of, and what is there we might as well not bruit about?
- How proud are we of our longevity or conversely, how much importance does our distinguished past have in persuading our future clients that we are trustworthy and professional, yet designers in today's mode?
- What characteristics of our firm ought we to emphasize as most valuable to our clients?
- What are we already known for? Is it what we want to be known for?
- What kind of architecture would we like to do, were we ever to find that ideal client?
- What sort of building would we like to be known for: megastructures or shingle cottages?

In response to these (and other) questions, a graphic style can start to crystallize. But it must be constantly thought of as being the kind of graphics that is a deliberate choice in a corporate tactical context.

Let's face it: nobody but you cares very much about your firm. But they do care very deeply about what that firm can do for them; what advantages they can derive from an association with it. That is why it is absolutely essential that the character of the *recipients* be taken into account in the earliest stages of the design of the master plan.

If your firm is trying to impress fellow architects, then the architectonic quality of the letterhead and the other printed ephemera may make great sense . . . but if you admit that the prime target is not your colleagues, but rather the potential clientele in the world at large, then that selfsame architectonic quality might well be a serious tactical mistake.

To persuade clients that we are, in fact, on "their" side, understanding their problems and willing to work with them, we must transmit our messages to them in a format that is comforting to them, palatable, and familiar.

Why invest in outside help?

Certainly it is possible for a good architect to design anything he sets his mind to doing. But graphics is a tricky business that looks simple. Its depth requires considerably more experience and knowledge than the surface might indicate. But even more important than that technical expertise the outside consultant might bring in, his greatest value lies in his gadfly-role: his outlook and his slightly different way of looking at the common problem. Possibly his vantage point may allow a slightly more commercially inclined realism than the architect may deem appropriate in his professional orientation. This does not mean that the designer can push the architect where the architect does not wish to go. It does mean that the designer brings in a fresh perspective, which can be exceedingly useful.

So before doing anything else, you have to get your designer first. Look at lots of portfolios, but do not be snowed by the flamboyance of the graphic goodies therein artfully displayed. Ask many questions to find out the background of each piece, in order to be able to judge how the designer thinks and how he appears to understand the function of "design" at the level and for the purpose that you may need.

What happens and when?

First someone in the office must be delegated to gather one sample of each of everything that the office puts out. Everything that bears the firm's name, from correspondence materials to booklets and exhibits. And then the stuff must be displayed. The purpose: to show at a glance the variety of style the office now uses, and to act as visual catalog for the items that need to be taken into account and worked on in devising that graphics master plan.

The designer may well be shown some samples of what the firm "likes" or "dislikes." That is marvelous, because it narrows down the area of search he must go through, even if

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it does *appear* to restrict him. If he is a pro, he will appreciate the restrictions for what they are: direction-signals, not fences.

Since design cannot be done *in vacuo,* the designer will probably take with him three or four of the typical items to redesign as test cases. One of them must be the letterhead, since it is, in fact, the microcosm of the entire job. It embodies the desired character in its most concentrated form, and to reach that character, answers to a whole host of other questions about the firm must be sought:

- Do we want to be known by our full name, or do we want to shorten it to a set of initials; or an acronym? Or how about a smart, invented label that describes our attitude and what we do in contemporary cliche terms?
- Do we want a trademark, a symbol? If so, ought it to be based on our initials, or do we want an abstract sign?
- And then comes the set of questions that lead to the choice of materials and characteristics from which the various styles of letterheads are drawn.

The answers to these questions grow out of the designer's work. He will probably have broached some of them in that first meeting, but nobody will be prepared to make decisions on anything as substantive at that point. He will therefore be flying blind, basing his work on educated guesses, what decisions he could gather, experience, instinct, and luck.

Then comes the second conference in which sketches are presented and reactions sought. It is the most crucial meeting, since excitement and interest are at their highest pitch: the designer is showing off with his most flamboyant ideas; everyone with an ax to grind does so; sparks are flying. But out of this come the beginnings of the basic decisions that will govern corporate policy which, in turn, will be given visible form in graphic terms.

After the basic character policy has been agreed upon, the design *modus operandi* can no longer be outlined in specific terms. What needs to be said at this point is merely this: it is unlikely that the final outcome will be successful, if there is a failure in establishing a working partnership between the firm and the designer. Such a relationship, based on mutual trust and regard is absolutely essential, if the complications that lie ahead are to be overcome. The best way to tackle this large project is to take it a step at a time, informally, as it develops. The ultimate result fits best that way. But it cannot possibly work out if there is no mutual understanding. There is no roadmap, no precedent—just good will and a mutual desire to do a good job. That liking of each other had better be there, or else. . . .

It is theoretically possible to write a precise program that will become part of the contractual agreement between the firm and the graphic design consultant. It can spell out the desired goal, and the items that will be designed by him, the sequence of work and time allotted to each step, and the costs involved. The inherent danger in such a document is that the designer (just like the client) gets himself boxed in by it—so much so that the desirable working partnership never materializes. And so the designer remains outside the firm in spirit. He does his work as specified, his solutions get imposed by executive *fiat* onto the firm's output when completed, and he says good-bye.

Now those solutions may be marvelous, but more likely, the design will fall short of the ideal (in its spirit), and the first chance that comes along, some "improvements" are suggested and introduced—and here beginneth the slow process of erosion that brings you back to the point from which you started.

Time is money (sure is!)

How much should this process cost? How much does a building cost? It depends on what needs to be done, the extent of the job, the degree of experimenting that will be necessary, the amount of mind-changing and insecurity of the people taking part. In any case, it is not a cheap process. It will certainly run into several thousands of dollars by the time the whole thing is done.

But more useful than pulling generalized figures out of the air, perhaps, is to mention the fact that if the job achieves its stated goal, then its cost is worth the investment many, many times over. Not only because it is good for the office but because the excellence of the scheme ensures its longevity, which, in turn, allows the first cost to be amortized over a number of active years.

As a rough estimate, I suggest you think of the designer as part-time partner in terms of compensation level. After all, he is someone working at this corporate-policy level, in constant contact with the principals. Thus the daily salary multiplied by the number of days estimated to do the work required, ought to come somewhere in the vicinity of the fair fee for services rendered.

How long should a process like this take? As little time as possible (and not just to keep costs down, either!). It is essential to maintain momentum and interest. Yet even more important than momentum is the necessity for all concerned to remember what it is they are trying to be (and why). Furthermore, people need to remember what the last set of decisions was and on what they had been based.

It is necessary for the designer to work with the fewest possible number of principals, who are empowered to make binding decisions. (This, of course, when the production stage of the work has begun.)

The first step, which ends with the basic policy about the visual vocabulary being agreed on, ought not to exceed two months.

The application of the vocabulary to the various graphic products ought to be completed within another four months, depending, of course, on how much needs to be done. If the office brochure is part of the job, then four months may be short.

Now about that brochure. . . .

This is one item that ought to come at the end of the design process, because it is the most complex product. If the preliminary work of character-definition and visual vocabulary-building has been done well, then it makes the job of editing the brochure easier, since it can be done within an already-existing framework. To attempt both character-definition and material-editing simultaneously is a very ambitious undertaking indeed.

In the brochure you are faced with making decisions about the projects that you wish to be included—and in the way they should appropriately be shown. These decisions affect the format, shape, and handling of all the material in both physical as well as journalistic ways. Journalistically? In the techniques used to organize the material on the pages, in the sizes of the various elements (where size automatically implies importance), in the emphasis given to the different aspects of the subject.

In the publishing business, this is called "editorial presentation." Here the words and pictures are manipulated so that the editorial purpose and the visual arrangement complement and reinforce each other, so that the resultant statement becomes clear and forthright—and memorable.*

How does "editorial presentation" manifest itself? Example: if the building to be shown is merely to be shown as an object unto itself, it is probably best to do a simple "walk-around" presentation of it: you show the site plan and exterior first, then a close-up of the main entrance, followed by a bunch of interiors in conjunction with plans, and perhaps a section or two if needed. You close on another exterior. This sequence can be done in miniature on a single page or spread over several pages.

Example: Does the major significance of the building lie in its construction technology? Then the presentation stresses construction sequence photos, diagrams, cutaways, all with engineering flavor.

In preparing the brochure, you must take other considerations into account, apart from the nice shape, appropriate typeface, sense-making disposition of elements on the page and the other obvious factors that come to mind immediately:

- What do you expect the shelf-life of your brochure to be? This automatically defines the inclusiveness and the cost of the piece.
- Do you want it to be constantly up-to-date?
- Do you want to communicate a feeling of longstanding permanence?
- Do you prefer custom-assembly material for each client presentation? In that case you need a handsome container into which to slip the various elements—and a first-rate filing system. (Trouble is that such a brochure, which isn't a brochure, may disintegrate when the architect leaves the scene.)
- Do you prefer an annual report-type of document with glossy four-color?

Evidently, the type to be picked depends very much on what the firm is trying to accomplish. It becomes a corporate strategy decision, not just a "design" decision. The "design" can be used to reinforce that corporate strategy, make it stronger, more noticeable, more memorable, more specific for your firm. That is what a graphic designer can do for you. Expecting any less is a waste of effort and money.

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*If I may be allowed a commercial message: there is a book on the market that treats this subject in detail and might well be a useful reference: "Editing by Design," by Jan V. White, R.R. Bowker, New York 1974; $17.50.

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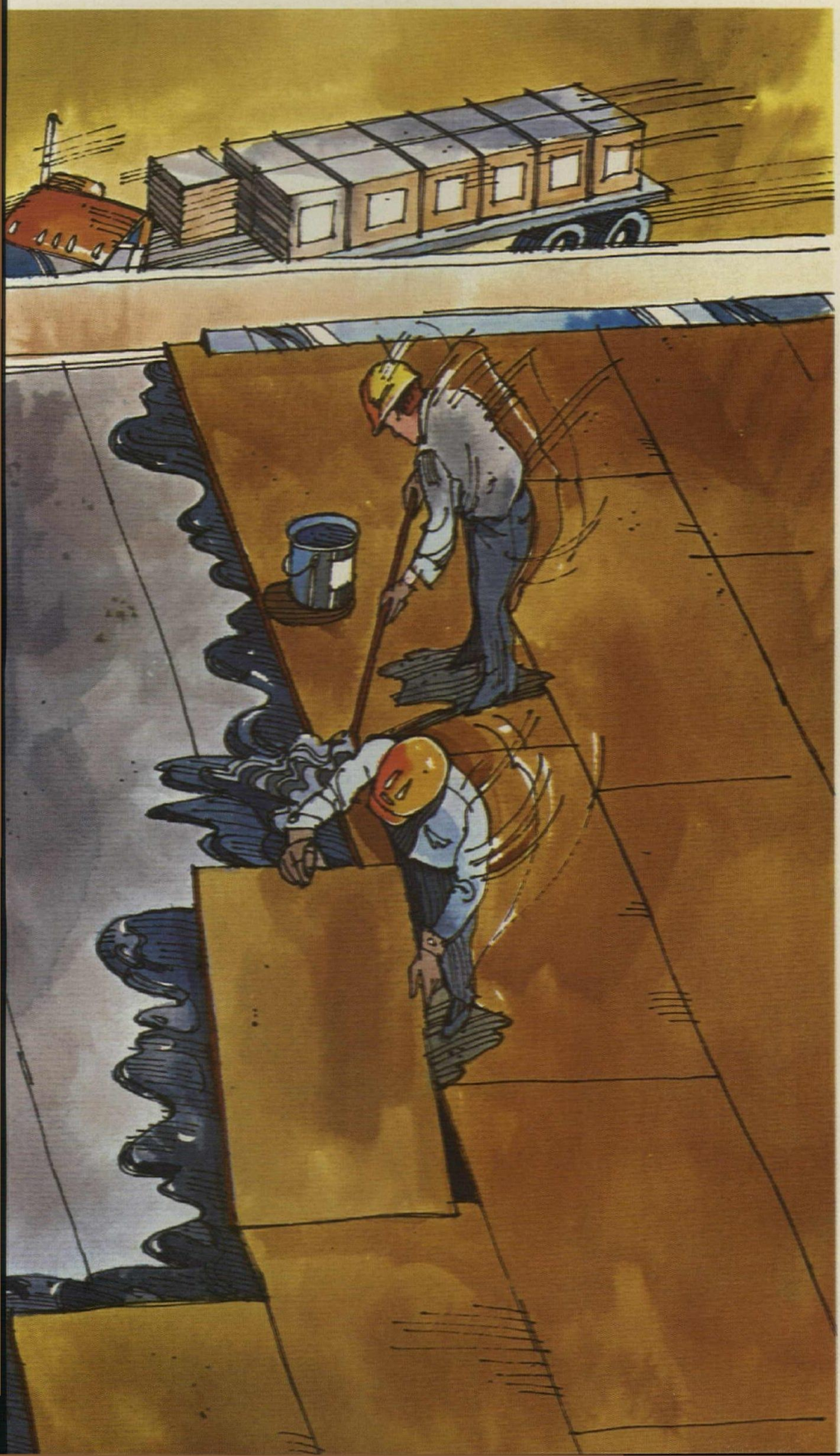

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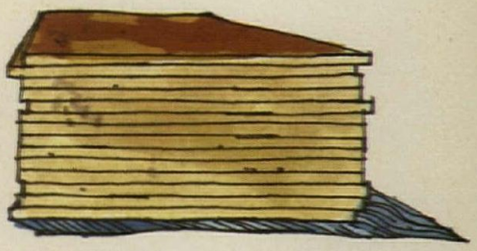

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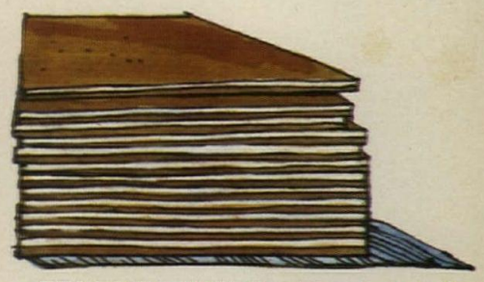

FESCO-FOAM™ Roof Insulation for high thermal requirements, with C-values from 0.15 to 0.05 and R-values from 6.67 to 20.00, offers outstanding thermal efficiency.

To upgrade insulation means the building will probably cost more to begin with. But, it's an investment that will pay off in savings and comfort in the years that follow.

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The single-source built-up roofing system

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For more data, circle 32 on inquiry card

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Our carpet wearability and performance tests separate the beauties from the beasts.

A carpet made of Dow Badische fibers or yarns has to survive many brutish lab tests – with looks and performing talents intact – before it can carry our Performance Certification label in the market. That's how we make sure the beauty is more than "skin deep."

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Williamsburg, Va. 23185
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PERFORMANCE CERTIFICATION

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Dow Badische produces acrylic and nylon fibers and yarns especially engineered for carpets of beauty and performance.

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Costing theaters and playhouses

These figures are taken from the 1976 Dodge Construction Systems Costs.

	Average		High average	
		%		%
Building system	**$/SF**	**TOT**	**$/SF**	**TOT**
Foundations	2.24	5.1	2.37	4.9
Substructure	0.78	1.8	0.82	1.7
Superstructure	4.53	10.4	4.79	9.8
Exterior closure	7.37	16.8	8.39	17.2
Roofing	1.01	2.3	1.07	2.2
Partitions	3.25	7.4	3.84	7.9
Wall finishes	1.30	3.0	1.54	3.2
Floor finishes	1.79	4.1	2.12	4.4
Ceiling finishes	1.55	3.5	1.84	3.8
Specialties	0.88	2.0	0.93	1.9
Conveying systems	0.39	0.9	0.41	0.8
Plumbing	1.95	4.5	2.16	4.4
Fire protection	0.06	0.1	0.07	0.1
HVAC	5.20	11.9	5.76	11.8
Electrical	6.11	14.0	6.77	13.9
General conditions	2.26	5.2	2.39	4.9
Net building cost	40.67	92.9	45.27	93.0
Equipment	3.09	7.1	3.43	7.0
Gross building cost	43.76	100	48.70	100
Sitework	2.04	4.7	2.26	4.6
Construction cost	$45.80		$50.96	

	$/SF
Auditorium seating	
Plastic	20.70
Metal	28.25
Wood	29.75
Upholstered	46.00
Stadium seating	29.75
Stacking chairs	20.30
Bleachers, steel frame-wood seats	24.35
De-mountable steel and wood	29.75
Reinforced Concrete	32.90
Telescoping, manual operation, 30 tier	32.45
Power operation, 20 tier	28.98
30 tier	38.40

INDEXES: February 1976 — 1941=100.00 (except as noted)

Metropolitan area	Cost differential	Current Indexes non-res.	residential	masonry	steel	% change last 12 months
U.S. Average	8.5	521.5	479.1	513.7	501.0	+ 9.7
Atlanta	7.5	606.9	572.3	598.1	587.3	+ 4.1
Baltimore	8.5	592.0	556.7	583.1	566.2	+ 8.7
Birmingham	7.3	455.7	423.9	424.4	438.1	+ 6.6
Boston	9.0	520.9	492.2	523.5	505.6	+10.9
Buffalo	9.1	579.7	528.4	571.2	554.4	+10.1
Chicago	8.3	556.8	522.9	548.6	541.8	+ 5.8
Cincinnati	8.8	554.5	509.5	546.9	534.0	+10.1
Cleveland	9.0	537.9	493.7	530.0	516.9	+ 4.2
Columbus, Ohio	8.2	536.1	488.5	528.2	512.5	+ 5.9
Dallas	7.9	503.7	477.9	498.7	488.6	+ 4.5
Denver	8.4	559.2	515.4	552.6	541.3	+ 8.5
Detroit	9.8	624.7	570.1	617.3	591.3	+10.9
Houston	7.4	487.5	449.7	480.3	471.8	+13.7
Indianapolis	7.8	460.3	422.4	453.5	443.1	+ 7.5
Kansas City	8.7	513.9	477.1	506.8	497.9	+14.4
Los Angeles	8.5	603.9	541.6	590.4	579.1	+11.7
Louisville	7.6	499.8	460.2	492.4	482.8	+ 6.9
Memphis	8.4	535.4	492.7	527.5	516.9	+11.6
Miami	7.9	564.6	525.1	557.4	544.1	+15.1
Milwaukee	8.7	613.4	557.2	604.4	584.6	+16.0
Minneapolis	8.9	547.3	503.0	540.8	528.3	+10.1
Newark	9.0	500.1	456.1	492.7	478.8	+ 6.4
New Orleans	7.5	502.2	465.2	495.3	486.0	+11.9
New York	10.0	547.8	498.6	535.0	523.7	+ 3.5
Philadelphia	9.1	581.7	537.8	573.8	557.8	+ 9.4
Phoenix (1947 = 100)	8.2	299.5	275.3	295.1	288.8	+11.4
Pittsburgh	8.9	520.5	474.4	514.4	498.2	+ 9.4
St. Louis	8.7	540.9	499.1	533.5	521.4	+10.9
San Antonio (1960 = 100)	7.6	200.1	184.4	197.5	193.4	+ 9.3
San Diego (1960 = 100)	8.7	222.5	203.3	219.2	213.2	+10.9
San Francisco	9.6	777.9	691.8	760.5	739.7	+12.0
Seattle	8.6	536.6	463.3	522.6	504.0	+14.4
Washington, D.C.	8.4	525.0	478.9	517.3	502.4	+11.8

Cost differentials compare current local costs, not indexes, on a scale of 10 based on New York

Tables compiled by Dodge Building Cost Services, McGraw-Hill Information Systems Company

HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES — 1941 average for each city = 100.00

Metropolitan area	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974 (Quarterly) 1st	2nd	3rd	4th	1975 (Quarterly) 1st	2nd	3rd	4th
Atlanta	321.5	329.8	335.7	353.1	384.0	422.4	459.2	497.7	544.8	555.2	556.7	573.5	575.0	583.8	585.3	597.2	598.7
Baltimore	285.7	280.9	295.8	308.7	322.8	348.8	381.7	420.4	475.5	516.3	517.8	532.8	534.3	538.7	540.2	579.6	581.1
Birmingham	265.9	270.7	274.7	284.3	303.4	309.3	331.6	358.3	402.1	405.5	407.0	419.7	421.2	438.6	440.1	447.4	448.9
Boston	257.8	262.0	265.7	277.1	295.0	328.6	362.0	394.4	437.8	455.1	456.6	461.0	462.5	484.1	485.6	511.7	513.2
Chicago	311.7	320.4	328.4	339.5	356.1	386.1	418.8	444.3	508.6	514.2	515.7	528.1	529.6	539.2	540.7	558.6	560.1
Cincinnati	274.0	278.3	288.2	302.6	325.8	348.5	386.1	410.7	462.4	484.5	486.0	498.6	500.1	518.0	519.5	549.1	550.6
Cleveland	292.3	300.7	303.7	331.5	358.3	380.1	415.6	429.3	462.2	490.3	491.8	508,0	509.5	516.6	518.1	529.5	531.0
Dallas	260.8	266.9	270.4	281.7	308.6	327.1	357.9	386.6	436.4	453.7	455.2	476.4	477.9	488.3	489.8	498.1	499.6
Denver	294.0	297.5	305.1	312.5	339.0	368.1	392.9	415.4	461.0	476.1	477.6	508.5	510.0	530.4	531.9	552.1	553.6
Detroit	284.7	296.9	301.2	316.4	352.9	377.4	409.7	433.1	501.0	519.5	521.0	537.2	538.7	554.4	555.9	596.0	597.5
Kansas City	256.4	261.0	264.3	278.0	295.5	315.3	344.7	367.0	405.8	435.6	437.1	443.4	444.9	481.1	482.5	507.6	509.1
Los Angeles	297.1	302.7	310.1	320.1	344.1	361.9	400.9	424.5	504.2	514.3	515.8	531.3	531.8	546.7	548.2	592.6	594.1
Miami	277.5	284.0	286.1	305.3	392.3	353.2	384.7	406.4	447.2	467.6	469.1	484.6	485.5	499.5	501.0	557.4	558.9
Minneapolis	285.0	289.4	300.2	309.4	331.2	361.1	417.1	412.9	456.1	469.7	471.2	487.1	488.6	513.9	515.4	536.5	538.0
New Orleans	256.3	259.8	267.6	274.2	297.5	318.9	341.8	369.7	420.5	437.5	439.0	440.6	442.1	463.5	465.0	493.2	494.7
New York	297.1	304.0	313.6	321.4	344.5	366.0	395.6	423.1	485.3	497.4	498.9	513.8	515.3	524.1	525.5	532.0	533.5
Philadelphia	280.8	286.6	293.7	301.7	321.0	346.5	374.9	419.5	485.1	495.7	497.2	517.0	518.5	531.5	533.0	566.0	567.5
Pittsburgh	267.0	271.1	275.0	293.8	311.0	327.2	362.1	380.3	424.4	443.7	445.2	464.1	465.6	475.2	476.7	508.0	509.5
St. Louis	280.9	288.3	293.2	304.4	324.7	344.4	375.5	402.5	444.2	458.7	460.2	475.2	476.7	497.5	499.0	527.4	528.9
San Francisco	368.6	386.0	390.8	402.9	441.1	465.1	512.3	561.0	632.3	647.1	648.6	671.6	672.5	716.0	717.5	751.8	753.3
Seattle	268.9	275.0	283.5	292.2	317.8	341.8	358.4	371.5	424.4	437.8	439.3	448.7	450.2	472.5	474.0	513.6	515.1

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

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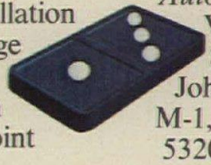

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What recovery?, says the architect

Lately I've been having this dream. I am at a cocktail party. Everyone seems relaxed. There is laughter. Conversation. Pretty soon I find myself in the corner with someone who tells me he is an architect. He is not laughing. He speaks:

"I read your Dodge/Sweet's Construction Outlook for 1976 with considerable interest. You talk about a recovery of the construction business. I see no recovery. In fact, I can't remember when things were so bad. I've had to let half my staff go. What kind of recovery is that?"

I try to edge away, but suddenly I am confronted by five angry architects. Then ten. Everybody in the room is an architect. It is an AIA chapter meeting and I am the program. There is no escape.

Wearily, I unfold my charts and place them on the easel. A hush falls over the room as I begin:

Anyone who was left out of 1975's recovery might be justifiably uptight about the use of that term. But now that 1975 is well behind us, let's see what really happened in that strange year. I say strange because to some of us in the construction industry, recovery is exactly the correct word to describe last year's events. To others, recovery is a wholly inappropriate label. Stagnation might be a more accurate term.

So what has recovered, and what hasn't? The Dodge Index has, that's what. This broad-gauge indicator of contracting for new construction of all kinds rebounded from a five-year low of only 136 all the way to a new high of 208 between January and August of 1975. Now, if that isn't a recovery. . . .

Still, to the architect, the ups and downs of 1975 must seem like a lot of motion without much accomplishment. Certainly what's been going on for the past year isn't your typical, post-recession recovery that we experienced after the economic breakdowns of 1970, 1966, 1960, 1957, and their forerunners. This one has a different twist to it—something that's been making the construction business appear a lot better than it actually is. That something: energy.

So let's make a few "adjustments" on the Dodge Index and see what it would look like if we were to set aside all the energy-related construction that has come forth in the past year in response to the so-called "crisis" of the winter of 1973-1974. Some examples: the Trans-Alaska pipeline—a couple of billion dollars of construction all by itself; half a dozen or more huge oil refineries and petro-chemical processing plants—each going for well on the high side of a hundred million; and power plants—*seven billion* dollars worth of new electric generating facilities in 1975 alone. Once you take out all this energy, what you've got left is a pretty lazy recovery.

Now the point is *not* that all this energy-related work isn't somehow real, or that it isn't construction. It most certainly is real construction. Just ask the engineers, the steam-fitters and welders, and the pipe and valve manufacturers how the construction business is these days.

The issue is more like whether we should consider this 1975 burst of energy construction an authentic recovery, or just a one-time shot of highly specialized work in response to a unique situation. Is it a recovery, or is it just something that is disguising the absence of a recovery in the traditional nonresidential building and housing markets?

How you view this depends mostly on whether or not you've been getting some of this action. An easy answer is to say that we all knew there would be a surge of energy-related work in 1975. But not everyone has the flexibility to adapt quickly to such a change. One of the differences between the design firms that are hanging in these days and the ones that aren't is their ability to latch on to the energy boom. And that doesn't mean designing nuclear power plants, refineries, and pipelines. It means finding traditional building design work in the areas where the energy boom is concentrated—in oil country: the Southwest, Alaska, even the Middle East.

But that's another story. The main reason for separating out energy construction from the total flow of new construction work is to see what's been happening to the more traditional kinds of projects through 1975. And that leaves quite a bit to be desired . . . which is not too surprising when you consider the sluggishness of the recovery of the economy as a whole. The unpleasant truth is that the "strong recovery" that the Messrs. Ford, Burns, Simon, and Greenspan were grabbing so much credit for back in the fall of 1975 is in grave danger of being choked to an early death by tight money and budgetary austerity at a stage in the business cycle when all good sense dictates stimulative economic policy—monetary ease and creative spending.

There's no better documentation of the faltering recovery of the economy than the government's own composite index of leading indicators. After accurately foretelling the initial stage of the recovery during last year's second half, this index has been running flat for the past five months—a dismal preview of 1976's first half. The Dodge Index, as a leading indicator of the construction industry, may be giving similar signals, especially after it is adjusted for the extraordinary volume of energy construction that came forth in 1975. The "adjusted" Dodge Index of conventional construction contracting is saying that there was a clear recovery of construction during the first half of 1975 when the "adjusted" Dodge Index rose from 139 in January to 166 in June. Since then, the adjusted Index has been doing no better than wobbling sideways in the 155-165 range. When taken further apart, this "adjusted" Index shows that even less is going on. Virtually all of the gain in 1975's first half (the gain that *wasn't* energy-related) was confined to one-family housing . . . period. The second half's flatness was largely a matter of a slower rise in single-family building offset by a further decline of commercial, institutional, and other nonresidential building. And that brings us pretty much to the present. What's next you might well ask?

There are no sure bets in this game, but there are some strong probabilities:

1. It is unlikely that the energy boom will keep going at its furious 1975 pace. There was a lot of catch-up in 1975's burst of contracting, and while energy needs will continue to loom large in the second half of the seventies, there will be no big gains beyond the extraordinary 1975 rate of this kind of construction.

2. One-family housing is getting close to its ceiling, and from here on it's up to multi-family residential building to sustain the housing upswing. Subsidies are needed, but they are probably not forthcoming.

3. It's finally about time for the non-residential building cycle to make its upturn. By now all of the individual building cycles that are responsive to economic condition—industrial, retail, offices—finally appear to have stopped declining. But how soon will they begin advancing again, and how strongly, depends an awful lot on whether the economy's tenuous recovery is encouraged by stimulative monetary and fiscal policy, or is held back by the appalling notion that recession is the sure cure for inflation. It's almost that simple.

George A. Christie
Vice president and chief economist
McGraw-Hill Information Systems Company

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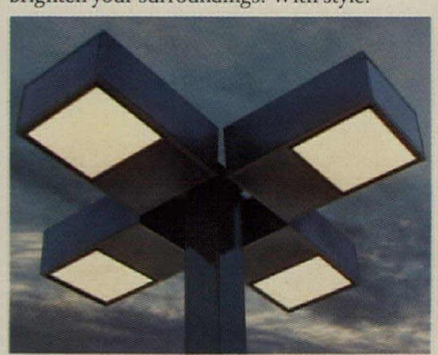

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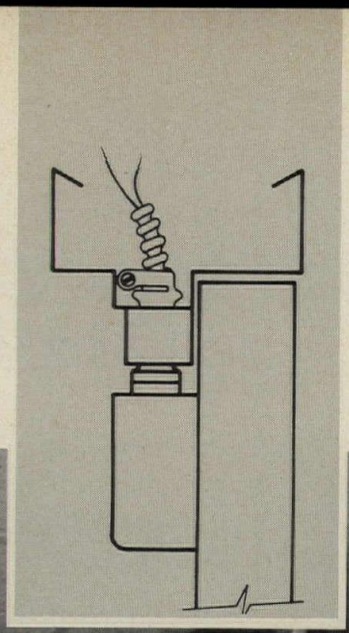

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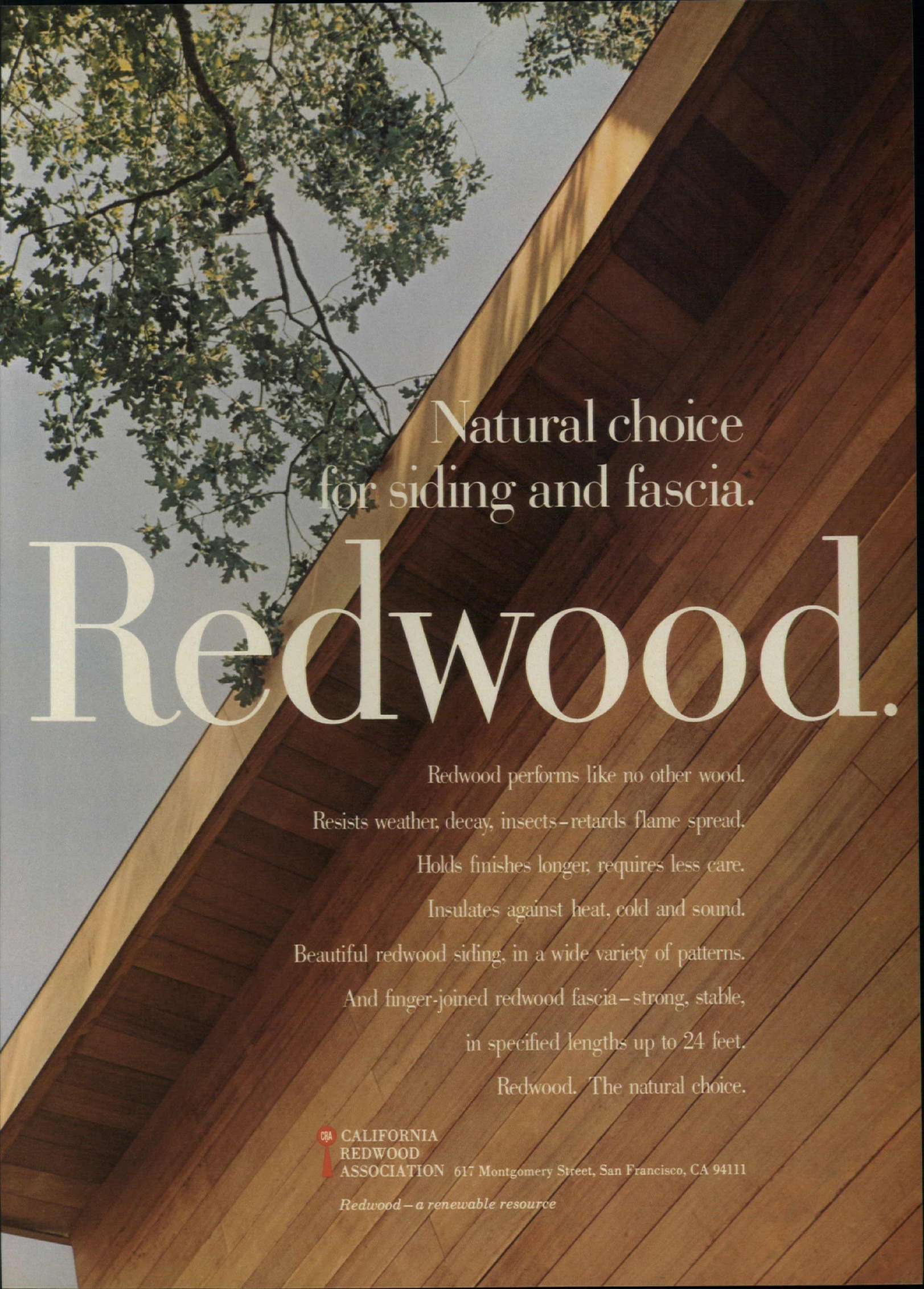
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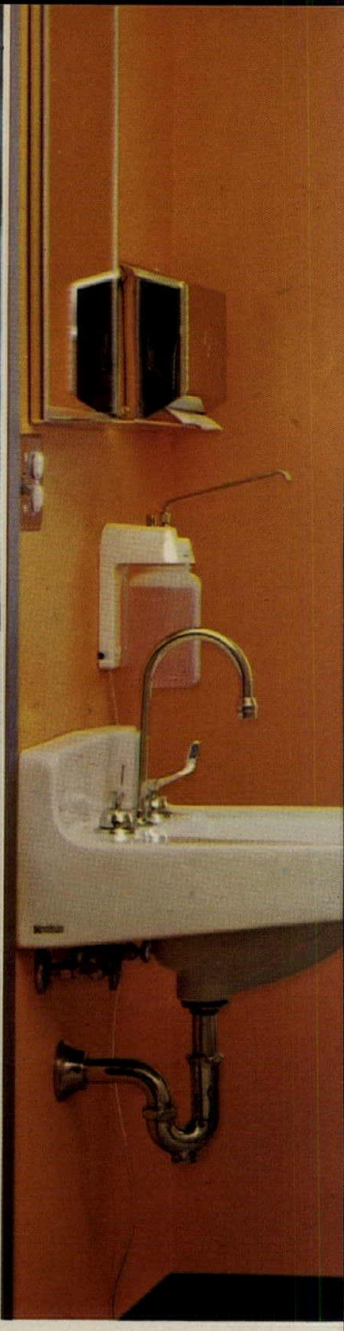


Children's Health Center and Hospital of Minneapolis, Inc.

Outside, one of 11 colors to choose from in our low maintenance, acrylic coated aluminum finish.

Pella Clad Wood Windows eliminate two common problems associated with ordinary weather-shielded wood windows. Lack of color choice. And lack of design freedom. In a Pella Clad window, all exterior wood surfaces are covered with an acrylic coated aluminum skin. A well-known and well-respected outside finish. Available in three standard (a) and eight special colors. On our Contemporary and Traditional Double-Hung, Casement, Awning, Fixed and Trapezoidal Windows. And Pella Sliding Glass Doors.

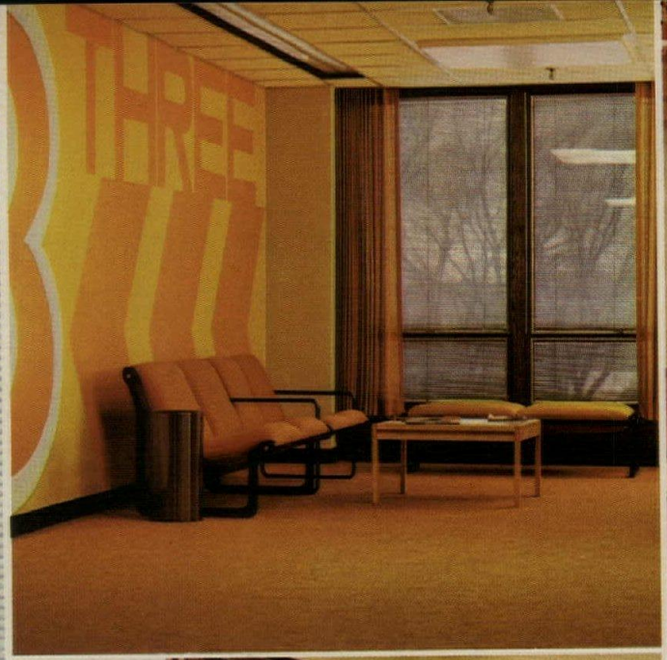
(a)

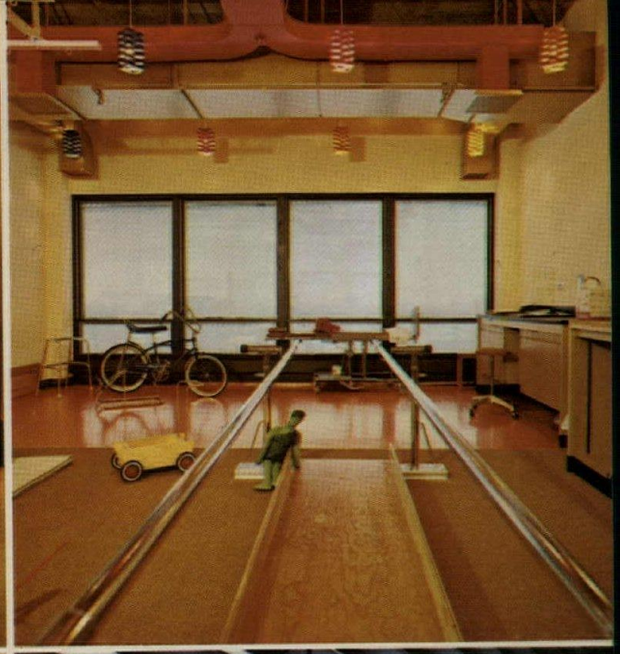
Inside, the familiar warmth and beauty of a wood window in a child's world.

Wood windows are known for their warmth. Visually. And because of their natural insulating value. And in designing the Pella Clad Wood Window, we left both of those properties unchanged. The exterior aluminum skin does not penetrate the frame or sash (b). Nor is it visible anywhere on the inside of the window. We recognized the need for a weather-resistant, low maintenance window. But seeing no reason to compromise the natural warmth of a wood window, we very carefully avoided doing just that.

(b)

At the Children's Health Center and Hospital, this Pella Clad window system contributes to the relaxed atmosphere, inside and out.





Architect: Ellerbe Architects - Engineers - Planners *Builder: Bor-Son Construction Inc.* *Windows: Pella Clad Fixed Units and Contemporary Double-Hung*

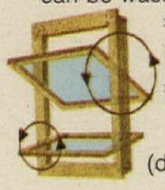
In between, the built-in advantages of Pella's unique Slimshade®.

The removable inside storm panel in our Double Glazing System gives you any number of interesting options. Like using our Slimshade® (c) to control sunlight, privacy and solar heat gain and loss. Housed between the panes, this fully adjustable blind remains virtually dust-free. The Double Glazing System can also accommodate our snap-in wood muntins or privacy panels. But flexibility is not the system's only built-in advantage. The 13/16″ air space between the panes also does a better job of insulating than welded insulating glass.

(c)

Afterward, the ease of washing a counterbalanced, pivoting sash double-hung window.

Window cleaning is another maintenance factor that must be considered. And here again, Pella design makes an easy job of it. Our Double-Hung Window has a spring-loaded, vinyl jamb liner which allows the sash to pivot. So the outside surfaces can be washed from inside the building. And because each sash pivots at its center point (d), the weight of the sash is counterbalanced. Which makes the whole job just that much easier. Reglazing can also be accomplished from inside, along with sash removal.



(d)

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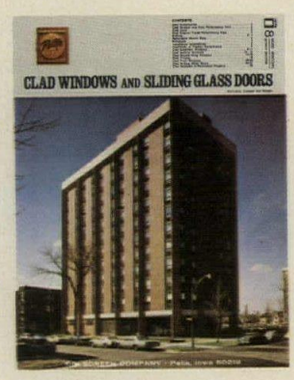

Please send me your 24-page brochure on Pella Clad Windows & Sliding Glass Doors. I am specifically interested in: ☐ Double-Hung Windows, ☐ Casement Windows, ☐ Awning Windows, ☐ Sliding Glass Doors, ☐ Wood Folding Doors.

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TERNE, FRANÇOIS MANSARD AND THE CONTEMPORARY IDIOM

Few architectural elements are more traditional than the classic mansard roof. Its current adaptation to highly contemporary design thus provides a dramatic example of "the very old becoming the very new," a phrase which Frank Lloyd Wright once applied to Terne metal itself. And wherever such fascia elements are used, the outstanding functional characteristics of Terne, along with its inherent affinity for both form and color, are available at relatively moderate cost.

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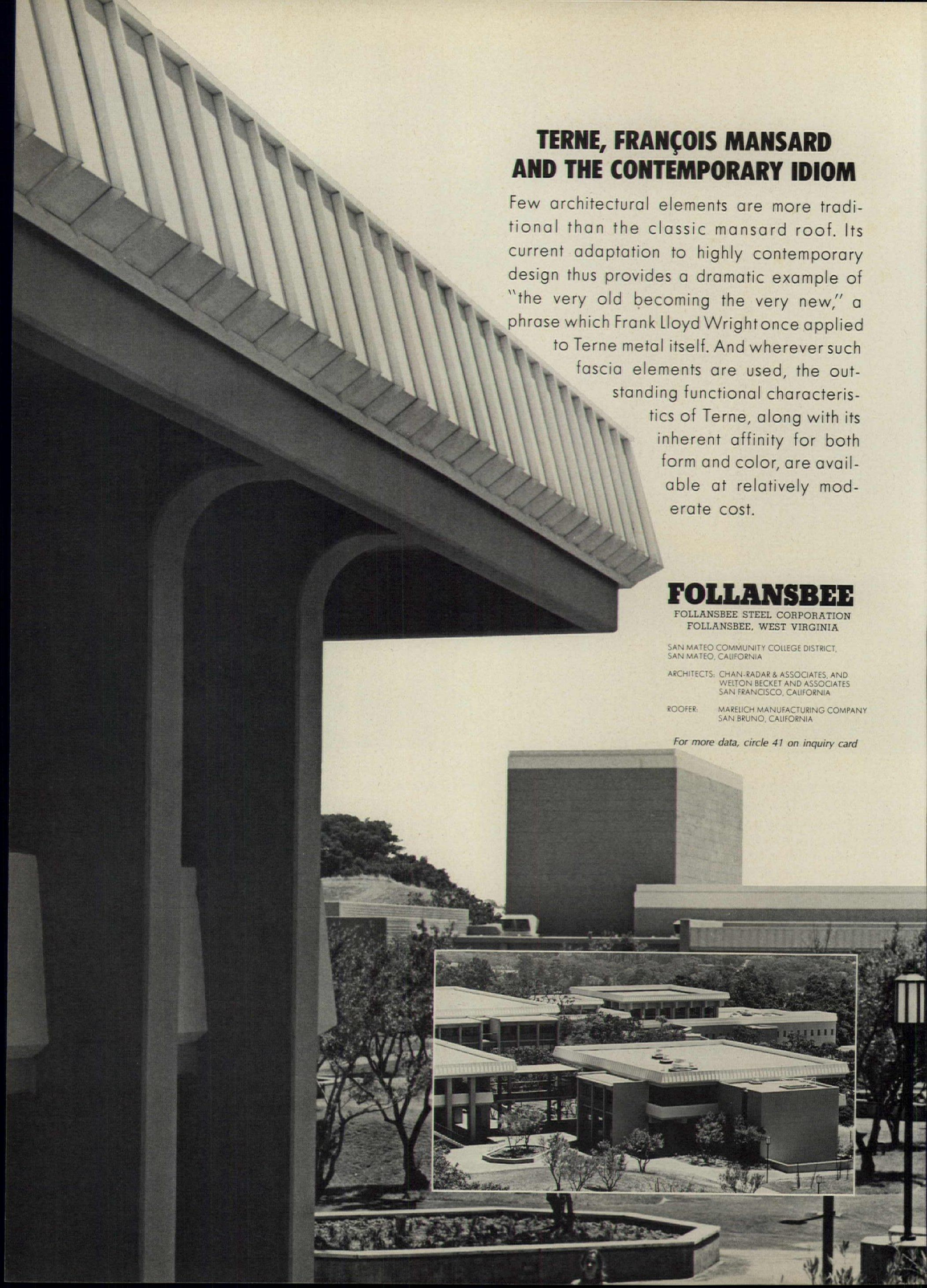

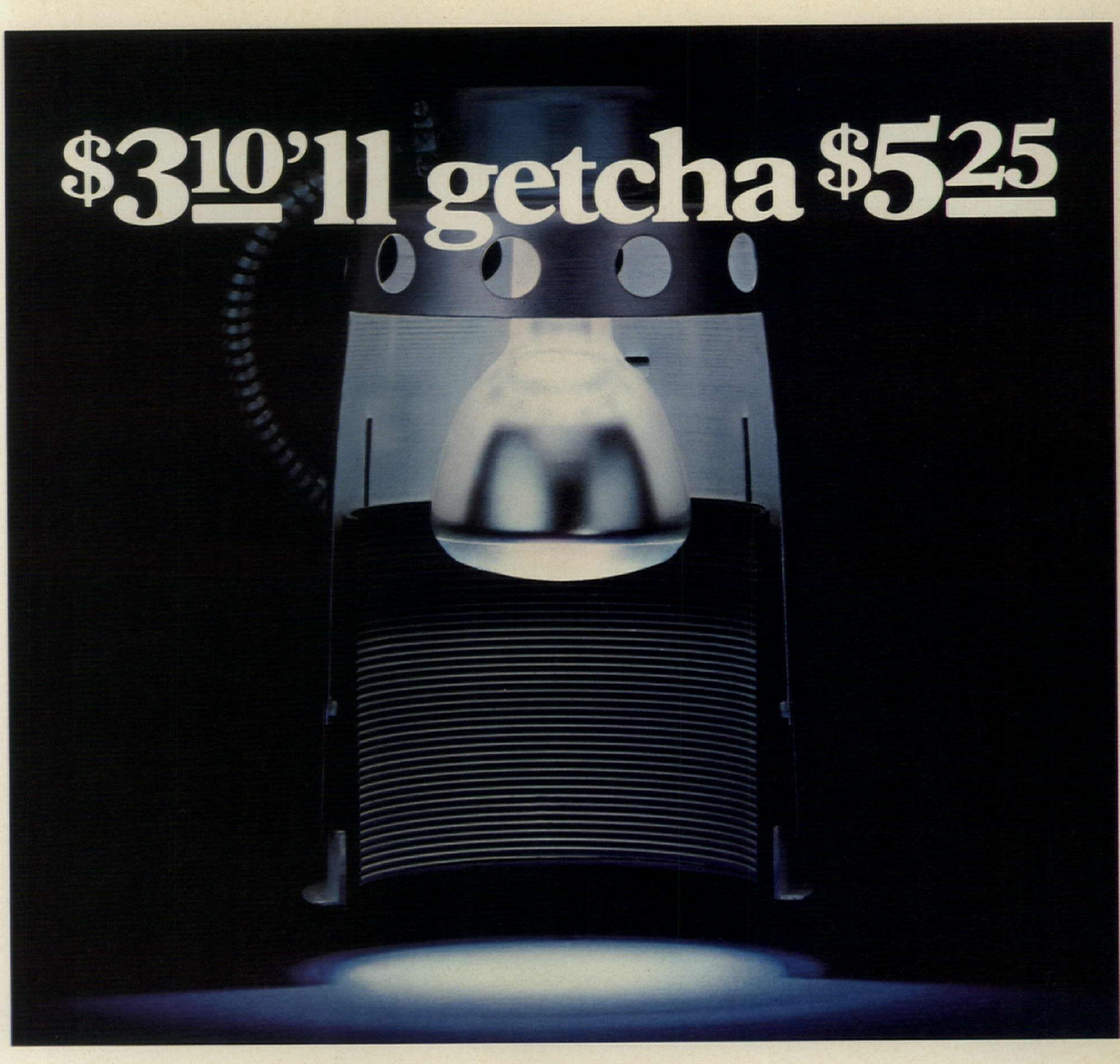

For downlighting, from fixtures such as this, the new GE 75-watt Elliptical Reflector lamp at a $3.10 suggested list price will typically save you $5.25 in energy costs and provide up to 40% more light in the bargain.

That's the story, short and sweet. The lowest cost elliptical light source you can buy. For deep-baffle applications in stores, offices, schools, restaurants, or wherever downlight or tracklight is used.

You can often cut wattage in half. Because this new 75-watt lamp is specially shaped to do the reflector work of a 150-watt lamp. You save an average of $5.25 per fixture, based on a 2000-hour life and 3½¢/KWH.

You get up to 40% more light on the lighted surface. With ordinary reflector lamps, up to 60% of the light gets trapped by the fixtures having deep baffles. The new GE 75ER30 focuses its beam so that usable light gets **out.**

There's less glare from this new shape. As much as 70% to 90% **less** in shallow downlights from typical viewing angles.

So that's the story: more light where you need it, lower energy costs, less glare. And if you buy the story, you'll want to buy the lamp — for every deep-baffle unit in your ceiling.

For GE 75ER30's — or more information about them — call your nearest General Electric distributor, or your GE Sales District Office. Or write directly to General Electric, Dept. C-603, Nela Park, Cleveland, Ohio 44112.

Cut the cost, not the light.

GENERAL ELECTRIC

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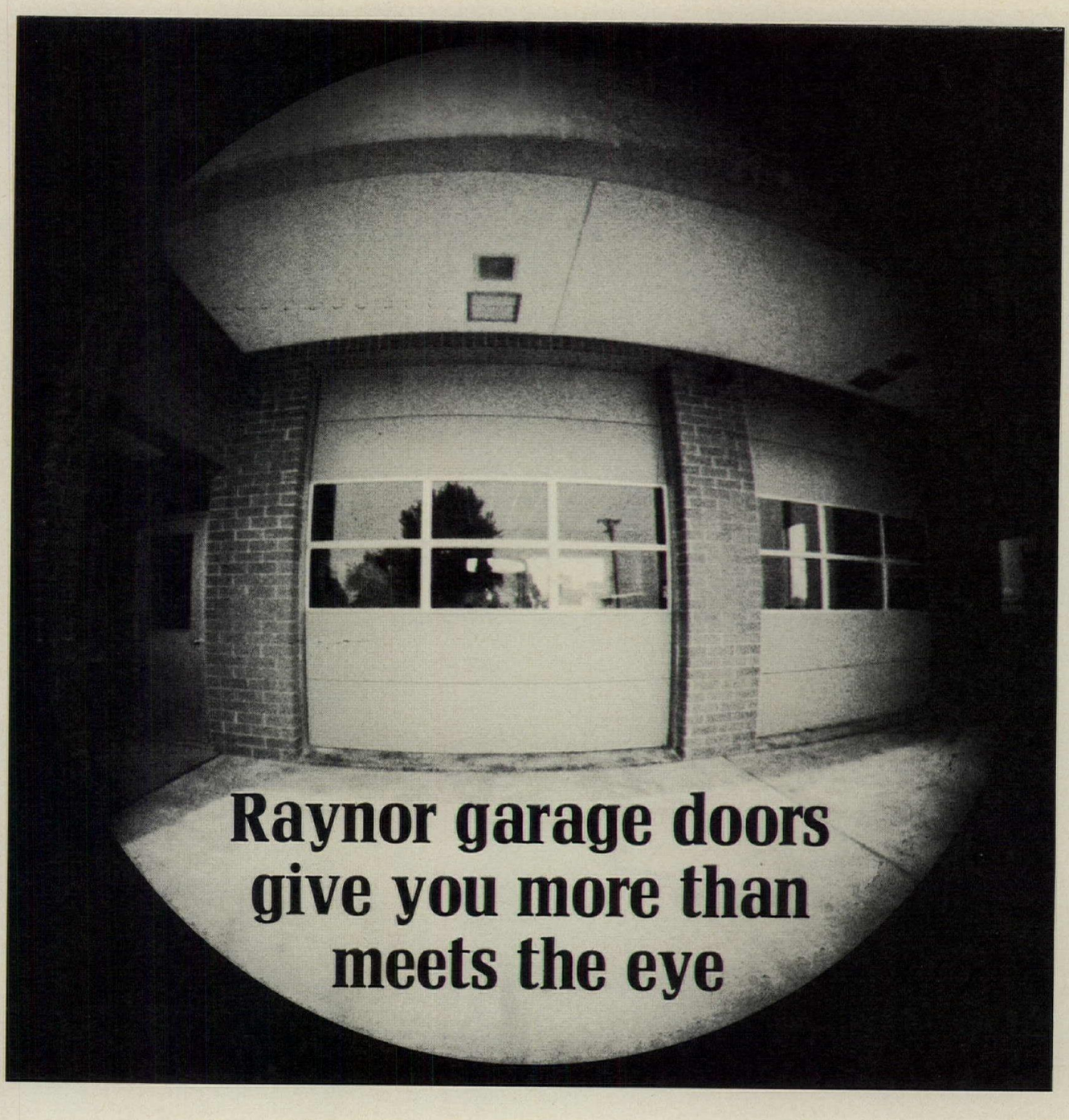

If you look only at the appearance, you're overlooking some of the most important reasons for buying a garage door. You can be overlooking the qualities that make Raynor garage doors so outstanding. Raynor gives you the big choice in materials: aluminum, steel, wood, fiberglass. Every Raynor garage door has hardware that's custom engineered just for that particular job requirement. Even the springs are custom wound. Then there's a life testing program that measures the longevity of Raynor doors, so you can be sure you're buying a product that will last longer. And every door comes to you through the skilled help of your Raynor distributor, a talented specialist who is a businessman/salesman/consultant/installer/serviceman. Raynor garage doors can be job-matched to offer you a true complement to your project. But it's what doesn't meet the eye that completely sets Raynor garage doors apart from all the rest.

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These platform wedgies have traipsed through the aisles of the Huntington Mall for the past 2 years.

Good thing the floors are carpeted with Anso® Nylon. It's guaranteed for 5 years.

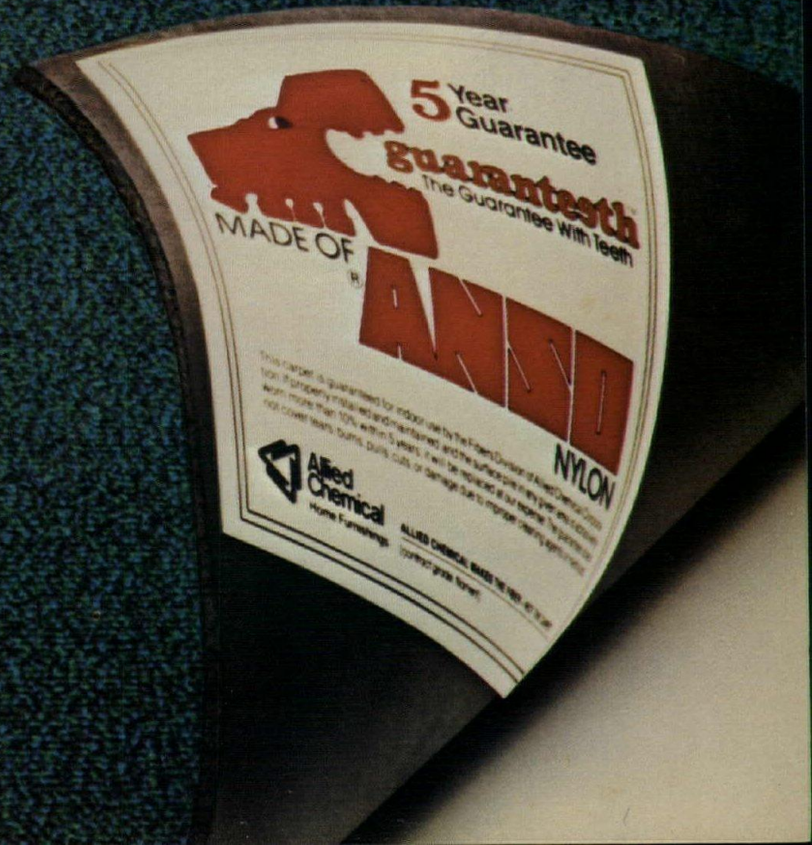
What a pair of funky feet can do to a carpet is enough to make a designer wince. Soil it. Stain it. Even stomp to some rock tune on it.

That's why the designers of the Huntington Mall in Melville, New York chose to carpet the 75,000 foot expanse with carpet of Anso nylon. It's the second-generation, anti-soil nylon that resists dirt and stains and is easily maintained.

Only carpet of Anso has the Guaranteeth®: the guarantee with teeth. Your assurance that if any portion of the carpet wears more than 10% in five years, Allied Chemical will replace it—free.

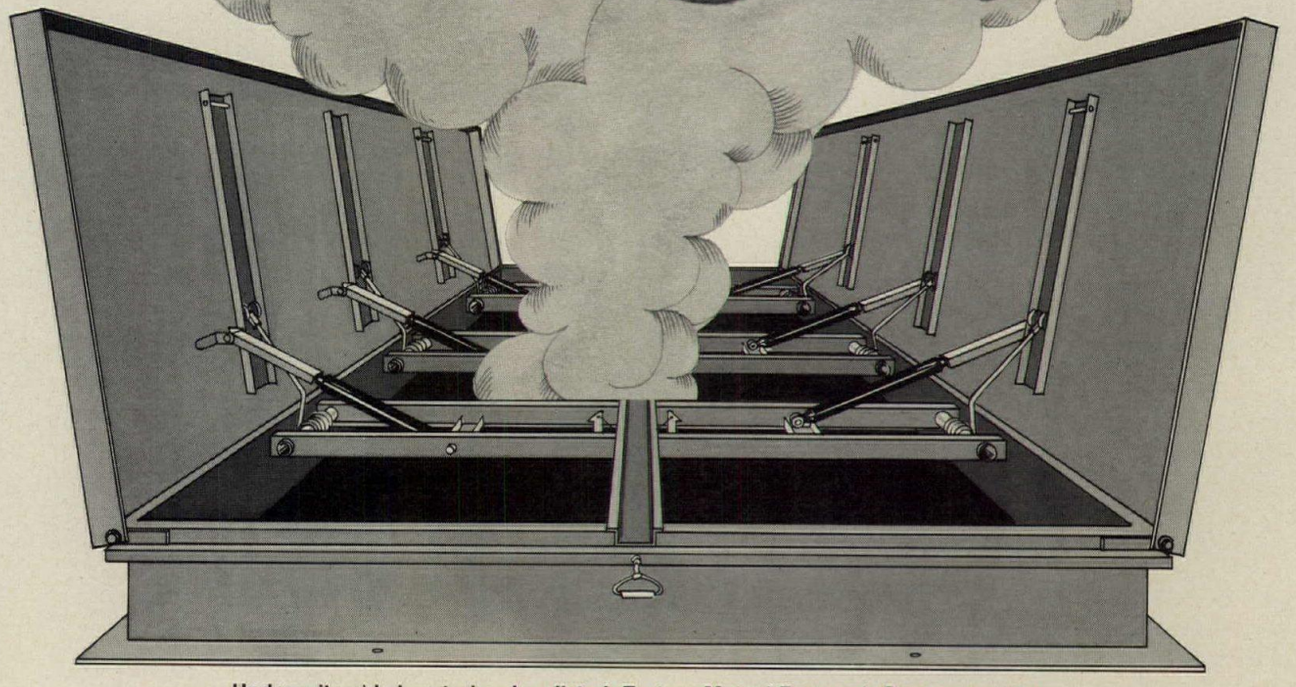
The Guaranteeth also applies to Anso-X, the anti-shock version of Anso nylon. Carpets of Anso-X are also guaranteed anti-static for the useful life of the carpet.

All types of shoes pass through the aisles here. But carpet of Anso nylon is tough enough to withstand the traffic. Discover why more and more specifiers prefer it to all other nylon fibers. For more information write or phone: Allied Chemical Corporation, Fibers Division, Contract Department, 1411 Broadway, New York, New York 10018. (212) 391-5069.



Here's the new, "large economy size" steel heat and smoke vent

BIG SMOKY T.M.



Underwriters' Laboratories, Inc. listed. Factory Mutual Research Corp. approved.

for 5′-0″, 5′-6″ and 6′-0″ wide spans ...in lengths from 6′-0″ to 12′-0″

Now, when you need automatically operating heat and smoke vents for buildings with 5-ft., 5-ft. 6-in. or 6-ft. joist spacings, you don't have to settle for aluminum units. Big Smoky brings you the strength and economy of steel.

Its unique composite cover design—with galvanized steel cover and liner laminated to an inner core of 2″ thick rigid foam insulation—provides a variety of benefits: **Strength**...will safely carry loads of 70 psf; **Rigidity**...surface continuously supported by firm inner core; **Light Weight**...comparable to internally reinforced aluminum covers; **Excellent Insulation**..."U" factor of .093 (compared to .26 for 1″ thick glass fiber); **Condensation Control**...no cold spots.

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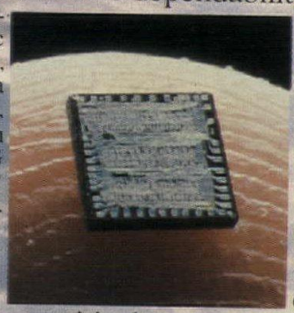
Our search for product innovations and improvements is constant. And it's paid off. Our reputation is one of absolute dependability—whether the the glass requirements are those for a multi-story building, modern medicine, solar energy or critical space-age technology.



This micro-electronic circuit, shown on a finger tip, started with ASG Lustronic™ glass.

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SuperSaver Excel incandescent lamps. These lower-wattage lamps (34, 54, 69, 93 and 143 watts) give the same light output and 2500-hour life as the extended-service lamps they replace (40, 60, 75, 100 and 150 watts). They also reduce energy demand by 5-15%.

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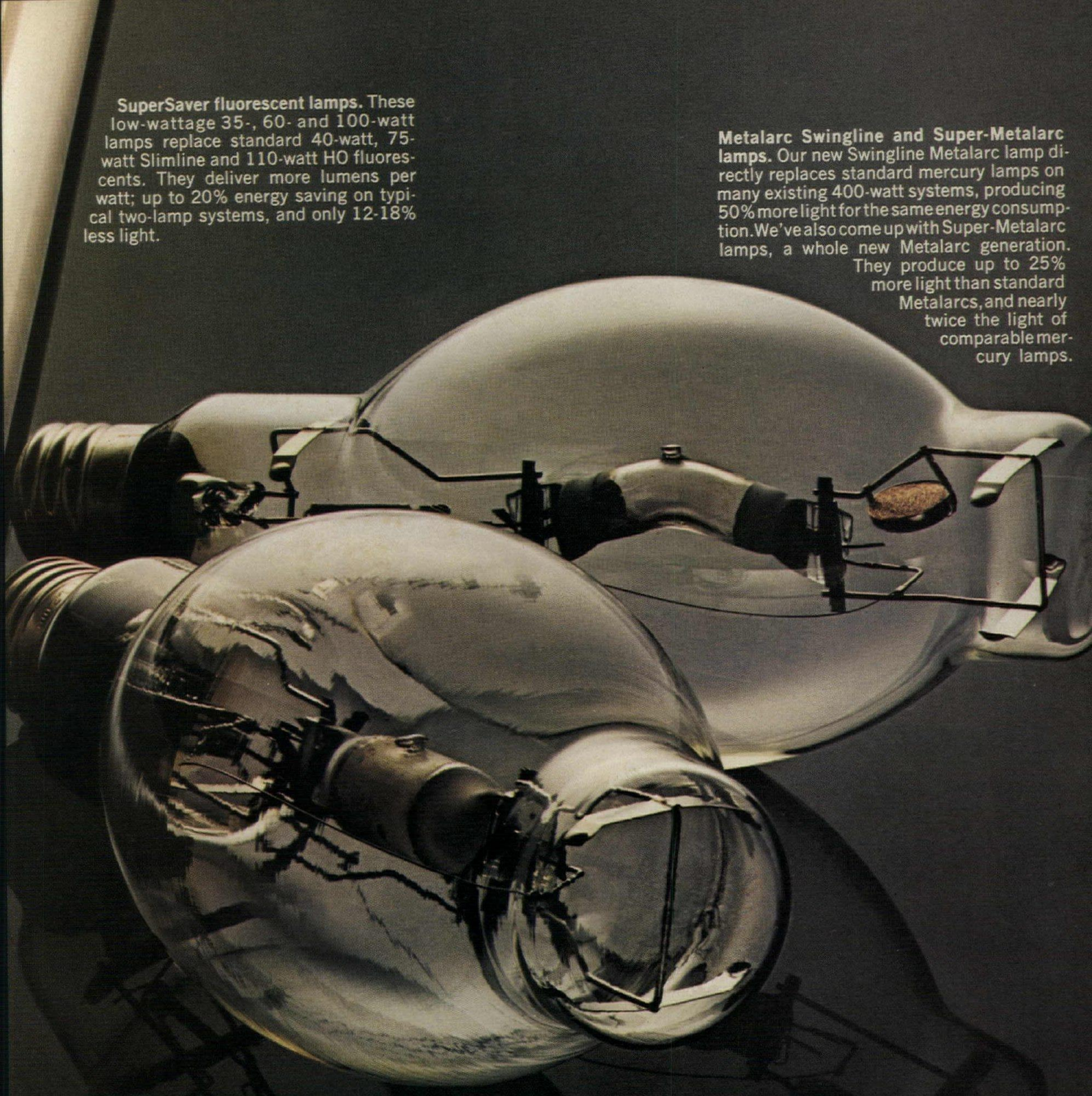
SuperSaver fluorescent lamps. These low-wattage 35-, 60- and 100-watt lamps replace standard 40-watt, 75-watt Slimline and 110-watt HO fluorescents. They deliver more lumens per watt; up to 20% energy saving on typical two-lamp systems, and only 12-18% less light.

Metalarc Swingline and Super-Metalarc lamps. Our new Swingline Metalarc lamp directly replaces standard mercury lamps on many existing 400-watt systems, producing 50% more light for the same energy consumption. We've also come up with Super-Metalarc lamps, a whole new Metalarc generation. They produce up to 25% more light than standard Metalarcs, and nearly twice the light of comparable mercury lamps.



The stingy bunch.

A lot more light from every watt.

Just because there's an energy shortage, don't think you have to turn the lights out.

Instead, look into these Sylvania energy-saving lamps. Our "kilowatt cutters."

They squeeze more light out of every watt. Which means you can cut down on power consumption and still have plenty of light.

And, in most cases, all you do is replace the lamps you're using now.

There are Sylvania kilowatt-cutting lamps for just about everything from hallways to football stadiums. And, by saving energy, these lamps also help you save money, at a time when every penny counts.

Thanks to Sylvania, you can be stingy with energy and still be generous with light.

See your Independent Electrical Distributor for details.

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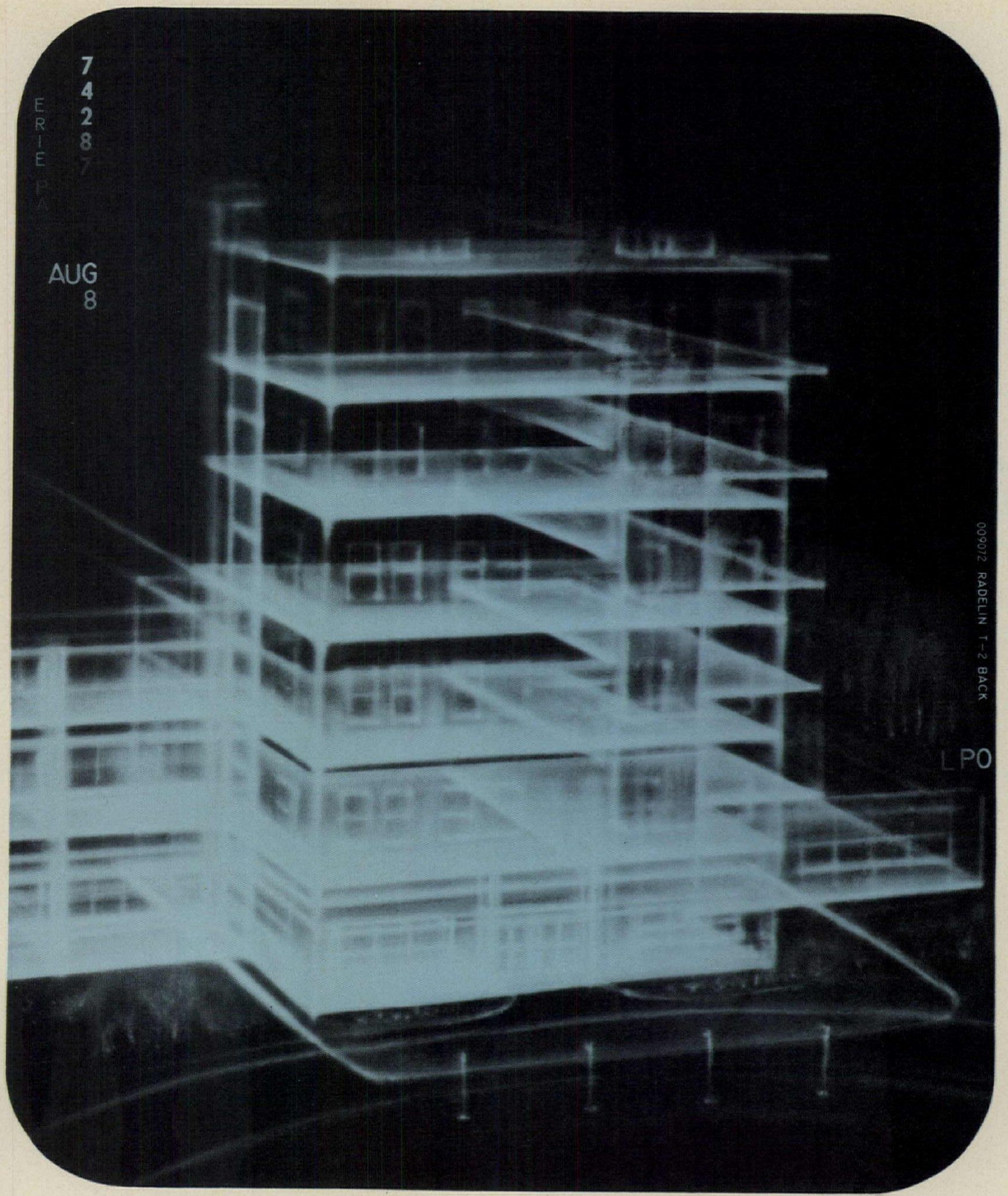

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AMSCO Systems Company. Experienced in hospital remodeling as well as new construction.

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Classic windows: Trapezoids the way you want them

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Marvin Windows

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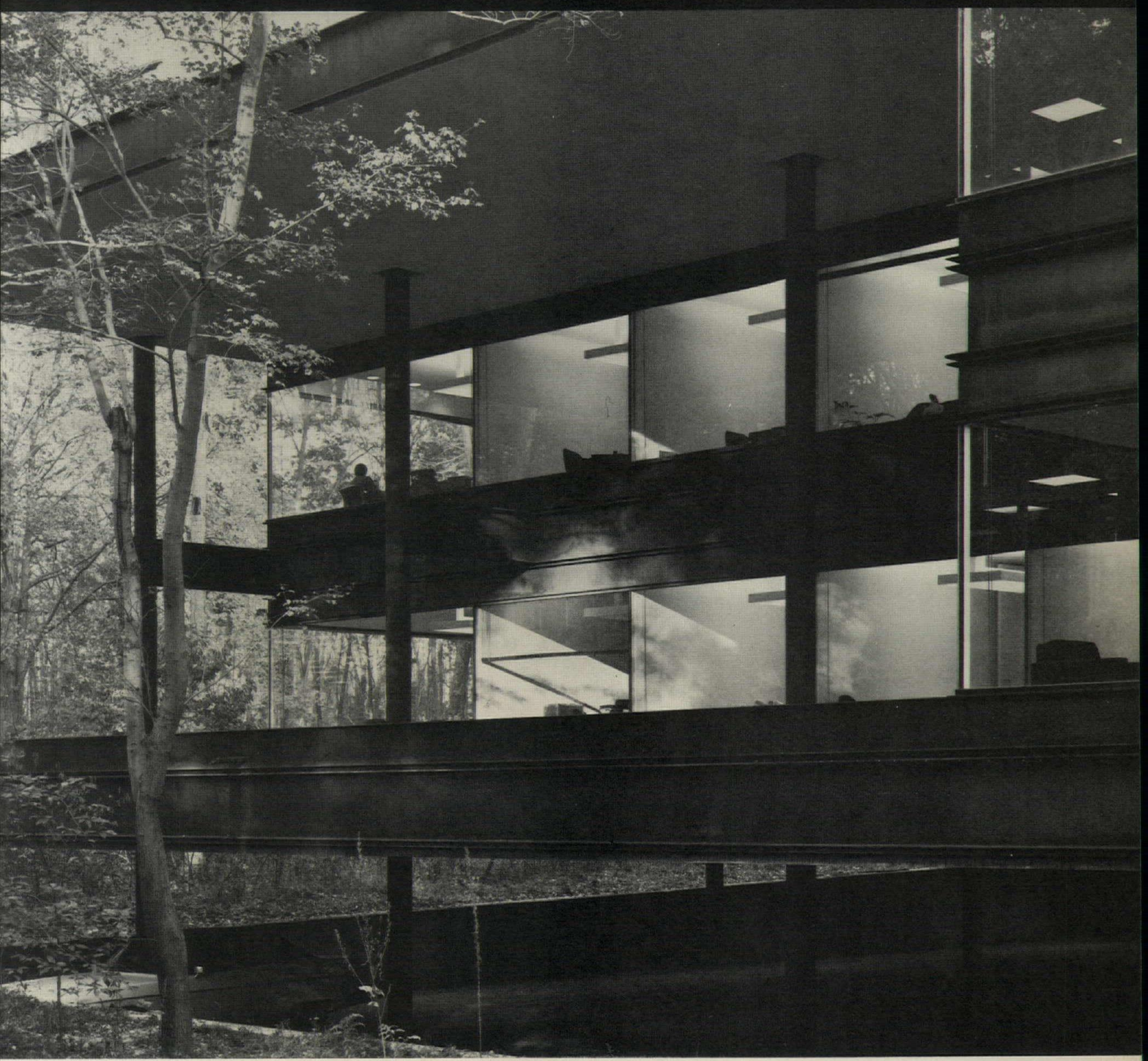
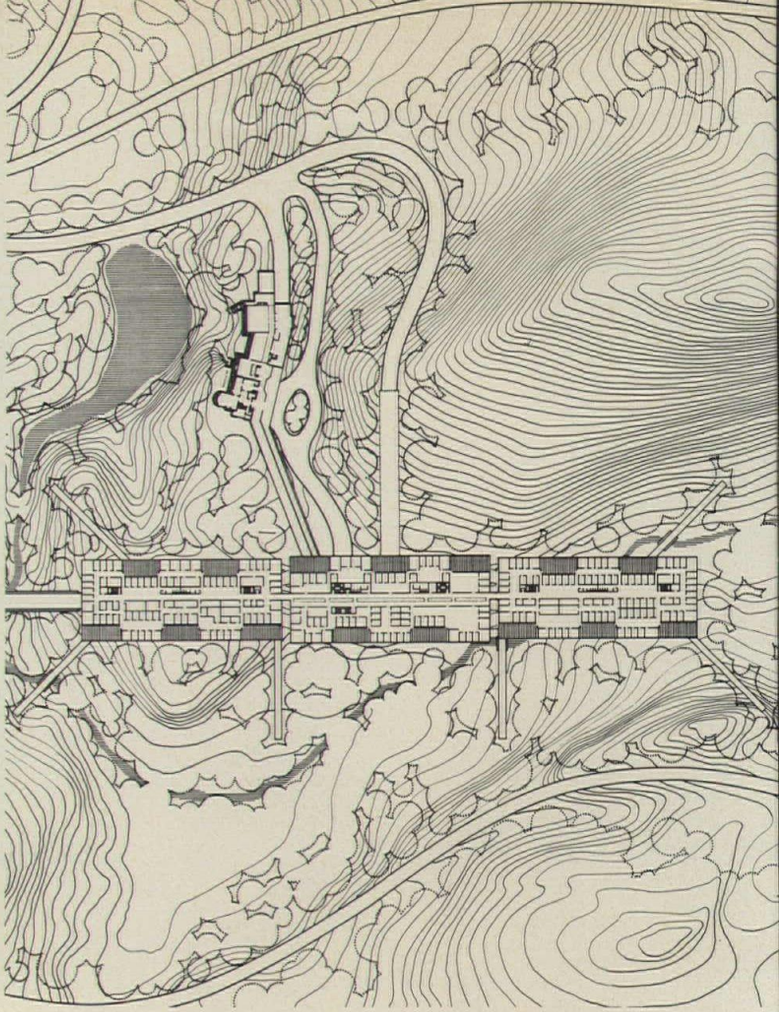
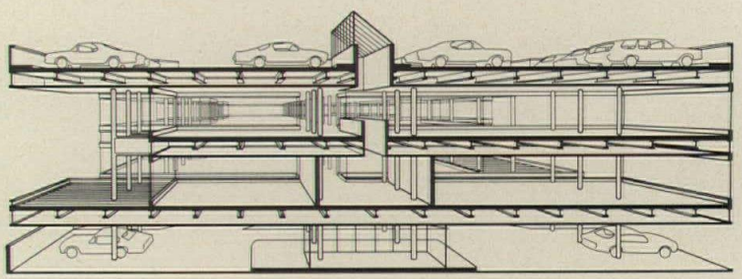


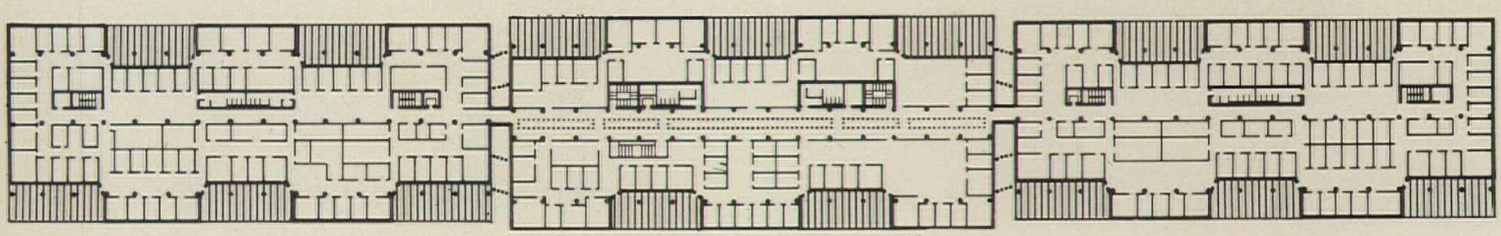
TWO BUSINESS BUILDINGS

Kevin Roche and John Dinkeloo, working near New Haven with a team of 60 people, continue to produce architecture of such thorough logic that it defuses all the corroded canons about "rational" design. The Richardson-Merrell Corporate Headquarters Building (above), located in the countryside near Wilton, Connecticut, is an unfolding of such logic. So is the Worcester County Bank Building (page 86), located in downtown Worcester, Massachusetts. The main reason we are discussing these two very different jobs is not to acclaim still further evidence of the collective genius of a noted firm; it is to explore an approach to design, a perception of place and program. This is an approach that transcends the "rational" insistence, still holding sway in these cost- and corner-cutting times, that there are certain axioms applicable to all cases. The logic of Roche and Dinkeloo is that axioms are not applied, like precepts brought out of cold storage, but are *found*—a kind of efflorescence, rather like outcroppings of stone that suggest the forces beneath otherwise quiet contours. These buildings, then, are not just gems in the rough of reality; they are its outcroppings. "Rational" thought, girding cities from Abadan to Zagreb in precisely measured grids, has produced homogenous design. Here we have, to borrow a term from biology, an *endogenous* approach—work produced from within.—*William Marlin*



The 812- by 120-foot structure is of weathering steel and glass, with double tubular fireproofed columns carrying exposed beams. Two office floors are sandwiched between two parking levels, one suppressed directly below the building and the other, reached by ramp (opposite right), directly on the roof. The interpenetration of site and structure is the result of deft, deferential siting and choice of materials.





RICHARDSON-MERRELL HEADQUARTERS WILTON, CONNECTICUT

During the middle of the 1960s, the countrified corporation became a commonplace feature of the American way of life as big businesses, leaving big cities, scrammed to the suburbs or, sometimes further, to the sticks. The architectural results of this solemn migration have been, too often, a savaging of terrain with if-you've-got-it, flaunt-it forms.

Just down the road from villagey Wilton, Connecticut, Richardson-Merrell, Inc., the big pharmaceutical company (Vicks Vapo-Rub, for example) has built itself a new corporate headquarters. One of the first things one notices about the building is that one doesn't notice the building at all. What finally unfolds is perhaps Roche Dinkeloo and Associates' most understated (and satisfying) job.

Given such a generously endowed 57-acre site, with a rolling meadow by the road, a good many companies would have told the architects to plop their building and parking in full view of passersby, or to get lost. But these architects don't work that way, and Richardson-Merrell is not a show-offy kind of outfit. So they all decided to get lost together, go up above the meadow, ensconce themselves on a slight rise above a ravine with a creek gurgling through and, just down from the crest of the highest hill, widening into a plateau beyond. The low-lying, strongly linear structure has been situated among oaks and maples and pines and cypress. Not one tree was cleared more than 15 feet from the two-story, 196,500-square-foot building which, overall, measures 812 by 120 feet.

The construction is of weathering steel, emanating that deep reddish-brown hue, and vast sheets of glass. Double columns, tubular and fireproofed, carry the big beams which, in turn, carry concrete floor

slabs over metal decking. The building is divided into three sections, representing the major divisions of the company—the middle one being slightly wider than the two flanking it. All are interconnected with a central corridor, with balcony-like light-wells and, in the middle section, a shed-style skylight—all of which makes this element of circulation into a good-feeling esplanade with intermittent views through the outer offices into the sylvan setting.

Although it is impossible to take in the entire building in one glance (it gives itself a little at a time), the basic schema is evident as one curls into the final approach of the driveway past grassy mounds and a pond, and glimpses a hefty expanse of the hovering building. Essentially, Richardson-Merrell is like one of those giant multi-decker sandwiches one would expect to find at a company picnic. And the reason for this is the architects' approach to solving the problem of parking. One division manager explained, "We saw no sense in leaving New York City just to stare at a bunch of automobiles."

Presenting any number of layouts and their implications for the site, all of which would have resulted in the same thing—a building in or by a parking lot—the architects came up with a ridiculously obvious solution. Perching the headquarters slightly above ground level, and by digging in a few feet below it, they slid one-half of the required parking directly beneath and, reached by a bridge-like ramp, the rest was slid onto the roof, concealed with a parapet.

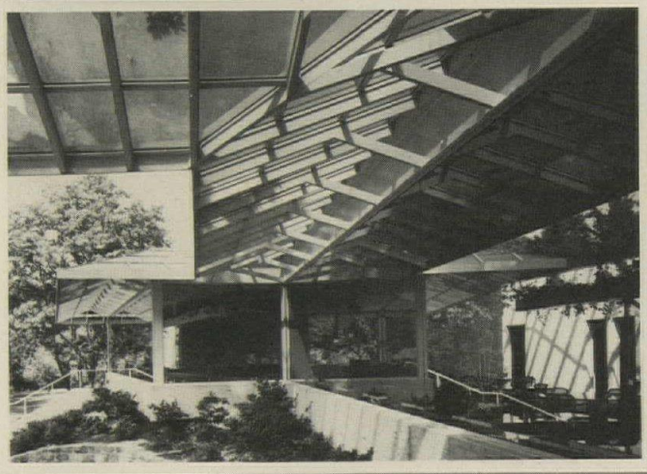
Which is an example of how Roche Dinkeloo work: painstakingly presenting all options, all ramifications—illustrating even the less preferable ones as beautifully as the most preferable. As associate David Powrie explains, "The client is brought along every step of the way. We never come in talking about *our* solution of a problem. We show the problem's solution of itself." This is the most cogent kind of communication—and a key reason for Roche Dinkeloo's success. During

a time when so many are touting "construction management," "fast-tracking," and "comprehensive services," this job shows that talent and thoughtful teamwork can yield "dependable project delivery" at budget—$50 per square foot here.

In convincing contrast to the main building is the roomy, homey old mansion, which came with the property, that has been skillfully spliced into the scheme. Ranging out at an angle, a 210-foot-long pergola, topped with a single-slant glass roof, reaches through the grounds to the mansion, which has been furnished comfortably for little meetings and dinners. The pergola is lined with a planter containing all kinds of herbs, which are used by the kitchen staff in serving the cafeteria and dining room housed in a new structure that is appended to the far side of the mansion. Seeing this off-time, lunch-break facility, its roof eaves reaching out beyond generous glass walls as a trellis infilled with still more glass, Philip Johnson said, "I'm going to get Kevin to do all my cafeterias from now on." Looking outside, diners have a view down the grass to the pond into which the creek, passed under the headquarters and through the ravine, pours. So the formal and informal, new and old elements run smoothly together.

It can be said that there is something of the romantic here, but this is because of the logic in it all. One can roam about this site and see all of the fine points it had before but, *because* the building was done, see them in an enhanced, personable perspective. Kevin Roche, for his part, pronounced, "You know, it's really quite unimposing."

RICHARDSON-MERRELL CORPORATE HEADQUARTERS BUILDING, Wilton, Connecticut. Owner: *Richardson-Merrell, Inc.* Architects: *Roche Dinkeloo and Associates.* Engineers: *Severud Associates* (structural); *Cosentini Associates* (mechanical/electrical); Contractors: *Edwin Moss & Son, Inc.* (general); *Bridgeport Pipe Engineering Co., Inc.* (mechanical); *Ducci Electric Co., Inc.* (electrical).

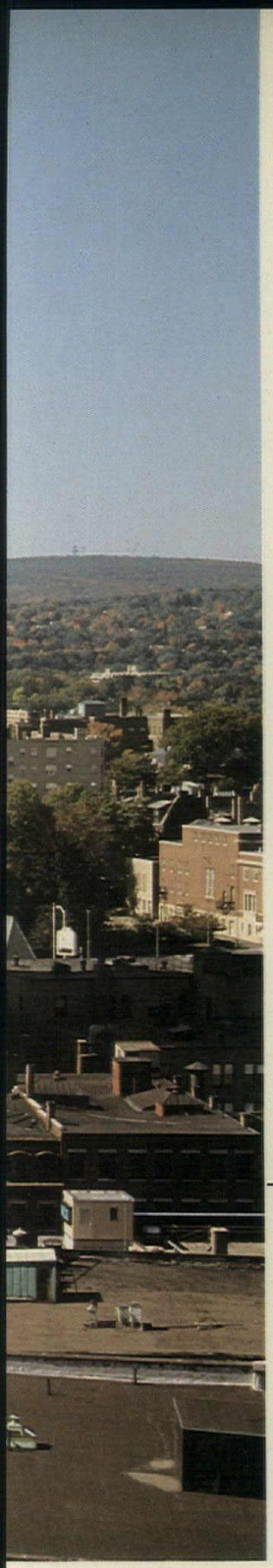


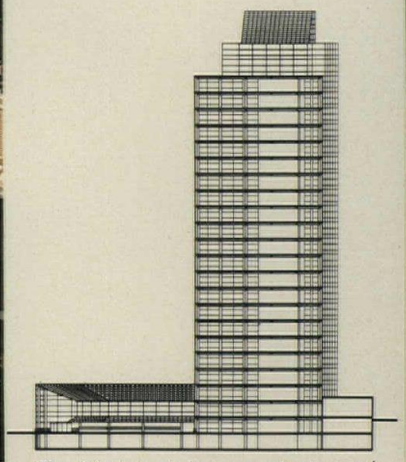
The three sections of the headquarters building are spatially spliced with a wide central corridor which, in the middle section, is dramatized with a shed-style skylight (above). Lightwells add a sense of lift and depth all around. Connecting the main building with the cafeteria and dining room facilities is a 210-foot-long pergola-like walkway (opposite above). Trellis effects characterize the roof overhangs of these facilities, as does the skylight above the serving area (opposite, middle photos). The main lunch room is a familial space framing views across landscaped lawns to the nearby pond.

WORCESTER COUNTY NATIONAL BANK WORCESTER, MASSACHUSETTS

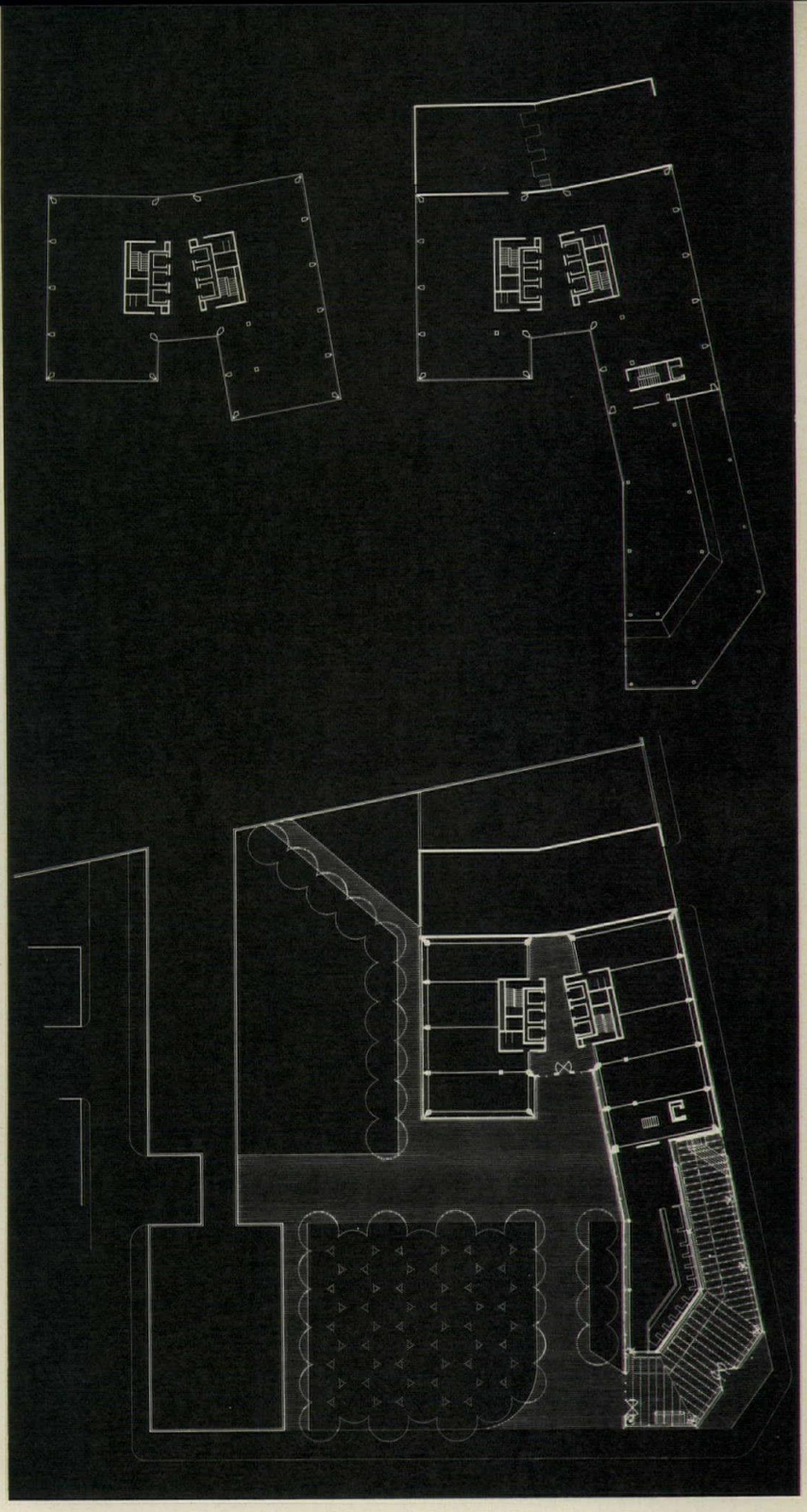
There is a real problem of architectural conscience, or at least there *should* be, when a prospective client calls up and wants to discuss building a skyscraper smack-dab in the middle of an otherwise low-scale downtown. Back in 1967, when officials of the Worcester County National Bank called up Roche Dinkeloo and Associates (doing so at the suggestion of J. Irwin Miller, that perennial supporter of design excellence in Columbus, Indiana, for whom they had designed all kinds of buildings), Worcester's downtown was so low-scale that anything higher than its old city hall, on Harrington Corner, would have stood out. Almost a decade having passed, communities no longer automatically regarded tall buildings as beneficial, mainly because so many of them, however carefully done, bring along an almost inherent truculence in trying to relate to the streets and buildings which already exist. The officials of a bank may want image, identity, and amenity. They may want a building that stands for their city's cultural and economic comeback. They may even want, as one official at Worcester says, "something more than pulling out a drawer and picking out an erector-set design." Still the problem of conscience persists for an architect. What is the response to be? Turn the job down? Or turn the problem around, designing, more than some stunning, symbolic slab, an example of decent, deferential manners? The Worcester County National Bank Building, as completed, a 24-story twin tower framed of steel and sheathed in mirrored glass, comes about as close to having good manners as this architectural genre can.

Known as Worcester Plaza, the building is at Pleasant and Main Streets just west of the granitic elegance of city hall and the spacious





The 24-story, twin-tower structure of the Worcester County National Bank Building is of steel sheathed with mirrored glass. The towers, connected by a core of elevators, are wedged apart (plans right) to reinforce the shape of the site and the line of the surrounding streets. Located immediately west of the old and elegant city hall and the spacious Commons, the building's new landscaped plaza, edging the two-story outstretched banking space (overleaf), is an enhancing rather than overwhelming element of the city.



Common. Front Street reaches east from this junction, lined with shops, and linking up with the commerce- and retail-lined malls called Worcester Center. The Common has recently been spruced up by the landscape architectural firm of Sasaki, while the Center, a few years old, was done by Welton Becket. All of which was anticipated by Worcester Plaza. Its first design—a 46-story, poured-concrete tower rising from a vast greenhouse-style lobby area—was announced in 1969 to a public that went absolutely ga-ga and my-gosh and oh-no. "Assuring Worcester's prominence," so the bankers bleated, was the aim and, so several critics including Aline Saarinen suggested, it was one of Roche Dinkeloo's finest moments—albeit one that didn't last. The completed version, considerably scaled down from the earlier 400,000-square-feet to a more manageable and affordable 280,000—about half for the bank and the rest for renting out—is a much finer moment, even as restrictions of budget and marketplace potential were what impelled a more modestly scaled solution.

A primary consideration, as the new design evolved, was reinforcing the existing pattern of streets rather than, as in the earlier version, rising in majestic aloofness from them. The two towers, linked by a core of elevators and utilities, were angled away from each other at 11½ degrees. This wedging apart of what might have been a more routine rectilinear plan does several nice things. As the office towers pull away from each other, elevator lobbies are created and, being recessed between the two show up as a vertical spine of space anchoring the shimmering facades. Another nice thing about the wedging is that the site, wedge-shaped itself, is thus enhanced. Finally, while the towers are set back from Main Street with a landscaped plaza in front, the two-level banking lobby with its mezzanine of offices overlooking the main space, edges down Pleasant Street, nudging the sidewalk, and then turns the corner at Main. This out-stretched arm grabs the

environment and is a natural horizontal extension of the towers' vertical thrust. Both are 50 feet wide. One is a hundred feet deep; the other, 80. These alternately recessing and assertive masses, with the indentation of the core, give the thrust texture and make the verticality less intrusive. It becomes less a building in the city and more a building of the city—a calm come-on.

This character is pointed up by the treatment of glass. The curtain walls are composed of three different color bands on each floor, and these have varied levels of reflectivity. This treatment contrasts with the clear glass which sheathes the core on both ends, allowing a see-through effect in viewing the building from outside. At the curtain wall of the office towers, the lightest band of glass is at eye level; the darkest, by the floor. Metal-covered neoprene gaskets hold the ten-foot-wide sheets; floor levels are denoted by the horizontal bands.

A sharply angled roof surmounts the core which becomes a two-story lobby, ebulliently lit and finished with mirrored and stainless steel surfaces, and serves the shamelessly posh private club, bar and restaurant that take up the 23rd and 24th floors. The view from this top-side dining room to the city and its Seven Hills is arresting in its beauty as the cityscape stretches beyond to a striking horizon. Around sunset, the colors of the sky are strongly picked up by the reflective finishes and richly textured fabrics of the space. It is a thoroughly successful interior.

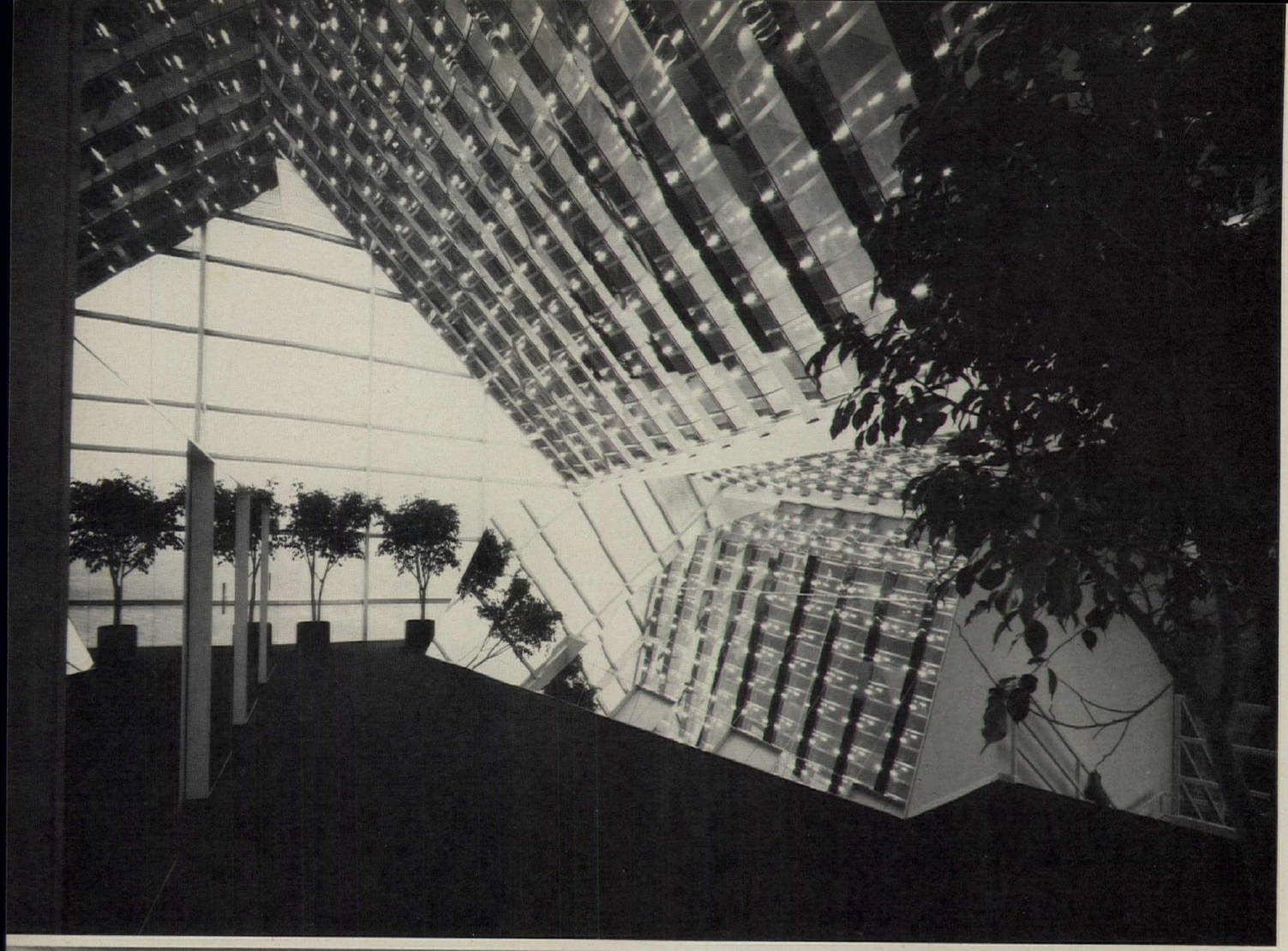
At ground level, the banking space picks up the external environment in as compelling a fashion. Greenhouse-style, the roof of this two-level room, paved in earth-colored tiles, is of stippled glass. Over the tellers, protecting them from possible glare, stretches a trellis-like awning arrangment of metal and glass. The tone is rather that of a conservatory or a partially shaded sidewalk cafe. It is small-town, affable, pleasant—a truly urbane place. And there is not a hint of the

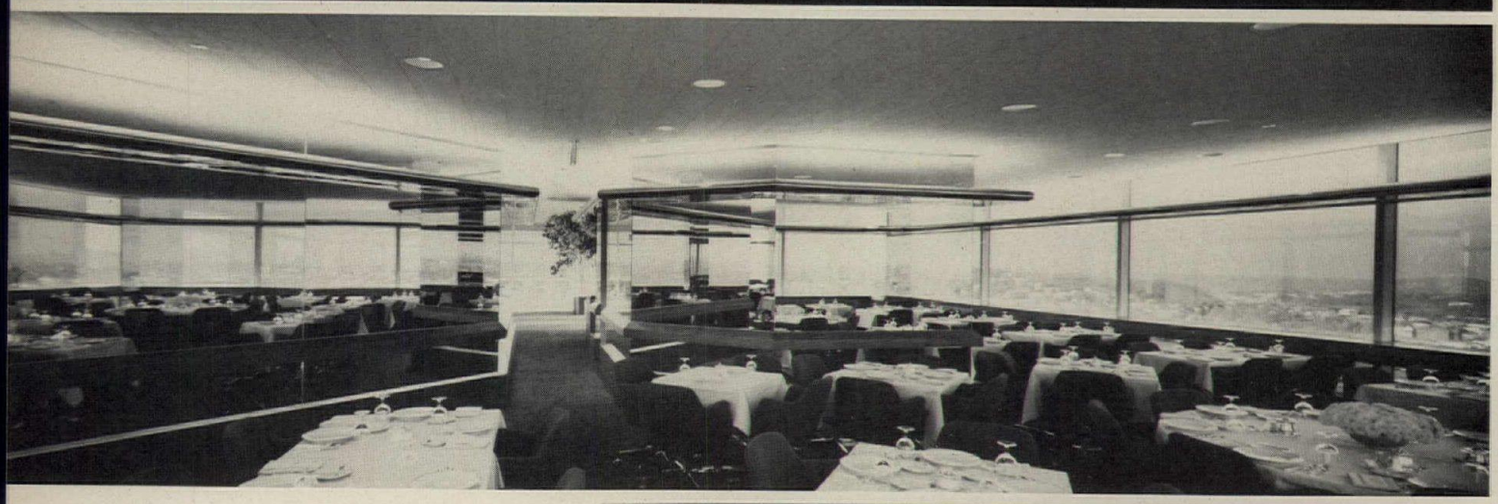
paste-on pretentiousness so often associated with banking or big business establishments.

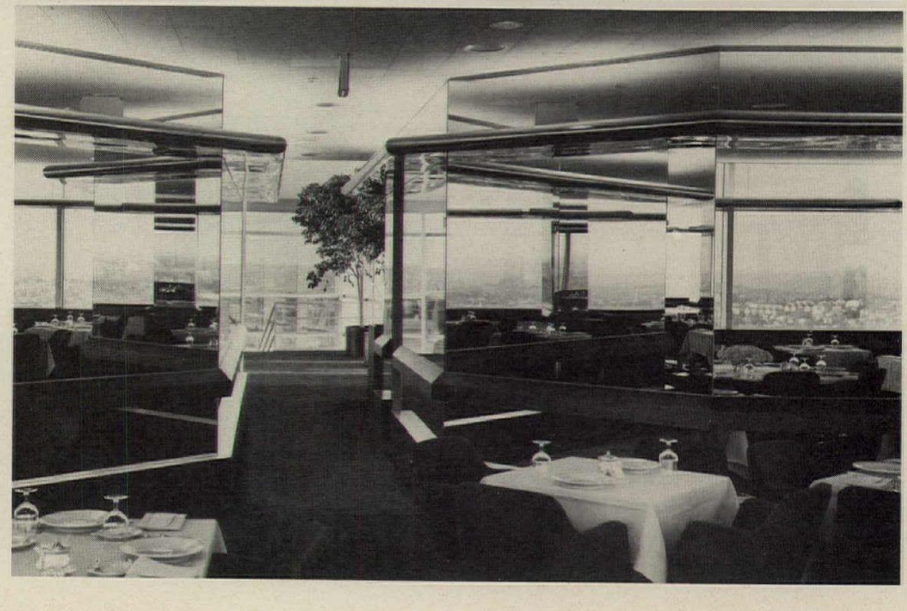
Throughout the building, the twin-tower solution yields dividends. Just getting out of an elevator is delightful, looking out, as one can, to the city below. The towers, one of them 4,500 square feet and the other 3,500, accommodate six corner offices on each floor and two sizable reception areas—all with good views. And because the floor sizes are manageable, both large and small tenants can be flexibly taken care of. On the lower levels of the towers, a variety of retail and service shops have moved in, thus adding to the building's permeability and identification with the street-sauntering public. And from the fourth level, at the core, a bridge reaches out from the back of the building to a 600-car parking structure, thus consolidating and concealing the necessary if noxious presence of automobiles.

"Those are the circumstances," as John Dinkeloo suggests, "that make up what we do. We do not just design. We derive. And that is why a certain truth comes out, which it can't do if you high pressure a situation and try to force yourself upon circumstances." Worcester Plaza tells the truth about a tough situation for any architect facing the problem of fitting into surroundings that, as at Worcester, needed to be beefed up rather than bludgeoned. In a moment of rare enthusiasm, Kevin Roche said of it, "The results are not unpleasant." With an enthusiasm as rare, when it comes to liking skyscrapers, the people in this old industrial town have taken to it as well. Telling, isn't it, how architectural conscience can raise that of everyone else?

WORCESTER COUNTY NATIONAL BANK, WORCESTER PLAZA, Worcester, Massachusetts. Owner: *Worcester County National Bank.* Architect: *Roche Dinkeloo and Associates.* Engineers: *Pfisterer Tor and Associates (structural); Hubbard Lawless and Osborne (electrical).* Contractors: *Blount-Fontaine (general); E.A. Berman Co. (mechanical); Coghlin, Inc. (electrical).*





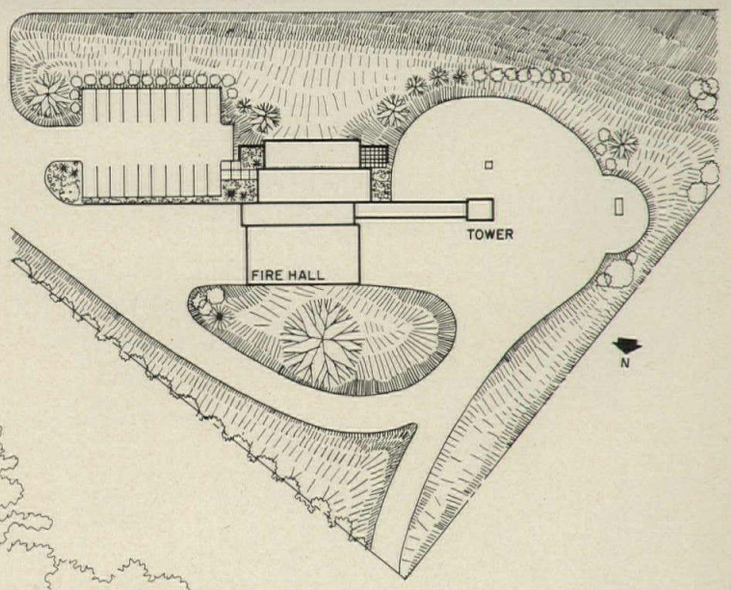


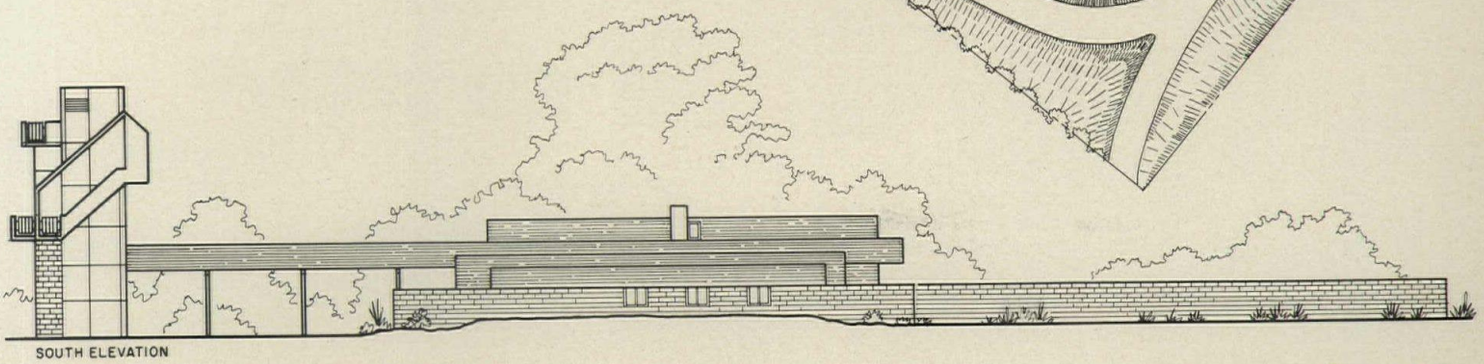
The 23rd and 24th floors of the Worcester County National Bank Building are occupied by private restaurant and club spaces that are reached through a two-story lobby (top) of highly reflective surfaces of glass and mirror-finish stainless steel. The sharp angle of the roof surmounting the lobby is brightly lit, its slanting surfaces shimmering with a kaleidescopic effect. The layout, finishes, and fittings of the dining space are conceived to grasp a wide view of the stark horizon. Recessed lighting, carried in stainless steel continuous soffits below the ceiling, give the room a floating effect and soften the juncture between walls and ceiling, inside and out. Down to the last knife and fork, the interiors are among Roche and Dinkeloo's finest.

PURE FUNCTIONALISM CREATES STRIKING FORM

The prime concern of a fireman is to respond quickly to an alarm in order to save property and lives, and a well designed fire station is one in which the planning decisions are predicated on that function. This new station, located in a suburb of Victoria, British Columbia, was designed with that in mind—it is totally functional and efficient, and from that grows its design quality. The most dominant form on the site is a unique 45-foot-high concrete practice/training tower. By its nature, and the nature of the site, it could not be screened from view, so the architects made it an integral feature of the station and designed it to be sculptural as well as functional.—*Janet Nairn.*

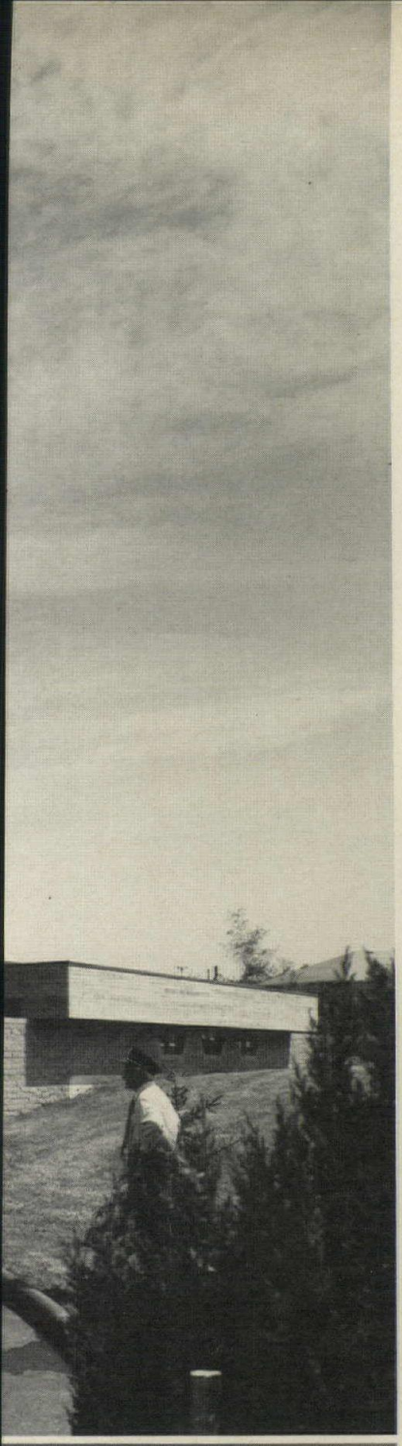
d'Estrubé Industrial Photography photos

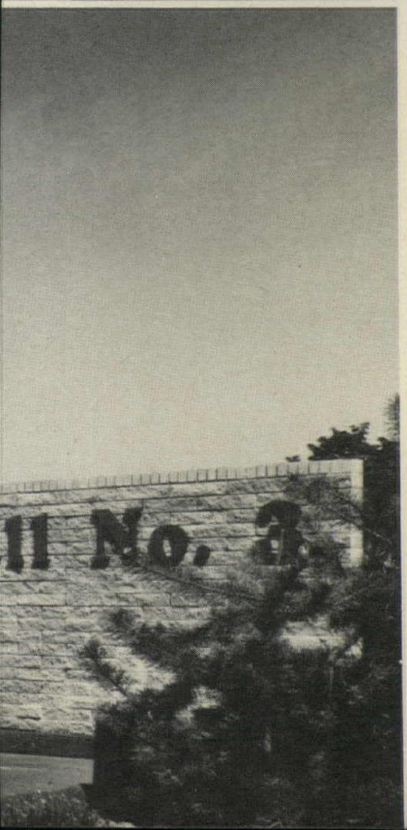


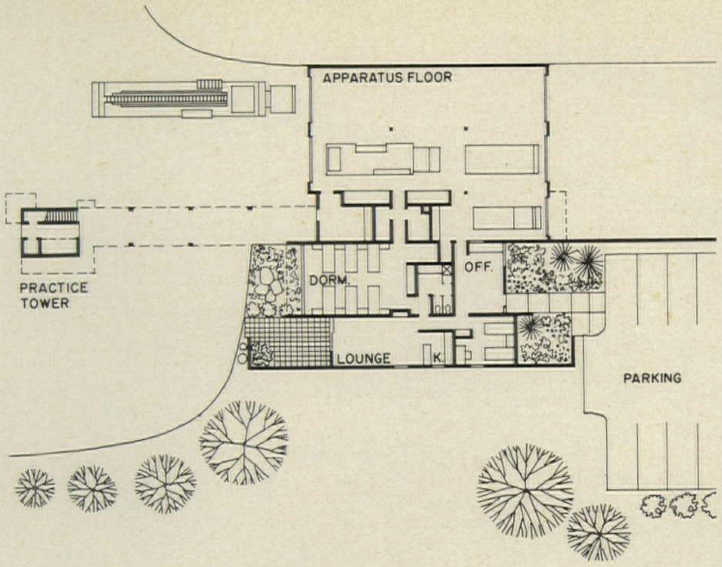


SOUTH ELEVATION

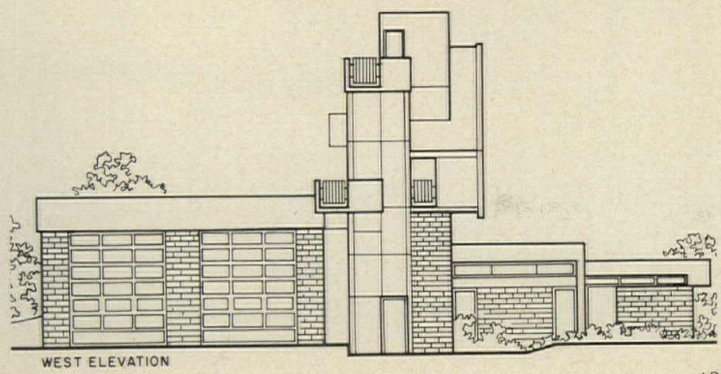

Saanich Fire







The practice/training tower simulates a multi-story building, with typical window openings, a sloping roof, high parapets, open and enclosed stairways, balconies, a "break through" door, and an open shaft used to simulate elevator shaft fires and smoke inhalation escapes. A 60-foot covered walkway, connecting tower and station is not only an important visual element, but provides a protected place for rolling the 50-foot lengths of hose and—with its high parapet—is used for ladder practice. The area surrounding the tower drains to a sump pump which recycles water during practice sessions and times of community water rationing. The shape of the site, the desire to save the only tree on it, and the need for maneuvering room around the tower determined the linear nature of the station. While the extension wall (right in plan, photo lower left) visually reinforces this, it also separates the parking area, giving a clear path for fire engines responding to an alarm. Roof heights step down following the function of space, from the 16-foot-high drive-through apparatus bay, to 14-foot-high ambulance/workshop bay, to 11-foot-high dormitory/lecture hall, to 8-foot-high ceiling in lounge area. Two short perpendicular corridors connect lounge and all living quarters to the apparatus bay for efficient access to trucks.



WEST ELEVATION

SAANICH FIRE HALL NO. 3, near Victoria, British Columbia. Architects: *Orme & Levinson.* Engineers: *Graeme & Murray Consultants Ltd.* (structural for tower); *B. W. Brooker Engineering Ltd.* (mechanical/plumbing); *Spratt & Associates Ltd.* (electrical). Contractor: *Dura Construction Ltd.*

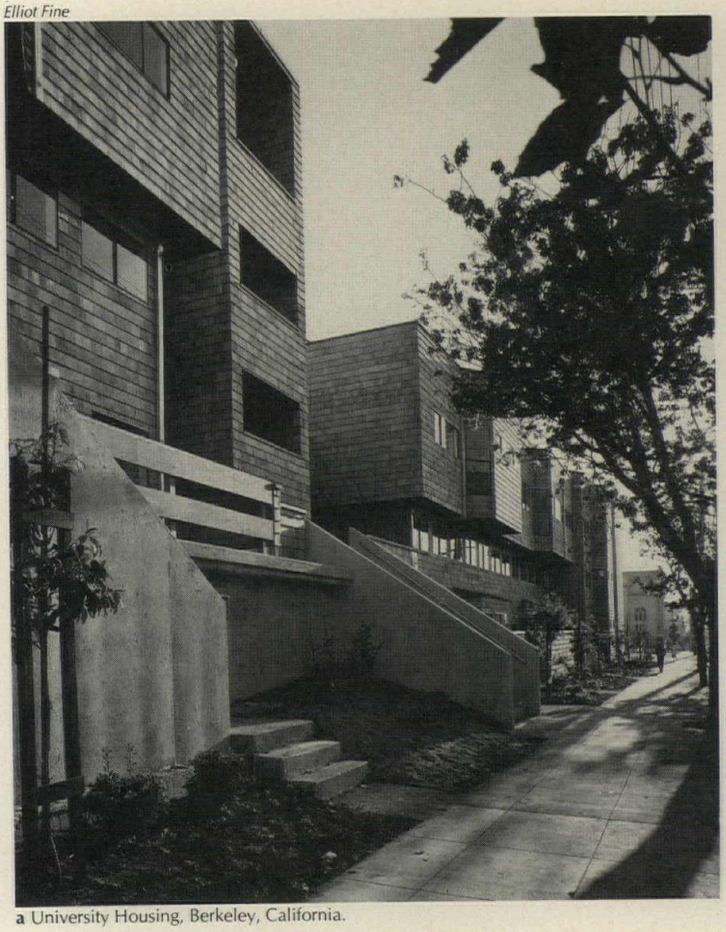
The tower's sculptural nature is here silhouetted through an apparatus-bay door. In the dormitory (lower left) folding beds allow the room to be converted into a lecture hall for training and community education programs. The apparatus floor (lower right) is open, free of posts which could become obstacles to firemen running to trucks in an emergency. Its high, unobstructed ceiling can accommodate the newest equipment. To increase this area's use, light fixtures were placed so light would fall on work area between trucks, and the bay is heated on a separate zone. Recessed open closets permit quick access to "turn out" gear—helmets, boots and coats. Speakers throughout the station relay alarm information; and an intercom system notifies men in training area.

DENSITY: THE ARCHITECT'S URBAN CHOICES AND ATTITUDES

by Herbert McLaughlin

There's an assumption that high-density housing, built on expensive urban land, must by definition be high-rise. In this controversial article, San Francisco architect Herbert McLaughlin argues that this is not the case, that urban housing is often built high-rise not because it has to be, but because architects and clients assume it should *be. In the essay that begins overleaf he seems to prove his point that "high-rise density" can often be achieved with low-rise buildings, and that cities—and the people who live in them—would be better off for it. First, though, McLaughlin poses some comparative tests, the first of which is below. Which project has the higher density . . . ?*

Elliot Fine



a University Housing, Berkeley, California.

Joshua Freiwald

b Twin Parks Northeast Site 2, Bronx, New York.

	a	b
Ratio: Occupied square feet per square foot of site	**1.51**	**.6**
Ratio: Sq ft of recreation space per occupied sq ft	**.035**	**.097**
Cost of structure per occupied square foot	$33.01	$44.62
Cost of land per occupied sq ft		
. . . if land is $300,000/acre	$5.84	$5.97
. . . if land is $600,000/acre	$11.68	$11.94
Total cost per occupied sq ft		
. . . if land is $300,000/acre	**$38.85**	**$50.59**
. . . if land is $600,000/acre	**$44.69**	**$56.56**
Ratio: Adjusted net to gross	84.01%	84.5%

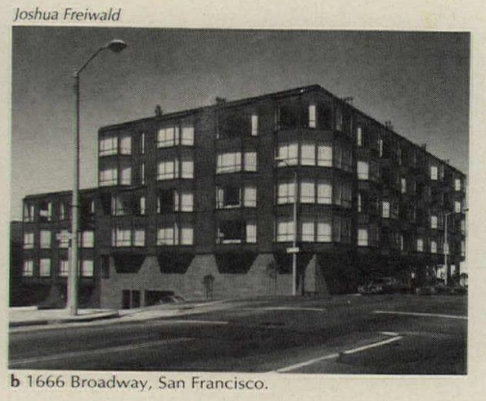
If underground parking is provided at one car per 1000 occupied sq ft, @ $5,000/car (or an added cost of $5/occupied sq ft), and assuming same ratio of recreation area to occupied sq ft . . .

Ratio: Occupied square feet per square foot of site	1.51	2.12
Total cost per occupied sq ft		
. . . if land is $300,000/acre	$43.76	$54.09
. . . if land is $600,000/acre	$49.60	$58.56

Ezra Stoller © ESTO

a Twin Parks Northwest, Bronx, New York.

Joshua Freiwald



b 1666 Broadway, San Francisco.

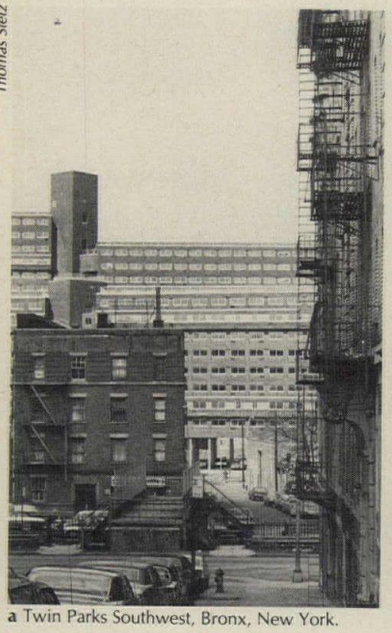
Which project has the highest density? Wrong. See the tables . . .

	a	b
Ratio: Occupied square feet per square foot of site	**3.02**	**3.07**
Ratio: Sq ft of recreation space per occupied sq ft	**.037**	**.021**
Cost of structure per occupied square foot	$45.46	$34.04
Cost of land per occupied sq ft		
. . . if land is $300,000/acre	$3.14	$2.88
. . . if land is $600,000/acre	$6.28	$5.76
Total cost per occupied sq ft		
. . . if land is $300,000/acre	**$48.60**	**$36.92**
. . . if land is $600,000/acre	**$51.62**	**$39.80**
Ratio: Adjusted net to gross	82.92%	85.63%

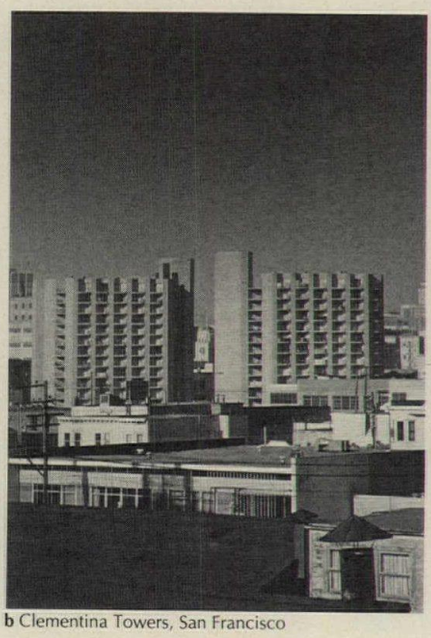
If underground parking is provided at one car per 1000 occupied sq ft, @ $5,000/car (or an added cost of $5/occupied sq ft), and assuming same ratio of recreation area to occupied sq ft . . .

Ratio: Occupied square feet per square foot of site	2.94	3.90	3.07
Total cost per occupied sq ft			
. . . if land is $300,000/acre	$57.72	$52.59	$41.67
. . . if land is $600,000/acre	$60.94	$55.20	$44.54

Thomas Stetz



a Twin Parks Southwest, Bronx, New York.



b Clementina Towers, San Francisco

Merg Ross

c Pacific Heights Place, San Francisco.

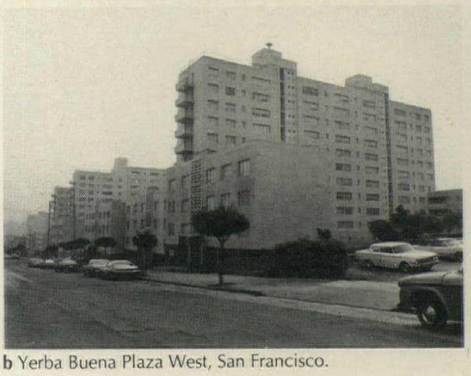
Guess again. You're probably right, but you're still surprised

	a	b	c
Ratio: Occupied square feet per square foot of site	**2.66**	**2.21**	**2.56**
Ratio: Sq ft of recreation space per occupied sq ft	**.049**	**.110**	**.030**
Cost of structure per occupied square foot	$48.00	$47.88	$32.23
Cost of land per occupied sq ft			
. . . if land is $300,000/acre	$3.55	$4.27	$3.38
. . . if land is $600,000/acre	$7.10	$8.55	$6.77
Total cost per occupied sq ft			
. . . if land is $300,000/acre	**$51.25**	**$52.15**	**$35.61**
. . . if land is $600,000/acre	**$55.10**	**$56.43**	**$39.00**
Ratio: Adjusted net to gross	78.55%	78.74%	85.16%

If underground parking is provided at one car per 1000 occupied sq ft, @ $5,000/car (or an added cost of $5/occupied sq ft), and assuming same ratio of recreation area to occupied sq ft . . .

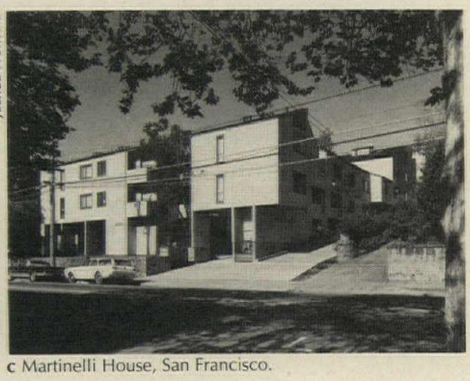
Ratio: Occupied square feet per square foot of site	3.07	2.65	2.56
Total cost per occupied sq ft			
. . . if land is $300,000/acre	$56.09	$56.43	$40.56
. . . if land is $600,000/acre	$59.18	$59.99	$41.34

a Martin Luther King Square, San Francisco



Dan Chu

b Yerba Buena Plaza West, San Francisco.



Joshua Freiwald

c Martinelli House, San Francisco.

These buildings look very different—but you guessed it

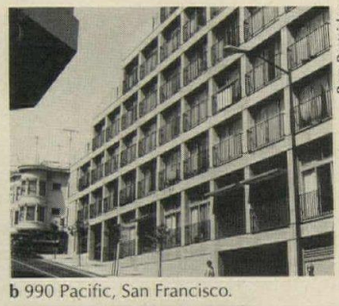
	a	b	c
Ratio: Occupied square feet per square foot of site	**1.02**	**1.28**	**1.19**
Ratio: Sq ft of recreation space per occupied sq ft	**.216**	**.11**	**.062**
Cost of structure per occupied square foot	$28.13	$48.24	$31.86
Cost of land per occupied sq ft			
. . . if land is $300,000/acre	$8.55	$7.19	$7.32
. . . if land is $600,000/acre	$17.10	$14.39	$14.64
Total cost per occupied sq ft			
. . . if land is $300,000/acre	**$36.68**	**$55.43**	**$39.18**
. . . if land is $600,000/acre	**$45.23**	**$62.63**	**$46.50**
Ratio: Adjusted net to gross	93.53%	71.06%	82.50%

If underground parking is provided at one car per 1000 occupied sq ft, @ $5,000/car (or an added cost of $5/occupied sq ft), and assuming same ratio of recreation area to occupied sq ft . . .

Ratio: Occupied square feet per square foot of site	1.23	1.62	1.19
Total cost per occupied sq ft			
. . . if land is $300,000/acre	$40.19	$58.92	$44.18
. . . if land is $600,000/acre	$47.26	$64.61	$51.50

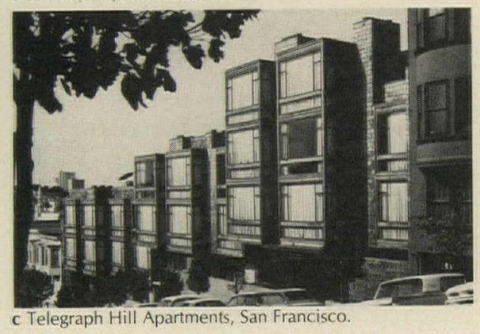
Ezra Stoller © ESTO

a Twin Parks Northeast Site 8, Bronx, New York.



Ron Partridge

b 990 Pacific, San Francisco.



c Telegraph Hill Apartments, San Francisco.

There's a moral: high-rise—and low-rise—can both be high density

	a	b	c
Ratio: Occupied square feet per square foot of site	**2.03**	**1.86**	**1.93**
Ratio: Sq ft of recreation space per occupied sq ft	**.022**	**.032**	**.023**
Cost of structure per occupied square foot	$48.63	$51.44	$30.74
Cost of land per occupied sq ft			
. . . if land is $300,000/acre	$4.65	$5.03	$4.47
. . . if land is $600,000/acre	$9.31	$10.06	$8.94
Total cost per occupied sq ft			
. . . if land is $300,000/acre	**$53.28**	**$56.47**	**$35.21**
. . . if land is $600,000/acre	**$57.94**	**$61.50**	**$39.68**
Ratio: Adjusted net to gross	77.52%	73.29%	85.6%

If underground parking is provided at one car per 1000 occupied sq ft, @ $5000/car (or an added cost of $5/occupied sq ft), and assuming same ratio of recreation area to occupied sq ft . . .

Ratio: Occupied square feet per square foot of site	2.03	1.86	1.93
Total cost per occupied sq ft			
. . . if land is $300,000/acre	$58.28	$61.47	$39.87
. . . if land is $600,000/acre	$62.94	$66.50	$44.34

The conventional wisdom which says that high-rise towers provide relatively high densities and therefore compensate for high land costs is nonsense. The examples on the left and on the previous page compare 10- to 18-story housing projects with others of three to four stories, and they show that the appearance and the realities of density are deceiving. In typically crowded urban neighborhoods, the same densities can be achieved with *either* type of building, but in a low-rise a usable square foot of space costs only 60 to 70 per cent of what one in a tower costs—even if land is quite expensive. The examples shown here are not loaded in favor of this principle, for many other buildings were analyzed, and they revealed generally consistent design atttitudes and densities. The projects here were selected because they are familiar to me, and because they are the work of intelligent and informed architects, who have worked skillfully to humanize the scale of their buildings. These are not examples of the anti-urban tendencies which I describe later.

In practice, modern architecture's penchant for monumental towers scattered across a site very seldom results in a ratio of more than two and a half square feet of usable floor space to one square foot of site—a density that is equivalent to about 150 units per acre, and one that can be achieved in low-rise, and indeed is common in many existing four- and five-story brownstone blocks in New York City.

It is clearly preferable, both in economic and social terms, to build two low-rise projects at a ratio of two and a half square feet to one rather than a single high-rise at five to one, and this holds true even when land costs $1 million an acre—as the chart on the following page illustrates. The same chart, which posits low-rises with 80 per cent site coverage and 10- and 20-story high-rises with 50 per cent coverage (which is quite dense), shows that land costs have to reach $2 million an acre before a high-rise solution begins to produce occupied footage at the same cost as low-rise.

These findings have serious implications for architects and planners. What price LeCorbusier's tower in the park? If one starts with a cleared urban site of average cost and density, the price for new high-rise housing is approximately one-third more than for low-rise. And the operating costs (because of maintenance and taxes added to the greater debt service for a high-rise building) are almost *double*.

The implications for redevelopment agencies who have demolished old neighborhood buildings rather than rehabilitate and infill are even more appalling. Take, for instance, a typical site in San Francisco or in the Bronx in New York, well covered with three- and four-story semi-detached and row houses. If you demolish these buildings and replace them either with high- or low-rise ones, the gain in density is often minimal, if it exists at all. The cost of new buildings relative to rehabilitation soars—not only because rehabilitation is generally cheaper than *any* kind of new construction, but also because you must add the cost of demolition and the cost of interest and taxes while the land is held through the planning and construction stages (which as we all know

can drag on considerably). The cost of new housing at approximately the same density as rehabilitated housing is then approximately *three* times greater. The costs in human terms of displacement are too well known to merit further discussion.[1]

Why then do architects go on designing towers? Because clients tell them to? Because they seem to provide views and open space? Because they achieve what is felt to be an appropriate urban lifestyle, or because they seem appropriately monumental or institutional? Or because they make a separate urban architecture (whether high- or low-rise) that seems to be disturbingly harsher than its suburban equivalent?

Analytical methods and assumptions defined: I have defined density as the ratio of occupied square feet in a building to square feet of site, rather than using the more common statistic of units per acre. Units, after all, vary in size and efficiency, so it is the occupied square feet that represent the final product.

The number of occupied square feet has been factored to adjust for the efficiency of net to gross ratios of various unit types by from three to seven per cent.

The net occupied square footage is livable area, including related interior and exterior walls. The gross square footage adds to that corridors, stairs, elevators and major duct shafts.[2] It also includes community space, which was surprisingly uniform from development to development. The take-offs favored high-rises slightly, in that plumbing shafts, which are much larger in these types of buildings, were included in net, rather than gross, square footage. Balconies used for circulation were counted at one-third of their square footage in the gross; balconies for private use were not counted in either net or gross.

In our calculations, outdoor recreation space includes patios, playgrounds and the like; circulation paths were excluded. But (worthwhile question) how much outdoor space is really used? Most experience indicates that relatively little of it is used, except for circulation. This is obviously more true in projects which exclude children, in which .02 to .03 square feet of recreation area per occupied square foot may be suitable. But even in projects that house a goodly number of children, recreation space in excess of .08 square feet per square foot of occupied space is generally superfluous. Adjacent streets and neighborhood parks are often preferred even when this amount of space is provided within the project. Private outdoor spaces, however, I feel are valuable. They are not often provided—though the Martin Luther King Square in San Francisco (shown on the previous pages) has them for 60 per cent of the units and they comprise 60 per cent of the recreational land on the site.

The figures we have used for construction costs and, to a certain extent, for "soft" costs are on the high side, but in any event they reflect proportional differences. Construction costs are calculated on gross square feet and are universalized to San Francisco in 1976; they assume a standard level of finish. They are categorized as follows: three-story, $22 per square foot; four-story, $24 per square foot; mid-rise, $30 per square foot.[3] Obviously, differentials in these costs will vary from place to place. For instance, in New York City there may be less difference between the cost of three-story and mid-rise construction because of the building codes that apply to both. But the cost spread between types should hold true generally.

It is nevertheless important to remember (as many architects fail to do) that construction costs alone are no indication of real cost. Real costs also include the "soft" costs—which vary according to construction time and include interim financing, taxes and, often, carrying costs; they increase with the height of the building, since higher buildings take longer to design and construct.

Thus the real costs used here (the "soft" costs added to construction costs) are: three-story, $26.31; four-story, $29.15; mid-rise, $37.70.

The purchase price of land has been calculated for two levels of land cost in urban areas: $300,000 and $600,000 per acre. Added to these are the "soft" costs of the land (taxes, holding and interim financing) over the typical design-and-build times for each building height. Thus the real land costs we have used for land at $300,000 an acre are:

Three-story, 1.7 years to design and build $378,668

Four-story, 1.9 years design and build $388,288

Mid-rise, 2.4 years design and build $412,320

For land at $600,000 an acre the real costs are:

Three-story, 1.7 years design and build $757,335

Four-story, 1.9 years design and build $776,415

Mid-rise, 2.4 years design and build $824,640

These costs, and the way of looking at them that I have described, reflect my experience as a developer.

Public agencies may claim that their economics are different—that they do not have to pay the cost of interest on land while they are holding it, or pay taxes. While this may sometimes be true, somebody ultimately *does* pay, and it is usually you and I as we fund the interest on the national debt with our taxes.

Why build high-rise?
The comparisons on the previous pages show that architects and clients alike have the power to manipulate both the appearance and the cost of their buildings in surprising ways. How and why do they do so? What is the pattern of these manipulations?

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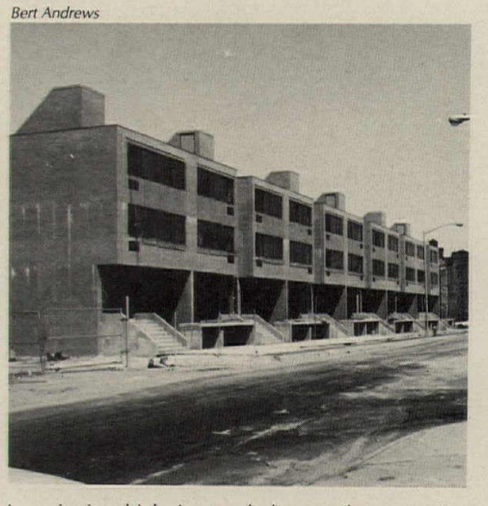
[1] I want to thank the Minnesota Society of Architects, whose invitation to speak at their convention gave rise to this article. I would also like to thank Ned Eichler, now in charge of Levitt Homes, and Martin Fenton of Christiana Corporation, who first led me to this sort of analysis in hospitals and housing, and George Miers, who worked on the analyses with me.

[2] Inevitably there are slight errors in square footage take-offs, and cost analyses are simplistic; they nevertheless reveal patterns which I feel are valid.

[3] We have not, for purposes of these comparisons, taken into account the difference in construction costs between a five-story mid-rise and a 17-story one, though of course the latter would be higher.

Building type	Cost per occupied square foot	Ratio of occupied square feet to square feet of land	Cost per square foot with land at $300,000	Cost per square foot with land at $600,000	Cost per square foot with land at $1 million	Cost per square foot with land at $2 million
Two-story	24.91	1.36	30.98	37.07	45.18	65.44
Three-story	30.94	2.04	35.21	39.49	45.18	59.42
Four-story	34.29	2.71	37.57	40.85	45.22	56.16
Mid-rise, 10 stories	44.35	4.25	46.57	48.79	51.75	59.15
Mid-rise, 20 stories	47.31	9.5	48.54	49.78	51.43	55.54

Bert Andrews



Low-rise in a high-rise vocabulary can be oppressive too, and its appearance of density as deceiving, as in the Marcus Garvey Housing, New York.

Forms associated with high density are consistently used in cities, whether they in fact produce those densities or not, and despite their costs. Whether high-rise or low-rise, these forms—in heavy contrast to their suburban counterparts—are massive, sheer, large-scale, blank and regular. They are now deemed *appropriate* urban forms, and they carry with them important connotations. They seem to *signal* density, and therefore urbanity, even when they are not dense; and they make an architecture with associations of harshness, starkness and even hostility, which stands in contradiction to architects' loudly professed humanity.

This implied linking of architectural forms and social behavior may seem facile. Do the forms themselves shape behavior? Or are they merely the expression of social attitudes that already exist and that are in turn the real root of the problem? Unfortunately, the research of an increasing number of environmental psychologists—like Oscar Newman in *Defensible Space,* David Dornbusch in *The Impact of High-Rise Development on San Francisco* and J. L. Freeman in *Crowding and Behavior*—suggests not only that certain architectural forms facilitate certain kinds of behavior, but that they *suggest* it—so that, for instance, one feels that one *should* relate to the street and be responsive to it from a low-rise building, and that one *should not* from a high-rise.

Once imbued with a sense of excitement and romance, the modern city is now, in the popular imagination, a place of crime and depression. "New York, New York, it's a wonderful town" no more, and the architecture shows it. We have moved from the exuberance and individuality of Rockefeller Center and the Chrysler Building to the anonymity of the World Trade Center and Chase Manhattan Plaza, whose excellences, differences and pleasures seem things to be savored only by architects and a few other other sophisticates. But the *image* of places like these—looming, cold and oppressive—has now become the popular image of the city in most people's minds, replacing more traditional images of small-scale markets and row houses.

Paddling along on these currents of association, the architect identifies much the same urban forms as everybody else—except he ignores the fact that almost everybody else dislikes and mistrusts them. Indeed the architect more often than not chooses to *exaggerate* those very aspects of form which create popular perceptions of density and therefore anonymity and therefore alientation. Contemporary urban architecture has an aura about it which is almost punitive. A city image of barren plazas and stark buildings emerges, and to some it approaches the most autocratic concoctions of Mussolini.

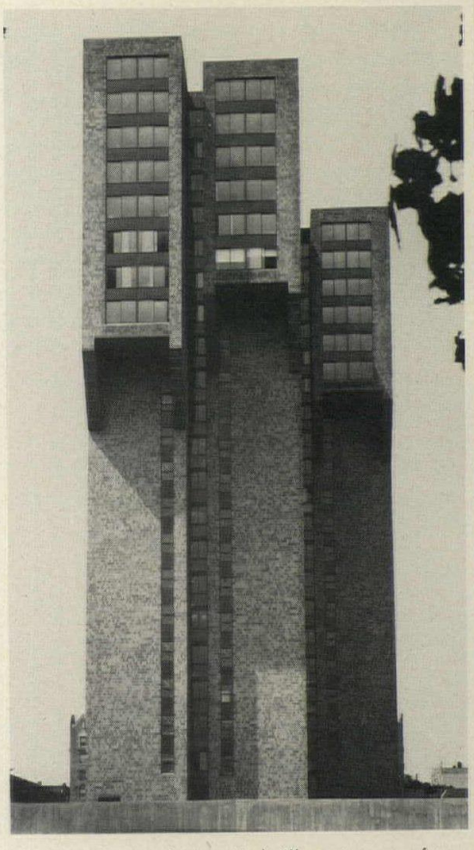
Architects are certainly uncomfortable with the charge that they view the modern city so harshly, and defenses and rationalizations set in in an attempt to explain away the urban antagonisms their designs reveal. But, as we have seen, economic explanations fail to explain the choice of high-rise vs low-rise. So perhaps "rigid and harsh" designs are justified by a need for the image of order and clarity in the otherwise chaotic lives of the occupants: the masses must all get in step with our rational, industrial, managerial times. No matter whether they like it or not, it is the modern *style.* We cannot return to cottage industry, or to rural romance. Architects thus remain, in my view, the irretrievable prisoners of Bauhaus ideology of the '30s, an idealization of industry and technology and order that is at best unappealing to most people—including, it should be noted, architects themselves, who show a notable preference for the small scale and the renovation in their own offices and houses.

The unpopularity of present-day urban design is explained away with reference to only a few special cases. Pruitt-Igoe is often mentioned, and its failure is said to be an inappropriate (but singular and forgivable) misfit of architecture and a particular life-style. The argument is that everything is basically all right—"We just made a few understandable, dreamers' mistakes about some details." "Call in some social scientists; tinker with a misplaced piece of architectural enthusiasm; eliminate the *piloti;* use common brick rather than raw concrete—and we will move right along." "Our basic direction is humane and popular; it is only a few details which require examination." This is so much bushwa.

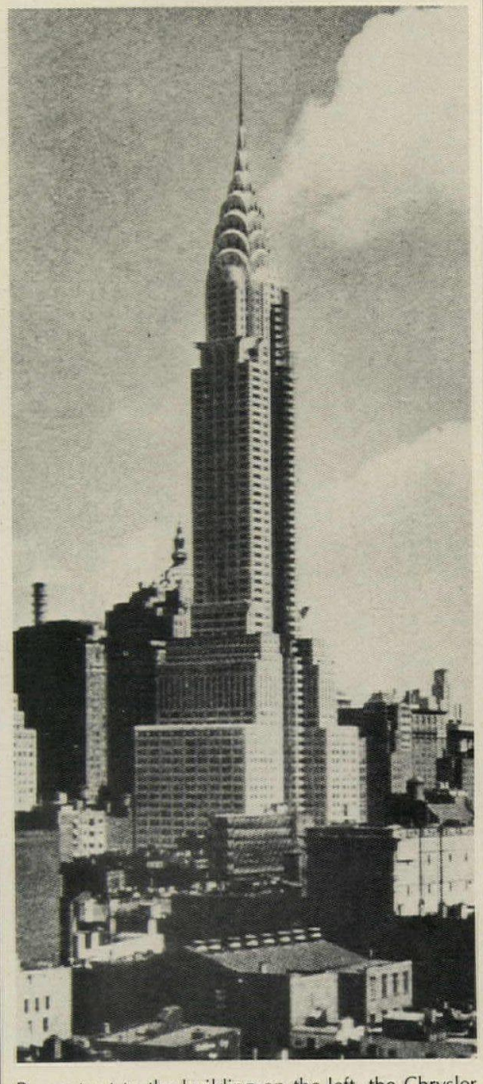
The failure of projects like Pruitt-Igoe is, of course, instructive at a number of levels, and one of them is the narrowly selective recognition of its failures by architects. They regard it as an isolated, peculiar event that has little relevance to the broad range of their work.

The real problem is that the city is now seen as the focus of poverty, crime and the modern corporation, and an urban architecture has been evolved to suit this view—an architecture of lifeless boxes and plazas for both offices and housing. In fact, though, contemporary design offers a wide range of choices of style (if not of philosophy), and the architect is free to take them as he will.

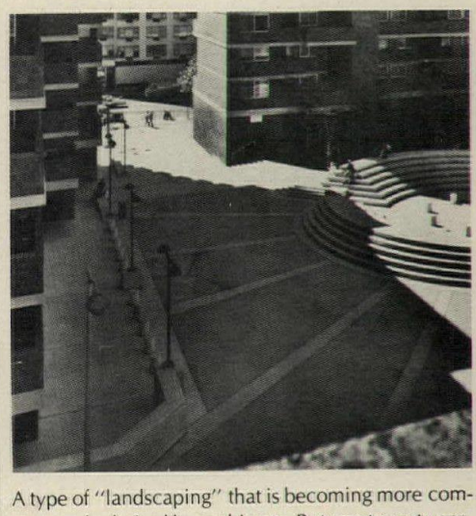
Irregularity and informality are generally seen as possibilities only for the suburbs (or for architects' own offices, or for renovations).



2440 Boston Road, New York, illustrates one of contemporary architecture's current fancies—exaggerating a building's mass at the top.



By contrast to the building on the left, the Chrysler Building makes light of its mass as it soars gently up to the final spire on the top.



A type of "landscaping" that is becoming more common and admired by architects. But can tenants possibly relate to it?

Why not for the city as a whole? Why can't the city be a place for joy? Urbanity can mean adventure, choice and delight.

Admittedly these qualities have diminished in the city lately, and perhaps in the culture as a whole. But it is not to the architect's credit that he exaggerates and celebrates this trend. It is clear that we badly need an urban architecture that denies density and—insofar as density is a symbol for harshness and anonymity—denies those qualities as well. Fortunately, as we have already seen in part, achieving actual density while diminishing the *sense* of density is not difficult.

High-rise/low-rise

Obviously the most important decision is in the selection of the over-all form. Enough has already been said on this issue, here and elsewhere. It is worth adding, however, that a low-rise solution does not in itself guarantee a sense of intimacy and community. New York State's Urban Development Corporation recently sponsored research into and construction of low-rise housing. The resulting schemes were much talked about as a "new direction." But one of the results, which is shown on the previous page, with its regularity, rigidity, stiff formalism and heavy, detail-less masses merely manages to *seem* more dense than many of the other low-rise projects shown earlier here. Actually it is of very low density, less than one square foot of occupied space for each square foot of site. These buildings were also reportedly very expensive to construct—perhaps because of the basically high-rise nature of the construction methods and the extraordinary number of stairs involved in the design. It is well to note this example, since low-rise obviously does not guarantee low cost when not carefully designed.

Surprise and the absence of diagram

Contemporary architecture is, of course, strongly diagrammatic. The intent of the designer is usually to allow a complete perception of form at a glance. But most people seem to perfer the experience of the unforeseen, the peculiar, the odd; they do not want to gulp it all down at once. There is an uneasiness created by strong, clear and total "statements"; their lack of complexity does not respond to most people's needs.

Concealment of mass

Higher buildings *can* be hidden behind lower buildings, particularly along a street. This notion, however, runs counter to the architect's instinct to monumentalize his building by presenting the largest mass most prominently, often with a plaza as a foreground.

The upper stories of a building can be diminished. In residential low-rise, this is often accomplished with the developer's unfortunte bastardization of the Mansard. But it works, as does the ideologically more acceptable pitched roof with dormers. On a larger scale, the skyscrapers of the twenties, capped by romantic spires which de-emphasize mass, contrast vividly with Modern architecture's lopped-off cubes or, worse, the Brutalist tendency to exaggerate mass at the top of a structure.

Ground relatedness

The removal of the building from the ground through *piloti* or with a plaza is a peculiar feature of contemporary buildings, but it does not have to be. Buildings can seem to embrace the earth—and hills can be created to cradle the structure. Earth moving is one of the few construction technologies that has remained relatively inexpensive.

Not all housing residents, of course, will want the same relationship to the ground; experience shows, for instance, that most families want to be near the street or a yard, while people living alone often prefer a small, shared public hall between themselves and the outside. But *all* seem to prefer a building that expresses closeness to the earth rather than to a blank concrete plaza, and they prefer to be in possession of some kind of outdoor space, whether balcony or yard.

Irregularity of forms

Techniques for achieving success here are difficult to describe because the results can so easily be capricious. How does one go about designing a Georgetown from scratch? Clearly most architects don't know—and when they have tried, the results have often been disastrous enough to make us all return gratefully to formalism. One reasonable approach would be never to allow a single architect to do more than 100,000 square feet or 10 per cent of any community—whichever is less.

Subduing the "statement"

Users want to possess "their" buildings. And when a building is clearly a statement of someone else's will and personality, possession becomes difficult. Time can dull an overly strong statement, as successive users place their imprints on a building, but from the beginning things like ground-floor shops, balconies and outdoor spaces provide for individual expression on the part of the individual inhabitant as he claims a part of the building for his own personal use.

Some generic solutions

Obviously, certain approaches to sites are very much more efficient than others, and this is a subject of continuing inquiry in our own office. Some notes follow.

A typical New York brownstone block is very dense, and if the houses are five-stories-high, a density ratio of about 2.6 square feet of occupied space for each square foot of site can be achieved, including allowances for setbacks on the upper floors. These blocks, and ones like them in San Francisco and other cities, provide in many ways a model for handling a typical rectangular site.

A typical Manhattan lot is 100 feet deep, and the houses are 50 to 60 feet deep, frequently with half-width two-story projections at the rear *(Figure 1)*. Brownstone blocks in New York do not contend with parking, but actually a garage can represent an opportunity to provide variety on a site. *Figure 2* shows one possibility.

Scattering long, narrow building masses along the site (the more common, if illogical, contemporary site planning practice) is relatively inefficient *(Figure 3)*. It stems, one suspects, from the deeply ingrained and peculiarly American tradition of single-family housing and the concomitant attractiveness of the small-scale monumentality that separate buildings can possess.

The rules for achieving high densities in low-rise are simple. Develop blocky masses and press them to the boundaries of the site; maximize the length-to-width ratio of courts. If such a form seems unappealing as a diagram, remember the many ways that actual density can be concealed—just as, the other way around, the false appearance of density can be created in a high-rise.

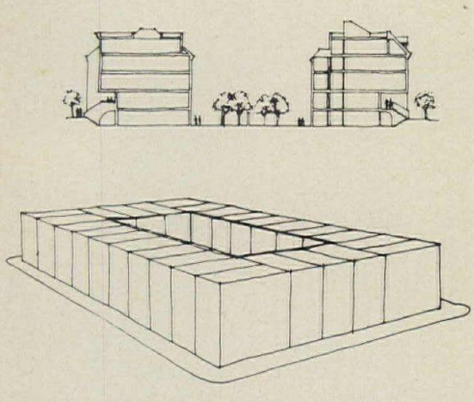


Figure 1 (above) Section through houses arranged like a typical brownstone block in Manhattan. (below) View of entire block.

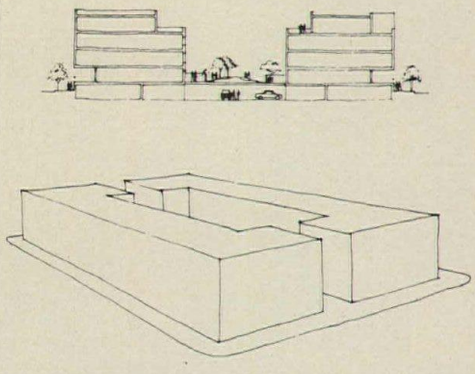


Figure 2 The two drawings show one of the possible ways for accommodating parking within the typical brownstone block arrangement.

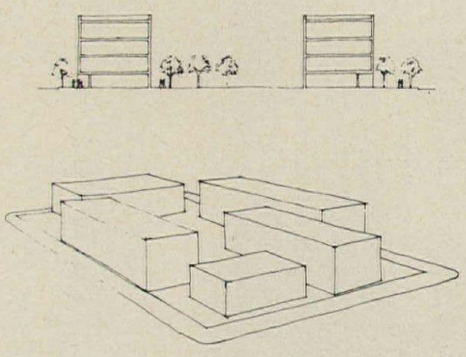
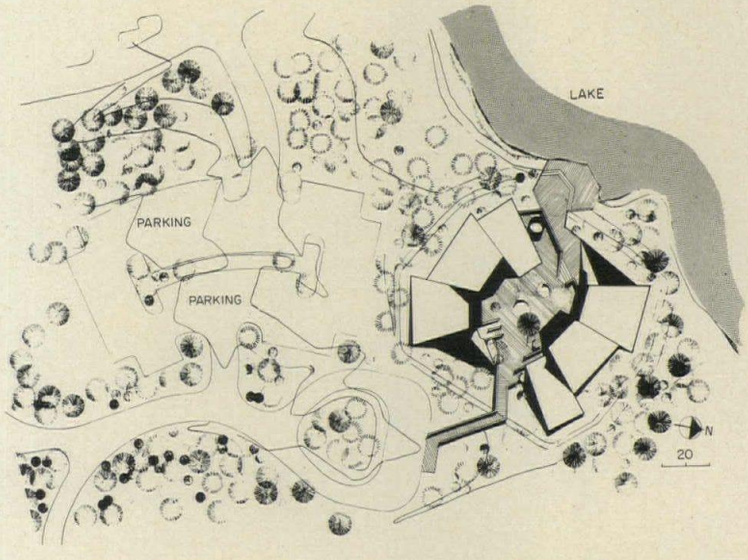


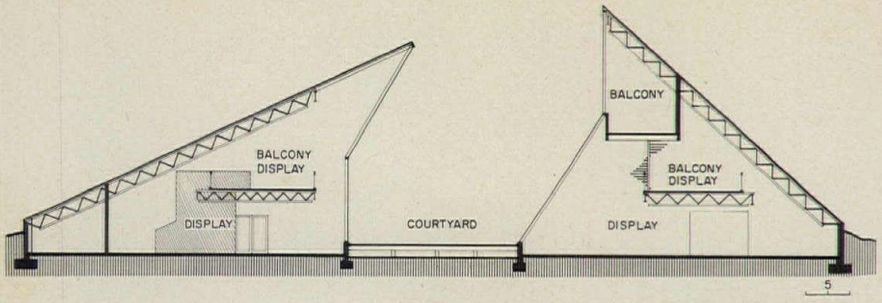
Figure 3 A less efficient (but more common in contemporary practice) way of arranging houses on a rectangular site.

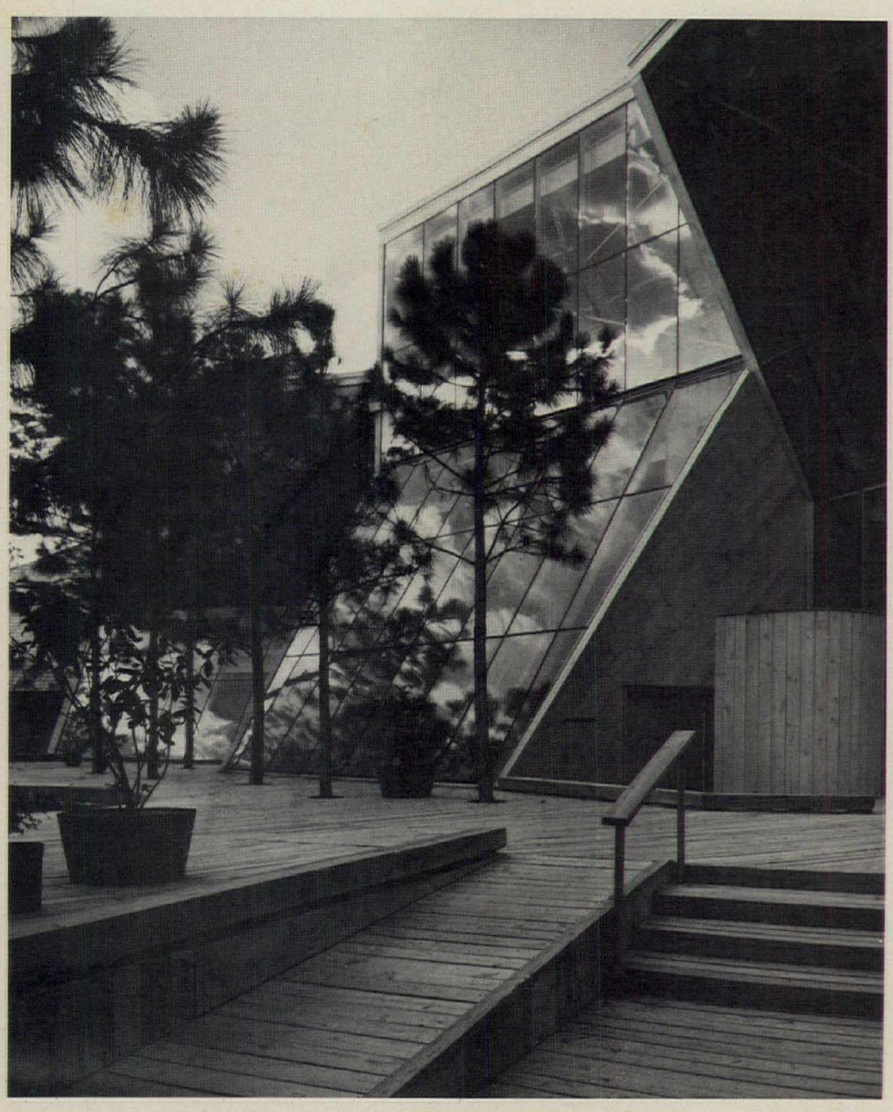
Wayne Thom photos

VISITORS CENTER FOR A NEW TOWN



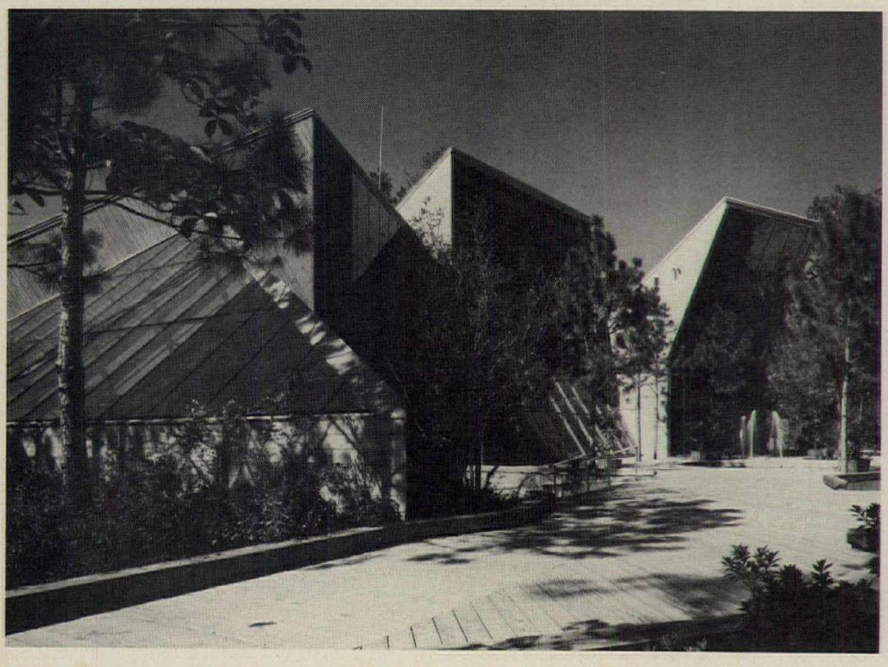
The Woodlands Visitors Center is located at the site of a new town called The Woodlands, Texas, 28 miles north of downtown Houston (RECORD, December 1973). Over a period of 20 years, 17,000 acres will be developed by a subsidiary of Mitchell Energy & Development Corporation. As part of Phase One construction, this Center, designed by architects Bennie M. Gonzales, Inc., shows (through a series of displays and multi-media presentations) what has already been constructed and what the amenities of the total community will be when completed, and affords space for the owner's sales staff. The Center, moreover, is a showcase—designed to be a visual experience for visitors.





The complex consists of two groups of buildings—each of four small interconnected buildings—nearly encircling an open, wood-decked courtyard. This cluster is set on the bank of a man-made lake, the center of initial development and important in controlling a high water table and maintaining ecological balance. The center is the first of seven town centers to be scattered throughout the development, for after the development is completed, the buildings will be converted to community use.

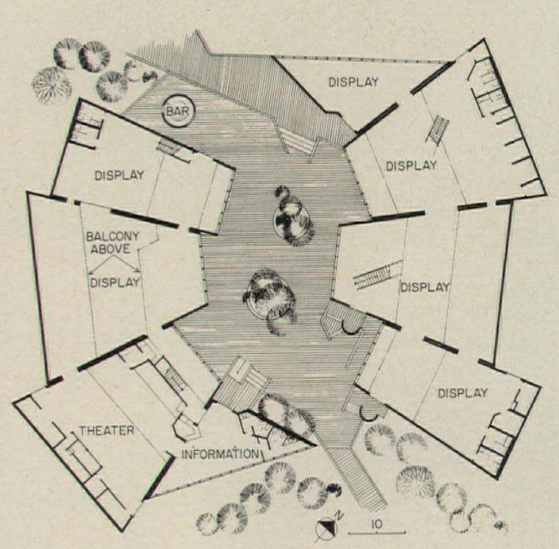
The site is heavily wooded with pine trees, and exterior materials were selected to blend with the natural area. Roofs have cedar shingles, solid walls are finished with pine, and the face of each building opening onto the courtyard is sheathed in glass. The glass walls allow those in the courtyard to see into display space, and allow those inside to see outward to the courtyard and up to tops of trees. Further, two of the buildings—the entrance information building and its counterpart across the courtyard—have glass roofs. After entering these, the visitor's attention is immediately drawn upwards, capturing the full force of the trees. The buildings' forms represent an angular abstraction of the trees, and of the shed roofs common in the area. Few trees were disturbed during construction; the foundation of pile footings permitted saving trees within a foot of the buildings. Landscaping of the courtyard included indigenous plants and pine trees. The courtyard extends in two directions—beyond the entrance, leading visitors to and from the roadway; and behind the buildings to the lake where there is a view deck and boat dock. This deck also connects with a footpath that circles the lake.



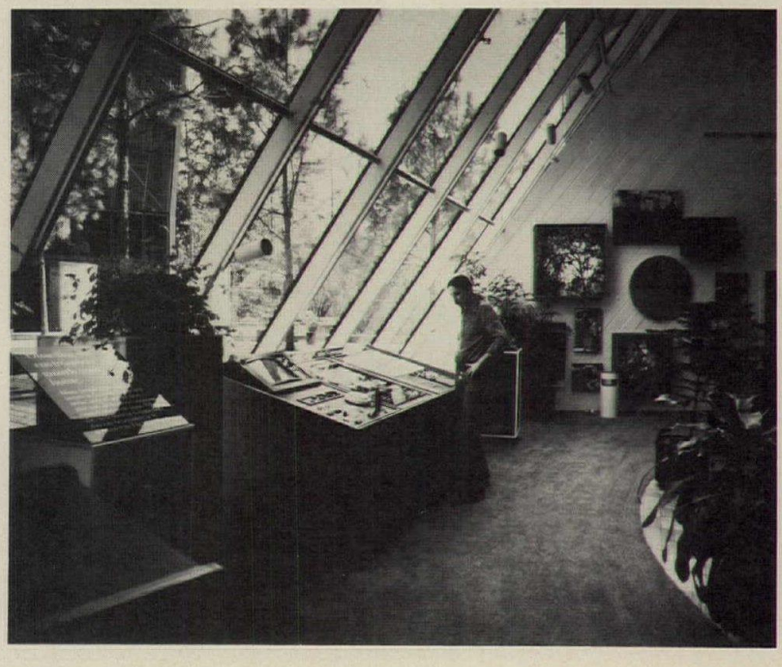
The quality of light, both in the interiors and in the courtyard, is an important aspect of the visitor's total experience. Trees surround the project and in the courtyard filter enough sunlight to not only form changing patterns of shade and light, but eliminate the need for tinted or reflective glass on buildings. Because almost all buildings have glass walls opening onto the courtyard, a show of colors and lights from displays is created outside. A different quality of light is achieved in the interiors by balancing natural light with track lighting and display lighting. Interiors are painted white, reflecting all light back and forth, down the angular walls, "softening" exposed ducts and trusses. At night, exterior lighting highlights tree branches, enhancing light flowing into courtyard from inside glass-faced buildings.

Flexibility in spaces—some open, some with balconies of different heights—allows variety in size of displays and makes all buildings easily convertible to new uses when the Center is changed to community use. Rest areas are provided throughout the Center, mostly near the glass walls (right) so the visitor's attention is drawn away from the displays to the views outside.

THE WOODLANDS VISITORS CENTER, Woodlands, Texas. Architects: *Bennie M. Gonzales, Inc.* Engineers: *Blaylock-Willis and Associates* (structural/mechanical/electrical); *National Soils Service* (soils). Consultants: *MDM* and *Invironmark* (interiors/graphics); *Bill Stokes Associates* and *Mike Kirkland* (audio-visual); *John Watson* (exterior lighting). Landscaping: *Bennie M. Gonzales, Inc.* General contractor: *Mitchell Development Corporation of the Southwest.*



Large tapestries hung from exposed trusses (above), by artist Helen Webber, add color and movement to the interiors, and are easily seen from the courtyard. After seeing the multi-media presentation in the theater, visitors are directed through a series of elaborate, architect-designed displays, organized in a logical progression, showing various aspects of the community. Large floor models show total scope of the project and Phase One construction. Other displays explain the extensive environmental studies conducted before building began, the schools, recreation centers, transportation systems, public services, the community association, commercial and business enterprises, industrial park, and builders' displays.



HOTELS

IN A SEEMINGLY SLOW FIELD, THERE ARE REALLY INCREASED OPPORTUNITIES FOR SOME KINDS OF NEW WORK— AND FOR MORE THOUGHTFUL DESIGN

1
Professionals who understand cost controls and/or efficient planning are in growing demand

2
Architects are increasingly involved on all parts of projects —including the interiors

3
The pace of design for hotels that meet special needs seems insensitive to slowdown

4
The "redesign" of existing hotels is gaining a growing share of professional practices

5
The potentials of work abroad are well established; the need is criteria

Despite Dodge's estimate that over-all hotel construction in 1975 will prove to be at less than a third of the pre-inflation value of two years back, there *will* be opportunities for architects in hotel design in 1976. Despite the previous boom in hotel construction, there are only somewhat over one million "guest" rooms in the United States. For a massive population that is increasingly mobile, the implications are obvious. On top of the positive reaction of the particularly volatile field to an anticipated general economic recovery, there are certain areas of the field that have shown no slack, some that are destined to increase (in any case) and some which—by virtue of victories for good design—will put the architect in increasing demand. Most importantly, there are things that the architect can do to make hotels feasible again. And lastly, there are things that the architect should know about the field before entering it. The various factors discussed here are listed in the left-hand column and are hence amplified, along with examples.

On practical standards, little has changed since RECORD's last comprehensive report in May, 1974 (pages 145-160). The described space innovations and program requirements are fairly constant for all types of hotels. For example, the 450-750 square feet of total area of building for each room remains the feasible minimum, and will therefore undoubtedly be the standard for some time to come. But one innovation discussed in RECORD's last report is producing increasingly positive changes in the visual quality of the ways in which these standards are met. The fact that the large, recognized hotel companies do not generally build anymore (but instead manage for other owners) means that a new breed of client is influencing the more subjective qualities of hotels. While still expecting basically efficient buildings, the new owners, sensing the keen competition for their investments, know that they will have to have products that are better than those produced by "safe formulas." The tired appearance of sameness, second-rate design, and hung-on ersatz "atmosphere" is now being questioned. And who—in a time when better quality seems increasingly out of reach—is better able to produce "something else"? That quality need not cost more if it is derived inside and out from the total building's design to begin with. Just look on the following pages.—*Charles Hoyt*

1

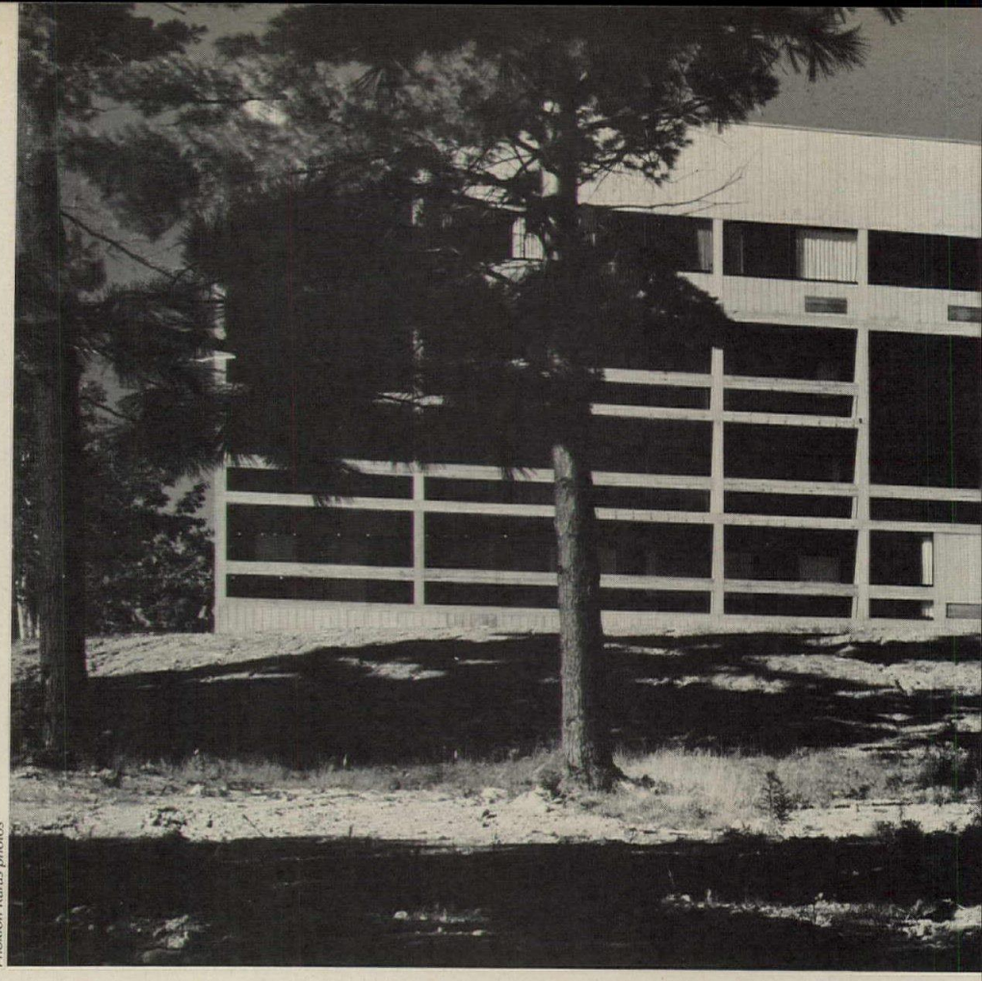
Professionals who understand cost controls and/or efficient planning are in growing demand

One thing is certain: personal incomes are not increasing at a rate that will justify the building of hotels at *any* cost in the expectation that rates for the rooms will "catch up"—which is what many owners were doing two years ago. General accommodations costing $100 per night by 1980 just are not "in the cards." Attitudes on where costs should be cut are as varied as the different approaches to management (see page 116 for an explanation of the "chains" approaches). But there are things that the architect can do to help the feasibility of a given project in any case.

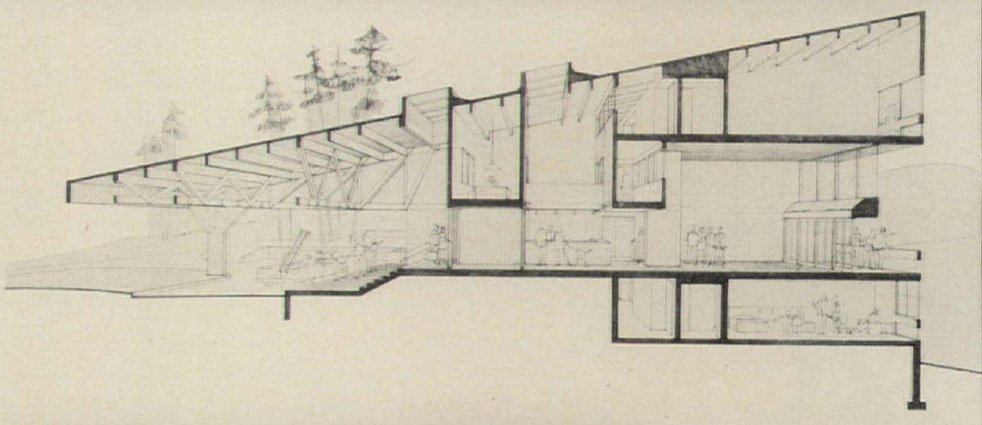
First, the professional can cut construction costs. This can be done by getting maximum efficiency out of a structural system (see page 111) or, conversely, by providing a plan that will accommodate the cheapest structural system at the time that a building is bid (see page 110); and—most basically—by understanding the goals of a particular client and eliminating the standardized but irrelevant facilities that are generally considered "necessary" (see opposite and pages 110-111). While some owners have tended to view the architect's role as "putting together the input of various consultants," knowledgeable architects will say that the lack of their control of such input can be one of the most inflationary elements of any hotel's cost.

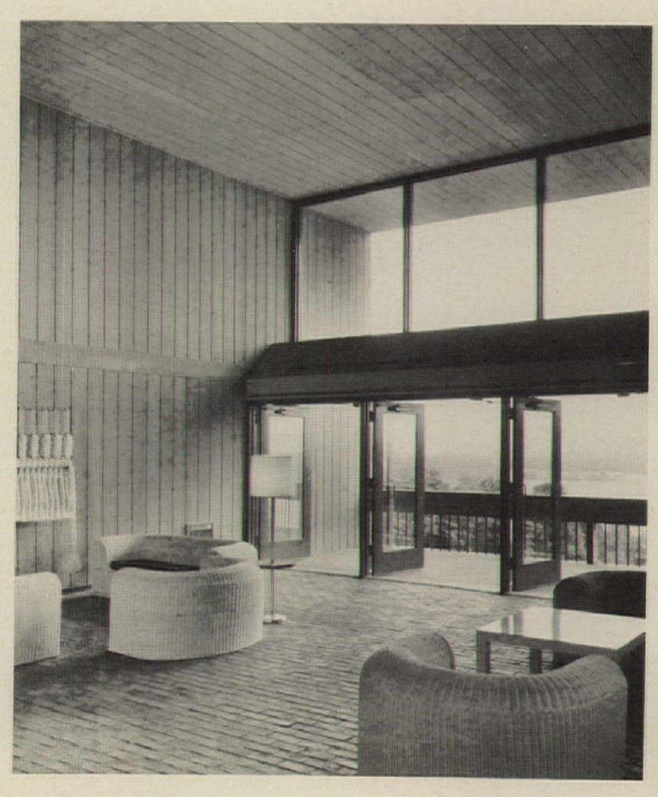
One formula for determining allowable hotel costs dictates that the total amount will not exceed $1000 for each $1 to be charged for each room—but this formula depends on variable factors, such as occupancy and income from ancillary sources. The architect can be of great influence here by understanding the intended clientele and what it takes to keep it returning for *both* the rooms and ancillary facilities (which—while generally thought to "break even" at best—can be generously productive of income if properly planned).

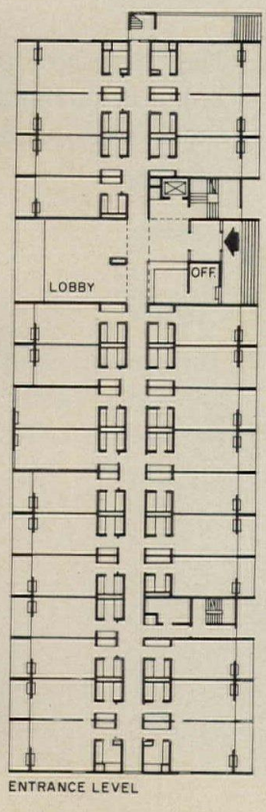
According to Thomas Hughes, whose article appears on page 112, the new hotel must be all things to all people: a convention *and* commercial facility, a resort for out-of-towners *and* a recreation center for the local community. While some of the following examples will illustrate that specialized alternatives exist, the general hotel is going to have to rely on "something special for everyone" to balance demand and keep it constantly high for the rooms and the ancillary facilities. Besides the obviously required flexibility of basic planning, the "something special" will have to offer a place that is apart from the users' regular lifestyles—the something special that "surface" designers have only been able to add to buildings at the high cost of the ersatz and the "squeezed-in."



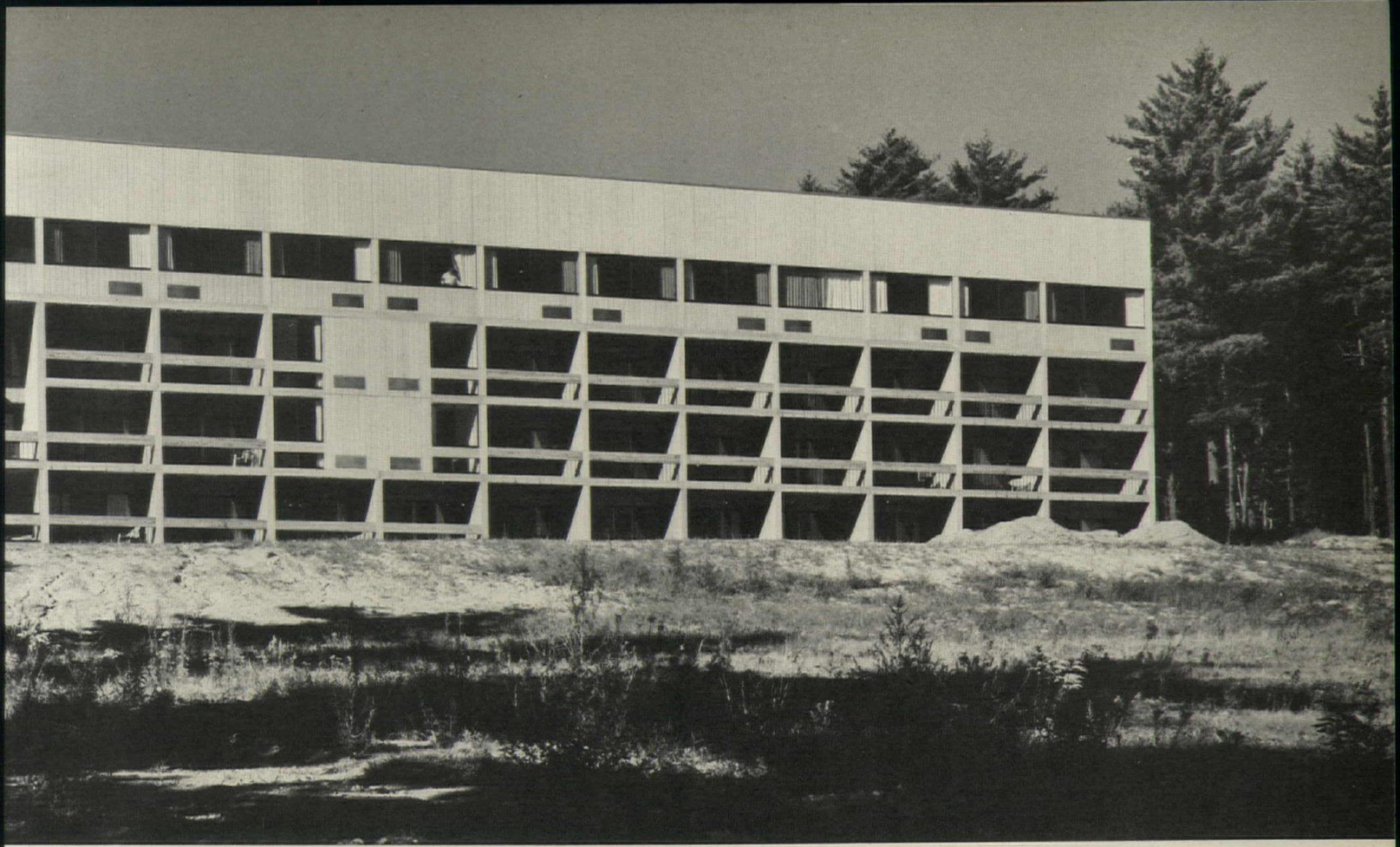
Phokion Karas photos







ENTRANCE LEVEL

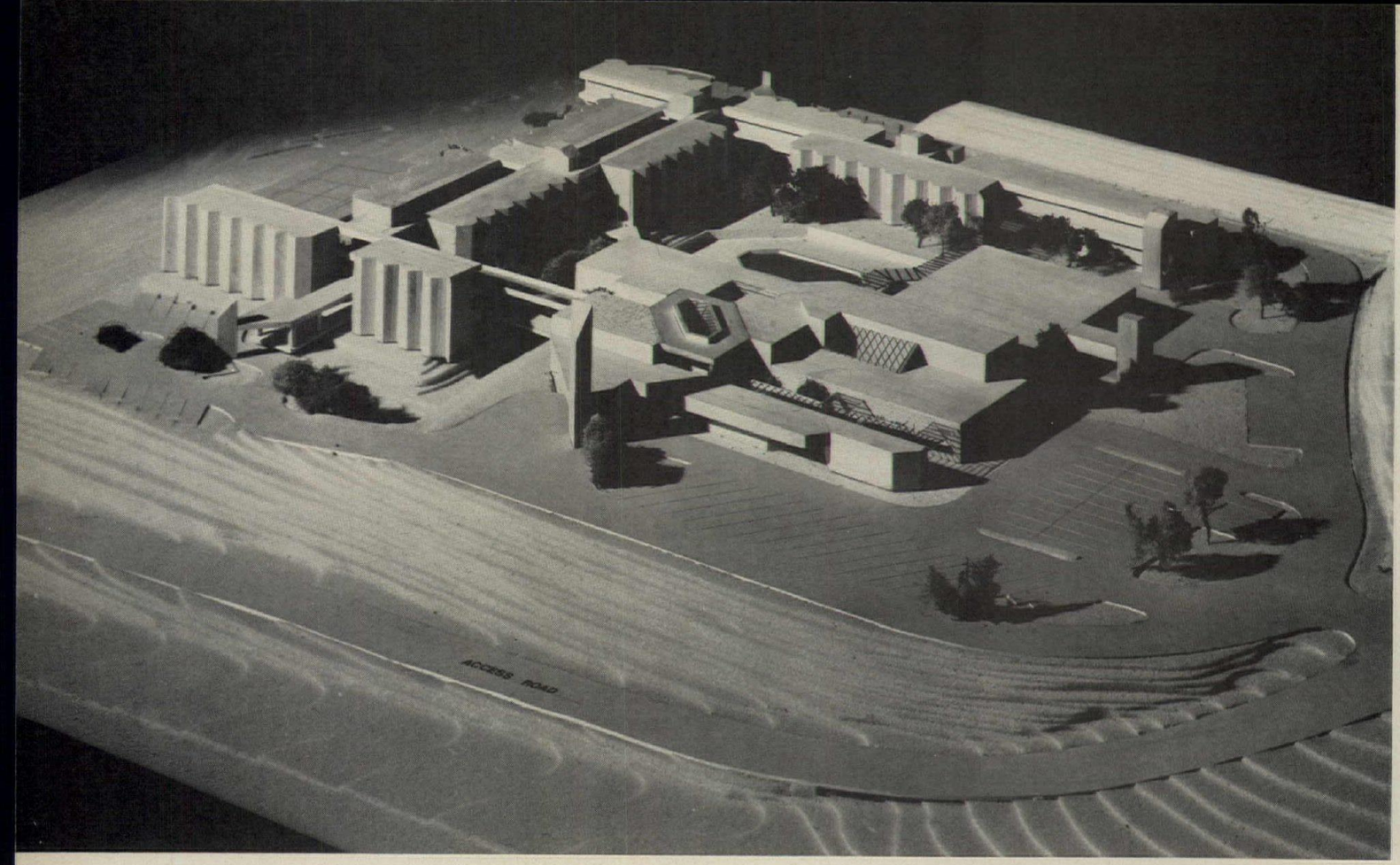


The Brickyard Mountain Inn is a basically "simple" building that utilizes a number of ways to cut costs and still offer guests an exceptional experience. Located in Weiers Beach, New Hampshire, this economically rectangular hotel by architect Kenneth DeMay capitalizes on a wilderness site overlooking Lake Winnipesaukee and—partially because of the attractions of the site—cuts non-income-producing public spaces to a minimum. The rooms are generously sized and well designed for a constant demand by vacationers (water-loving families in the summer and skiers in the winter), and some can be converted for conferences (photo, below right). They are oriented so that a maximum number can take advantage of the views. As seen in the section (opposite), the straightforward precast-concrete structure (chosen for speed of erection) is recessed into a hill, producing more floors on the side with the desirable exposure. While there is an economic double-loaded corridor on floors 2-3, floors 1 and 4 have rooms on only one side, and these all face the lake. Hence, most spaces including the bar on the top floor (below, left) are visually expanded by vistas.

The lobby (photo, opposite page) occupies an area equal to only four guest rooms, although it is given generous proportions by its height and, again, the views (see section). And it is given further importance by a skylit well that extends upwards to incorporate three levels of corridors.

While the owners desired a fireproof structure provided by the concrete framing, they also desired a rural ambiance that has been provided by the brick flooring and economical plywood sheathing along with extensive other finishes of wood. Considering the site's visual strength, the architects chose to emphasize, and thereby contrast, the building's own strong form by means of the flush exterior detailing. The contruction cost was $23 per square foot.

BRICKYARD MOUNTAIN INN, Weiers Beach, New Hampshire. Architect: *Kenneth DeMay of Sasaki, Dawson, DeMay Associates.* Engineers: *LeMessurier Associates* (structural); *Golder Gass Associates* (foundations/soils); *Francis Associates* (mechanical/electrical). General contractor: *John Deary.*

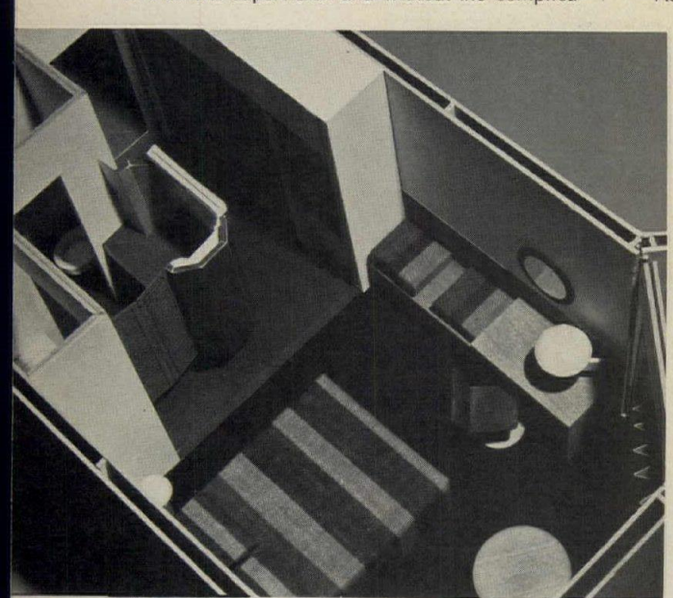


Prototype building segments offer a response to the need for low-cost facilities. Designed by architects Warner Burns Toan & Lunde; and Paulo Case, these two projects are currently under construction in Contagem (model photo above) and in Brasilia (plan, below). They are prototypes designed for Brasilton—a joint venture by Hilton International and Sisal S.A.—using standardized plans for rooms and basic support facilities, which can be joined in infinite ways to meet local demands and regional character. The object—besides providing workable standards for a non-standardized market—is to make simultaneous, high-volume construction possible for 30 to 50 hotels now planned by the owner, without extensive on-site supervision and without the complication of totally new plans for each location.

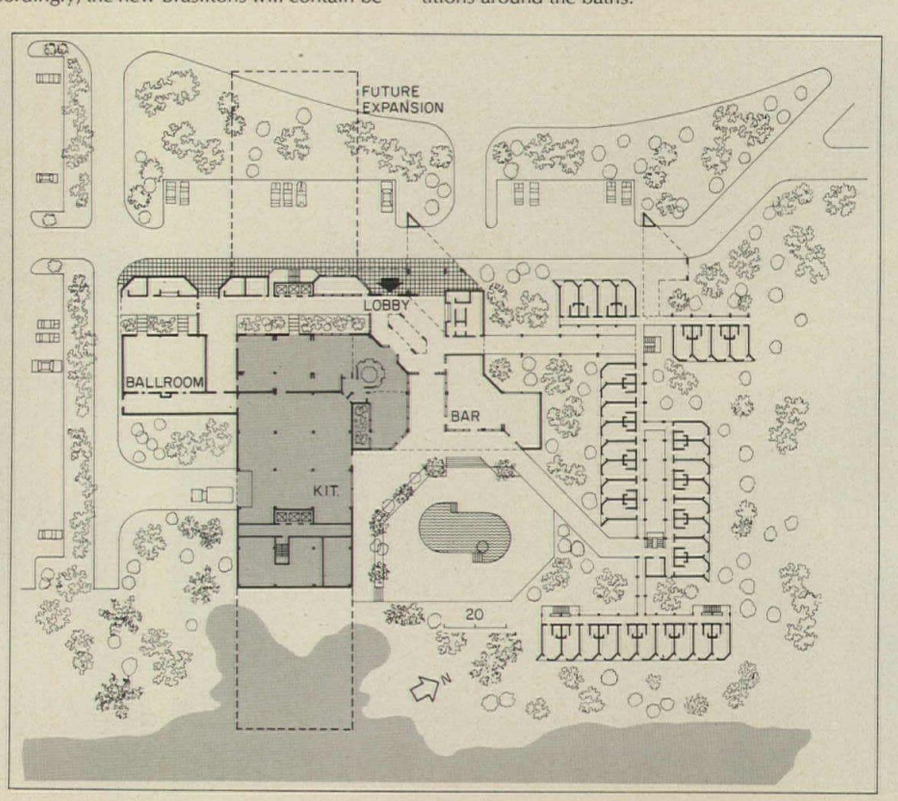
According to Hilton International president Charles Bell, the "uncharted" smaller towns around the world (except for certain areas—see pages 120-122) offer the best opportunity for new hotels. And because of differing local construction techniques, the builder should be prepared to construct with steel, concrete or "waddle and daub." The essential element is an assurance that the new facility be one that can be managed by the standards with which the operator works. At the same time, Bell states that American hotel corporations have often entered foreign markets without any understanding of what the local conditions demand.

Accordingly, the new Brasiltons will contain between 150 and 250 standardized rooms (arranged in any horizontal or vertical fashion) served by a basic "core" (gray areas on plan) which can be expanded—in a linear manner along the entrance side—to accommodate up to 400 rooms. In the core, a large service area (large rectangle in photo and plan) "feeds" an exposed hexagonal pantry, designed as a pavilion, between the coffee shop, a bar on the opposite side and the dining room. Service can be either buffet or by waiters.

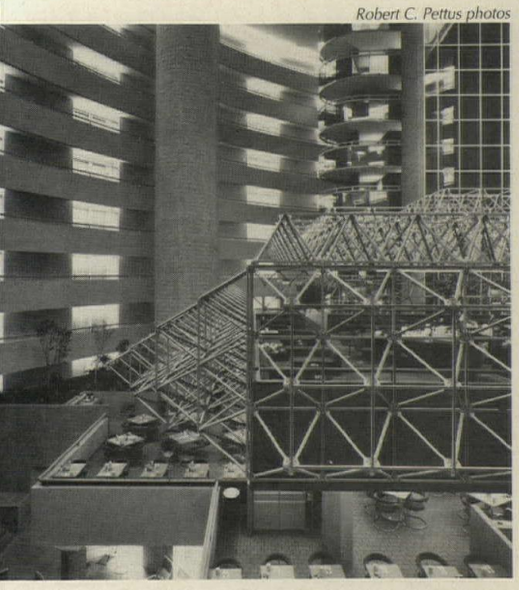
But the rooms (photo below) offer the most interesting departure from American expectations. They are small, in keeping with a low budget, and the fact is compensated by balconies and by low partitions around the baths.

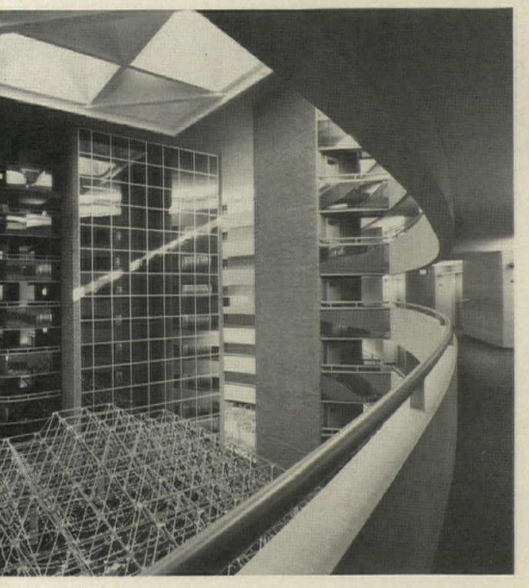


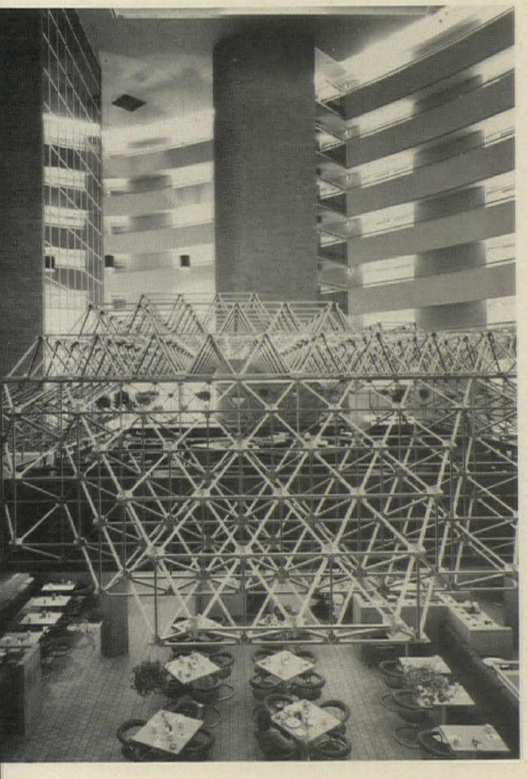
Gil Amiaga photos

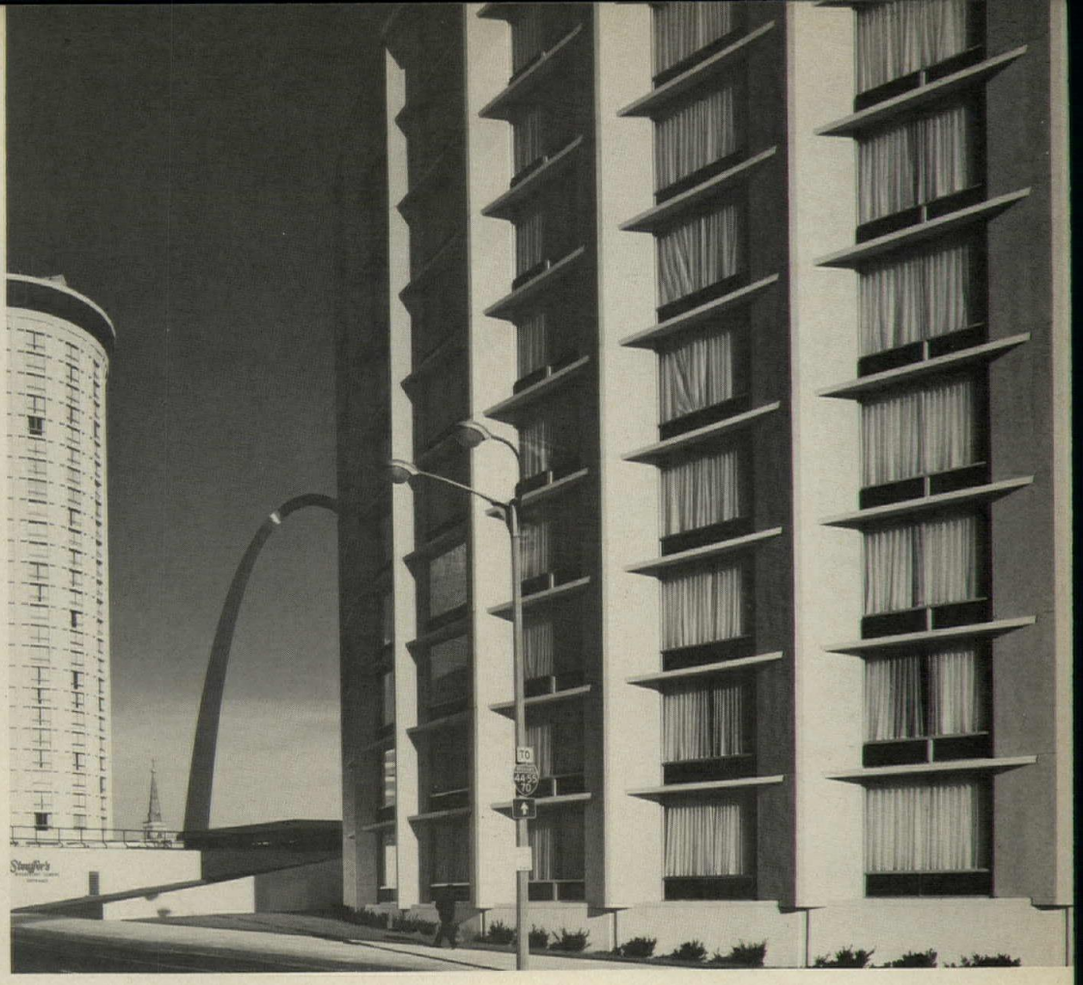


Robert C. Pettus photos



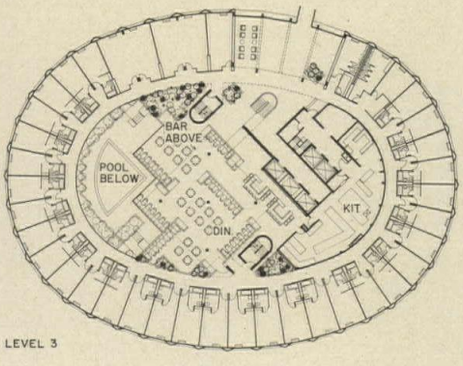




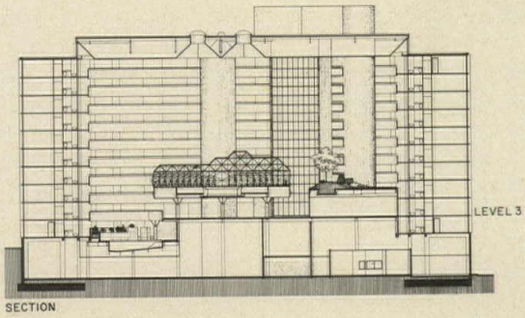


At Stouffer's Riverfront Towers, systems construction shows positive economic results. In letting bids for the construction of a new 401-room round counterpart to an existing convention hotel in St. Louis, (respectively foreground and background of the photo, above right), architect William Tabler found that the most favorable structural costs could be obtained from a local manufacturer of precast-concrete wall-and-floor panels. Accordingly, the radial separating walls between rooms are each formed by a single panel that supports 2 floor panels per room (or bay). The structure was erected in less than 18 weeks. The skylit atrium is innovative because—while supplying the sense of a grand lobby and varied activities—it consists of several levels of space, all income-producing. The lowest level is a swimming pool that can be overlooked by diners in the restaurant and bar above. The top level is a bar lightly screened from viewers above by a space frame.

STOUFFER'S RIVERFRONT TOWERS ADDITION, St. Louis, Missouri. Owner: *Civic Center Redevelopment Corporation.* Architects: *William Tabler Architects—William C. Meagher, associate-in-charge.* Engineers: *Wayman Wing* (structural); *The Murphy Company* (mechanical); *Sachs Electric* (electrical). Consultants: *Howard Brandston Lighting Design Inc.* (lighting); *Ford & Earl Design Associates* (interiors). General contractor: *R. K. & A. Jones, Inc.*



LEVEL 3



SECTION

2

Architects are increasingly involved on all parts of projects —including the interiors

As discussed in the introduction, owners of hotels are becoming increasingly aware that they will have to provide something exceptional if they wish to compete for guests. But as an earlier hotel study (December 1969) pointed out, the exceptional has often meant two different things to architects and to hotel management. Architects have regarded the all-important ingredient in attracting guests as character derived from the quality of the total building's design, while owners have seen that ingredient as atmosphere, which can be "hung on" after the building is complete. The obvious limitations of such processes (often carried out by "specialists" following prescribed formulas) have been responsible for the bland look of sameness that has proliferated in past decades—and it is just what owners can no longer afford.

Nowhere has the syndrome been more evident than in hotel interiors where the architect—and even his guidance—have often been dismissed once the shell was complete. All sorts of buildings, of differing architectural qualities, invariably looked alike inside the front door. In the past, under normal hotel practice, it has been the exception when architects or other disciplined designers were really given the chance to show the results of a distinctive marriage of all aspects of a building—inside and out. John Portman's Hyatts were some of the more obvious early examples, but all sorts of possibly influential examples are now coming into existence—influential because they do not necessarily rely on pyrotechnics to achieve drama. They are just well designed, attractive and have an easy-to-understand distinction.

The section that follows was written by Thomas Hughes, currently a vice-president of ISD Incorporated, and previously the designer, with Portman, responsible for the interiors of many Hyatts (including San Francisco's—see RECORD September, 1973). As such, Hughes has had extensive experience with the large hotels that rely on different types of guests—conventioneers, businessmen and vacationers—and he talks about the crowd-pleasing techniques to keep these diverse peoples happy and coming back. His latest project appears overleaf.

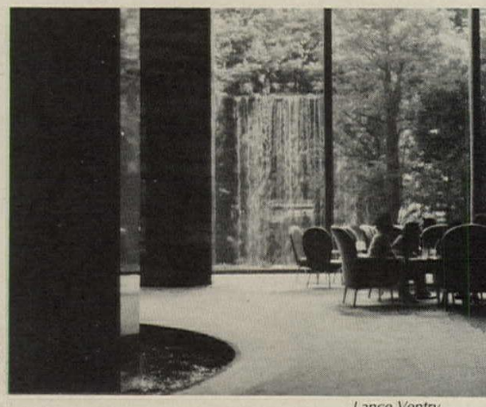
"Prior to World War II, the American traveler was a member of an elite class. For the most part, he traveled in small groups, families, couples, or as an individual, and he stayed at the hotel for long periods of time, a week or more. He was, in most cases, the same American who traveled in Europe, and architects and designers simply looked to Europe's hotels, inns and palaces and built their near duplicates on American soil. All this changed in the years after the war. The average American began to travel. He very often had not traveled before, in this country or in Europe. He had not seen much of the world, but he had seen many fantasies produced by Hollywood and he did have expectations of his travel world. He wanted to sit with his friends in the lobbies of grand hotels, to dine in supposed luxury, to relax in saunas and dance in nightclubs—in short, to play out his fantasies. From these requirements an architecture (both good and bad) has developed.

"The good designs fulfill certain common objectives. First, the larger well-designed hotel can offer the experience of a large and dynamic interior space as a counterpart to European cathedrals, palaces and hotels. Second, and most importantly, such interior space design allows guests identification and a feeling of a 'place,' as part of an exciting community. The design of a dramatic lobby—where people come to see and to be seen—is a successful tradition of hotels from the Biltmore and Waldorf Astoria to the Century Plaza in Los Angeles, the Crown Center in Kansas City and Regency Hyatt Houses throughout the United States.

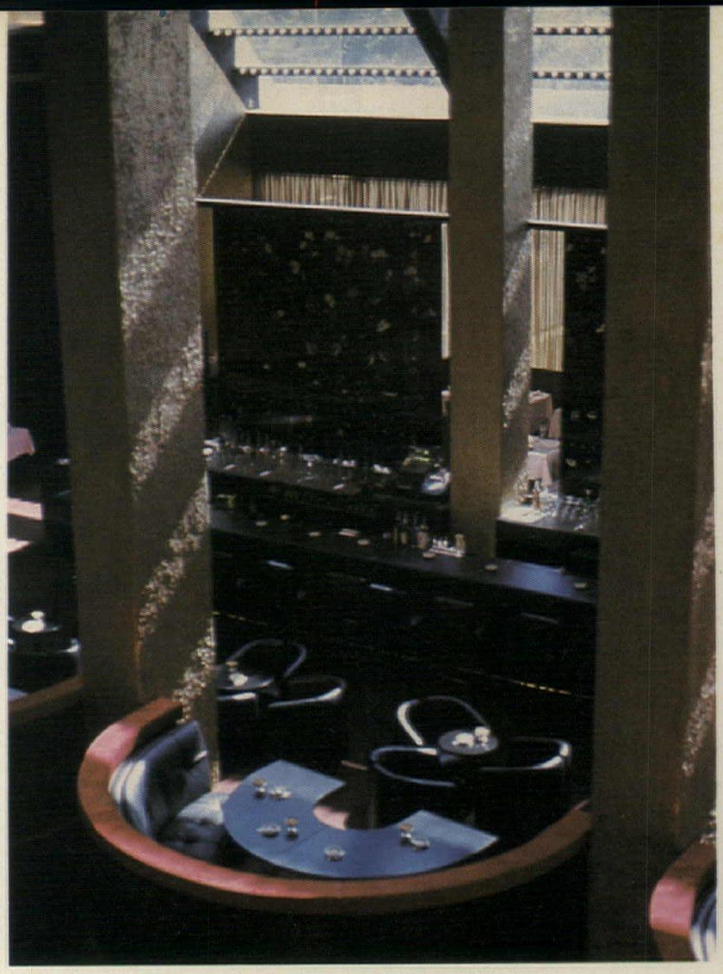
"In any case, 'atmosphere' is one of the most important requirements of hotel design. It can be treated with nonprofessional 'stage set' gimmicks that will satisfy the hotel users' need for escape and fantasy. But it can also be resolved with good design.

"To create a hotel that is unique within itself and not simply like the last, the design team should develop a spirit for the hotel. This spirit should evolve out of the design process; it should not be affected or superimposed on the interiors of a building. If the design team analyzes the community and its history, the site, the economics of the project, types of construction available to the locale, the time frames to be met and other formulating influences, this 'spirit' will rise naturally from its beginnings.

"Creating a place which fulfills the fantasies of many people and represents good professional design is a complex process requiring careful programming at the front end of the project—a team effort of owner, architect and designer. While technical changes have occured in the requirements for the hotel, attracting a broad clientele is still the primary objective and an understanding of the make-up of this clientele is the design tool to success. And as the hotel develops as a recreation center as well as just lodging, its new role will serve as a source of new profits through new pleasures."

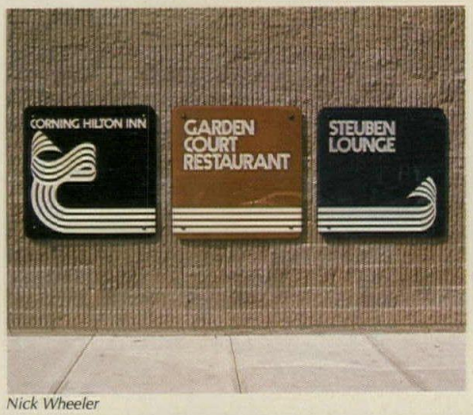


Lance Ventry



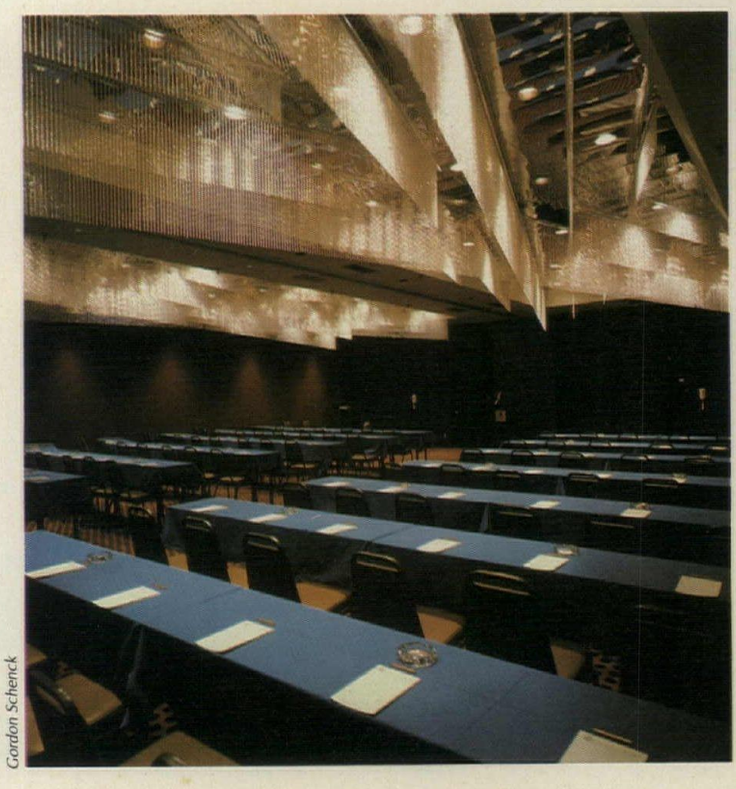
Gordon Schenck

Examples of the new freshness: the lobby of the new Paris-Sheraton Hotel (opposite, top), by architect/builder Pierre Dufau, has a particularly European appearance achieved by glossy surfaces and sensuous shapes, while the lobby of the Palace Hotel in Osaka (opposite, center) is a vast, serene room that relies primarily on a garden and waterfall for "decoration." Habitation Leclerc in Haiti (opposite, bottom and page 119) contains older native furniture to achieve an "authentic" and "established" appearance, while the bar of the Colony Square Hotel (above left and RECORD, December 1975, pages 80-83) by architects Jova Daniels Busby, projects a dynamic appearance under its glazed roof. Graphics for the Corning Hilton Inn, by Sasaki Associates,



Nick Wheeler

offer information in a lively manner and are a prelude to the characterful spaces within. The Century Center Hotel/Atlanta by 3D/International (above and below left) offers an exciting, totally man-made environment for conventioners and other guests, as does the addition to the Stouffer's Riverfront Inn (below) by William Tabler Architects with interiors by Ford & Earl Design Associates. (The latter project is shown on page 111.) All of these hotels recognize the need to attract guests by offering unique environments that are designed for increasingly sophisticated tasts, and many of these hotels—located in "out-of-the-way" areas—would not be successful without the infusion of such particularly attractive attributes and a strong sense of creating their own "place."



Gordon Schenck

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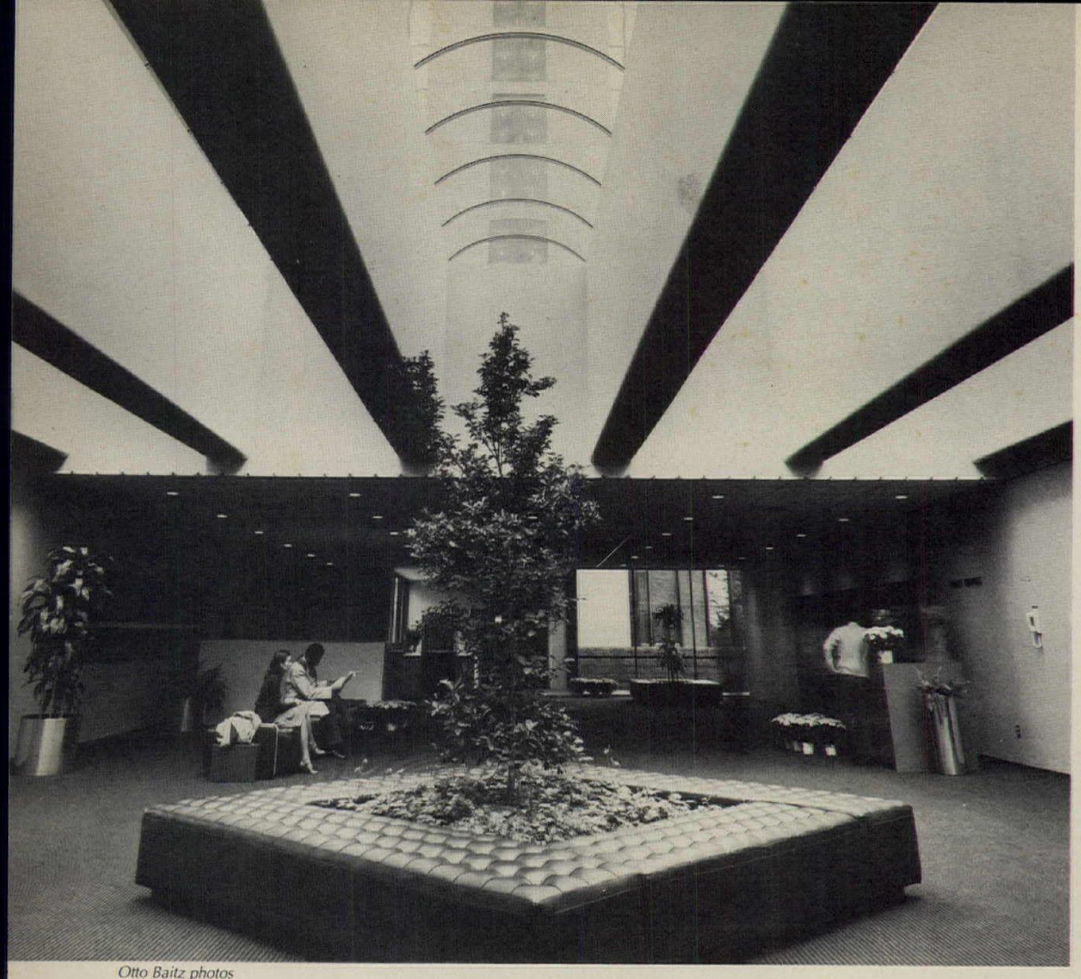
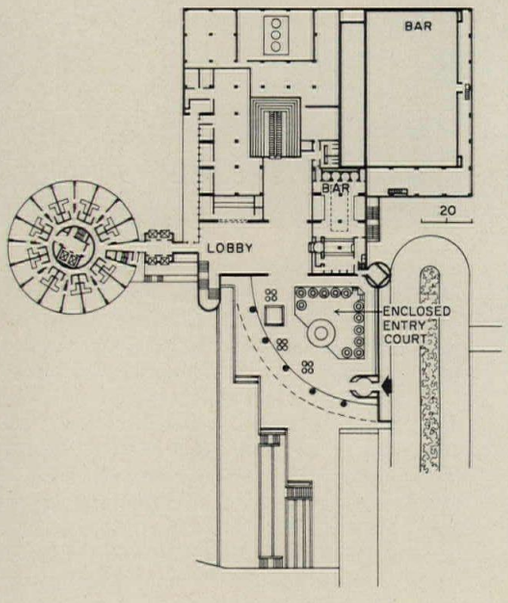
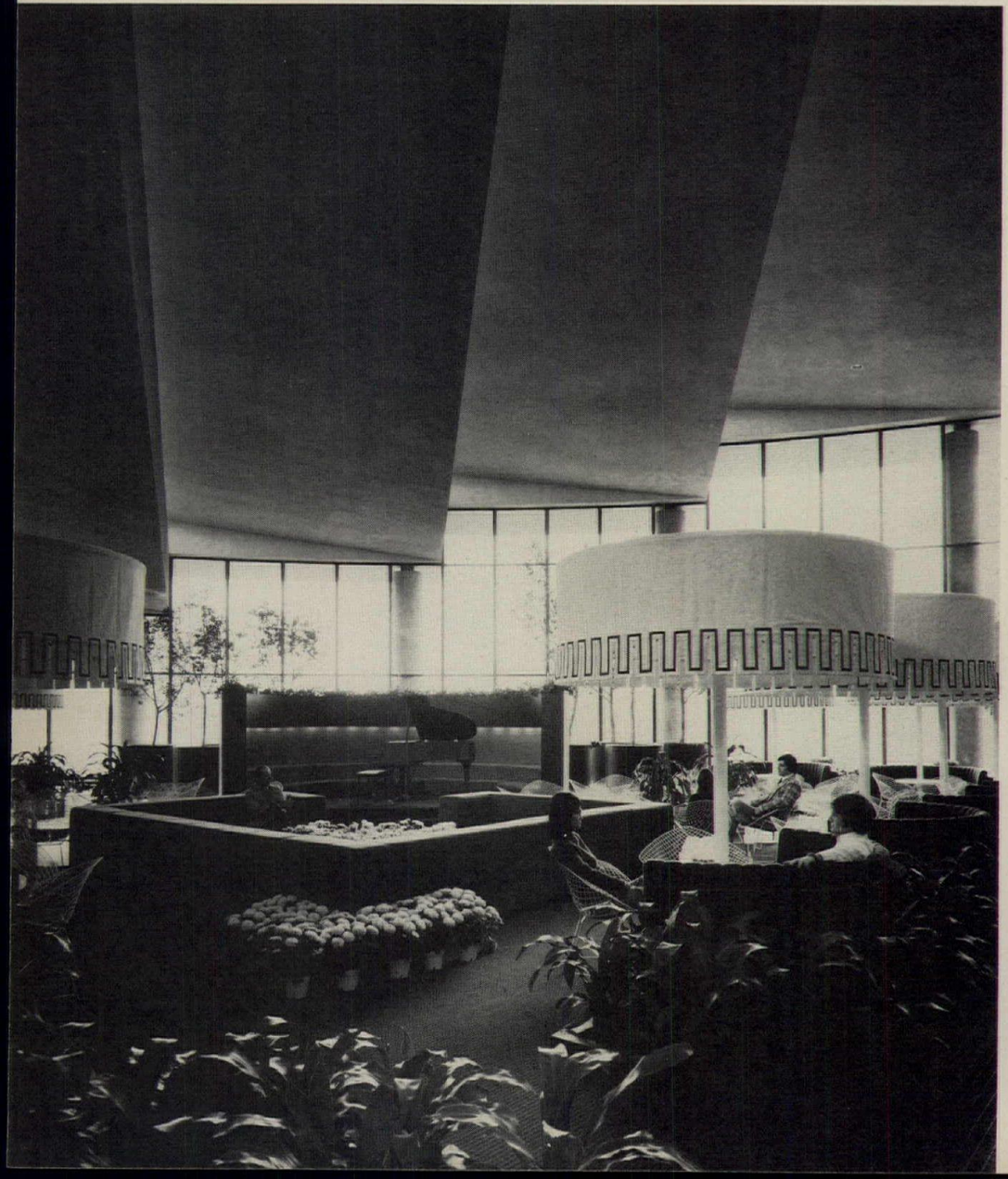
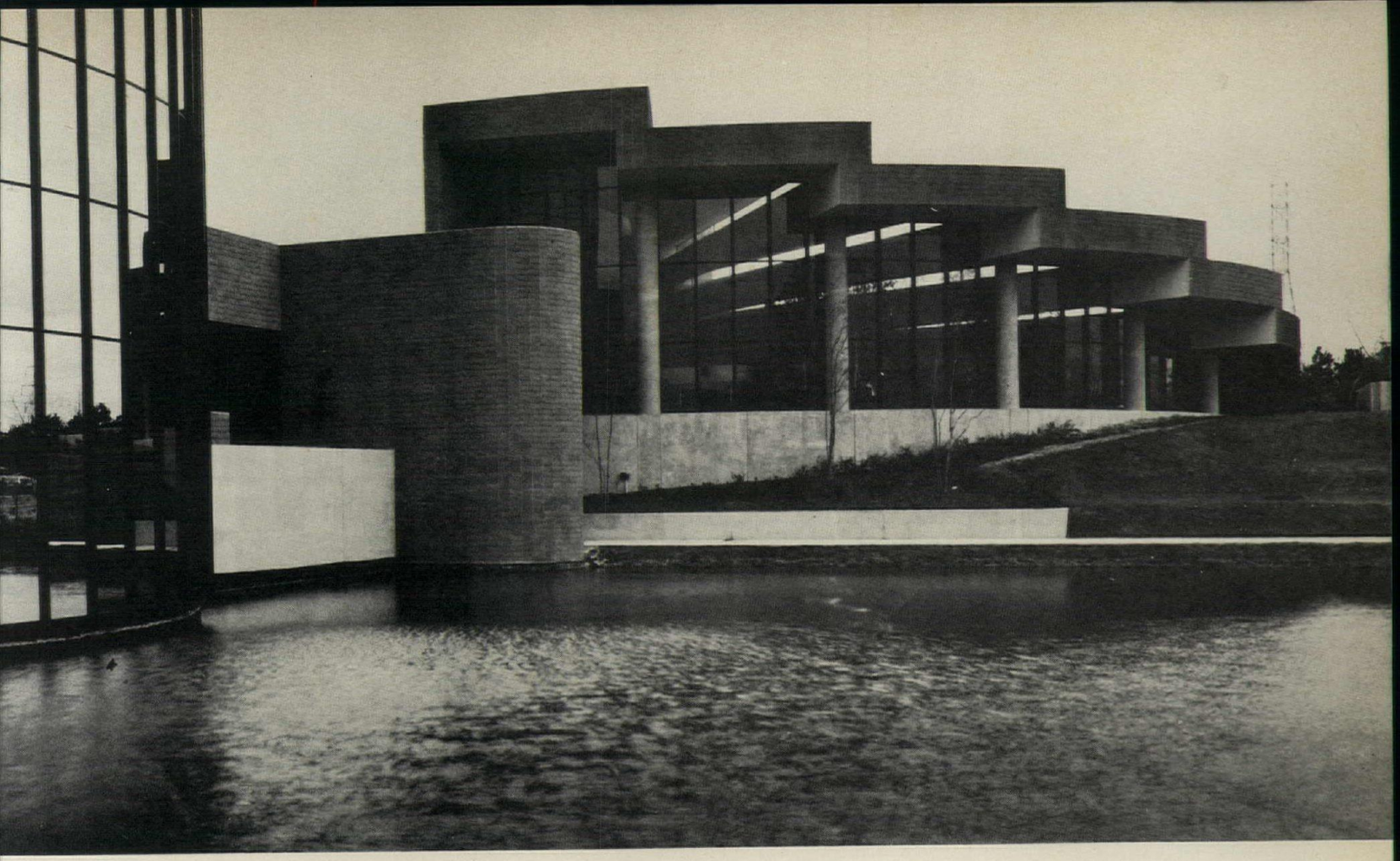


Otto Baitz photos







The Hyatt Regency Hotel in Memphis clearly illustrates ways in which distinctive interiors can become an integral part of a distinctive building. Designed by architects Walk Jones & Francis Mah, this suburban hostelry is a departure from Hyatt's norm. The extensive public spaces, designed to attract every kind of guest from conventioneers to neighbors are contained in a separate building from the 400 rooms. The circular, mirrored-glass clad tower containing the rooms, seems to be the symbolic counterpart of the prototypical atrium.

But the panache of Hyatt's image of dramatic public space has certainly not been lost. Instead, it is architecturally expressed by a dramatically stepped-fan roof over an entrance court (photos above and opposite page), and by views of the "symbolic" tower from all public rooms and—via the curved skylights—the main lobby (photos opposite, top). A grand stairway leads to the dining and meeting rooms on the lower floor.

Interior designers ISD have reinforced the circular imagery by rounded seating arrangements and umbrellas in the seemingly outdoor court-lounge, and by circular banners in the restaurants and registration area (photos, below). And they have carried the contrast of textures of mirrored glass and striated concrete-block from the exterior to the inside—setting it off with bright red color.

The 26-story tower is constructed of flat-plate concrete on a mat foundation, while the 90-foot spans over the entry court are framed with steel trusses. The concrete core of the tower contains service functions while providing bracing. The hotel was built for $28 per square foot.

HYATT REGENCY HOTEL AT RIDGEWAY, Memphis, Tennessee. Architects: *Walk Jones & Francis Mah, Inc.—Francis Mah, designer.* Engineers: *Le-Messurier Associates, Inc.* (structural); *Golder Associates* (foundation/soil); *Ellers, Fanning, Oakley, Chester & Rike, Inc.* (electrical/mechanical). Consultants: *ISD, Inc.—Thomas Hughes, vice-president-in charge* (space planning/interior design); *Jack Heitman, L. H. Antoine & Associates, Inc.* (curtain wall). General contractor: *Allen & O'Hara, Inc.*

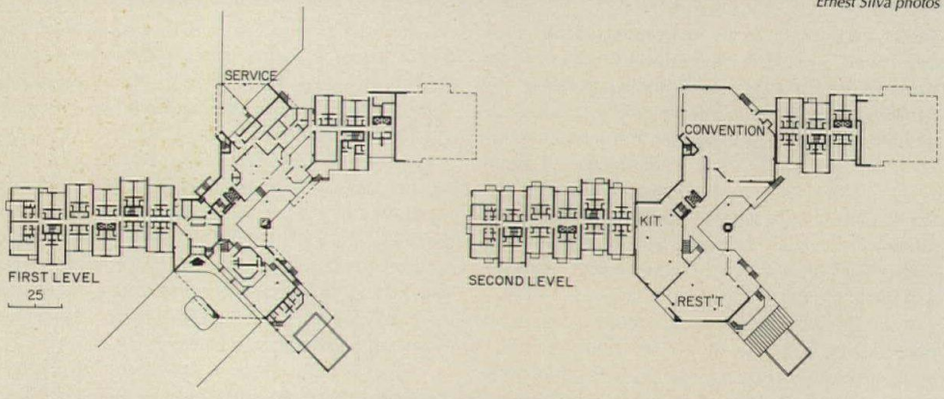
3

The pace of design for hotels that meet special needs seems insensitive to slowdown

At a time when unoccupied rooms are leading to a conclusion that hotels are overbuilt, it is cheering to know that some kinds of hotels can never meet the demand. The wrong type of hotel in the wrong place offering more of the same as others—but less well—is doomed to failure in slack times. But the large-hotel corporations operating in this country have all evolved philosophies about the type of hotel that will succeed. Hyatt's continuing development of "luxury" hotels coincides with consultant Steven Brener of Helmsley-Spear's projections that rooms at $100 per night will be commonly in demand by the 1980's. Conversely, Holiday Inns are stressing self-service and economy. Both Marriott and Sheraton see a need for hotels that cater to both business and pleasure in a "resort" atmosphere close to large towns, while Hilton expects the same sort of hotel to succeed *in* large towns. Architect William Tabler sees the popularity of new convention hotels continuing as long as the incentives to use them remain in the tax laws, while Thomas Hughes sees such hotels growing smaller (because of telecommunications) and more diversified. Neither the corporations nor these architects are concerned about any impending demise of wholesale travel by private cars. Whether or not any or all of these projections are correct, they indicate a varied over-all direction for American hotel construction.

But new hotels that meet special needs seem to be most in demand. Essentially, they are the right type in the right place, and they offer something special. Here, the right place is often a unique location such as proximity to water, spectacular scenery or specialized sporting facilities. And the something special is design which takes advantage of the surroundings by not destroying them through over intrusion. Instead such hotels show a recognition of the special local character inside and out and encourage guests to realize that they are in a truly unique place. Examples: The convention hotel on this page offers guests spectacular scenery combined with a chance to pursue a specialized active sport in an atmosphere that clearly both provides the sense of a unique location and capitalizes on it through access and views. Here, business can be truly combined with pleasure. Other hotels may offer only relaxation to those who can afford it. Habitation Leclerc (see page 119) is an example of the attractions expected. Other hotels which meet special needs are seen on pages 108 through 124. What becomes clear is that the right type of new hotel for current markets is that which can give exceptional experiences and stand out from its predecessors; it will always be in demand.

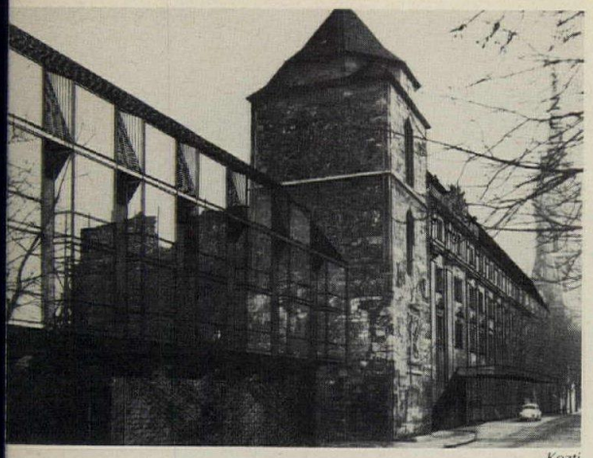
Ernest Silva photos



The Ramada Snow King Inn exemplifies the specialized hotel that answers constantly evolving demands. In Jackson Hole, Wyoming, an area of the country with spectacular mountain scenery and well developed ski facilities, associated architects MacFadyen/DeVido and Corbett/Dehnert have designed this 200-room hotel to create a uniquely attractive environment for conventions of up to 1,000 people. And because of the strong appeal of both the surroundings and the building itself, Snow King can expect to attract a steady clientele all year round—a clientele that can be expected to return again and again. An anticipated addition to the recently finished, 200,000-square-foot-building is to contain condominiums.

Snow King can expect to attract vacationers as well. Its design is a breakthrough for an area where such development has followed a generally unattractive motel pattern. The building's massing is a reconciliation between a low-rise unobtrusive building and the centralization required for conventions. It covers a minimum amount of its site, while sloping roofs echo the shape of the surrounding mountains. In the central portion of the building, the large public areas of 120,000 square feet are both appropriately "rustic" and enticingly dramatic. Guest rooms, located in the side wings, are attractive. Many have balconies. The wings containing the rooms are built of concrete plank on concrete-block bearing-walls and the central portion of the building is framed in steel with wood trusses. All of the structure is sheathed with cedar siding and the roofs are covered with split cedar shakes. The budget for basic construction was an incredibly low $12 per square foot. The project promises to become a local "standard."

RAMADA SNOW KING INN, Jackson Hole, Wyoming. Owner: *Western Standard Corporation.* Associated architects: *MacFadyen/De Vido—job captain: Hans-Jeorg Baehler; and Corbett/Dehnert/Associates.* Engineers: *Lev Zetlin Associates, Inc.* (structural); *Engineering, Inc.* (mechanical/electrical). Interiors: *Contract Design of Jackson Hole.* General contractor: *Northwest Construction, Inc.—Manuel Lopez, project coordinator.*



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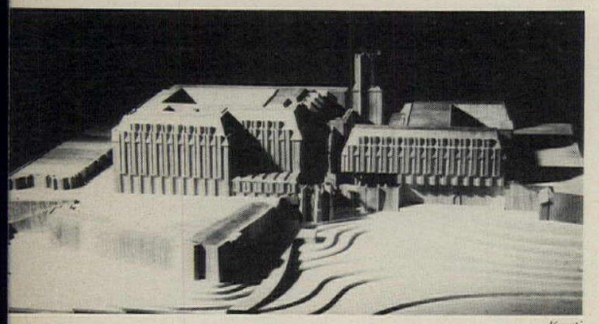

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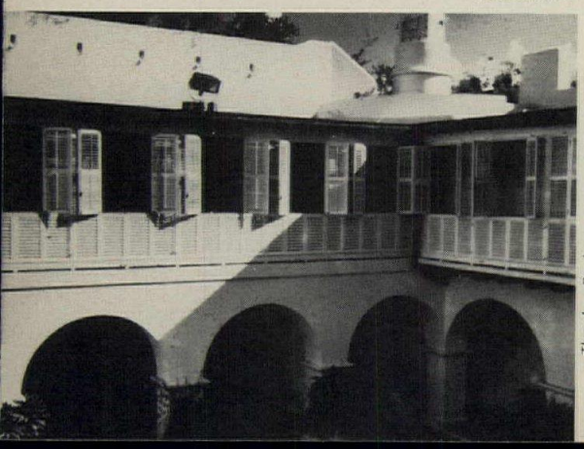


Theodore Prudon

4

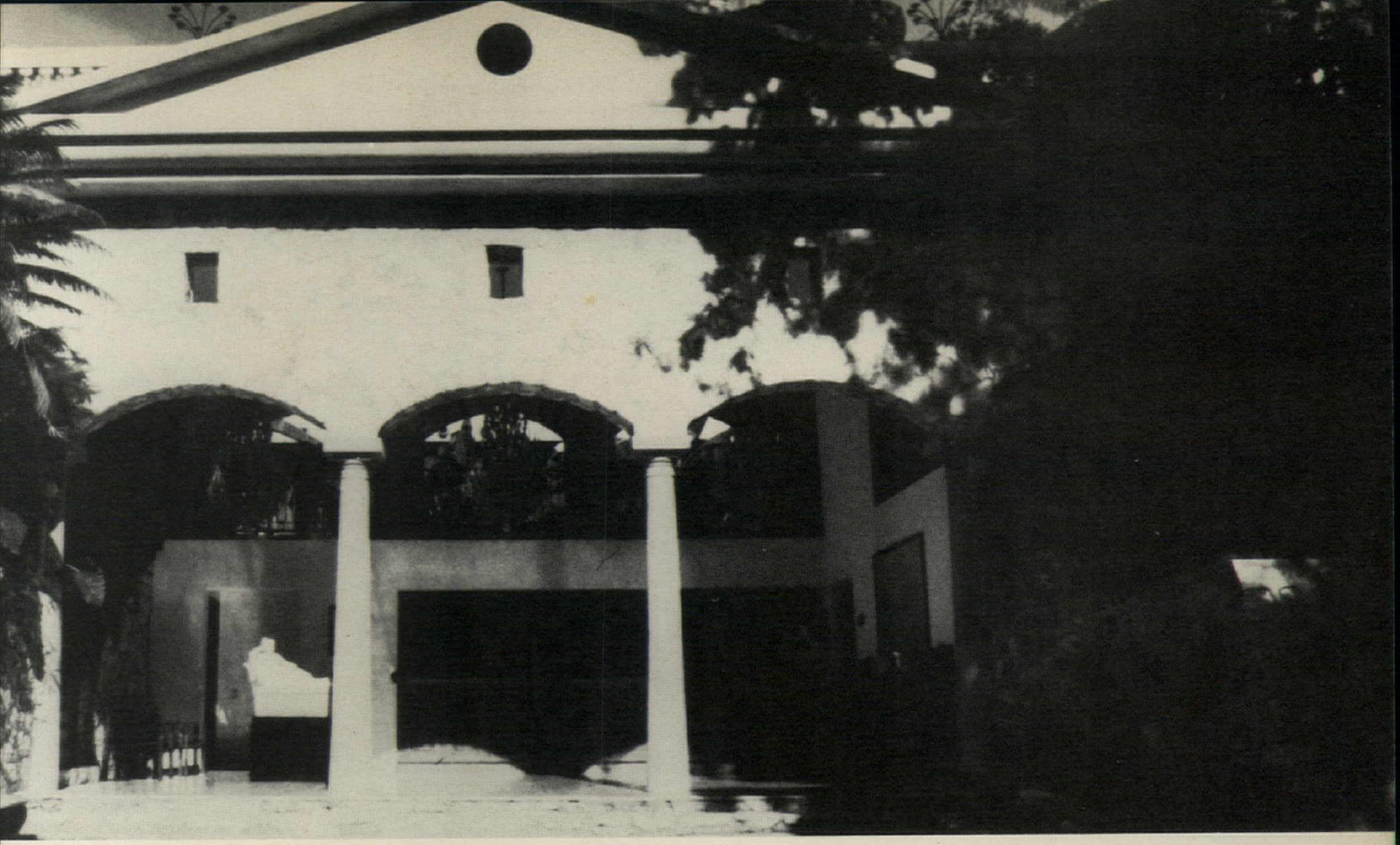
The "redesign" of existing hotels is gaining a growing share of professional practices

Just as with other building types, recycling of existing hotels—or buildings originally designed for other uses into hotels—makes increasing good sense. Sharing the obvious savings on construction costs found in other types of re-use, older structures can forcefully conjure the images of grandeur that constantly elude the hosteler attempting to create "period" atmosphere anew. At the right, is an example of a hotel owned by an independent operator catering to a highly specialized market of the "fashionable" and the affluent. But large corporations are not missing the point—and Holiday Inn and Hyatt corporations are among the more surprising of those currently engaged in projects re-using older structures. Holiday Inn is converting a group of houses in Bruges, Belgium into a hotel; according to one authority, previous attempts to provide American-style motels had been a failure. Hyatt has incorporated an 18th-century house into its hotel in Charleston, South Carolina. The Sonesta Hotel in Amsterdam is to use a 17th-century church as its conference center (Sonesta hotels occupy many recycled buildings.)

Hilton International has recently announced the conversion and extension of a monastery and church tower, dating from the Middle Ages, into a new hotel in Budapest (top two photos). Located in an historic district and across the street from the traditional crowning place of Hungarian kings, the new facility is designed by architect Bela Pinter, and will use the tower as a restaurant. The extension is to be faced in mirrored glass to reflect the site's surrounds.

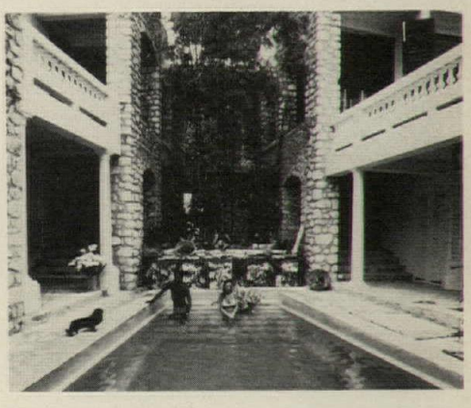
Howard Johnson has been responsible for conversion of a group of warehouses facing a major canal in Amsterdam into a hotel (this page, center). While both of the last two conversions were motivated by the enforced maintenance of historic buildings and character, other owners are actively seeking conversion of sound structures.

San Francisco's Stanford Court Hotel (photo second from bottom) has been recently stripped of fire escapes and completely refurbished by architects Curtis & Davis. It capitalizes on the popularity of other older hotels in the city. An older conversion, El Convento in San Juan (bottom photo) was an early indicator of the success of the approach. Fortunately, for a diversity of character, for urban cohesion and for the climate of today's economy, recycling has become a tested route to new hotels—and to new architectural commissions.



Habitation Leclerc was once the house of Napoleon's sister. Capitalizing on a spectacular location outside of Port-au-Prince, Haiti and on its historic associations, this resort has been designed to appeal to both Americans and Europeans of affluence—who come just to relax. Here, re-use of an existing structure has provided the real "rooted" atmosphere that other hotel owners have failed to capture from whole fabric. The original house contains the public rooms. Forty-four linked cottages (photo, below) accommodate the guests and have been snaked around existing terraces and vegetation. Louvered doors open the generous rooms (photo, below right) to the normally near-perfect climate. Furnishings throughout the hotel range from the antique to the contemporary. Much of the older furniture was found in local markets. Bathtubs and sinks are often exposed to the bedrooms. The popularity of this resort—despite its high rates—illustrates the appeal of older buildings and explodes many myths about what guests really want. Despite the extreme care in siting the new cottages, the over-all construction cost were considerably below those for new construction of equal area. The reception desk, in the original house, is open to the outside and arriving guests (photo, top).

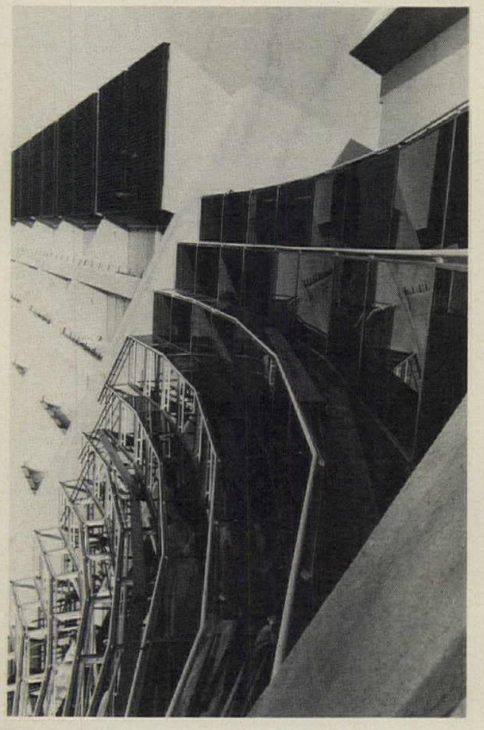
HABITATION LECLERC, Port-au-Prince, Haiti. Architect: *Albert Mangones.* Landscape architect: *Ralph Lee.* Interior consultant: *Lawrence Peabody.* Builder: *Allen Milman.*



5

The potentials of work abroad are well established; the need is criteria

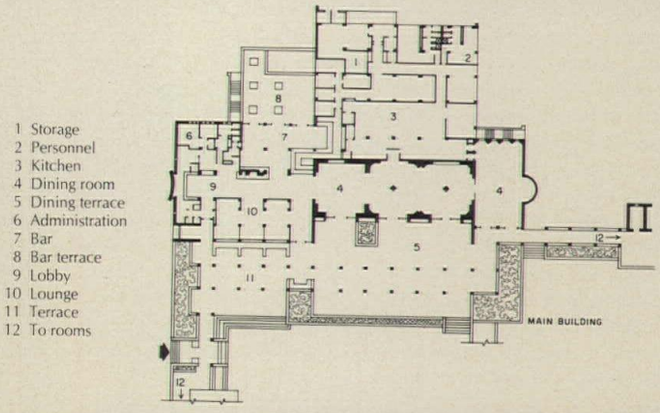
It is clear that a large part of hotel design work in many American architects' offices involves projects abroad. The clients in many cases are the large American hotel corporations; in others, hotels are built by local developers that are to be managed by these corporations. The largest "chain" is Hilton International, a completely independent offshoot of the Hilton Corporation with headquarters in New York City. While it is involved only in management and does not build for its own account, according to architectural director David Leavitt, Hilton tries to take a strong hand in the selection of architects—often nationals in areas that have qualified professionals. But many areas now being developed do not have qualified local architects, and Americans have the advantage there. And it is exactly in those underdeveloped areas where Hilton president Charles

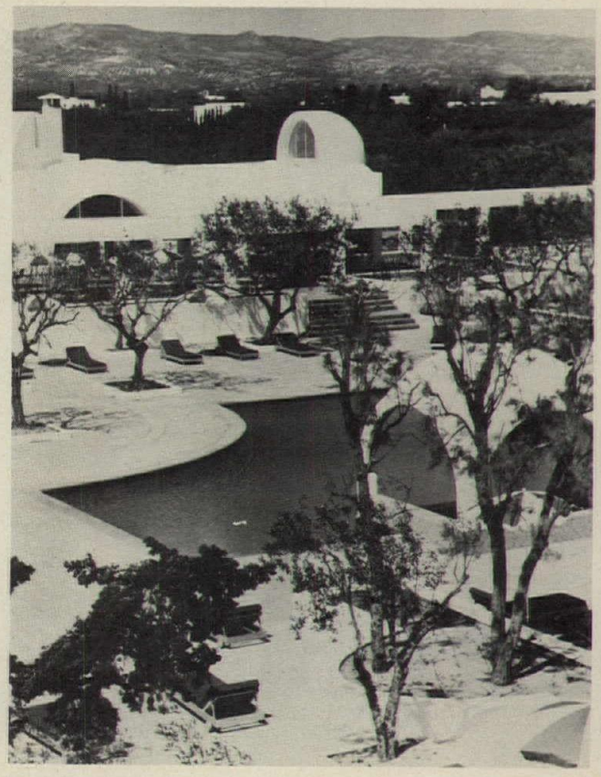


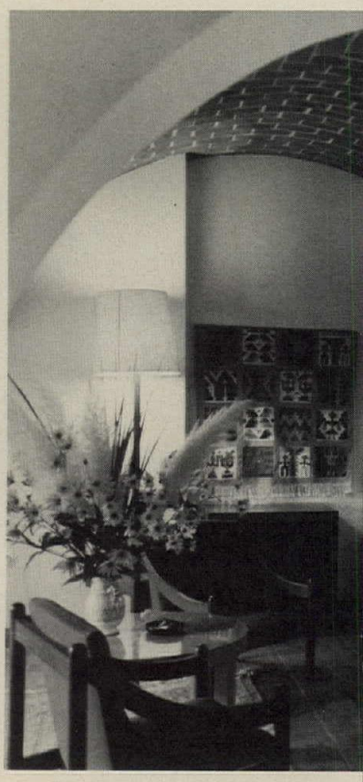
Bell sees the greatest opportunities for future expansion—North Africa, Central America, and the Middle East—since "the capitals of major countries in the world are largely overbuilt with hotels." In Brazil, Hilton's prototype for hotels in smaller towns (see page 110) is seen as another opportunity for expansion in otherwise overbuilt areas.

Inter-Continental, also headquartered in New York City, is a close second in size, and takes a strong hand in architect selection and the construction of hotels that it will operate. The corporation is particularly active in new construction in the Middle East (RECORD, June 1975, page 102), and—according to architectural director Wally Rootes—often works

Kahia Tunis





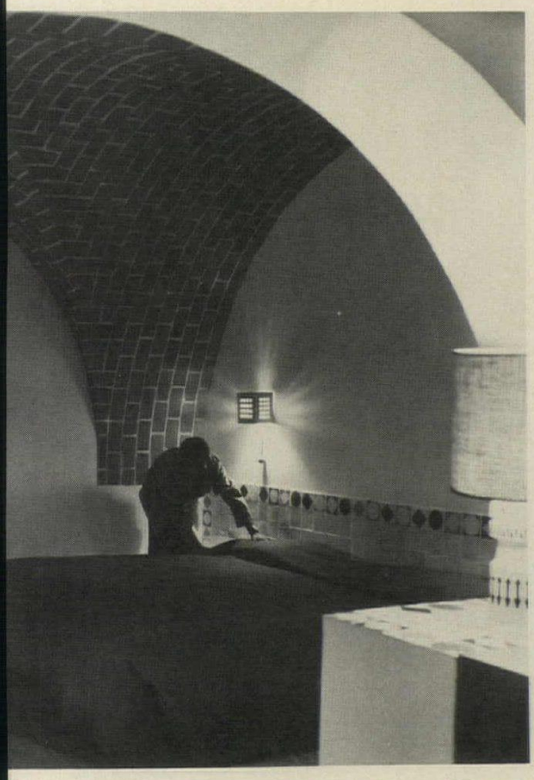


In the construction of the Hammamet Sheraton Hotel, research into local Tunisian construction methods saved time and cost, eliminated a lot of potential problems—and produced a particularly suitable "sense of place." Like Habitation Leclerc on the previous pages, this hotel creates an awareness in vacationing guests of where they are: in this case, 45 miles south of Tunis on the Mediterranean coast, in an area with a rich Arab background. But here, the 110-room hotel (to be expanded to 200 rooms) was built by a large American corporation that expects predictable standards of operation and efficiency. Accordingly it is centrally-heated, air conditioned, and otherwise serviced by the latest American technology. Still it maintains a local character.

The architects—Ahrens Di Grazia Frizzell—used prevailing local construction techniques, and both the basic building materials and experienced labor were readily available. The central building (plan, opposite page) and the cottages containing the guest rooms are built with brick vaults, exposed on the interior, with stuccoed-stone walls—all constructed by local craftsmen. Accordingly, the results are not only evocative—but were produced at construction-cost savings that offset the increased costs of importing the desired American products. According to Kenneth Frizzell, more than half of the $2 million cost of the resort was in the mechanical systems, including extensive refrigerated storage, emergency generators and a water filtration plant—all because of the relatively isolated location.

Beyond the regional atmosphere created by the structure, Hammamet is planned with the same sense of spaces found in nearby villages. Cottages are reached by narrow "streets" that open periodically into court yards. Typical of the care in obtaining a regional atmosphere, each court is "decorated" individually by flowers (jasmine, oleander, Bougainvillaea), pines, succulents, and cactus. Each room has balconies or terraces with a sea view.

SHERATON HAMMAMET, Hammamet, Tunisia. Owner: *Sheraton Corporation—ITT and PIT.* Architects: *Ahrens Di Grazia Frizzell.* General contractor: *Eurafricain Bredero.*

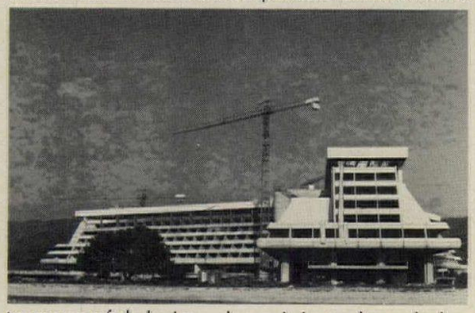


with American architects, placing an emphasis on design excellence and "appropriateness" in design.

The Sheraton Corporation, with 100,000 rooms in 385 hotels worldwide, is third in size, and Marriott, Holiday Inn, Howard Johnson, Loews and Hyatt are all expanding. But, the client can also be an independent private individual or government—as it was for Rader Mileto in their design for a hotel in Iran now nearing completion (inset, previous page).

The greatest surprise to American professionals entering into design of foreign hotels can come in the standards. According to Bell, people in other countries do not react favorably to American motel-type facilities. Leavitt says that everyone wants a New York City "skyscraper"—and he often tries to talk owners out of such over-ambitious ideas. Most areas have few, if any, building regulations, (though Hilton uses the New York City fire code, even in remote areas). One of the greatest problems is that architects will often specify construction systems that are too sophisticated for local abilities. The simpler and more local, the better.

Architects Ahrens Di Grazia Frizzell clearly agree that local construction techniques are the best. They cite early consultation with a competent local building contractor as one of the most important contributions

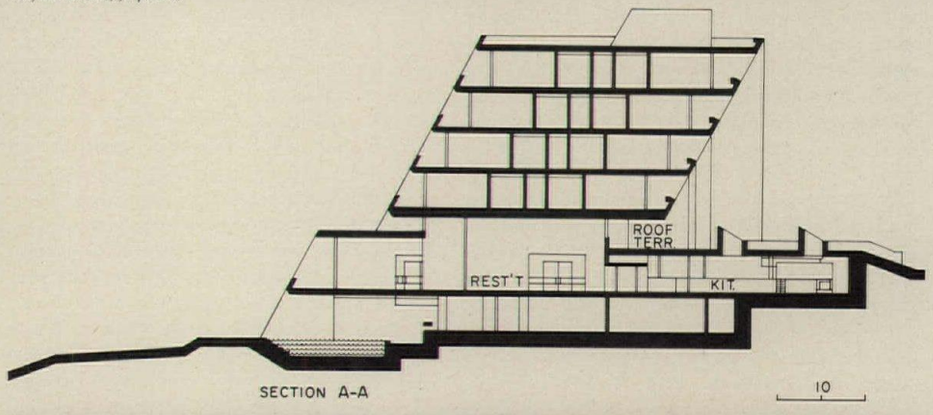


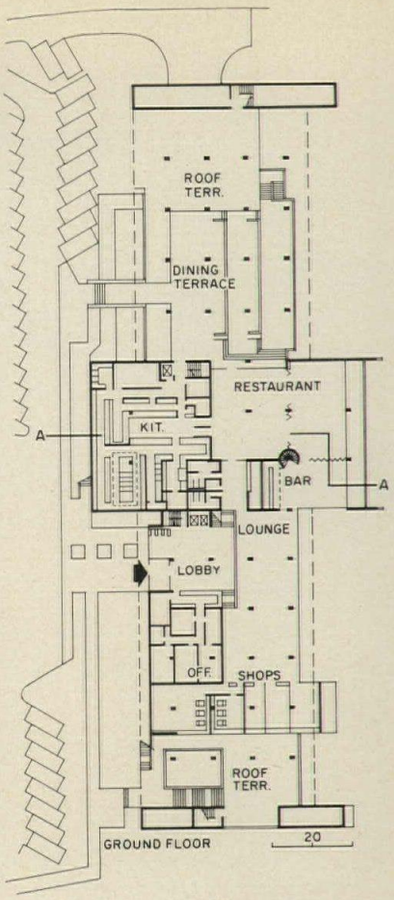
to successful design—by gaining a knowledge of techniques and detailing that can be readily built. They have exhibited their approach in Hammamet, Tunisia (page 121), and are completing a hotel under similar circumstances in Salah, Oman. Kenneth Frizzell also cautions that high-rise construction can obscure the very surroundings on which it was built to capitalize—as is happening at Copacabana and Waikiki.

Architects James Ruscitto-David Barovetto have designed a ski resort under construction in Farellones de Cerro Colorado, Chile, which is 9,500 feet above sea level. It is 100 miles, over primitive mountain roads, from the nearest point of supply. While steel, finish items and mechanical equipment are imported from the U.S., the bulk of the construction materials will be the stone found on the site and set by local masons in a manner that has not changed since the Inca civilization. Conversely, the building will have the latest in solar radiation systems.

The photo above shows a hotel now nearing completion—one of many buildings designed by The Architects Collaborative for a resort in Porto Carras, Greece. While this and the Amathus Hotel, opposite page, are built using current structural techniques, many similar projects designed by TAC utilize more local techniques when conditions warrant.

Wayne Soverns, Jr. photos





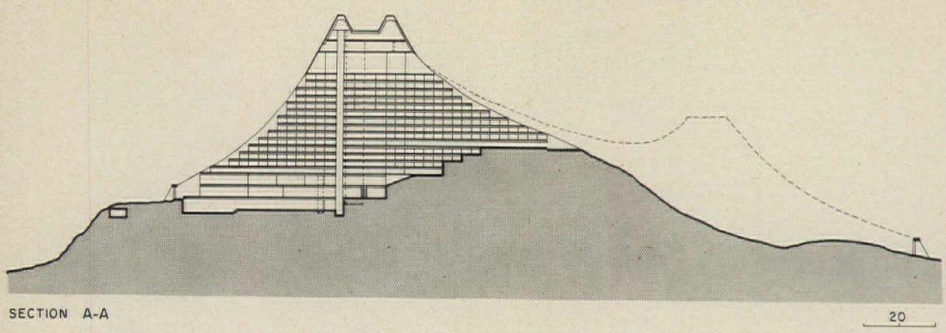
The Amathus Hotel is a strong form on a developing Cypress beach. This resort and convention hotel is built of poured concrete and asserts its presence on a rugged coastline. At the same time, it recognizes its unique site by slanting (and thereby reducing) its visible bulk on the beach side, and by hiding two of its seven levels below grade on the entrance side (see section). An open feeling is given to the building by expressing the 220 guest rooms as a bridge over open or fully glazed public areas on the lower floors.

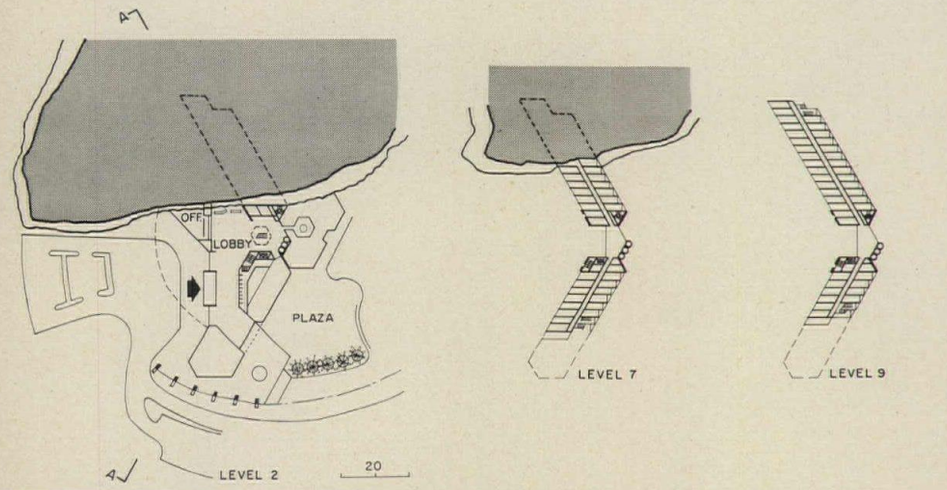
Associated architects TAC and Fotis Colakides & Associates agree that buildings for tourism must respond to local cultural and architectural traditions—but they do not see that this requires literal translation into a strictly indigenous building. In this case, where nearby high-rise buildings have already established an "international tone," the architects chose to produce a contemporary solution—and allow the natural site to provide the sense of place.

In keeping with the symmetrical plan, there are two entrances on either side of the central service block. One is for guests and leads to a lobby with an expansive view of the terraces and beach below. The other entrance leads to the extensive dining facilities, which have been placed on various levels to reduce the effect of a flat expanse of tables and provide views for more diners. A major portion of the dining area is completely open to the prevailing breezes. Rooms on the floors above are reached by double loaded corridors. Each has a balcony.

Because of proximity to an urban center of supply, the extensive storage areas found in more isolated hotels were not required; but certain areas do show marked differences from American practice. Among these are the kitchens—which are separated onto various levels for the various dining facilities. Amathus is the first of a planned chain.

AMATHUS BEACH HOTEL, Limassol, Cyprus. Owner: *Amathus Navigation Company Ltd.* Architects: *The Architects Collaborative Inc. and Colakides & Associates—principals-in-charge: Peter W. Morton (TAC), Fotis J. Colakides (Colakides).* Engineers: *Frank E. Basil* (structural/mechanical/electrical). General contractor: *Cybarco.*





. . . and TAC's study for the Republic of Iceland is a unique example of the potential for developing tourism in "new" areas. TAC's study—commissioned jointly by the country's government and the United Nations—envisions a year-round resort that will tap Iceland's underground thermal springs to create a tropical environment within an enormous suspended structure. Taking the form of the area's volcanoes, TAC's design for the complex includes a roof-top restaurant, which will allow views of the sub-arctic terrain, while a terrace within the thermal enclosure will allow after-dinner coffee near a tropical waterfall. Guest rooms in the V-shaped hotel face either a lake outside, or the "tropical area" within the thermal enclosure. The intent is to capitalize on the startling contrasts of the man-made and natural environments. In the drawing below, the hotel is seen to the right and the thermal enclosure to the left.

During the summer months—with continuous daylight and surprisingly warm temperatures—other small hotels were proposed around the natural therapeutic springs (as well as various "museums" at the locations of Iceland's numerous natural phenomena, and a visitors' center in Reykjavik). The development is planned not only to bring in tourists, but also to stem the flood of residents who may leave the country during the continuous night of winter. (Indeed, concern over the negative flow of tourist monies prompted the study.)

Exploding some myths about building energy use

By Lawrence G. Spielvogel, P.E.
Consulting engineer, Wyncote, Pennsylvania

The one factor that, more than any other, determines energy consumption of a building is how it is used. "How it is used" has more impact than the type of hvac system, or the boilers, or the chillers, or the energy source. More than how much glass, or insulation, or lighting a building has. It is the people who occupy a building that place the demands on systems and use energy. It is the *hours of operation* of systems and components that are the major determinant of energy consumption. What runs most of the time, and typically at full load? Prime examples are lighting, fans and pumps. In many buildings, the fans and pumps use more energy in a year than the chillers do.

While such statements may sound obvious, their reality is often ignored in many current studies and projections of building-energy use. Comparisons of buildings on the basis of installed capacities of hvac, lighting and other electrical equipment can be misleading because the quantity of energy used is not necessarily related either to design load or to installed equipment capacity.

The "occupant" factor is well demonstrated by studies on energy use by Princeton University[1] in "what would appear to be identical dwellings"— showing that during a given period of time, "a ratio of better than 2-to-1 exists between the highest and lowest users."

Furthermore, energy use can vary widely from year to year in dwellings, as is demonstrated by Figure 1, which shows metered energy for heating and cooling of a single-family dwelling in Indiana over a nine-year period. Heating- and cooling-energy consumptions vary by as much as 2 to 1.

Only a small fraction of annual energy use occurs during the extremes of weather

Most energy use in buildings occurs when the outdoor temperatures are moderate, which means that the hvac systems operate at part load most of the time. Only a small fraction of the energy use occurs during temperature extremes.

Figure 2 clearly makes these points. It is a curve showing annual energy use related to the outside temperature, for heating and cooling of a building in Ohio. In the 20F increment between 0F and 20F, less than 5 per cent of the annual energy is consumed, and in the 20F-increment between 80F and 100F, only 12 per cent of the total is used. But in the 30F-increment between 50F and 80F, 70 per cent of the total is used. Obviously, designers should be much more concerned about how efficiently the building and its systems operate during moderate temperatures than during extremes.

Space allocation directly affects efficiency of energy-using systems in buildings

Some of the most significant decisions affecting eventual energy use of a building are made in the very early programing stage. This is important enough that energy use should be included as one of the criteria in spatial organization of buildings. This means, for example, that particular attention must be paid to spaces that have only part-time occupancy such as conference rooms and auditoriums; and to spaces that are used round-the-clock, such as computer rooms.

A recent study[2] on the energy use of 50 office buildings in Philadelphia concluded that, "the single most important finding is that the variables most affecting energy consumption are the extent and type of building use, as determined . . . by presence or absence of computers, data-processing equipment and support facilities," in which case the energy use was 50 per cent higher than buildings without this equipment.

Virtually every one of these buildings was designed without thought being given to where computers would be located. While much of the 50 per cent premium in energy use can be attributed to the computers and their air conditioning, the fact that support facilities have to be provided for people working in these facilities is of major significance.

Most office-related systems are operated for 50 to 60 hours a week, while most computers are used for as much as 168 hours a week (24 hr a day). This means that it is necessary to provide lighting in the lobby, stairwells, corridors, lounges and toilet rooms, elevator service, vending machines, etc. for people working in these facilities. It may be necessary to provide almost as much energy for the services in the "spine" of the building as when it is fully occupied.

There have been cases where computer rooms occupying less than 10 per cent of the floor space of an office building consumed more than two-thirds of the annual electricity.

Big variations in energy budgets can result from changes in design and operation

Strikingly, studies of projected energy usage in buildings, using commonly accepted design

Actual energy use may turn out much different than presumed

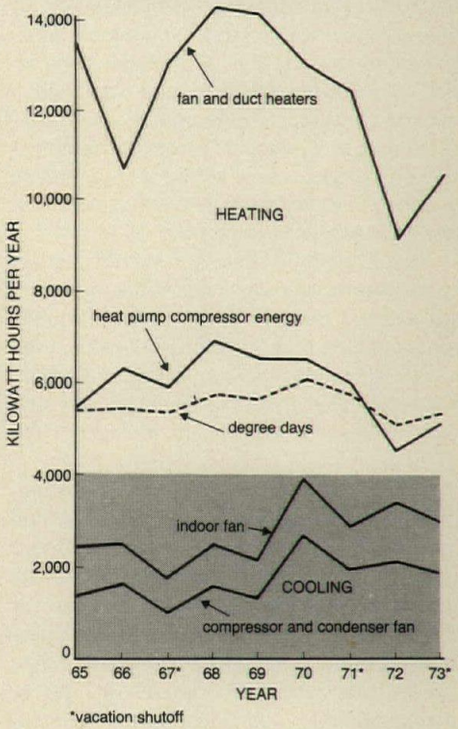


Figure 1: Annual variation in heating and cooling energy use for a single-family house with heat pump
For this house in Indiana, maximum variation in heating and cooling loads was about 2 to 1. In 1968 when maximum heating load occurred, total energy use exceeded by 30 per cent, that of 1972, when minimum heating load occurred. Dip in heating energy consumption in 1966 presumably resulted from greater operation of the heat pump and less need for duct heaters.

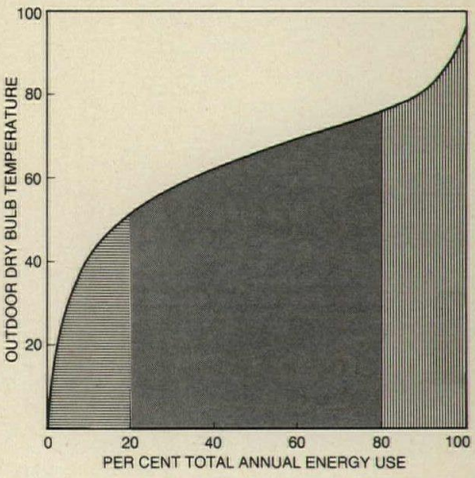


Figure 2: Hvac energy use as a function of temperature for a building in Ohio
Up to a temperature of 50F, only 20 per cent of the total energy use occurred; above 80F only 12 per cent of the total energy use occurred.

practices, have shown variations as high as five or even 10 to one, depending upon systems selected and system operation.

While this is not usual, it is relatively easy to demonstrate variations on the order of two to one, as in Table 1[3] which lists energy budgets for a variety of system design and operations options for a proposed office building. Some of the items having significant impact include amount of ventilation air, hours of fan operation, control and capacity of perimeter radiation.

Even in buildings having reasonable energy consumption, it is possible to find further substantial reductions as demonstrated by Table 2. This 1-million sq ft building has a perimeter induction system and interior-zone reheat, and during one particular year had a *measured* energy consumption of about 70,000 Btu per sq ft per year. Through a combination of design, operational, and schedule changes, computer simulation indicated a possible reduction of 20 per cent.

Before going further, we should explain the commonly used meaning of the term "annual energy budget." It is defined as the amount of fuel, at its gross thermal value, used by a building, plus the kilowatt hours of electricity multiplied by 3,143 Btu/kWh, the total being divided by the square footage of the building.

A word of caution, though, about interpretations and inferences drawn from reported measured data (annual energy budgets). Good-quality energy consumption data and adequate information on buildings and their use is difficult and expensive to obtain. Scarcely any buildings are monitored by anything more than a kWh-meter, and bills for fuel oil, gas or steam. Seldom are individual pieces of equipment metered. For these reasons, when reported data is being used as a basis for comparison, the quality of the data must be carefully examined and carefully used—taking into account the presumed accuracy and sophistication of the people reporting the data, who is presenting the data and why, the validity of the sample, etc.

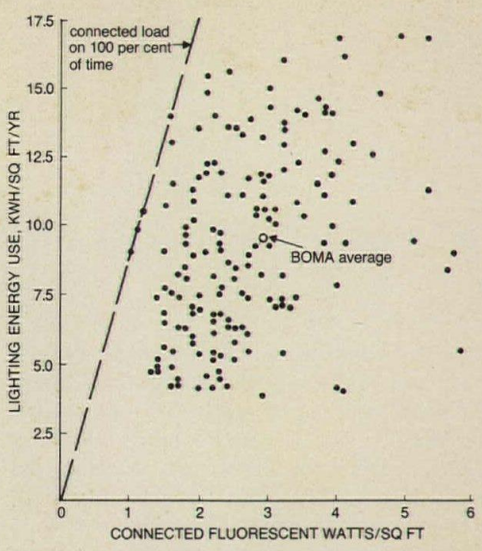


Figure 4: Plot of office building lighting energy consumption versus installed capacities
A survey of BOMA members across the country shows no correlation between yearly energy use for lighting and the watts per square foot of installed capacity.

Energy budgets vary from building type to building type and building to building

There seemingly is little consistency in annual energy consumption of buildings within given building types. And paradoxical as it might seem at first, statistics show that climate, itself, is not much of a factor. All of which tends to confirm the thesis that it is how a building is used and how much the systems are used that determine annual energy budgets.

Office buildings. Every year the Building Owners' and Manager's Association (BOMA) reports the air-conditioning operating costs of over 125 million square feet of office buildings on a city-by-city basis.

If air-conditioning operating cost, which in itself is fairly crude (how does one apportion the electrical energy usage among the various systems?) is plotted against cooling degree days, which also is fairly crude, on a city-by-city basis, the plot is a scatter of points all over the place (Figure 3). In other words no consistent pattern develops. What a person might expect would be a series of points forming a diagonal line, starting low at the lowest degree days, and being high at the highest degree days. But this graph shows that cooling cost of office buildings has little relationship to climate. The reason is that most of the air-conditioning energy is used to offset heat gains from people, lights and equipment.

Another misconception is that the efficiency of equipment at full load is an index how efficiently a building will be operated, but this is not necessarily so. Again, it is how the building is used. Take an example: A centrifugal chiller for a high-rise office building might have an efficiency of 0.7 kW per ton, while some low-efficiency unitary units might take 2 kW per ton. But if one tenant wants to work late in an office building with a central system, it is necessary to turn on, say, one 500-ton chiller, a couple of 100 horsepower pumps, a 50-horsepower cooling tower fan, one 400-horsepower primary air fan, and a 100-horsepower return fan. Before you know it, almost 1000 kW are being used. Unitary air conditioners, on the other hand would take only about 2kW per person to keep late workers comfortable.

The case is not being made for unitary equipment, per se; not at all. Obviously a central system is more efficient where occupancy is uniform and consistent in a large building. The point is again made, however, that actual building use is a primary factor in energy use.

Earlier the statement was made that there is no direct relationship between installed capacity and energy consumption. This is borne out by data on lighting energy use in 307 office buildings across the country as collected by BOMA[4] (Figure 4). There is no pattern whatever between installed capacity and annual energy use.

Schools and colleges. This inconsistency we've been demonstrating is true of schools too. This is shown in Table 3, an energy-use study done on schools in Fairfax County, Vir-

Neither climate nor installed capacities of equipment are a guide to building energy use

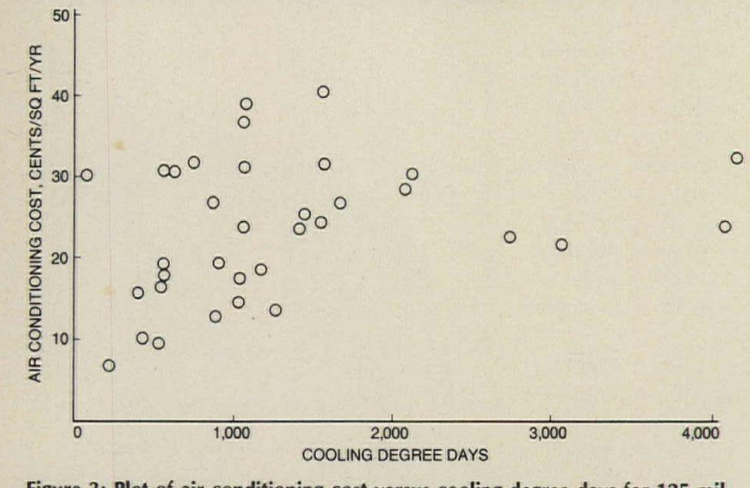


Figure 3: Plot of air-conditioning cost versus cooling degree days for 125 million square feet of office space
Statistics collected by the Building Owners' and Managers' Association show no correlation between climate and air-conditioning operating cost. The inference is that operating hours is a much more significant factor.

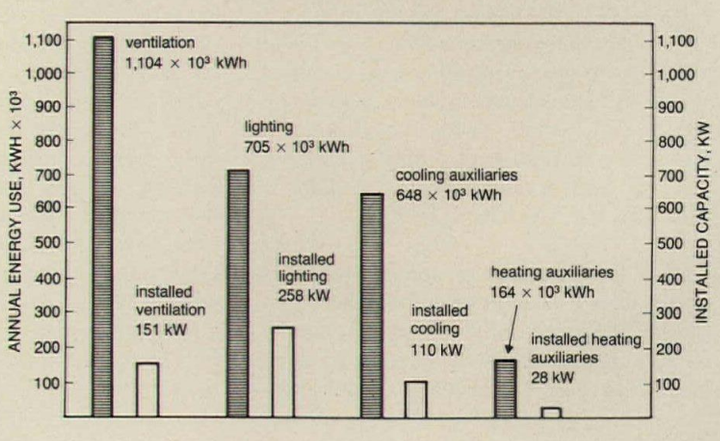


Figure 5: Relationships between installed capacities of equipment and energy consumption at an Ohio University
This bar graph indicates that there is no direct relationship between installed capacity and energy use.

ginia.[5] All the schools in this county operate under almost identical weather conditions; and, generally speaking, the architecture is similar. But look, for example, at how electrical consumption varies from school to school. Yearly costs range from 13.5 cents per sq ft down to 3.8 cents per sq ft—a ratio of four to one!

These schools are in an area where the utility company had an electric rate of a flat one cent per kWh with no demand, so the cost is directly related to the actual energy use. All the schools also pay the same price for fuel oil. so the cost figures are directly related to fuel consumption.

Figure 5 again confirms the concept that says, "I don't want to know so much how big the equipment is, I want to know how much it's used." This is a building at Ohio State University that has absorption cooling with a gas-fired boiler, which is also used for space heating.[6] Installed capacity of the ventilation equipment is only 151 kW, but look at the amount of energy it uses. In contrast, the lighting load is almost twice the installed capacity of the ventilation, but it uses only two-thirds as much energy.

University buildings of various types have been shown to vary by more than four to one in energy use[7](Table 4). Obviously a chemistry building will use a lot more than a fine arts building. But the table shows that energy use of fine arts buildings at two different universities in Utah varied by 50 per cent.

Hospitals. Energy use in hospitals is intensive, as is shown in Table 5, from a study of three Veterans' Administration buildings in different parts of the country.[8] But climatic comparisons are also interesting. In Buffalo, where the winter design temperature is –10F, one would expect the fossil fuel requirements to be a lot higher than in Florida or California where the design temperatures are 30F to 40F. But not so. This table agains says when it comes to the amount of energy used, regardless of source, factors other than climate are the prime determinant.

Stores. There is an extreme range of energy budgets for stores, as is demonstrated in Table 6 which lists data from an enclosed mall-type shopping center about 50 miles north of Philadelphia. It is an all-electric building where each store has its own unitary all-electric heating and cooling system. Each store is metered and billed individually. The shopping mall operates a fixed number of hour per day, and days per week. Yet, there is a ratio of almost 10 to 1 in energy used, due primarily to the disparate functions of the stores.

The relevance of energy or power budgets is difficult to prove

There has been a movement toward establishing annual energy budgets for buildings as the basis for legislation or as guidelines for designers to meet. While this is favored by many knowledgeable people, there are many pros and cons.

In favor of the energy budget is that it establishes target energy consumptions without prescribing methods of compliance. The main problem, however, is establishing the budget itself. Other problems include the means for determining compliance with the budget during design, and the means for enforcement after the building is built.

There has been a similar, but smaller, movement towards the power budget[9] which limits the installed capacity of the energy-using systems. But the power budget fails to account for the major factor in energy consumption: how the building is used.

Low life-cycle costs and low energy use do not necessarily go hand in hand

It may seem surprising, but there is no basic or implied relationship between low life-cycle cost and low energy consumption that holds true in all cases.

Table 1: Energy use variations with alternate designs for a three-story building

Alternatives	Estimated gas use, Mcf	Equivalent electricity MkWh	Approximate energy budget Btu/sq ft/yr
1* Base case 0.1 cfm/sq ft	10,127	2,415	73,400
2* Increased ventilation air	12,913	2,498	85,800
3 Single glass used	14,287	2,515	91,500
4* 68F-winter (20% relative humidity), 80F-summer	7,324	2,226	59,700
5* Heat recovery	9,165	2,856	75,700
6 Only 75% perimeter radiation installed	8,949	2,396	68,500
7 Modular radiation control	6,729	2,353	59,000
8 Perimeter radiation shutoff at night	6,749	2,356	59,200
9 Heat off over 50F	8,799	2,364	67,500
10* Reduced operation of air handlers	9,005	2,388	68,600
11* Increased operation of air handlers	17,851	2,869	110,600
12* Combines features	4,715	2,240	49,400

This table gives energy budgets for a three-story building with a central chilled-water system and a steam boiler, with a medium-velocity, variable-air-volume air-distribution system and perimeter radiation.

*1. The base case assumes the use of double glazing. 2. Ventilation air is increased to 0.25 cfm. 4. Base case (1) assumes 72F in winter and 75F in summer. 5. Heat recovery used, economy cycle (viz, outdoor air used for cooling) is turned off. 10. Startup is delayed until 8 a.m., and the system is shut off at 5 p.m., reducing operation by three hours. 11. The air-handling system is operated 24 hours a day, but outside air is shut off when the building is unoccupied. 12. Several of the energy-saving features are combined. They are not cumulative however, so energy saved is somewhat less than the sum total.

Tabe 2: Effects of design, operation and schedule changes on a million square foot building

	Annual energy use/sq ft					Percent savings		
	kWh	Btu	Steam (lb)	Btu	Total Btu	Heat	Cool	Elec
1 Building as is	7.9	26,963	42.3	42,300	69,263	0.0	0.0	0.0
2* Schedule changes								
a) 4 day week	7.7	26,280	40.3	40,300	66,580	8.5	3.7	3.4
b) daylight time	7.9	26,963	41.6	41,600	68,563	–1.6	4.3	0.3
3* Temperatures								
76-65 vs. 80-70	7.9	26,963	39.2	39,200	66,163	30.5	–4.2	0.4
4 Skin changes								
double glass	7.9	26,963	40.4	40,400	67,363	14.0	1.1	0.0
5* Air system changes								
a) reduced airflow	6.3	21,502	40.8	40,800	62,302	–4.3	11.8	20.6
b) vav + recirculate primary air	6.7	22,867	39.7	39,700	62,567	1.9	14.6	16.1
6* Central plant changes						Steam		
a) base load 500 ton chiller	7.6	25,939	38.2	38,200	64,139	9.7		4.5
b) electric 500 ton chiller	8.2	27,987	27.6	27,600	55,587	35.0		–3.2
c) electric 200 ton chiller	7.9	26,963	32.5	32,500	59,463	23.0		0.2
7 Combination of reduced airflow + recirculation + base load 500 ton chiller	6.0	20,478	35.6	35,600	56,078	16.0		25.0

The values in the table are the results of a computer analysis of an existing building with steam-turbine cooling.

*2a. Energy savings due primarily to reduction in number of startup and shutdown hours per week. 2b. Daylight-saving time reduced cooling energy but required more heating energy due to a one-hour earlier startup in mornings and the heating of ventilation air. The extra heating energy almost cancelled the cooling-energy saving. 3. Saving achieved by setting thermostat in winter at 65F instead of 76F, and 80F in summer instead of 70F. 5a. Savings due to reduction of air flow on both perimeter and interior systems to match actual load. 5b. Savings due to replacement of interior reheat coils with variable-air-volume boxes, and recirculating primary air for perimeter induction system in excess of that required for ventilation alone. 6. The central chilled-water plant consists of small, medium (500-ton), and large turbine-driven chillers. The medium-size chiller was used for the base load, Three of the alternatives included: 1) base loading the 500-ton turbine chiller; 2) substituting a 500-ton electric base-load chiller; and 3) installing a 200-ton electric base-load chiller.

For example, a recent study on a large high-rise office building recommended adoption of the system that had the highest annual energy requirement because it had the lowest annual operating cost. Reason for this apparent anomaly was that the district steam company had a 100 per cent demand ratchet charge for 12 months based upon maximum demand. The system with the highest capacity, though more efficient than a lower-capacity (and lower cost) system, had the highest demand charge, and consequently, the highest operating cost. The cost for the actual energy used amounted to less than one-third of the annual energy bill; the remaining two-thirds was demand charge.

Energy consumption of buildings can vary by 2 to 1, or more

Table 3: Energy consumption cost of 17 elementary schools in the same county

Schools	Area (sq ft)	Cost of electricity per sq ft	Cost of fuel oil per sq ft
Greenbriar East	59,483	.135	.059
Fort Hunt	66,992	.131	.061
Brookfield	43,794	.127	.062
Kings Glen	64,023	.107	.073
Camelot	76,853	.100	.076
Forest Edge	80,843	.094	.050
Mt. Vernon Woods	40,051	.094	.066
Oak View	77,254	.092	.079
Wolftrap	49,082	.086	.056
Floris	19,637	.079	.089
Little Run	40,035	.074	.070
Quander Road	40,033	.062	.091
Cedar Lane	37,194	.061	.088
Beech Tree	40,333	.060	.070
Sleepy Hollow	39,045	.049	.101
Oak Grove	10,349	.039	.188
Crestwood	46,983	.038	.108

Table 4: Energy usage of university buildings in Utah

Building	Institution	Building area, sq ft	Energy budgets—MBtu/sq ft/year Heat	Electric	Total
Law	U of U	57,286	207	180	387
Pharmacy	U of U	57,790	129	51	180
Chemistry	U of U	95,160	429	158	587
Library	U of U	248,480	117	134	251
Fine Arts	USU	132,435	148	52	200
Eng. & Phys. Science	USU	142,580	119	30	149
Forestry & Bio Science	USU	118,827	128	54	182
Fine Arts	SUSC	18,849	95	39	134
Library	SUSC	45,168	70	70	140
Phys. Ed.	SUSC	50,349	227	24	251
Science	SUSC	45,609	147	24	171
Range			70 to 429	24 to 180	134 to 587
			6.1:1	7.5:1	4.4:1

Table 5: Energy usage of three VA hospitals

	Btu/sq ft/year
Lake City, Fla	
Fuel	189,000
Electricity	73,000
Total	262,000
San Diego, Calif	
Fuel	285,000
Electricity	122,000
Total	407,000
Buffalo, NY	
Fuel	176,000
Electricity	41,000
Total	217,000

Table 6: Energy usage in a shopping mall

	Btu/sq ft/year
Auto center	74,000
Department store	114,000
Department store	102,000
Variety store	100,000
Restaurant	409,000
Bank	131,000
Drug store	129,000
Food market	205,000
Dry cleaner	688,000
Book store	104,000
Doughnut store	326,000

With computer simulation, how the building is used influences accuracy of results

From what has been said so far, one might be overwhelmed with the thought of predicting building energy use. There are, however, a number of computer programs available for this purpose. They have a wide range of capabilities and costs. No one computer program will be applicable in all situations. The key factor in selecting a program is its ability to handle the specifics of the building being evaluated in sufficient detail and flexibility to permit study of alternatives in adequate depth.

The cost of using these programs for new building design can range from less than $100 to several thousand dollars, plus about one to 10 professional man-days. Once a particular program has been selected, the main items of cost are the number of alternatives to be evaluated, and the complexity of the building and its systems.

How accurate are the results? Frequently, there are wide discrepancies between predicted and actual energy use because the use of the building turned out not to be what was presumed in the computer simulation. Then adjustments to the initial assumptions regarding hours of occupancy, night and weekend use, mechanical system operation, etc., are necessary to more closely match the predicted to the actual energy consumption.

Building owners must be able to control building energy consumption for efficiency

While the variations in building energy consumptions that have been demonstrated are probably best explained by use of buildings more than by their physical characteristics, this by no means implies that buildings and their systems should not be optimized for efficient use of energy in themselves. But the overriding factor still is the ability of the owner to efficiently control the energy consumption of the building, whether this be provision for switching lights off and on within reasonable building modules, allowance for part-load operation of systems, design for part-time occupancy of spaces or whatever.

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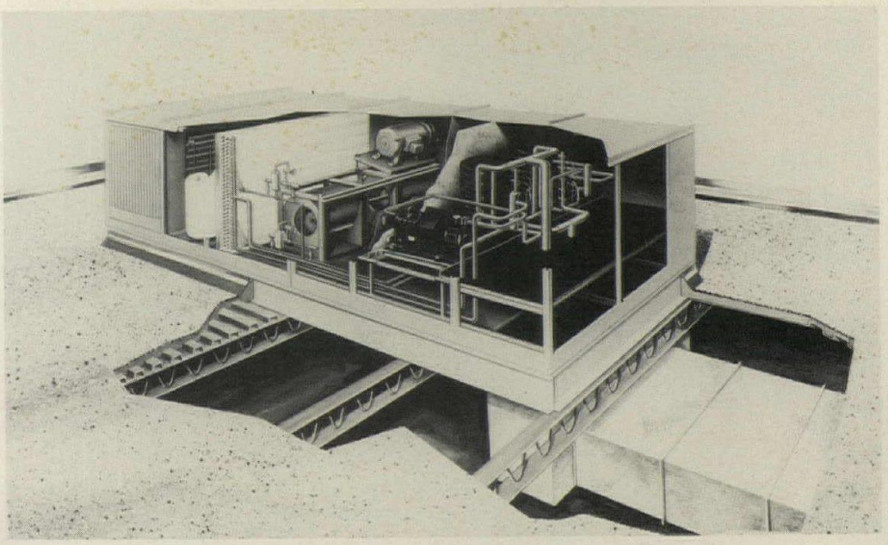
For more information, circle item numbers on Reader Service Inquiry Card, pages 197-198.



Reverse cycle rooftop hvac system saves energy

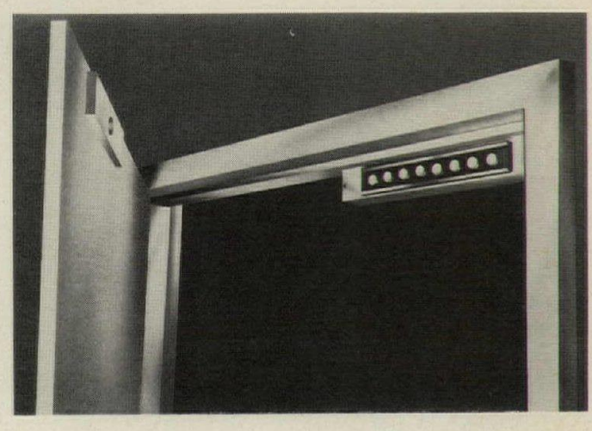
Using a water source heat pump in conjunction with reverse cycle units on the building's perimeter, this *Reverse Cycle Roof-Mounted System* is said to effect a 50 per cent savings in energy over conventional equipment. All units are connected to a single, uninsulated closed two-pipe water loop, in which the water temperature ranges from 60° to 90°F. This relatively low water temperature might permit the use of solar energy collectors as booster heaters. Shown, from left in the cutaway section, are: mixing box and dampers; filters; air coil; fan section; water-to-refrigerant heat exchanger; reversing valves and compressors; piping and discharge section. ▪ American Air Filter, Louisville, Ky.

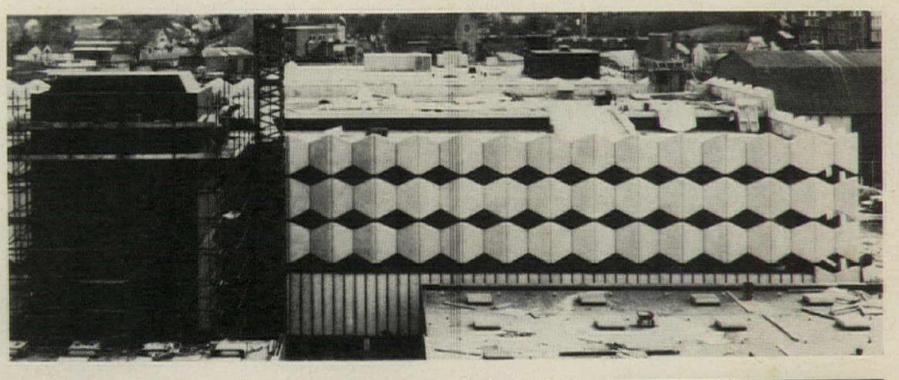
Circle 300 on inquiry card

Electro-magnetic locking system conserves power

"Powerlock" is an electro-magnetic locking device that provides positive, immediate door control by magnetically bonding the door to its frame. Newly designed to reduce power requirements, the largest, 11-in. long, unit is said to draw less than two amps at 12 volts DC, and requires no special voltage boosters within the electrical supply. Surface locks are offered in models for single or paired in- and out-swinging doors, and for sliding doors. All necessary mounting hardware comes with each lock. Available options include built-in power sensing, magnetic bond sensing, door switch, and indicator lights. Manual- and key-operated controls, flush and surface door switches, and central control may be ordered. ▪ Locknetics, Bristol, Conn.

Circle 302 on inquiry card

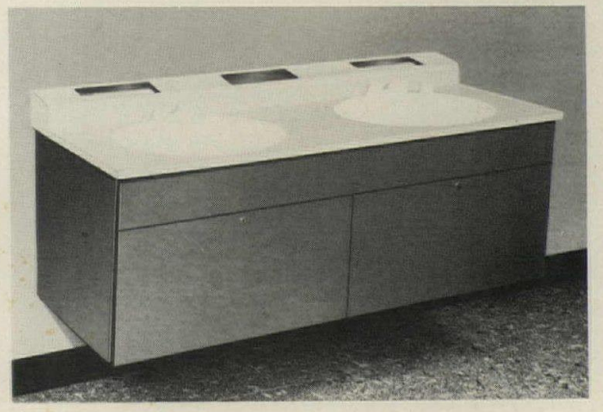




Vanity units with built-in accessories

These laminated plastic lavatories have built-in paper towel dispensers and waste receptacles located in the backsplashes. The towel dispenser loads from the top; the waste receptacle comes with a removable, leak-proof molded plastic container. Both units are finished in stainless steel. Cabinets are constructed of ¾-in. thick resin-treated particle board; doors have tumbler locks. ▪ Bobrick Washroom Equipment, Inc., New York City.

Circle 301 on inquiry card

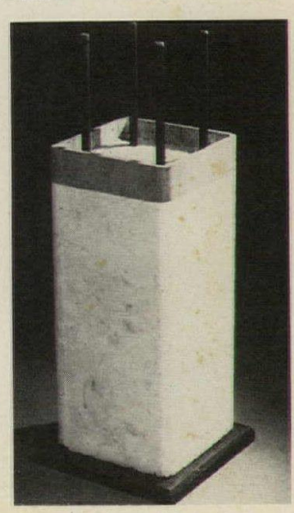


Glass fiber reinforced cement is now made in U.S.

A British and an American firm have formed a joint venture to produce alkali-resistant glass fibers in the United States. Conventional glass fibers may be damaged by the alkali in cement, but *Cem-Fil* glass fibers are produced from a specially formulated glass which is alkali-resistant. Wide development of this technology in Europe has produced many nonstructural architectural applications including for example, exterior panels, fire-resistant board sheet, window frames, etc. The manufacturers claim that *Cem-Fil* glass-fiber reinforced cement can be easily formed into thin-wall shapes with either decorative or smooth surfaces. Products made of the cement are said to be fire-, weather- and shatter-resistant, with low sound transmission. ▪ Cem-Fil Corp., Nashville, Tenn.

Circle 303 on inquiry card

More products on page 136



For more information, circle item numbers on Reader Service Inquiry Card, pages 197-198.

SECURITY GLAZING / A packet of five brochures outlines the uses of *Plexiglas* acrylic plastic sheet in industrial and commercial security installations. These case studies and technical bulletins describe the impact resistance, clarity, bullet- and burglar-resisting properties claimed for *Plexiglas*. Also included are instructions for fabricating, installing and maintaining this security glazing. ▪ Rohm and Haas Co., Philadelphia, Pa.

Circle 400 on inquiry card

PORCELAIN PANELS / Several new applications of porcelain-on-steel panels are illustrated in a 16-page color catalog. Included is a new transportation shelter said to be graffiti-proof and vandal-resistant; on-site photos of various panel installations are shown, as well as technical drawings detailing insulated and veneer porcelain-on-steel panels. ▪ Alliancewall Corp., Wyncote, Pa.

Circle 401 on inquiry card

OFFICE FURNITURE / A full-color catalog presents the "Crestwood Collection" of desks, credenzas, and coordinated seating. These pieces are available in solid walnut or walnut veneer, with aluminum inlays; with tops of walnut, olive ash burl or vinyl. ▪ R-Way Furniture Co., Sheboygan, Wis.

Circle 402 on inquiry card

WINDOW SHADES / Four window shade styles designed for school and other institutional use are illustrated in a new bulletin. Included are single- and double-roller shades, folding shades, and the "MS" unit that provides uninterrupted coverage for large, wide windows. Measurement instructions are given. ▪ Oliver C. Steele Mfg., Co., Spiceland, Ind.

Circle 403 on inquiry card

RESILIENT FLOORING / A 16-page, full-color catalog illustrates all colors and patterns of the company's vinyl asbestos and asphalt floor tiles, feature strips and cove bases. Included is information on sizes, gauges, installation, light reflectance values, and brief specifications. ▪ Azrock Floor Products, San Antonio, Tex.

Circle 404 on inquiry card

CONSTRUCTION SEALANTS / This four-page brochure summarizes design and application data for the firm's line of silicone construction sealants. Joint design and preparation is illustrated. ▪ General Electric Co., Waterford, N.Y.

Circle 405 on inquiry card

CERAMIC TILE / A 36-page catalog presents a full 1976 line of glazed, quarry and ceramic mosaic tile for walls and floors. Included are architectural specifications and installation information. ▪ American Olean Tile Co., Lansdale, Pa.

Circle 406 on inquiry card

ALUMINUM CONSTRUCTION PRODUCTS / The "Safeguard Gravel Stop" is included in the firm's 1976 product catalog. Roof expansion joints, fascia panels and coping systems are also illustrated. ▪ W. P. Hickman Co., Inc., Asheville, N.C.

Circle 407 on inquiry card

GROUTING COMPOUND / A six-page illustrated brochure explains the advantages of the company's brand of nonmetallic, inorganic grout for precision placement of both structural members and heavy equipment. Product preparation, installation and specification information is included. ▪ Sauereisen Cements Co., Pittsburgh, Pa.

Circle 408 on inquiry card

REINFORCED CONCRETE / A 52-page book contains reprints from professional publications reporting on uses of reinforced concrete said to have saved money and time in a variety of installations. There is also a section on the benefits of high-strength concrete. ▪ Concrete Reinforcing Steel Institute, Chicago, Ill.

Circle 409 on inquiry card

DECORATIVE COTTON FABRICS / Two large sample books, containing over 120 fabric swatches, display the firm's line of solid color and tweed-texture cotton upholstery material. All fabrics shown are washable and pre-shrunk. There is a charge of $5 for the books, refundable with initial purchase. ▪ Dazian's Inc., 40 East 29th Street, New York, N.Y. 10016.

HARDWOOD PLYWOOD / Flamespread testing and inspection procedures for hardwood plywood products are detailed in the 1975 *Testing and Inspection and Listed Products Manual*. The booklet is intended to provide a quick-reference list of companies manufacturing hardwood plywood wall paneling conforming to the flamespread and structural requirements of state and Federal building codes. Actual flamespread, smoke and fuel contribution values obtained by Association testing are included. ▪ Hardwood Plywood Manufacturers Assn., Arlington, Va.

Circle 410 on inquiry card

STEEL DECKS / Sales catalogs are available on three lines of steel decks: roof decks; "Tensilform/Tensilvent" floor decks; and composite floor decks. These two-color brochures include technical data, load tables, and revised specifications. ▪ Wheeling Corrugating Co., Wheeling, W. Va.

Circle 411 on inquiry card

CONCRETE CURING SYSTEM / A new booklet presents the advantages claimed for "Kure-n-Kote," a transparent curing and sealing compound. This two-step system is said to allow the selection of a durable finish to meet specifications without the need of such work as grinding or acid etching. Limitations and recommended maintenance requirements are also given. ▪ Sonneborn-Contech, Minneapolis, Minn.

Circle 412 on inquiry card

ENERGY CONTROL / A brochure describes what is said to be a low-cost, computerized system for reducing energy consumption in commercial buildings. The four-page illustrated brochure discusses common problems of energy use in existing buildings such as continuous operation at extreme demand capacity; time-clock start-up that ignores prevailing weather and occupancy conditions; lack of ventilation control and inability to avoid peak demand electric rates. The "Power/Perfect Package" can be installed in buildings of various sizes and can be adapted to accommodate fire-safety monitoring and control, security and control of all electrical and mechanical equipment in the building. ▪ Johnson Controls, Inc., Milwaukee, Wis.

Circle 413 on inquiry card

COFFEE BREWERS / A 6-page "Specifiers' Guide" describing the company's full line of coffee brewers and warmers details major product features for the various models; lists industry approvals, typical specifications and brewing capacities; and shows complete dimensions. ▪ Bunn-O-Matic Corp., Springfield, Ill.

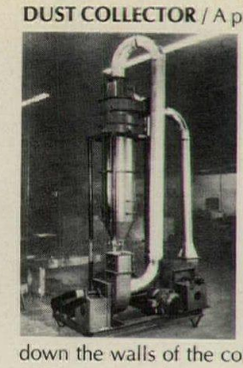
Circle 414 on inquiry card

For more data, circle 52 on inquiry card ➧

TEMPERATURE CONTROL SYSTEM / The "AutoPilot" is said to reduce energy costs by automatically cutting back on heating or cooling during unoccupied hours. Designed for small industrial plants, offices, banks, schools, etc., the system works with central, package, or rooftop units. It also regulates heating and cooling during the day, and includes a clock programmer for keeping the HVAC system on the energy-saving cycle weekends or holidays, then automatically returning to normal day/night operation. ▪ Pilot Industries Corp., Minneapolis, Minn.

Circle 304 on inquiry card

DUST COLLECTOR / A pilot dust collector, mounted as an integral unit on a steel frame, is available to test users' air separation requirements on location where dust collection problems exist. The mechanical unit is complete with ductwork and blowers, and is said to achieve high efficiency with a secondary air stream passing through vanes spiralling down the walls of the collector. Style "SV" reaches 100 per cent efficiency at 6 microns; 94 per cent efficiency at 2 microns. ▪ Aerodyne Development Corp., Cleveland, Ohio.



Circle 305 on inquiry card

SOAP DISPENSER / A leaf-form soap, said to be free of any unpleasant odor, is now available in either plastic or chrome dispensers. Designed for public washrooms, these units can be mounted on almost any surface, and the "leaf at a time" soap eliminates the waste of liquid or powder soaps. ▪ Cleaf System, Parachem Corp., Des Moines, Iowa.

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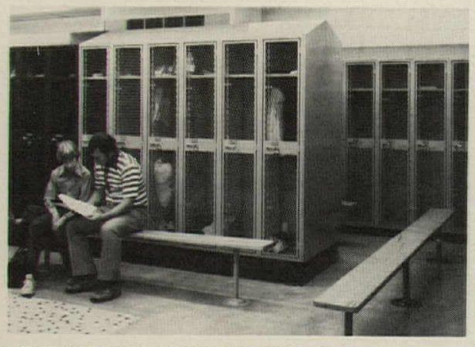


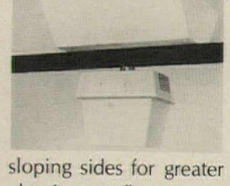
VENTILATED LOCKER UNITS / Expanded metal locker units are available with steel mesh doors to promote air circulation. Suitable for schools, hotels, hospitals and other institutional installations, these lockers are manufactured in single- and multiple-tiers, and in 18 colors. A 24-in.-wide team locker can be used for bulky equipment and uniforms. ▪ Lyon Metal Products, Inc., Aurora, Ill.

Circle 307 on inquiry card

OFFICE PARTITIONS / Designed for open plan commercial installations, these "Landscaped Look" panels are available in walnut, oak or aluminum frames; fabric, carpet or vinyl textures; and 23 colors. The partitions have a noise reduction coefficient of up to .95 NRC, and are said to meet Underwriters' Fire Standard 701. There are both curved and straight units; a wide range of custom colors and textures may be ordered. ▪ Panel Concepts, Fountain Valley, Calif.

Circle 308 on inquiry card

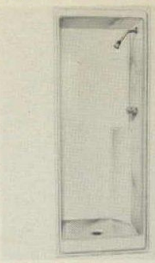
RECREATIONAL LIGHTING / A new indirect lighting system for indoor tennis and swimming facilities is said to require fewer units and use less electricity. The fixtures include a linear lamp compartment with 48 deg. sloping sides for greater light distribution; specular aluminum reflector; cast aluminum ballast housing; and wire guard. The units are available for 400- and 1000-watt mercury vapor or metal halide lamps, as well as 400-watt high-pressure sodium lamps. ▪ Guth Lighting, St. Louis, Mo.



Circle 309 on inquiry card

More products on page 137

FIBER GLASS SHOWER UNIT / This 32-in.-wide "Uni-Shower" is now available in an 81½-in.-height. The floor area of the shower has also been increased, and the unit can take a standard size shower door. Said to be especially popular for installation in existing homes because it fits through doorways, the "Uni-Shower" can be ordered in several colors. ▪ Universal-Rundle Corp., New Castle, Pa.

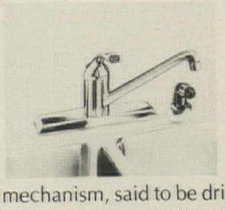


Circle 310 on inquiry card

TELEPHONE SYSTEM / A computerized branch exchange suitable for business and institutional applications from 80 to 800 telephone stations, the *Rolm CBX* is said to reduce wiring requirements from 100-pair cables to 3-pair cables. The system uses standard telephones, and is compatible with digital networks. The *CBX* has a large number of options permitting a high degree of control over telephone costs, speed and installation. ▪ Rolm Corp., Cupertino, Calif.

Circle 311 on inquiry card

FAUCETS / A new addition to the manufacturer's line of kitchen faucets is "Coronette," available in both dual handle and single lever models. These faucets have an all-brass swing spout and a three-ceramic-disc valving mechanism, said to be drip-free and backed by a ten-year warranty. ▪ Elkay Manufacturing Co., Broadview, Ill.



Circle 312 on inquiry card

AUTOMATED STORAGE / In one installation, computer-directed equipment automatically stores and retrieves over 70,000 packages of up to 50 pounds each in less than a quarter of the space needed for conventional warehousing. The "Racker-Stacker" would permit all the storage requirements of a five-story building to be contained in a 10-ft-wide, building-high space, according to the manufacturer. ▪ Automated Functions, Inc., Bladensburg, Md.

Circle 313 on inquiry card

VINYL ASBESTOS TILE / Described by the manufacturer as the first no-wax vinyl asbestos tile, "Sunbeam" flooring is available in three patterns ("Yardley Brick" is shown) and a total of 11 colors. The line comes in 12-in.-square, .080 gauge tiles with self-adhering peel-off backing, and requires only damp mopping. ▪ Amtico Div., American Biltrite, Inc., Trenton, N.J.

Circle 314 on inquiry card

More products on page 139

For more data, circle 54 on inquiry card

The System made us change our name.

We've changed our name from ECO to Hager Control Systems.

Our old name, ECO, stood for Electronic Control of Openings . . . but it didn't describe the world of other activities in which we are involved.

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Our address is still the same, 10765 Indianhead Industrial Blvd., St. Louis, Mo. 63132.

HAGER CONTROL SYSTEMS

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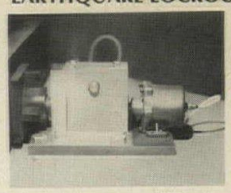
HAGER CONTROL SYSTEMS

EARTHQUAKE LOCKOUT SYSTEM / Air-conditioning units and other resiliently-supported equipment can be damaged by high g-forces occurring during earthquakes, according to the manufacturer of the "Type EL-9 Lockout System," designed to prevent such damage. Upon sensing acceleration of the building in excess of 0.03g, the floor-mounted, air-activated mechanical lockout devices engage locking pistons with equipment-base mounted centering sockets, fixing the unit to the building floor. ▪ Consolidated Kinetics Corp., Columbus, Ohio.



Circle 315 on inquiry card

DRYWALL CORNER BEAD / A steel corner bead, for use with drywall or one-coat veneer plaster, can be applied with staples, nails or clinch-on tools. The new galvanized bead has expanded 1¼-in.-wide fine-mesh flanges with tapered edges, and can be used with ready-mixed or powder joint compounds. ▪ United States Gypsum Co., Chicago, Ill.

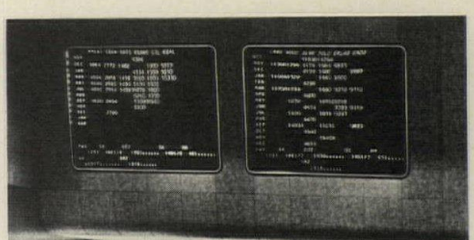
Circle 316 on inquiry card

SKYLIGHT PANELS / Designed to eliminate possible condensation and dripping problems associated with uninsulated fiber glass panels, these new "Lascolite" units provide a light-transmitting foam core between two layers of fiberglass. Their "U" factor is .84 BTU/hr per sq ft per deg F. ▪ Lasco Inds., Anaheim, Calif.

Circle 317 on inquiry card

UPHOLSTERED SEATING / A new addition to the firm's line of contract furniture, the "Manchester Seating Group" contains a lounge chair and three sofas. The pieces feature shaped, inward-curving arms and fully upholstered construction, designed to provide a self-contained appearance whether used singly or in combinations. Each is 33-in. deep and 28-in. high, and is available in any type of leather or fabric. ▪ Helikon Furniture Co., Inc., New York City.

Circle 318 on inquiry card



LARGE-SCREEN TELEVISION PROJECTORS / Pictured is the 6- by 8-ft television screen used by the Chicago Board of Trade to display transactions as they occur. The screen operates from standard 115v/20 amp outlets, and employs a sealed light valve to provide high levels of resolution, contrast and brightness, with a sealed Xenon lamp. ▪ General Electric Co., Syracuse, N.Y.

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more products on page 193

AE/UPDATE

A classified advertising section devoted to helping architects and engineers keep up to date on building product manufacturers.

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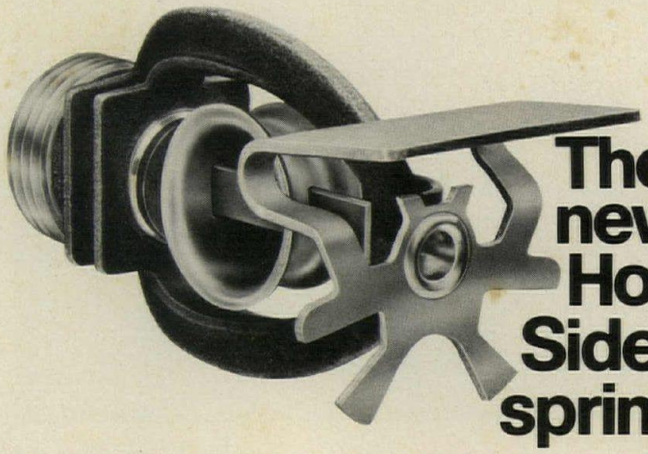

The new Grinnell Horizontal Sidewall sprinkler.

Grinnell's new Horizontal Sidewall sprinkler has a spray pattern of 14′ by 28′, giving you 392 square feet of coverage. That means a single sprinkler can cover twice the area covered by a standard sprinkler.

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The Grinnell Horizontal Sidewall sprinkler is UL listed and is suitable for light hazard occupancies where construction of the area to be protected requires a long throw pattern. Typical installations include apartments, hospitals, nursing homes, hotels, public buildings, museums, schools, universities and office buildings.

For additional information call your nearest Grinnell district office located in the Yellow Pages, or write: Grinnell Fire Protection Systems Company, Inc., 10 Dorrance Street, Providence, Rhode Island 02903.

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GRINNELL FIRE PROTECTION SYSTEMS COMPANY, INC.
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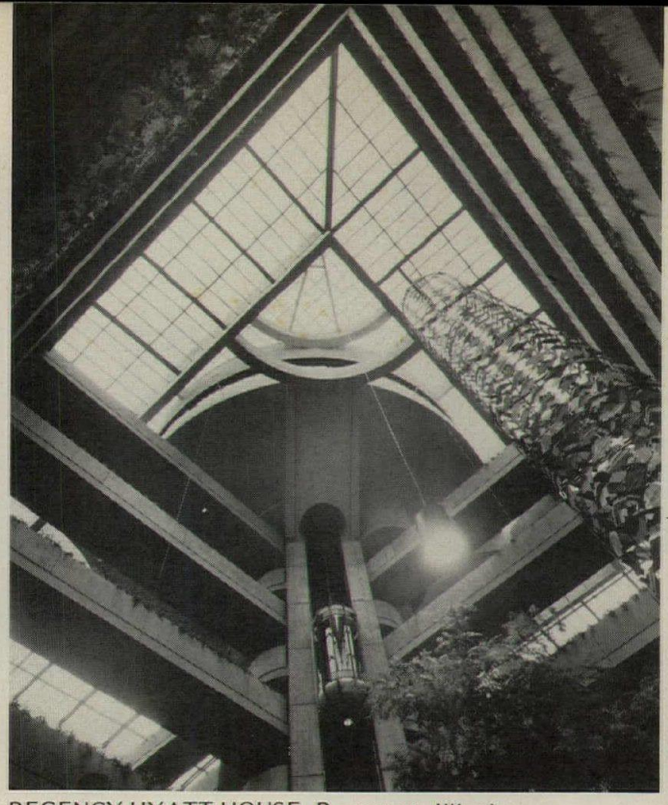
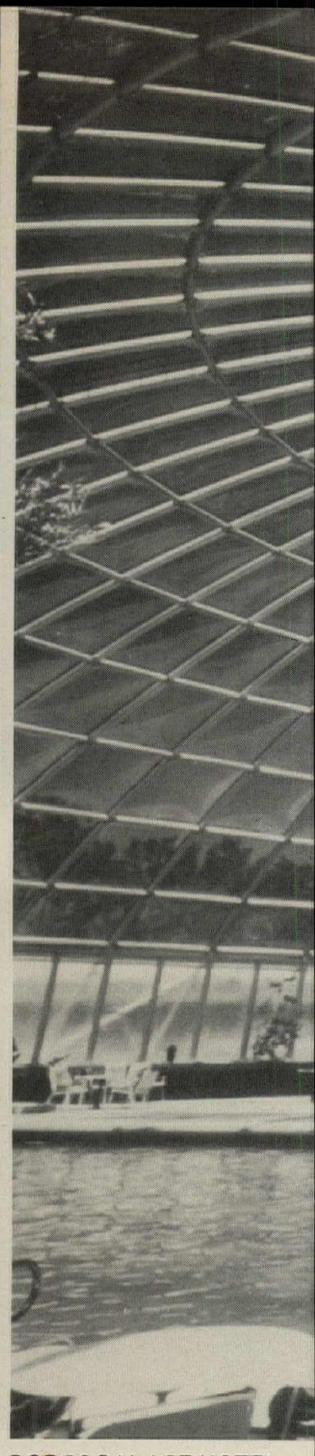
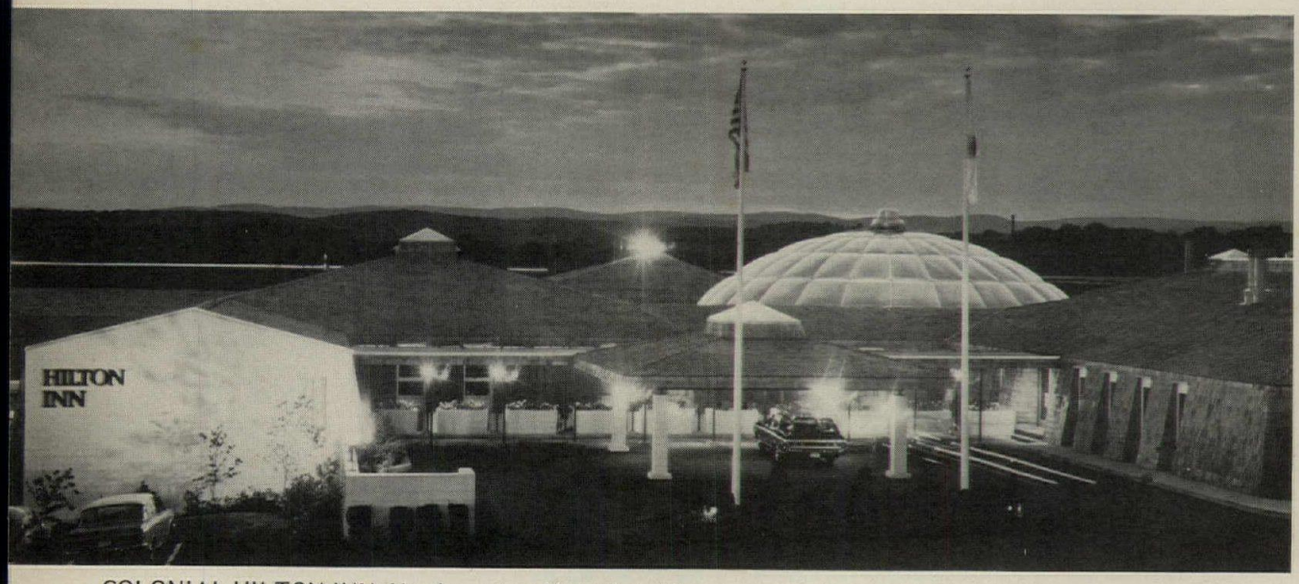
ADVENTURELAND MOTEL, Altoona, Iowa



REGENCY HYATT HOUSE, Rosemont, Illinois



RODOS PALACE HOTEL
Rhodes, Greece



COLONIAL HILTON INN, Northampton, Massachusetts

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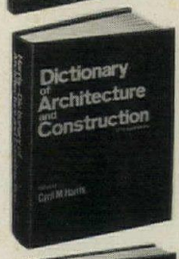

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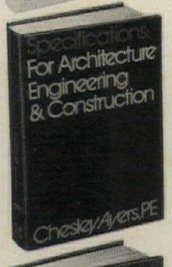

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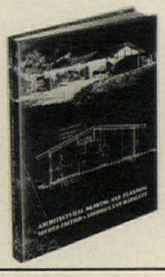

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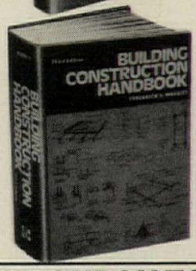

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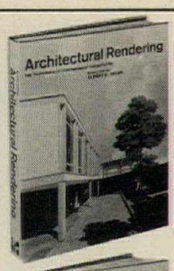

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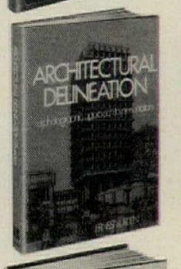

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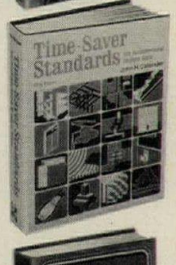

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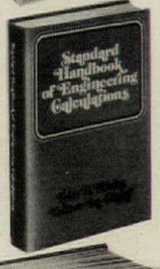

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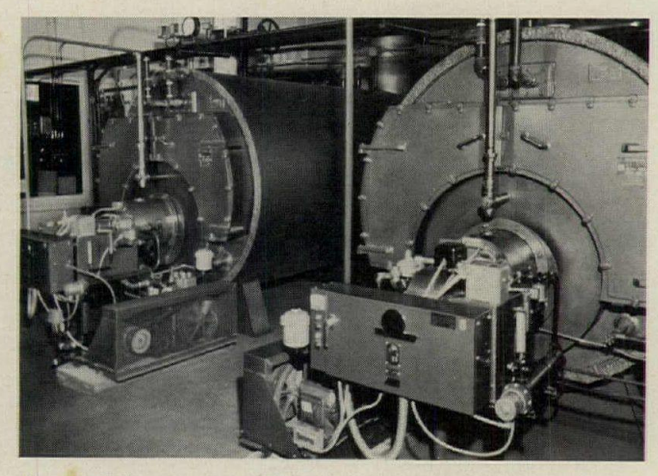

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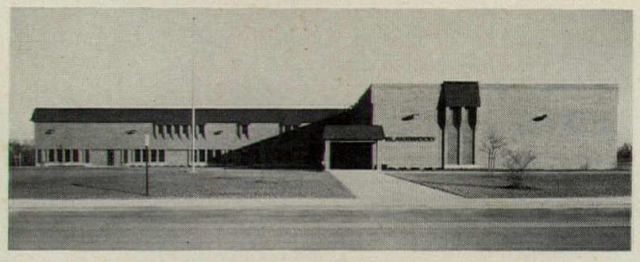

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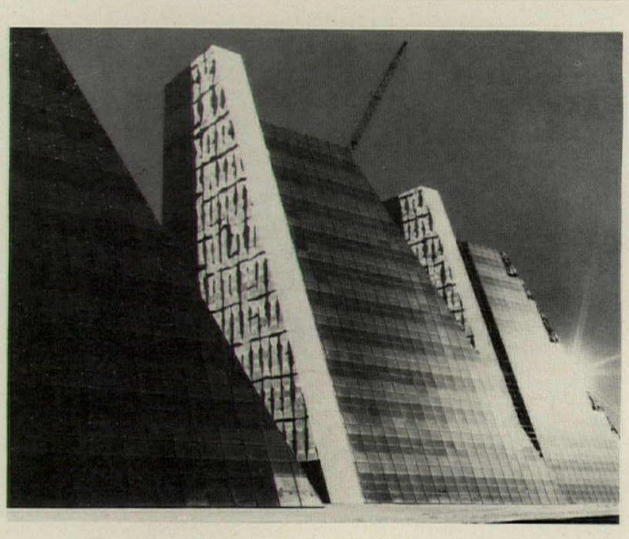

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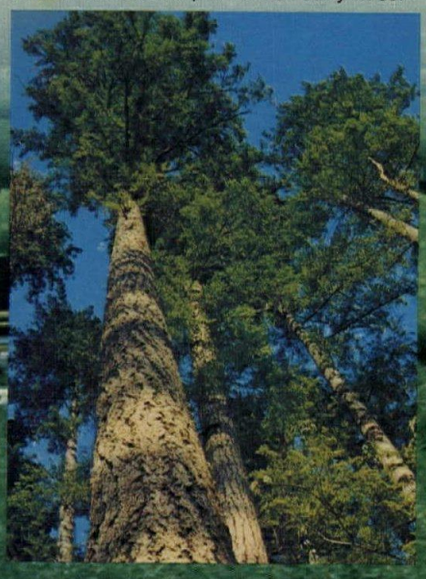
But, renewing our forests is only part of the story. We also believe in making better use of our raw materials today. And that's the job of our Research Center, where skilled scientists and technicians spend full time developing and testing products and processes to improve wood utilization, performance, and to meet the future needs of our industry. From this research Simpson has pioneered the way in many new building products, applications and special uses that have become part of our daily lives.



Ruf-Sawn Redwood Plywood

No other commercially available plywood has such a high reputation for sheer beauty in any setting as does Simpson Ruf-Sawn Redwood Plywood.

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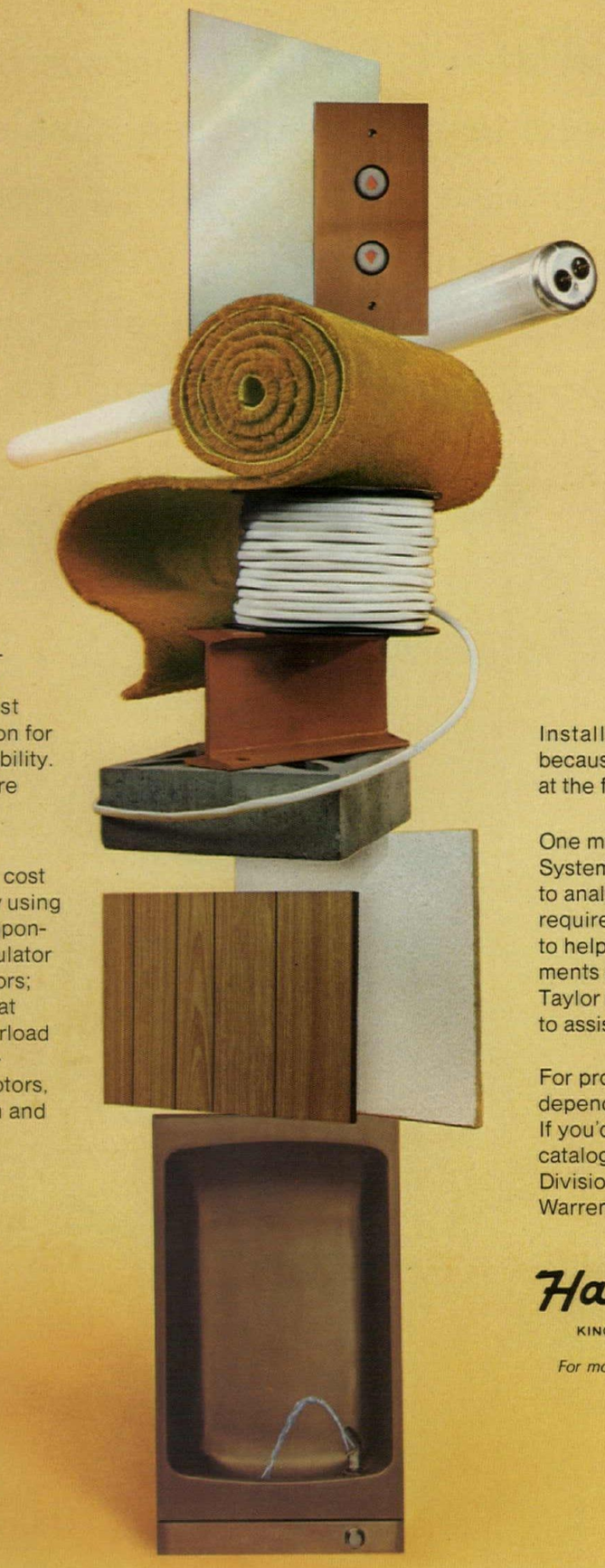

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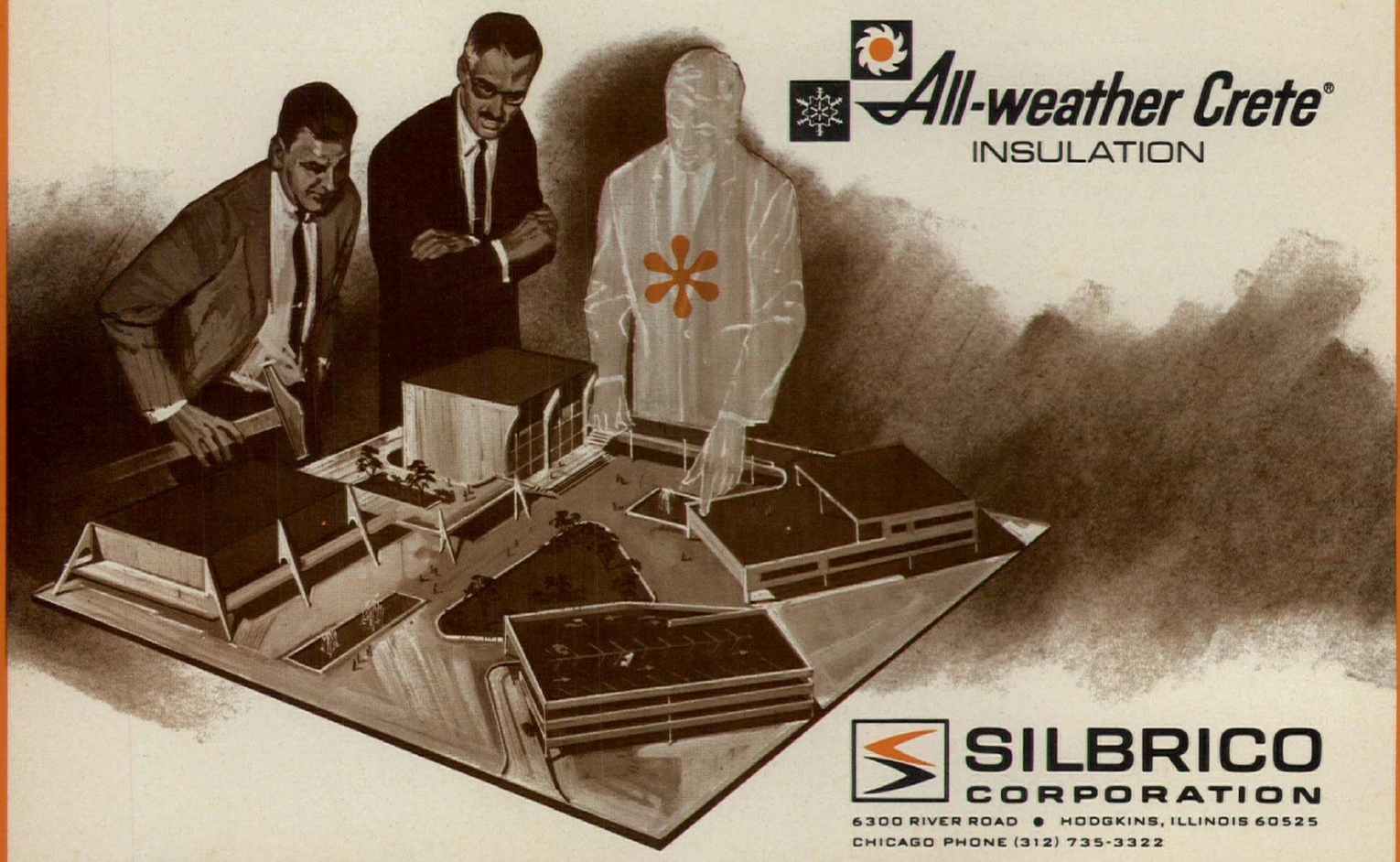

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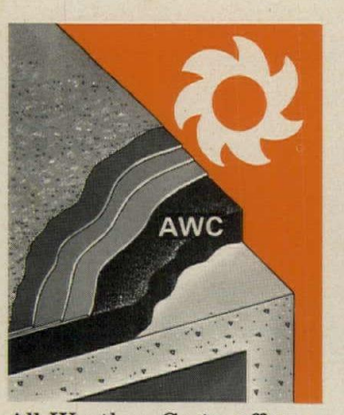

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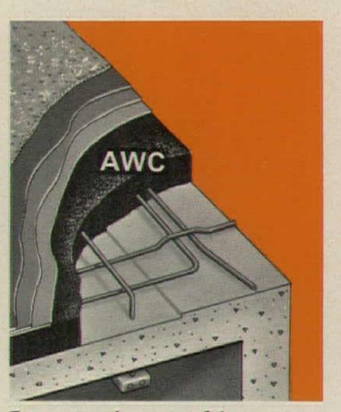

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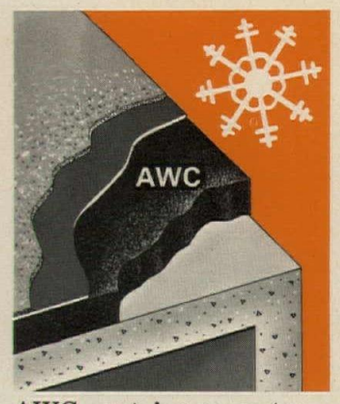

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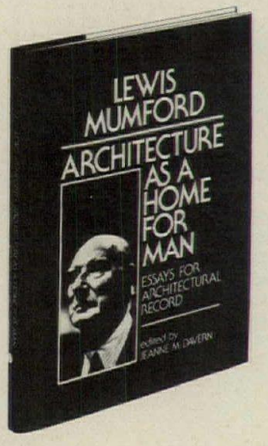

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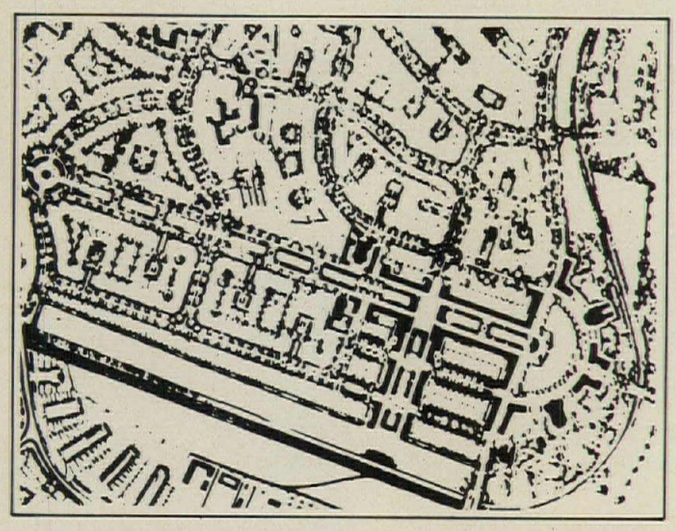

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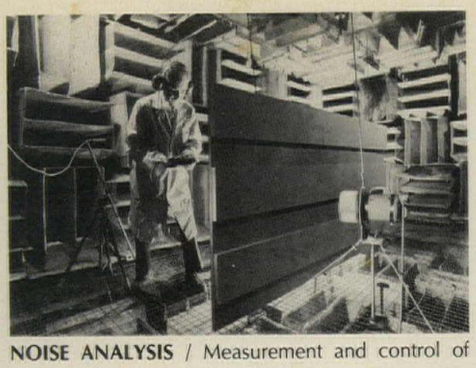

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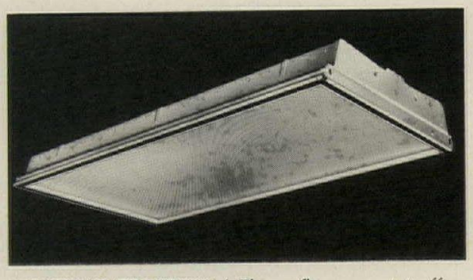

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