THE PHYSICAL SCIENCES COMPLEX AT THE UNIVERSITY OF GUELPH, ONTARIO

A REPORT FROM AUSTRALIA: THE ENVIRONMENTAL CRISIS DOWN UNDER

MEMPHIS' NEW C&I BANK BY GASSNER-NATHAN-BROWNE

BUILDING TYPES STUDY: INDUSTRIAL BUILDINGS

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

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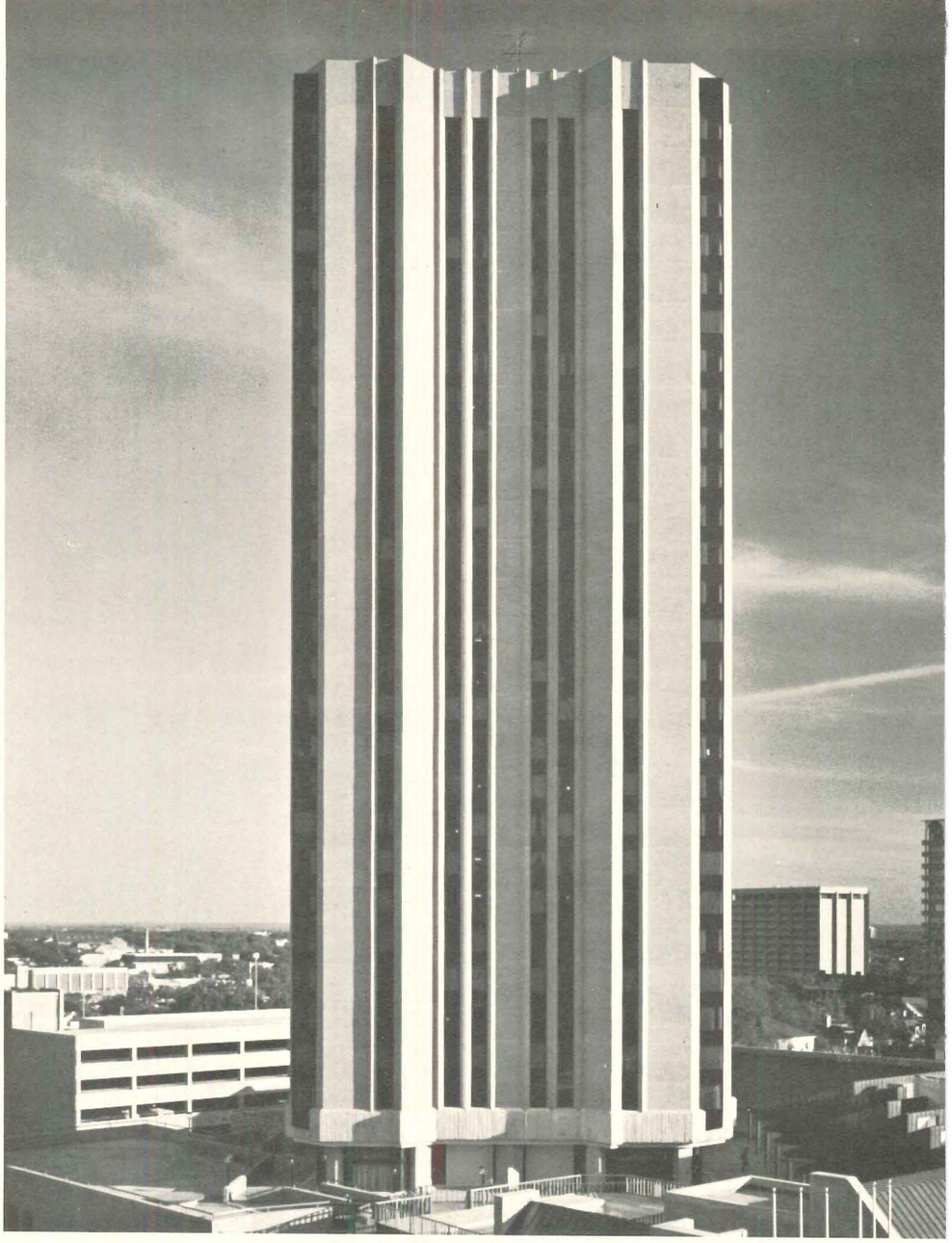
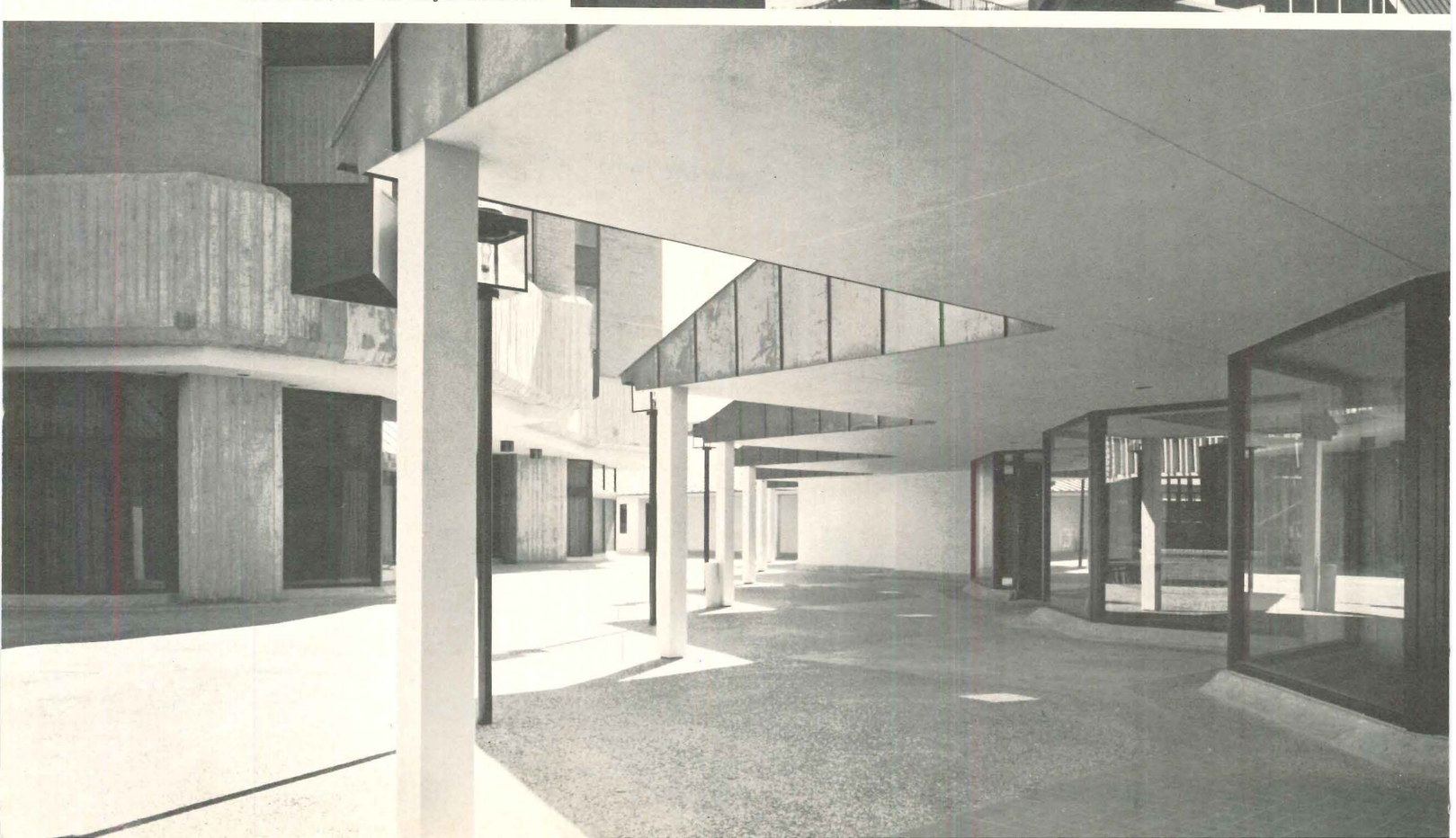
ARCHITECT: Karlsberger and Associates, Architects, Inc., Columbus, Ohio
GENERAL CONTRACTOR: G. W. Atkinson & Son, Columbus, Ohio
MECHANICAL/ELECTRICAL ENGINEER: W. E. Monks & Company, Columbus, Ohio
CEILING SYSTEMS CONTRACTOR: Myron Cornish Company, Columbus, Ohio
LIGHTING/CEILING CONSULTANT: Stockwell Design Associates, Columbus, Ohio



DOBIE RESIDENCE HALL, UNIVERSITY OF TEXAS, Austin—Architects/Engineers: Daverman Associates, Grand Rapids, Mich. General Contractors: Guy F. Atkinson Company, South San Francisco, Calif. Three Dover gearless traction elevators, 500 FPM, Computamatic® control; two Dover Oildraulic® elevators, installed by Dover Elevator Co., Hunter-Hayes Division.



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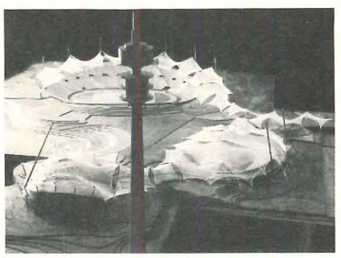
LUTHER TOWERS, Memphis, Tennessee. Architects: Walk Jones+Francis Mah, Inc., Memphis. Structural Engineers: LeMessurier Associates, Boston. General Contractor: ALODEX Corp., Memphis. Two Dover geared traction elevators, 200/250 FPM, duplex selective control, installed by Dover Elevator Co.

Cover: Physical Sciences Complex,
University of Guelph, Guelph, Ontario
Architects: Craig, Zeidler & Strong
Photographer: Michel Proulx

THE RECORD REPORTS



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FEATURES

BUILDING TYPES STUDY 434

ARCHITECTURAL ENGINEERING

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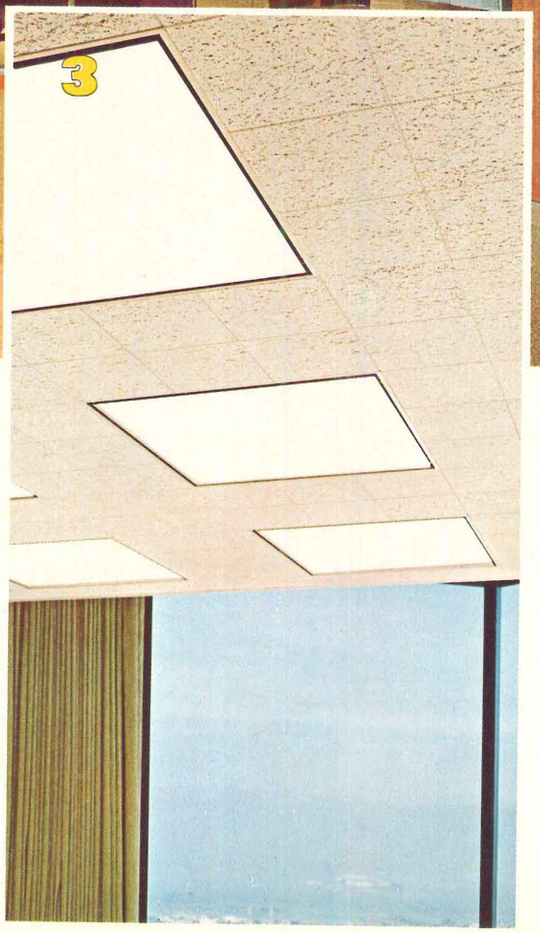
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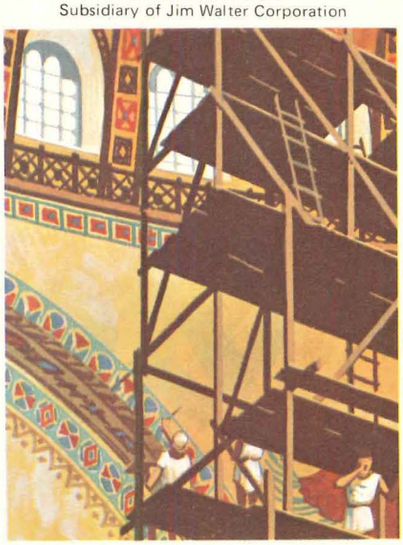

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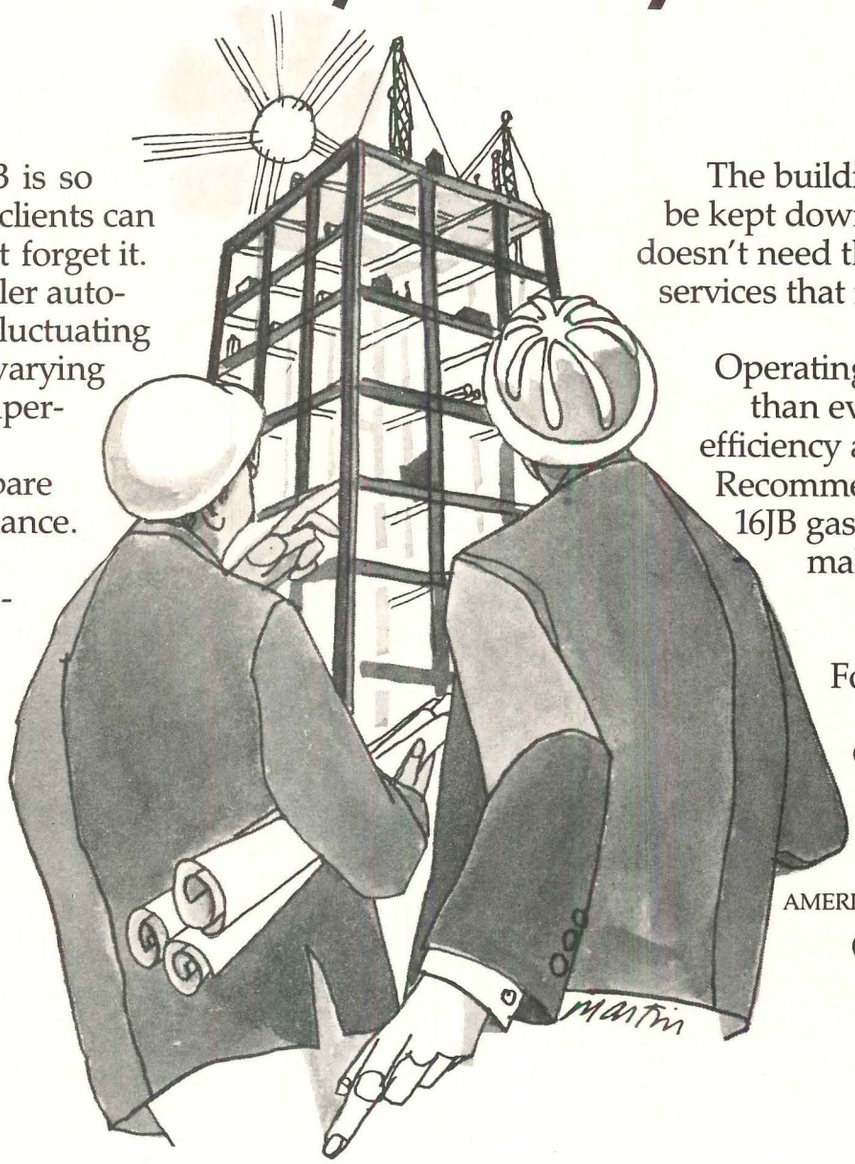

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The AIA and the Justice Dept: Do you know you're almost slightly pregnant?

Rumor has it (and it has to be a rumor because the AIA staff won't discuss the matter with "the press") that the AIA Board has voted overwhelmingly to accept a consent decree altering drastically the code of ethics of the American Institute of Architects and thus, in my view at least, altering the whole concept of professionalism.

The consent decree, rumor has it, would require an addition to the code of ethics permitting (and of course, at least on government work, that means encouraging) architects to submit fee quotations for architectural service at the time they offer their services.

What's so bad about this? Don't a lot of architects already talk fee pretty early in the game? Any architect has always been free to make any deal he wants to—even (and I guess that has happened) to taking a loss to do a building he really wants to do or to minimize losses during a slow period in the office. Further. . . .

Everyone knows that for a long time the various chapters' recommended minimum fee schedules have routinely been shaved by even the most professional firms (indeed, have often been exceeded for what the client agrees are good and sufficient reasons). It has never been unethical for a firm to offer to do a job for less than those suggested fees—as long as price alone was not the basis for selection and as long as an architect didn't sidle up after a commission was signed with a competitor and offer to do it wholesale.

What's so bad about this, it seems to me, is that agreeing to the consent decree reduces the concept of professionalism to the level of a commodity. Sure, there's nothing that says the client has to take "the lowest bid" on architectural services—but how'd you like to be the government employee (or school board member) (or corporate vice-president) who has to argue not to take the lowest fee?

All this emphasis on prices at the very first stage of an architectural project would, it seems to me, assume that from the very first stage the scope of the work will not change, there will be no changes in the conditions or laws during the job, and that the architect can 1) make no contribution to programming or 2) needs no time to think. The whole idea of early emphasis on price, it seems to me, takes on the aspects of competitive bidding by architects with very different skills, staffs, and experience—in the absence of identical documents for an identical end product, which is what contractors bid on the basis of. (Or will, soon, architects be asked to bid on a complete and detailed program established ahead of time by someone else—and how do you like that idea?)

Then there's the principle of the thing. As I understand consent decrees, signing one is the last thing short of admitting that you've been involved in hanky-panky (restraint-of-trade dept.) all along—which if I were the AIA board I'd be mightly reluctant to do.

Well, at last this whole matter will be discussed publicly at the convention. The choice, it seems to me, is a simple one. Either:

1) Refuse to sign the consent decree and continue to fight for the professional concept that fees may be discussed early but should be finally negotiated only after an architect has been selected for his professional qualifications.

2) Agree to sign the consent decree on the basis that it's not too bad a consent decree and that architects can live with it. And that, it seems to me, equates professional architectural services with buying a used car—*caveat emptor* and all that. I can't believe the client will be served by the proposed new process—and if serving the client is not the name of the game then let's toss in the whole thing.

I certainly don't insist that you agree with the point of view outlined here (expecially since I don't pretend to have all the facts and a lot of thoughtful men who do have all the facts voted to accept the decree). But I sure hope you'll try to think out the implications for the profession and let the board know your opinions.

Myself, I'd let the courts decide.

—Walter F. Wagner Jr.

Some random thoughts on open space, environment—and energy

I got back recently from a week in California. The trip was made possible by an invitation from the Southern California Edison Company to talk to its Architects and Engineers Forum (an annual event which this year drew nearly 600 professionals) on the subject of energy conservation. I'd like to talk about that a bit, since I return convinced more than ever that if architects and engineers don't do something about conserving fuel and power by better design (and by convincing clients that the slightly higher first costs of an energy-conserving building must be paid) we're really going to be in the blackout soup before long. But first . . . .

I got to spend two days poking around Los Angeles, two days poking around San Francisco, and two spectacular (if sometimes hair-raising) days driving between the two—happily in the northbound direction where there is at least another lane of road between you and a practically vertical drop to the shores of the blue Pacific. On the basis of such a barely subsonic trip, I certainly am not going to attempt any detailed analysis of the relative merits of anything (much less the two cities). But I find I do have some purely personal impressions about environmental things in general, herewith presented in no particular order:

- It's easy to find things to knock about Los Angeles, but it's also easy to find things that you wish there were more of in your home town: broad streets with broad dividers planted in flowers and flowering shrubs (even the infamous freeways are banked with ivy and flowers, which does a lot for them). There are fountains everywhere—not big famous controversial ones like San Francisco has; just unassuming ones in front of a lot of buildings. I was impressed (notably along Century City's

—Drawn for the RECORD by Alan Dunn

"No, we aren't an Historical Landmark—we just don't play our cards right."

main drag and in the garden behind the Century Plaza) that there are a number of pools that you cross on bridges without railings. I found this assumption that I could a) walk across without falling and b) if I did fall in would not instantly sue the owner, refreshing. Similarly, the fountains were squirting away merrily, which seems to be impossible at least in New York because matrons apparently sue over having their dresses spotted.

- Everywhere I went, the streets were clean.
- Route 1 to San Francisco is—as I guess everyone but me knows by now—perfectly beautiful. I was particularly moved by the number of public parks and beaches along the way—all in beautiful spots, beautifully maintained, and open to everyone at a nominal fee. There was, incredibly, no litter anywhere (nor did there seem to be litter baskets except in the picnic groves).
- The most beautiful park we saw was at Point Lobos, just south of Carmel. There's no sense trying to describe that beauty—but something else impressed me. The park—with sheer rock cliffs dropping down to a lot of Pacific Ocean—has some dangerous places; and it is also full of fragile parts of nature—ancient cypress trees, tiny wildflowers and brittle shrubs. For the protection of people and plantlife alike, the paths through the parks have slender wire railings on both sides, with simple signs requesting that park visitors stay between them. Though we were there on a day that saw many visitors (including three bus loads of school children) I saw no one outside those slender and step-overable barriers; no candy wrappers, no cigarette packages. The one Coca-Cola can lodged between two rocks, in that setting, seemed a particular outrage. Again, whether the level of care given that park, despite heavy use, is a credit to the visitors or the result of a different kind of maintenance than in other parks I really couldn't say. . . .
- The most dramatic example of the Californian's good sense about saving open space is visible from the top of Mount Diablo, which is the tallest (3,800 feet) mountain near San Francisco. We had the good luck to drive up just before dusk and get (before dark) a panoramic view of the Bay and the city and (after dark) a clear understanding—because they show as dark spaces amidst the lights of city, towns and roads—of the enormous amount of land in the city, across the Golden Gate Bridge, on the ridge behind Berkeley and Oakland, and in the valley that is still green because it is in state, regional, or city parks.

And even just outside both cities—and for the hundreds of miles between—there are California's golden hills (currently green) stretching down to the sea and off into the distance, now populated almost entirely by cattle.

So. . . .

Within a very short space of time you get two very conflicting impressions.

One, of a part of the country with a natural environment of extraordinary and fragile beauty, with climate that is the envy of at least 45 other states, and with a body of citizens that appear to appreciate what they have and to care for it with a rare intensity.

The other impression—this gathered at the Architects and Engineers Forum (as noted, sponsored by one of California's major utilities)—is the conflict between the environment and the need for more power. Like more and more parts of the country (see RECORD, December 1971), California is staring at power shortages, and the majority of the utility's efforts to provide new capacity are being blocked or delayed by environmental opposition.

So maybe we can—from those conflicting points of view of environment and energy—see in California a microcosm of what is going to occur across the United States—a tough, and terribly important, conflict between the conflicting needs of energy generation and conservation of the environment. Because of California's great need for power (on one hand) and its active and very personal involvement in conservation (on the other hand) we see clearly there the conflicts between desires and need, ideals and responsibilities, reality and romanticism, fad and fact, and—very simply—capacity and usage.

In a thoughtful booklet just published, Edison put it this way: "[Our company] is acutely conscious of its conflicting responsibilities. As a concerned corporate citizen, we are determined to intensify our efforts to preserve the environment. But we must also build 11 million kilowatts of new electric capacity in the next ten years."

They, of course, have a point. So, of course, have the activists who want the California environment—its hills, its coastline, its water, and its air—unimpaired.

As I said to the audience of architects and engineers (and utility executives) at the Los Angeles Forum, I'm certainly no expert arbiter of conflicting claims over energy generation and environmental conservation. I do know one thing: those ideas cannot be mutually exclusive. Along one part of that coast I raved about earlier in this editorial there is a perfect example of what is no longer acceptable: In Morro Bay—which has in its harbor one of nature's grand landmarks—576-foot-high Morro Rock—there is a generating plant (not built by SoCalEdison) of similar scale. It dwarfs the town—which is *all right* for a rock but not *all right* for a power plant.

Surely we can—with the concern on both sides of the question—find ways to generate the power that we undoubtedly need without disrupting the environment that we all must live with and live in. There are few problems that deserve more attention. —*Walter F. Wagner Jr.*

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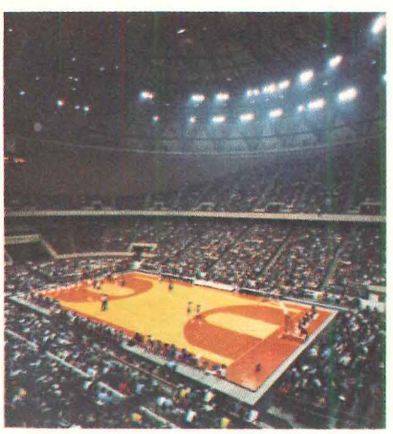

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Architect: Dukor Associates, AIA
Structural Engineer: Dimitry Vergun, AIA, S.E.
Steel Fabricator: Dukor Modular Systems, Inc.
General Contractor: Dukor Modular Systems, Inc.

Rapid Transit Stations on Dan Ryan and Kennedy Expressways
Owner: City of Chicago
Architect: Skidmore, Owings & Merrill
Structural Engineer: Skidmore, Owings & Merrill
Steel Fabricators: Inland-Ryerson Construction Products Company and Pittsburgh-Des Moines Steel Company
General Contractors: J. M. Corbett, Paschen Construction Inc. and W. E. O'Neil Construction Co.

Richmond Coliseum
Owner: City of Richmond
Architects: Ben R. Johns, Jr. and Vincent G. Kling & Partners
Structural Engineer: Fraioli, Blum & Yesselman
Steel Fabricator: Bristol Steel & Iron Works, Inc.
General Contractor: J. A. Jones Construction Company

Sears, Roebuck and Co.
Pacific Coast Administrative Offices
Owner: Sears, Roebuck and Co.
Architect: Albert C. Martin and Associates
Structural Engineer: Albert C. Martin and Associates
Steel Fabricator: Bethlehem Steel Corporation
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San Francisco International Airport, San Francisco, Calif.
Los Angeles International Airport, Los Angeles, Calif.
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Steel Fabricators: San Jose Steel Company, Inc.; The Herrick Corporation; Fleming Steel Company (Doors)
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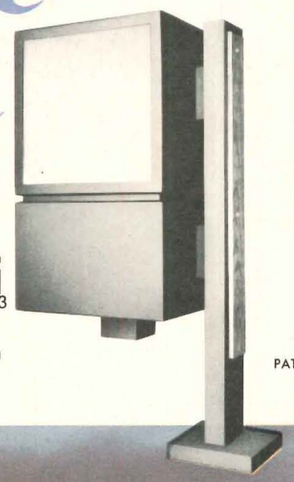

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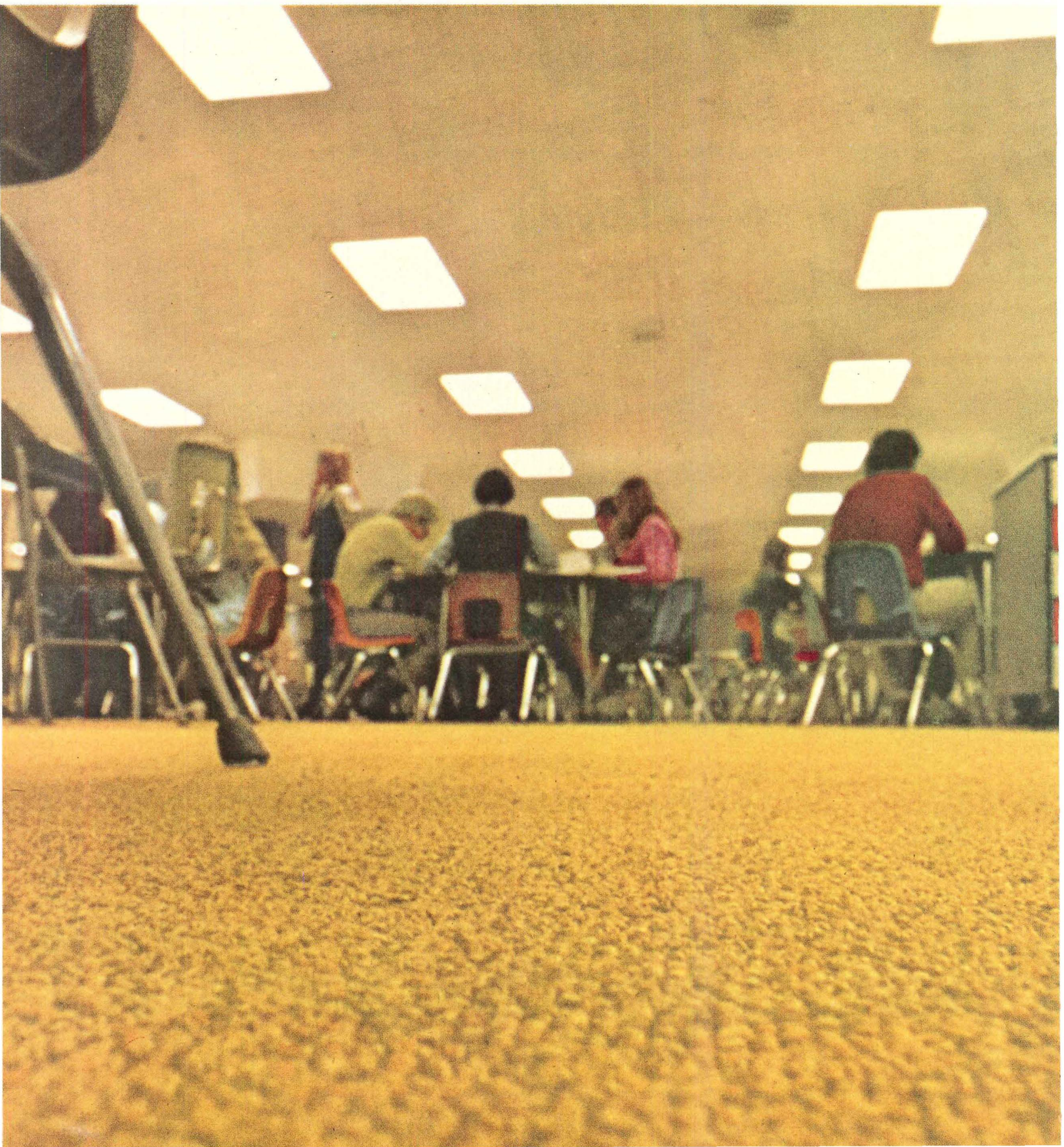

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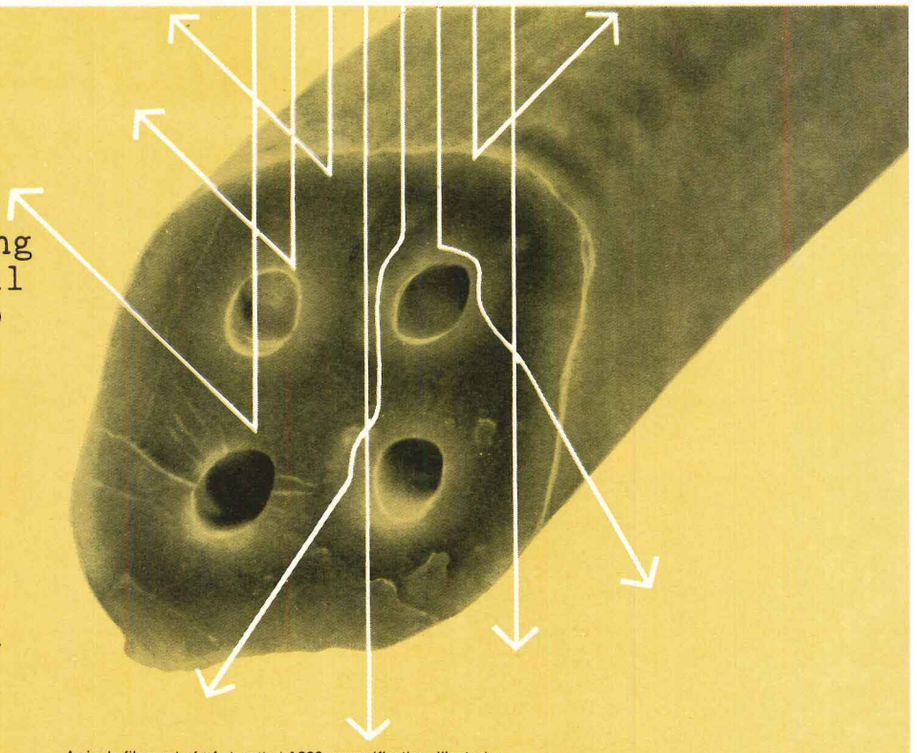
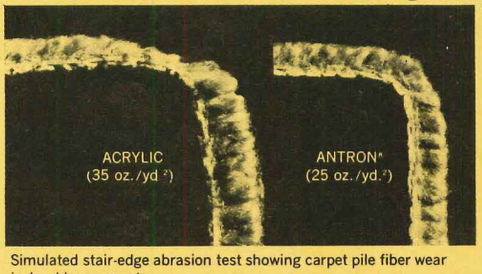


A single filament of "Antron" at 1200x magnification. Illustrates scattering of light to minimize appearance of soil.

This--together with the fiber's abrasion and matting resistance--means carpet with pile of "Antron" retains its original fresh appearance longer than carpet of other fibers. Concentrations of spots and soil tend to even out and blend into the overall color and texture of the carpet. Maintenance costs are minimized by the need for fewer wet cleanings than with carpet of other fibers. And even after repeated shampooings the carpet returns remarkably close to its original appearance.



Simulated stair-edge abrasion test showing carpet pile fiber wear in level-loop carpets.

What's more, "Antron" is tough because it's nylon: the abrasion-resistant, long-wearing carpet fiber. So the carpet will have a long life. Compare the performance of carpets in this stair-edge test (above).

Specify "Antron" for high-traffic commercial carpet. It has no equivalent in long-term appearance retention.

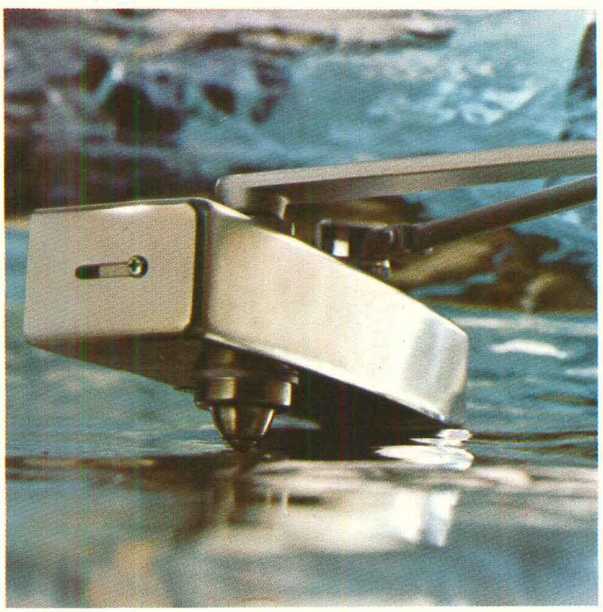
For more facts and a mill resource list, write to Du Pont, Contract Specialist, Room 5638/103, Eden Park, Wilmington, Del. 19898.

*Du Pont registered trademark. Du Pont makes fibers, not carpets.

DU PONT
REG. U. S. PAT. OFF.

For more data, circle 6 on inquiry card

Corbin presents the Fortune 100.



Top corporations top their doors with Corbin closers. Because Corbin's 100/110 Series matches the corporate image in style and strength. Think of it as a piece of metal sculpture beyond its basic closing function. Executive finishes in bronze, brass, aluminum and chrome. Solid rack and pinion construction absorbing busy door-to-door traffic. In short, good looks, long life. Get them into your plans and specs by reaching a Corbin distributor. Or write us direct. Fortune's looking after you.

CORBIN®

The Security Analysts.

For information write P & F Corbin, Division of Emhart Corporation, Berlin, Conn. 06037. In Canada, Corbin Lock Division.

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Our built-up roofing experience is priceless.

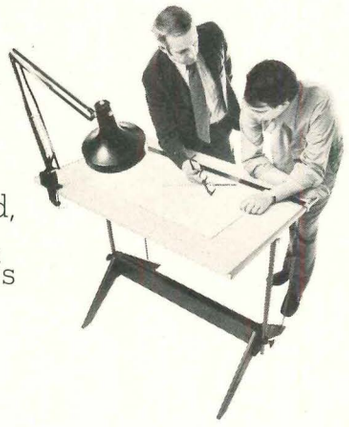
How can we put a price on the wealth of knowledge about built-up roofing we've assembled in well over 100 years in the business?

The answer is: We don't.

Therefore, we're offering it to you free. No charge. No obligation. No strings attached.

Which means that when you need help designing a roof, you can ask for and get—without cost—the knowledge and resources of one of the world's largest producers of built-up roofing materials. A company that has solved roofing problems for over a century.

All you do is contact J-M. One phone call or one letter will do. We'll send a qualified J-M roofing specialist to look at your plans—or inspect an existing roof if it's giving you problems. He's trained in all aspects of built-up roofing. He knows his job.



Should he be baffled, as sometimes happens, he'll consult one of J-M's 11 district engineers, who together have over 250 years of intensely practical roofing experience to draw upon.

So when you get their detailed recommendations for a built-up roof, you can count on their advice being exactly right for the job. Candidly, honestly given.

One other point. We hope you'll accept our recommendations. If you do, we can put you in touch with approved J-M contractors who will use quality J-M roofing materials to install, or repair, your roof. If you use someone else—well, we can't win them all.

But do keep this in mind. We at J-M stand behind our materials and our contractors 100%. Back them with roof bonds, if you choose, for as long as 20 years. And, if something should go wrong with your bonded roof, J-M will be around to make good.

When you have a new roof to design, call your J-M district sales office. Or write Johns-Manville, Post Office Box 5108, Denver, Colorado 80217.

We think you'll agree our advice is really priceless.

Johns-Manville JM

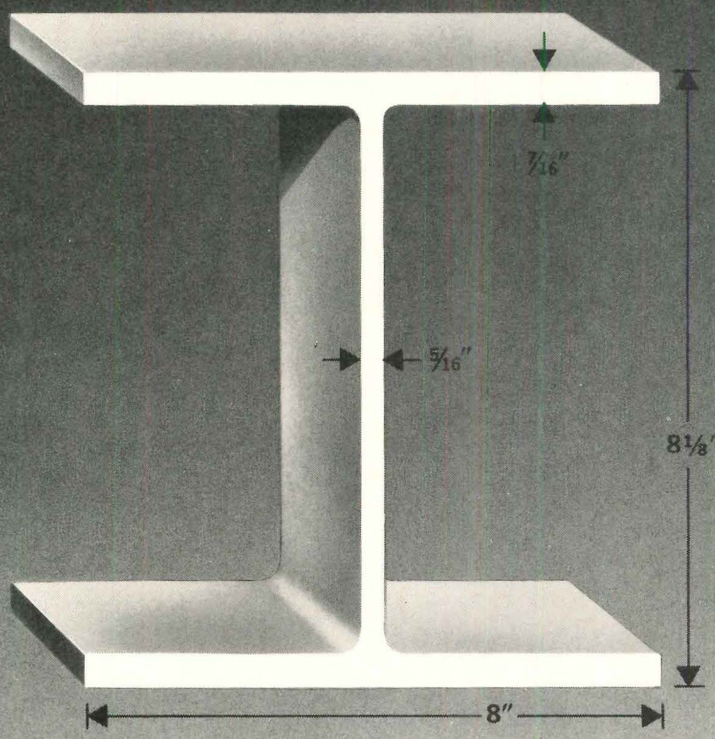
So is our advice.

For more data, circle 8 on inquiry card

Both of these structural columns do the same job. Which one would you specify?

WIDE FLANGE BEAM

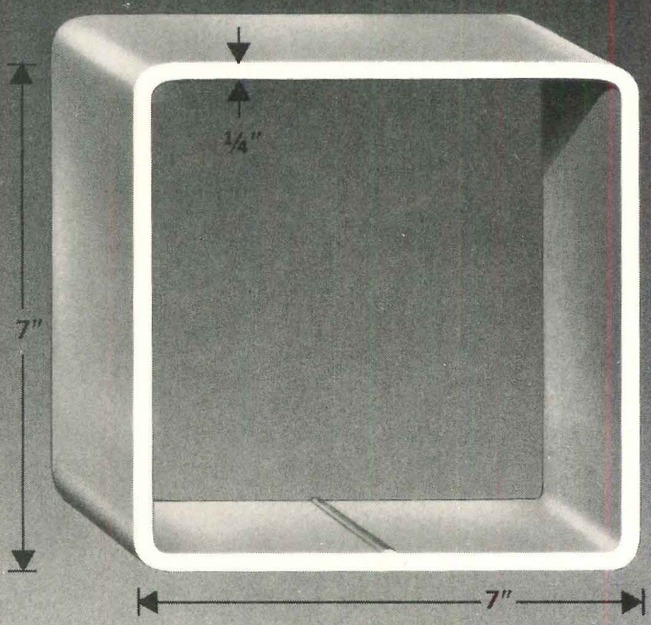
$3.03 per foot



35 lb/ft

WELDED SQUARE TUBE

$2.57 per foot



22 lb/ft

compare these advantages of square tubing over wide flange sections!

- *34% GREATER RADIUS OF GYRATION (greater resistance to twist)*
- *13% GREATER MOMENT OF INERTIA (less bending and buckling)*
- *28% GREATER YIELD STRENGTH (higher ultimate load)*
- *37% LESS WEIGHT (cost savings)*
- *37% LESS SECTION AREA (25% less infringement on floor space)*
- *SUPERIOR APPEARANCE*

AND NET COST SAVINGS OF 15.2% PER FOOT!

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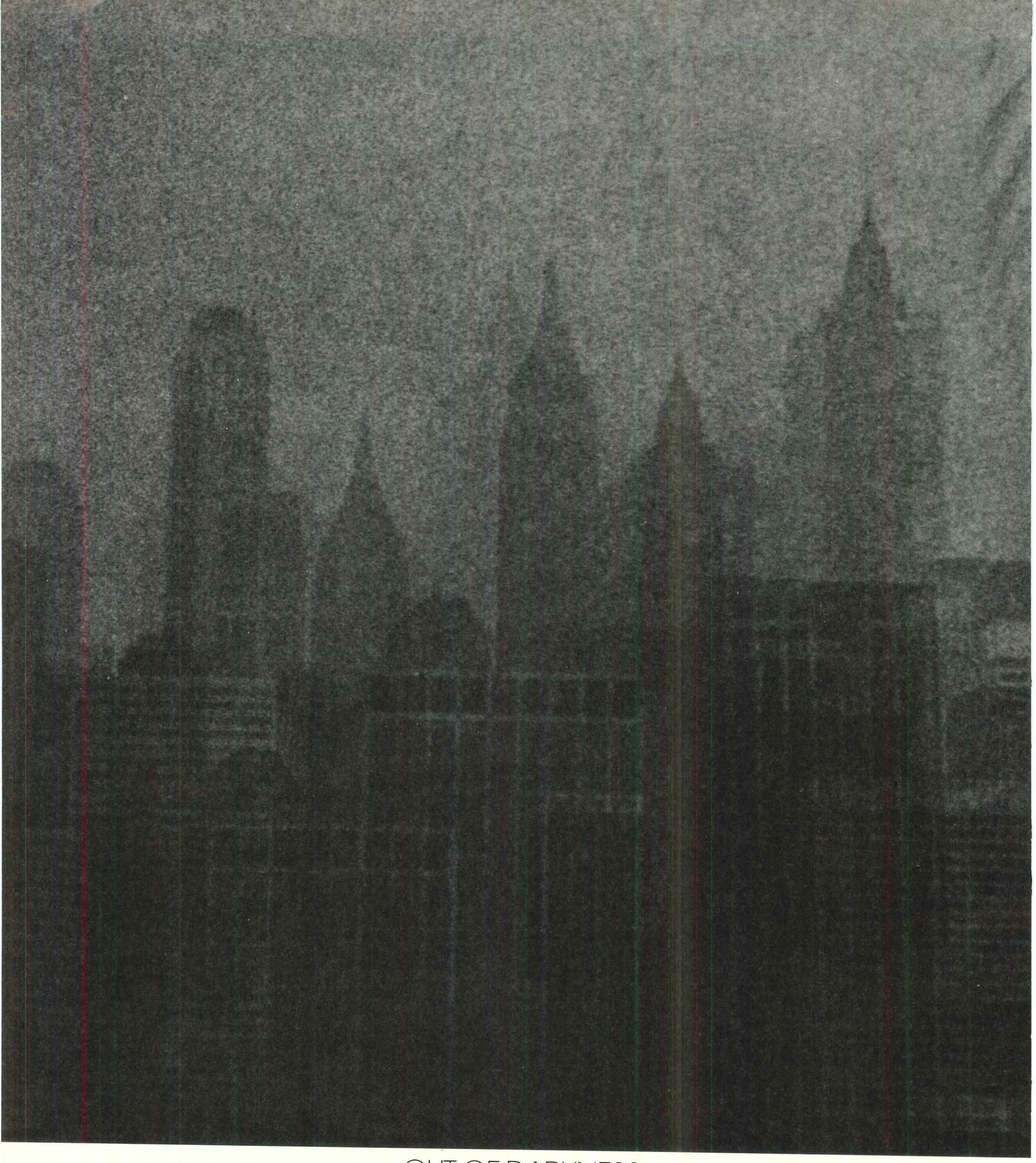
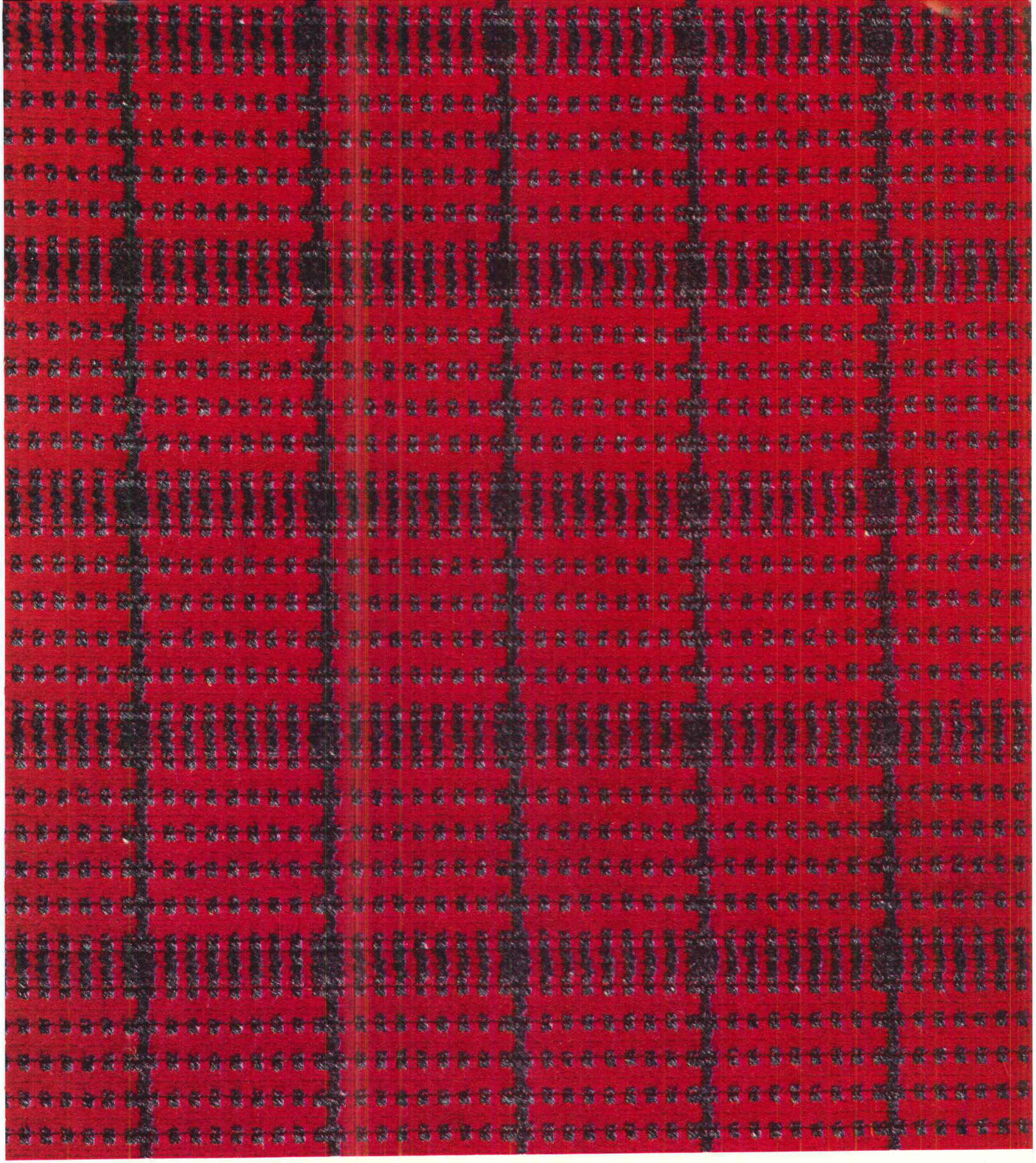
For more data, circle 9 on inquiry card

W102



OUT OF DARKNESS...



COMES THE LIGHT

How creative would you be if you had to work in darkness from 9 to 5? Then why impose it on others? Magee says stop darkness before it starts with their new carpet Alternates. 100% quality wool mark carpet. If you'd like to see the light: write The Magee Carpet Company, 919 Third Avenue, New York, N.Y. 10022...before it gets dark. A CARPET COMPANY THAT GIVES YOU ALL THE CREDIT FOR BEING CREATIVE.

CARPET BY
MAGEE

PURE WOOL PILE
The wool mark is your assurance of quality tested carpets made of pure wool pile.

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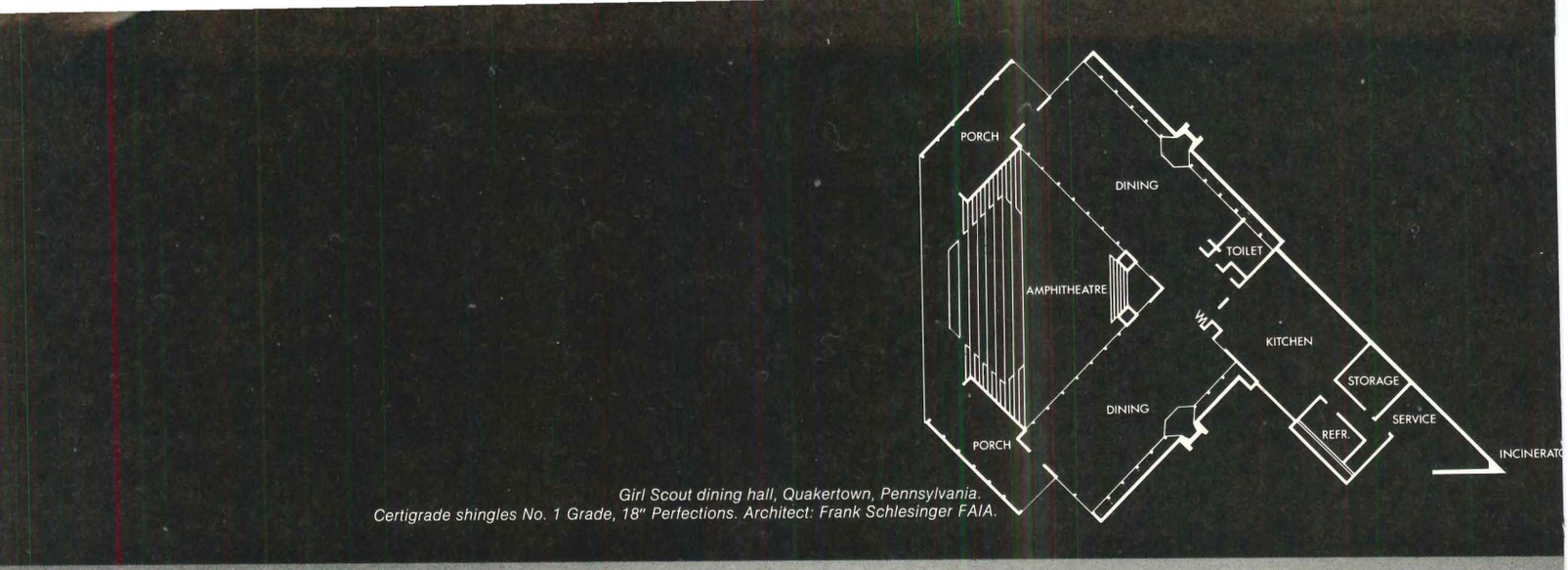
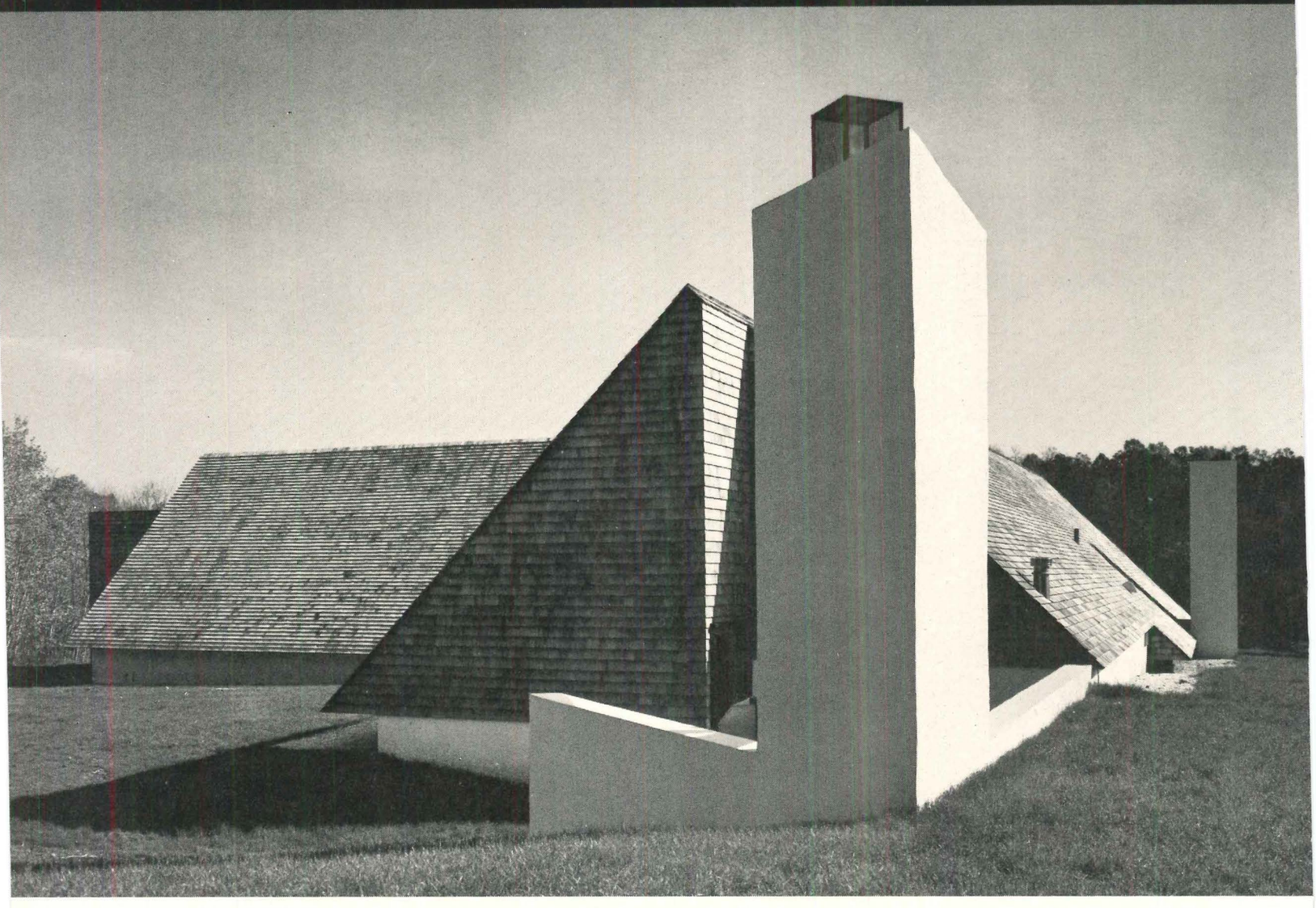


Girl Scout dining hall, Quakertown, Pennsylvania.
Certigrade shingles No. 1 Grade, 18" Perfections. Architect: Frank Schlesinger FAIA.



Red cedar shingles make a dining hall a feast for the eyes.

Few buildings have the architectural vitality of this dining hall at a Girl Scout camp in Pennsylvania.

The building is entirely covered by red cedar shingles. They implement the two key design requirements: low maintenance and a non-institutional look. The shingles will remain maintenance-free for decades. And their rich-looking, natural texture is always inviting, never sterile.

The value of cedar goes further. While expressing the excitement of the design, these shingles also help the hall blend effortlessly with other rustic buildings at the camp site.

For your next design, insist on the real thing: red cedar Certigrade shingles or Certi-Split handsplit shakes. They're worth it. For details and money-saving application tips, write: 5510 White Bldg., Seattle, Wa. 98101. (In Canada: 1055 West Hastings St., Vancouver 1, B.C.)

THE CROWNING TOUCH OF QUALITY · RED CEDAR SHINGLES & HANDSPLIT SHAKES ·

Red Cedar Shingle & Handsplit Shake Bureau

One of a series presented by members of the American Wood Council.

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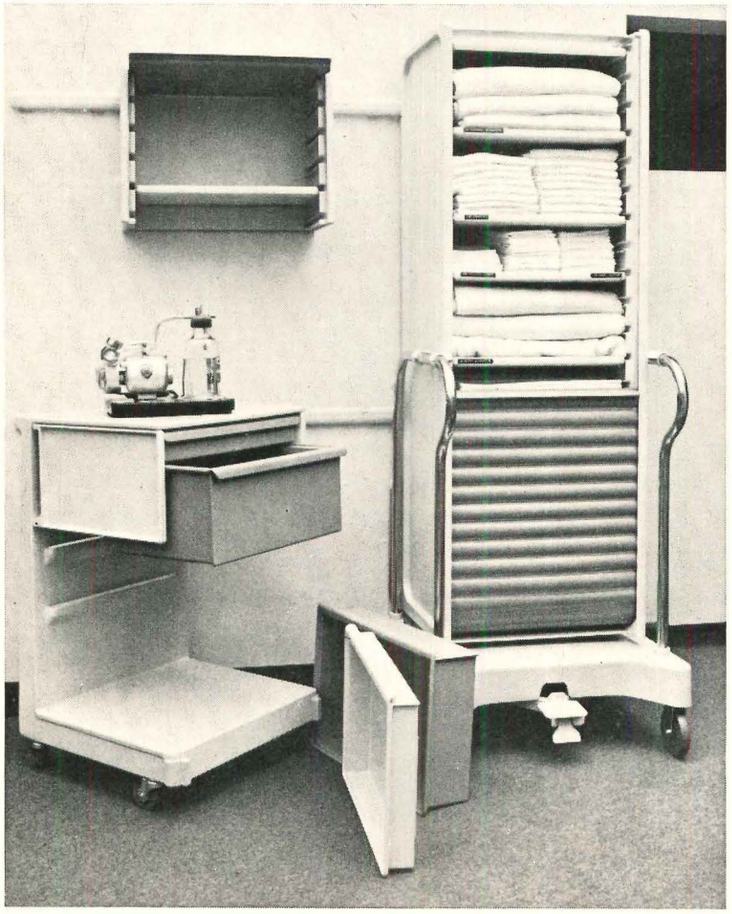
a system of coherent equipment for hospitals



a flexible component system

In 1960, Herman Miller Inc. began researching the hospital to understand, develop and test a new equipment system. Equipment with interchangeable components usable in *all* hospital departments. One that eliminates separate material, supply and transportation subsystems operating in wasteful conflict with each other.

The result . . . co/struc. The product of eleven years of study and design testing. An equipment system that:

- **grows and changes with the hospital**
- **becomes mobile furniture usable in many areas in many ways**
- **is adequate in new or renovated facilities**
- **simplifies architectural requirements**
- **is a systematic way of thinking of the hospital as a whole**

Available is a report that documents co/struc's development to its current stage of full production. Actual test installation photographs illustrate co/struc applications in such areas as patient rooms, central supply, nursing stations, laboratory and material handling use.

For a free copy of *co/struc—a research report* and more complete information about co/struc write or call:
Mrs. Nancy Jacobs
Health Care Group
Herman Miller Inc.
Zeeland, Michigan 49464
616 772 2161

Co/Struc is a development of the Herman Miller Research Corporation, and Herman Miller, Inc.

co/struc **herman miller** **health care group**

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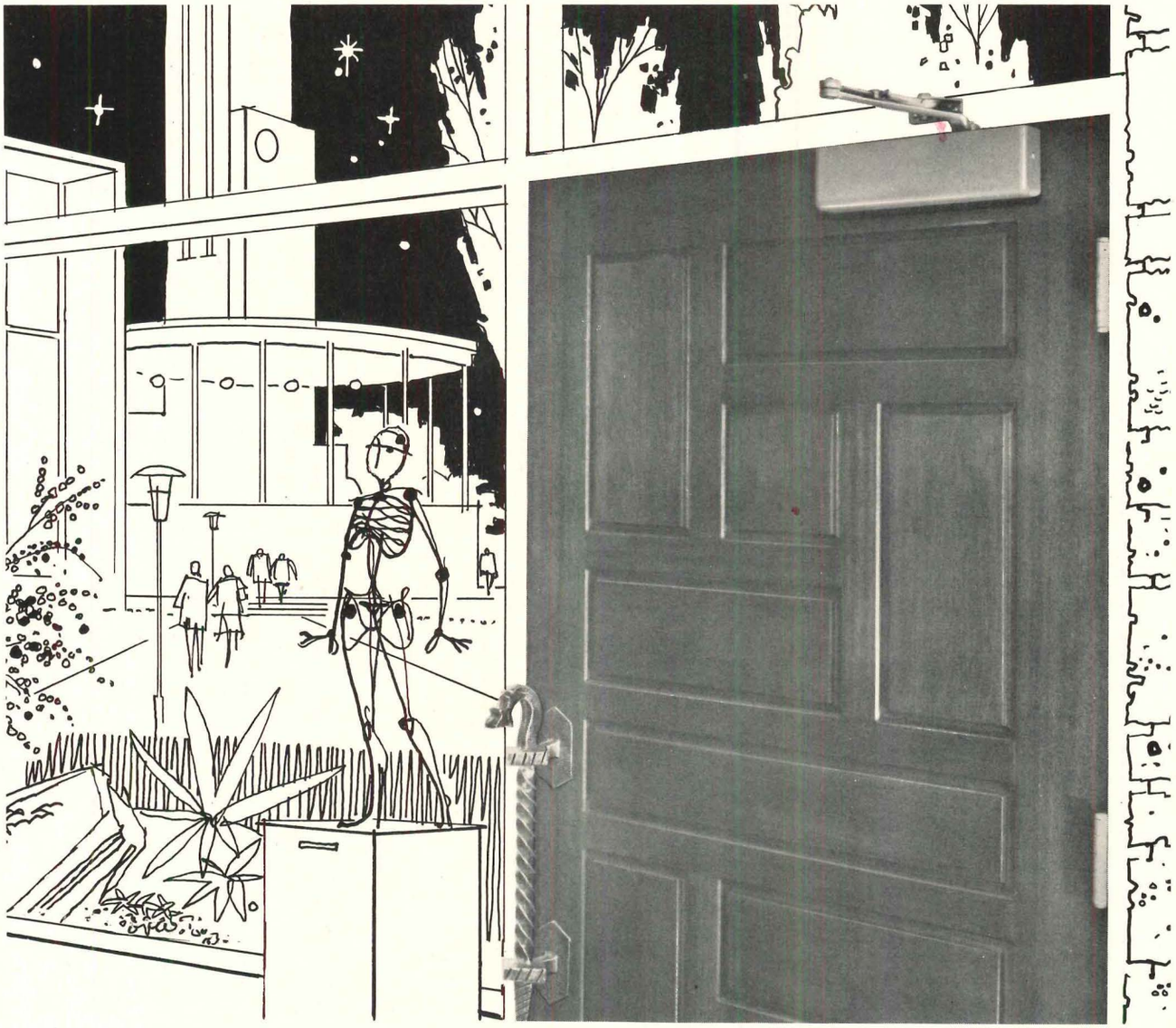

It's probably the most versatile door closer you can specify

It fits anywhere...

Is there anything that says it can't be attractive too?

the **Norton**® Apollo closer

1197

It's about as versatile as it can be. Plus or minus 25% spring power adjustment. A newly designed rack-and-pinion, plus adjustable back-check protection.

And it fits anywhere. It only has a 2″ projection. With non-handed installation. And you can specify regular arm, parallel arm or top-jamb mounting.

Attractive? You bet . . . contemporary narrow-projection styling. Covers of anodized bronze, brass or clear aluminum; or 67 imported or native wood grains. Plus all popular finishes.

For complete details, contact your Norton Representative or Eaton Corporation, Lock and Hardware Division, Norton Marketing Department, 372 Meyer Road, Bensenville, Illinois 60106.

EATON Security Products & Systems

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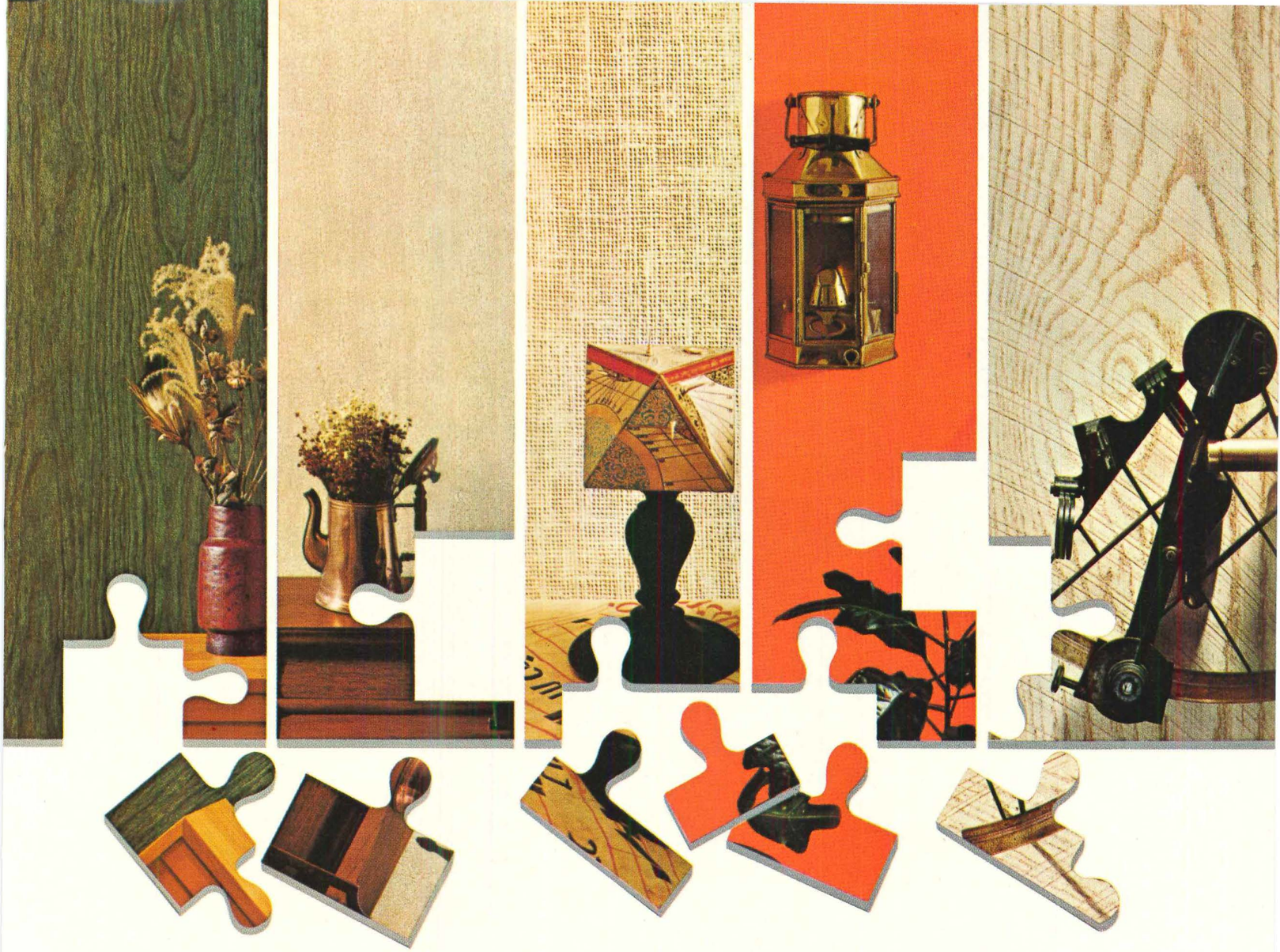
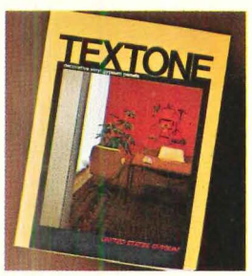


How to make hard-wear walls handsome.

TEXTONE* Gypsum Panels in new textures and colors put it all together for you. Touch tells the story of deep, deep textures that feel as real as they look. Twenty-seven colors and textures give you the latitude you need to create the unusual in decorator walls for stores, display salons, offices—any commercial application where walls must take a beating. TEXTONE Gypsum Panels are made of tough, washable vinyl, prelaminated to SHEETROCK* gypsum wallboard. Matching moldings are available. And panels work perfectly with U.S.G. wall systems, including USG® Demountable Partitions.



New colorful descriptive literature amplifies the exciting TEXTONE story. For your copy, contact your U.S.G. Representative; or write to us on your letterhead for sample swatches. 101 S. Wacker Dr., Chicago, Illinois 60606, Dept. AR-52

*Reg. U.S. Pat. Off.

UNITED STATES GYPSUM
BUILDING AMERICA

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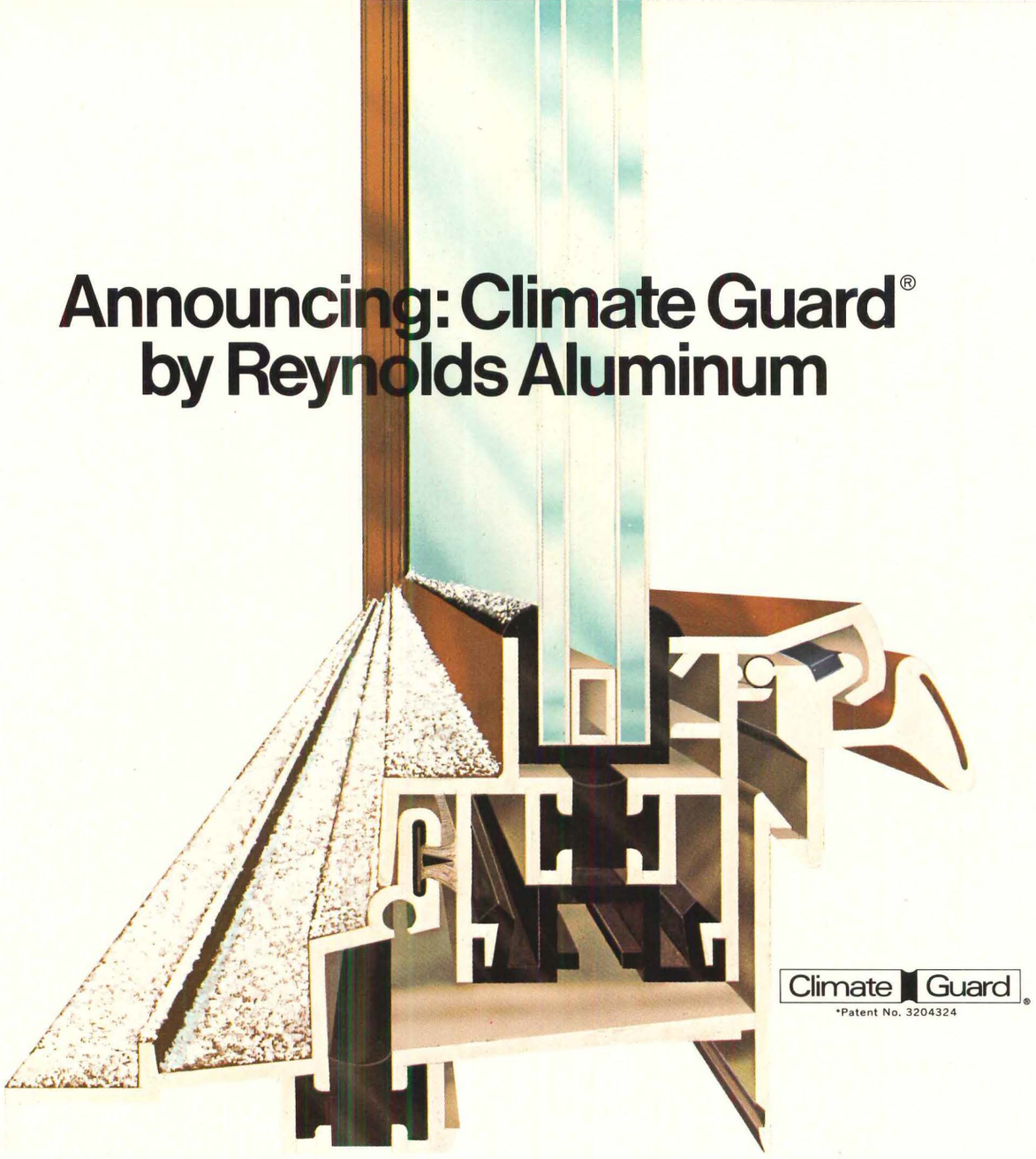
Announcing: Climate Guard® by Reynolds Aluminum



The first major advancement in aluminum doors and windows since the development of insulating glass

Until now, aluminum windows and doors permitted thru-metal conduction in framing members. In cold weather, the result was condensation and frost build-up on the frame. Not anymore.

Now, there's Reynolds Aluminum Climate Guard windows and doors with an exclusive patented polymer thermal barrier. A specially designed thermal break that minimizes condensation by keeping inside surfaces warmer. This combination of the Reynolds Aluminum extrusion with Climate Guard forms a solid thermal barrier between interior and exterior sections. A barrier that effectively keeps cold out in winter, heat out in summer. Climate Guard doors and windows do the best work in temperature extremes. When it's 5 degrees outside and inside temperature is 70 degrees at 35% relative humidity . . . properly adjusted Climate Guard doors and windows show no condensation or frost build-up on the aluminum frame members. No more damage to drapes, carpets, walls or sills. And there are other benefits.

They've been engineered to be strong and tough enough to stand hard usage. They're practical, easy to install and economically priced. They're available in silver mist, bronze and white Colorweld® finishes. Shouldn't you choose the finest doors and windows? Aluminum Climate Guard doors and windows with Reynolds reputation for quality behind them. We'll send you a free extrusion sample and all the details on this exciting new advancement. Just write to: Reynolds Metals Company, P.O. Box 25670, Richmond, Virginia 23260.

REYNOLDS
for better building products in
ALUMINUM

Katzenbach and Warren wall coverings include everything from roller-printed wallpaper to exquisite woven textures from the Orient. It is the only authorized maker of Williamsburg® Wallpaper Reproductions—each representing in color and design a faithful reproduction of original antique documents in the Williamsburg Collection. **Contact** Bernard Salembier, New York (212) 759-5410

Moreddi offers imported and domestic avant-garde furniture. Particularly noteworthy is the exciting Artemide collection of Italian fiberglass chairs, tables and lamps—a line that can add distinctive contemporary elegance wherever it's used. **Contact** Ed Frank, Ridgefield, N. J. (201) 941-0220

Bloomcraft markets an extensive line of beautifully styled fabrics, bedspreads, decorative pillows, draperies, casements and imported sheers of fine quality at surprisingly modest prices. An excellent source for those special touches that can set your overall scheme apart. **Contact** Lewis Bloom, New York (212) 683-8900

Selig is a major manufacturer of classic contemporary upholstered furniture and a leading importer of contemporary metal and glass furniture. Newly added are important lines of chrome and glass Italian imports, including chairs, tables, étagères and SleepAway convertible sofas. **Contact** Bob Wexler, Leominster, Mass. (617) 537-9111

Raymor/Richards, Morgenthau brings together for your selection the largest collection of decorative accessories available anywhere: specialty furniture, all types of contemporary accessories, lamps, wall decoration, sculpture, clocks, art; and craft-related products of wood, metal, ceramics and crystal. **Contact** Everett Winters, Ridgefield, N. J. (201) 941-0220

Living Room Division features sofas and chairs which emphasize simplicity of design and excellence of workmanship, in the highest standards of traditional and transitional styling. Many with exclusive Beautyrest Comfortorc construction. **Contact** Todd Colvin, LaGrange, Illinois (312) 352-9110

IT'S ALL AT

Here's one source for everything you need to furnish with extraordinary flair and authority. An enormous range of products and stylings. All within easy reach.

Financing may be arranged through American Acceptance Corporation, a Simmons partner company. Our International Division can help coordinate selection and delivery for installation anywhere.

Go Simmons all the way.

Simmons Contract is a world leader in furnishings for the health care, innkeeping and educational fields. In addition to its own lines of institutional furnishings—beds, bedding, chairs, Hide-A-Bed sofas, office furniture, case goods and carpeting—Simmons Contract offers the products of all other Simmons partner companies for a fully coordinated design and furnishings capability. **Contact** Bob Costello, Chicago (312) 644-4060

Hausted offers the health care field a full line of specialized patient handling and transporting equipment, including the Tractionaid unit and Inval-Aid chair, and continues to lead the world in the development of coronary and intensive care units. **Contact** Art Murphey, Medina, Ohio (216) 722-1515

Thonet occupies a unique position in wood and metal furniture for public use. Its chairs, tables and sofas are featured in schools, colleges, health care institutions, offices and restaurants. From its traditional bentwood to classic and contemporary metal, wood and upholstered seating, to case goods, to the custom designing of built-ins, Thonet offers a superb balance of beautiful styling and durable design. **Contact** Joe Quarles, New York (212) 725-1100

Greeff offers prestige lines with fashion authority. A leading supplier of imported and domestic fabrics—in both traditional and contemporary designs—for draperies and upholstery. Other important lines include coordinated wall coverings, carpeting, area rugs and exclusive Beautyrest Masterpiece bedding. The E.C. Carter Division distributes an exquisite collection of curtains, sheers and casements. **Contact** Ted Greeff, Port Chester, N.Y. (914) 939-6200.

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SIMMONS COMPANY Domestic Divisions and Affiliates: Living Room • Contract • Juvenile Products • Hausted • Thonet • Greeff • Bloomcraft • Katzenbach & Warren • Raymor/Richards, Morgenthau • Moreddi • Selig • American Acceptance • York-Hoover • Elgin Metal Casket □ International Operations: Simmons Limited, Canada • Simmons de Argentina, S.A.I.C. • Simmons Bedding Co., Pty. Ltd. and V. S. Wright & Sons, Pty. Ltd., Australia • Sleepeezee Limited and Warner & Sons Limited, England • Cie. Continentale Simmons, S.A., France • Cia. Italiana Simmons • Simmons Japan Limited • Compania Simmons, S.A. de C.V., Mexico • Simmons, Inc., Puerto Rico • Simmons de Venezuela C.A., Venezuela.

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Anything can happen

at the track. The racehorse,
Dragon Blood, ridden by Lester Piggott
in the Premio Naviglio in Milan, Italy,
on June 1, 1967, went off at 10,000 to 1
odds, the longest in racing history.
He won.

From the GUINNESS BOOK OF WORLD RECORDS,
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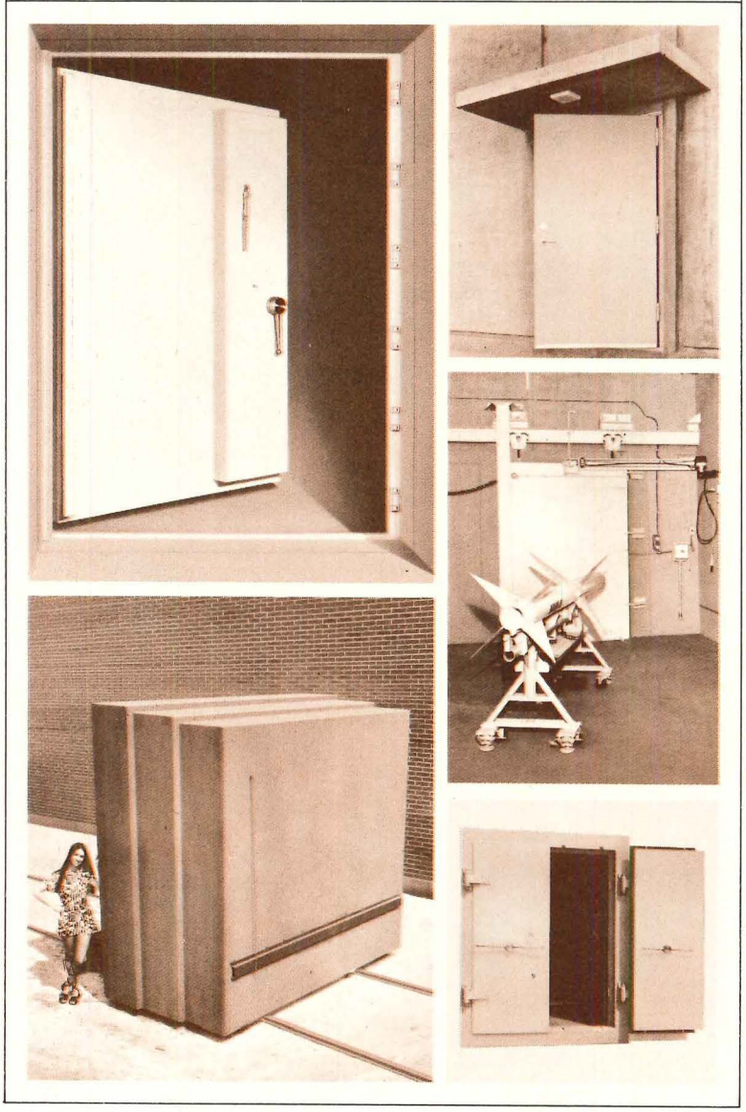

And anything can happen at Overly

Like doors that plug nuclear reactor cores.

We build doors that can resist or shield you from almost anything: atomic radiation or particle bombardment, bombs, fires, rocket tests, a lunar takeoff, gunfire or a noisy nearby tuba player.

You may need a door to resist lower pressures, or one that can take up to 300 psi peak incident pressure. No matter what kind of acoustical, shielding, fire or blast door you need, our computer will simulate all factors. Then we'll take all its information and custom-make the doors and frames to meet your specific need.

Anywhere protection is a problem, there's an Overly door to solve it. At Overly, anything can happen . . . and it happens for the good. We have plants in Greensburg, Pa., and Los Angeles, Calif. For more information, contact Overly Manufacturing Co., Dept. 19, West Otterman St., Greensburg, Pa. 15601.

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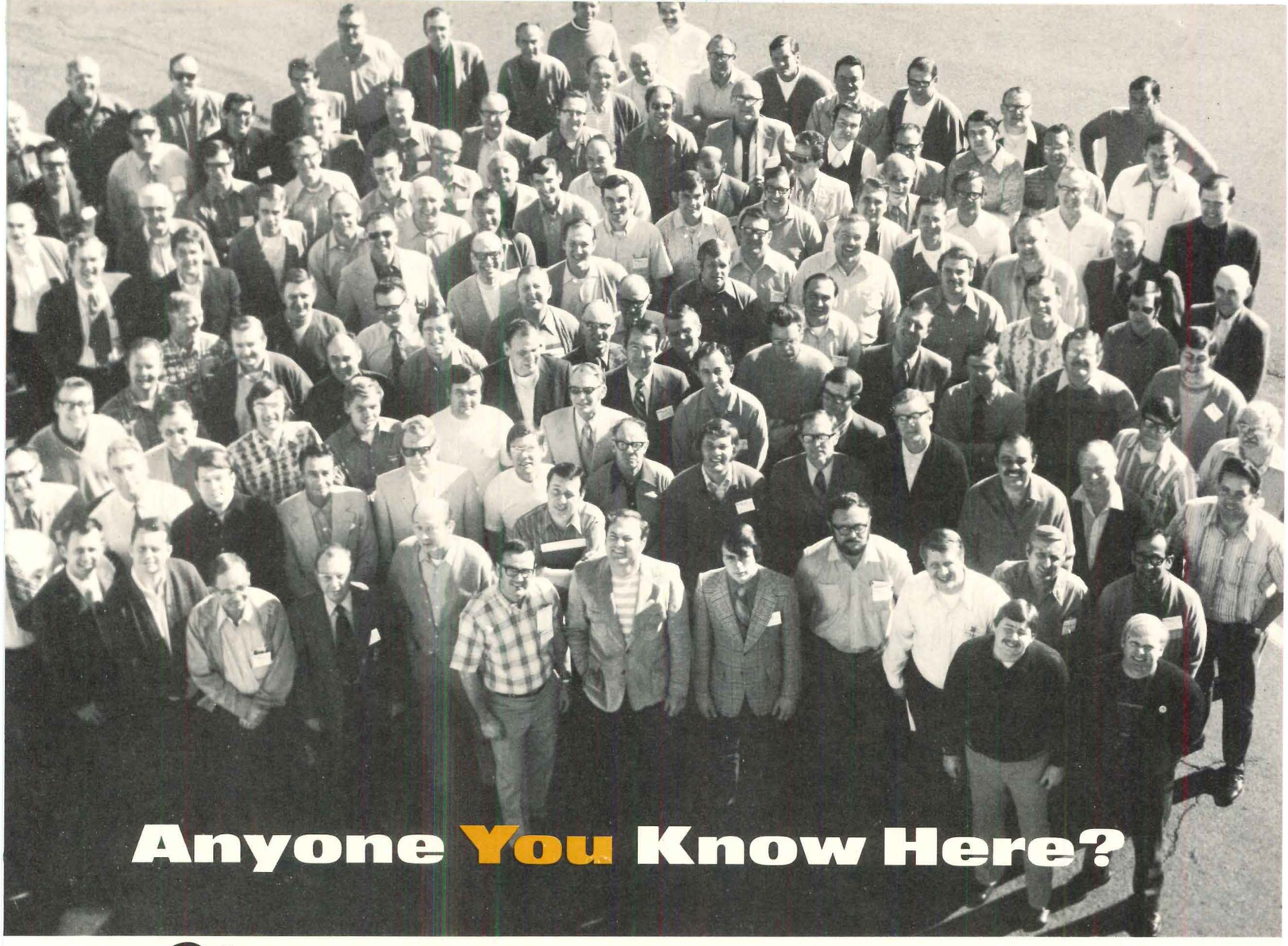


It's quite possible.
The 140 TRUS JOIST marketing men . . . technical representatives who call on architects, developers and builders throughout the United States and Western Canada, are on the move.

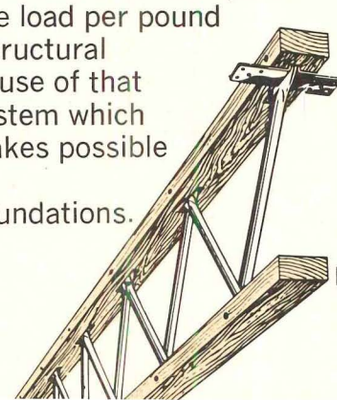
■ When it comes to roof and floor structural systems this is the most highly trained and knowledgeable marketing team in the nation. And they're backed by an engineering staff which includes eight professional and five graduate engineers plus more than fifty engineering technicians.

■ Their product is TRUS JOIST, the unique wood and steel roof and floor joist which will carry more load per pound of weight than any structural system known. Because of that light weight it's a system which erects faster and makes possible less costly footings, bearing walls and foundations.

■ Wide nailable chords allow for fast attachment of low-cost roof decking and ceiling materials and open webs provide ample space for fast installation of plumbing, wiring and ductwork. Long spans too, up to 150 feet and they can be made in almost any profile you may want to design.

■ It all adds up to a quality system which goes in place quickly and provides real labor savings. That's why this group contains some very busy men, but not so busy that they can't find time to give you service . . . service which could include a complete design manual . . . information on specific types of buildings or a free and accurate cost estimate on your next project.

■ Just ask. We'll put you in touch.



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Eleven strategically located plants serving the United States and Western Canada. Sales offices in principal cities.

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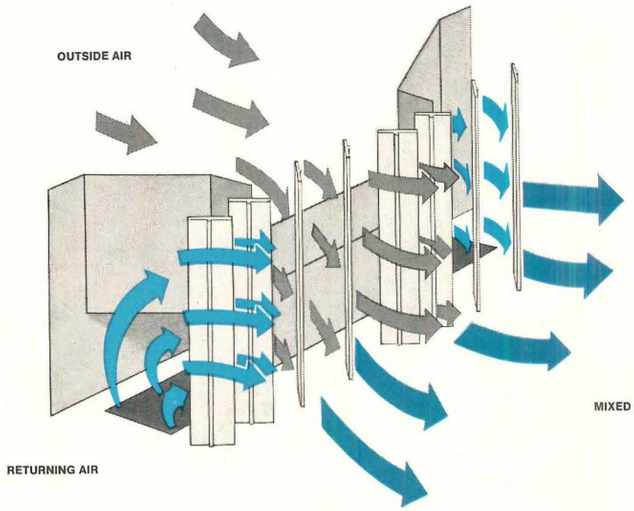
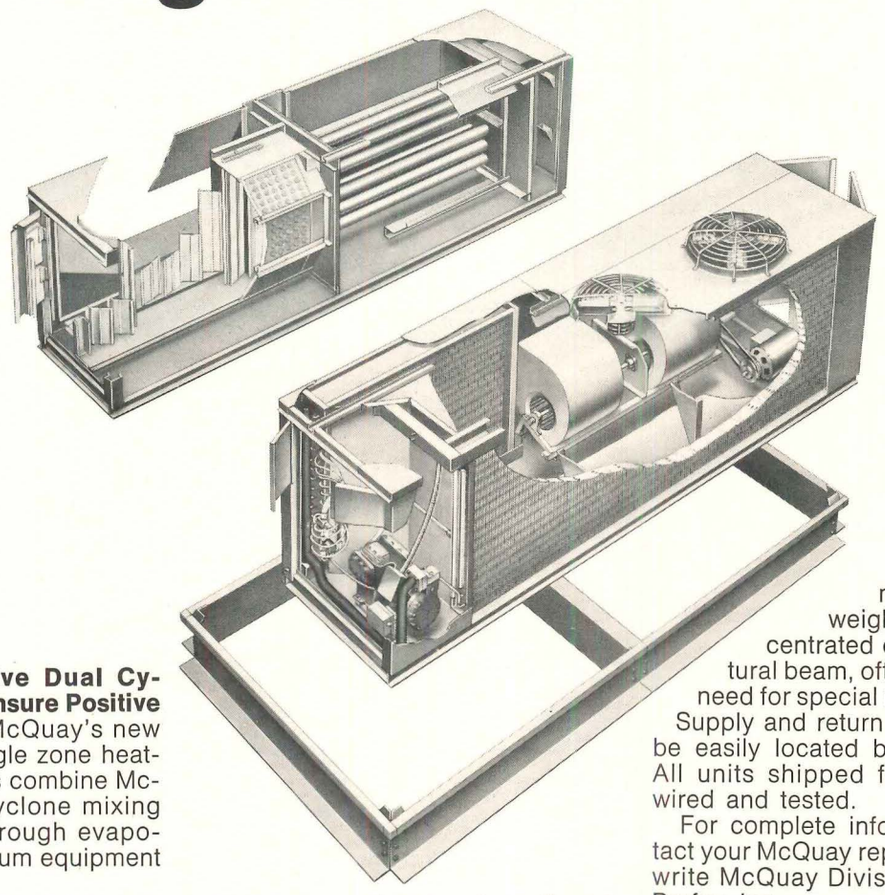


The "eyes" have it in single zone units.



McQuay's Exclusive Dual Cyclone Mixing Eyes Insure Positive Comfort Control. McQuay's new line of Roofpak® single zone heating and cooling units combine McQuay's exclusive cyclone mixing action with draw through evaporator coils for maximum equipment efficiency and life.

Dampers are positioned to create two turbulent cyclone mixing eyes, giving a more efficient mix of outside and return air and virtually eliminating air stratification. Reduces the possibility of uneven temperatures across the evaporator coil, inefficient heat transfer and humidity control and possible compressor damage from liquid slugging.

Cooling capacities from 15 to 35 tons, gas furnace heating from 285 to 760 MBH. Air delivery capacities are based on 400 CFM per ton and can be varied to provide 300 to 500 CFM per ton. Units designed to be roof or ground mounted. If roof mounted, most weight can be concentrated on main structural beam, often eliminating need for special reinforcement. Supply and return openings can be easily located between joists. All units shipped factory piped, wired and tested.

For complete information, contact your McQuay representative or write McQuay Division, McQuay-Perfex, Inc.

Look to the systems leader...

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For more data, circle 21 on inquiry card

News in brief

The volume of new construction work designed by architects declined slightly (2 per cent) in February. After adjustments for seasonal variations, the F. W. Dodge Index of architectural construction entering the contract stage stood at 151 (1967=100). The weak area in February statistics was apartment building where a 10 per cent seasonally-adjusted decline offset moderate gains made in the non-residential area. After hitting a record rate in December, apartment contracting fell sharply in both January and February. The seasonally-adjusted value for February was 25 per cent below December's peak. In the nonresidental area, industrial and commercial building showed gradual but continued improvement—public buildings and hospitals posted strong gains. One weak area in the expanding nonresidential building market is the educational category which declined 10 per cent during the month.

GSA has requested separate preliminary proposals without price for construction management on three California projects: Federal youth correctional facilities in Los Angeles ($7 million) and San Diego ($4 million), and Federal metropolitan correctional center in San Diego ($12 million). Submissions were due April 17. GSA will request prices from selected proposers after evaluation.

Robert J. Nash, a Washington, D. C. architect, has been awarded the first Whitney M. Young Jr. Citation from The American Institute of Architects. The citation, established in 1971, is being presented to Nash for his significant contribution in initiating and directing the Institute's programs in the area of social concern. He will be presented the Citation in May during the 1972 convention of the 24,000-member organization in Houston.

The New York State Dormitory Authority has been awarded the AIA's 1972 Citation of an Organization. The Authority was created in 1944 and in the past quarter century has financed construction of $1 billion worth of academic facilities involving more than 80 architectural firms. Many of the Authority's projects have won local design awards.

New York architect Richard Meier is the recipient of the 1972 Arnold W. Brunner Memorial Prize in Architecture. The $1000 award is made annually by the American Academy of Arts and Letters and the National Institute of Arts and Letters.

The first Operation Breakthrough homes were occupied last month in Horizon Village, Kalamazoo, Michigan. In a related development, HUD officials announced 24 more new Breakthrough projects to be built in various parts of the nation. These will form part of Phase III which will begin with more than 5000 units already approved.

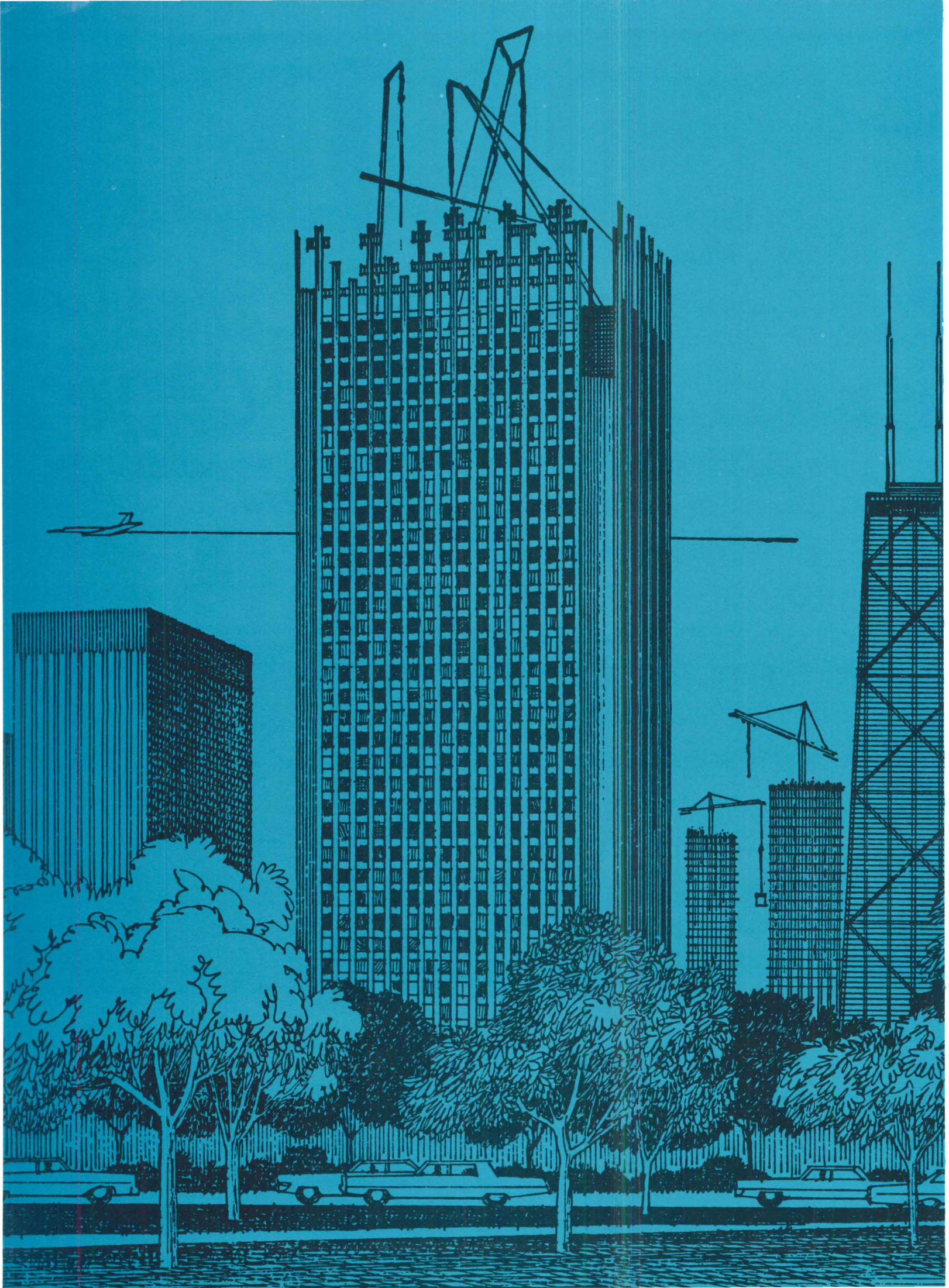
The National Academy of Design has awarded its highest architectural honor to the Philadelphia firm of Vincent Kling & Partners. For excellence in design of the Armstrong Cork Company's Design Center in Lancaster, Pennsylvania, Kling received the Academy's Samuel F. B. Morse Medal.

The Portland Cement Association announces the 1972 White Cement Architectural Awards. Any building that is designed by an architect registered in the United States and that makes significant use of white concrete can qualify provided that construction was completed between January 1 and December 31, 1971. For further information: Portland Cement Association Awards Program, Old Orchard Road, Skokie, Illinois, 60076.

Two international congresses of architects will be held this summer and fall in Brazil/Paraguay and Bulgaria. The 14th Congress of the Pan American Federation of Architects, the oldest international professional society, will convene June 10 in Sao Paulo, Brazil for five days and then shift in a reconvened session to Asuncion, Paraguay extending through June 18. The meeting of American architects will focus on urban deterioration, examining its root causes in order to be able to plan the measures necessary for effective development policies. Richard Sharpe, FAIA, of Norwich, Connecticut, second vice president of the Federation, will lead the United States delegation to the Congress which 3,000 architects are expected to attend. Registration fees are $50 for architects; $30 for personal guests.

Architecture and Recreation is the theme of the 11th World Congress of the International Union of Architects to be held September 25–30, 1972, in Varna, Bulgaria. Between 3,000 and 4,000 architects from all parts of the world are expected to attend this meeting at the Varna Sports Palace. Registration fees are $70 for architects; $50 for students, personal guests, and observers. These prices will increase 2 per cent after June 25.

For registration forms, hotel and tour reservations, or other information on both congresses, contact Maurice Payne, AIA Headquarters, 1785 Massachusetts Avenue, N. W., Washington, D. C. 20036.



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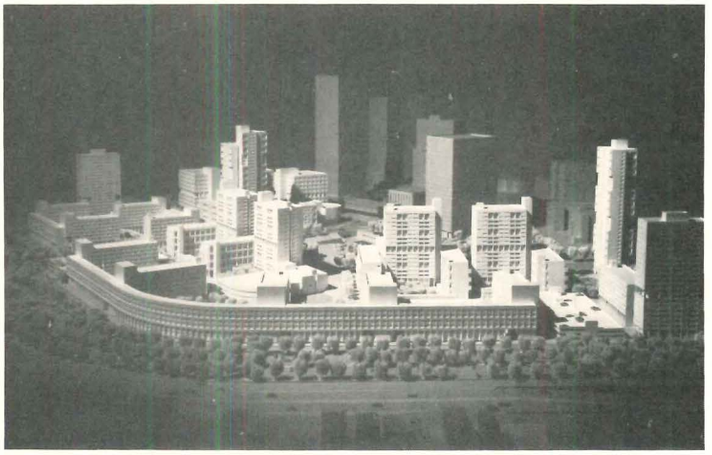

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$1.2 BILLION PRIVATELY FINANCED DEVELOPMENT FOR LOWER MANHATTAN. With the unveiling of Manhattan Landing, a mile-long housing, commercial, cultural and recreational development to be built on platforms between the bulkhead and pierhead lines extending from the Staten Island Ferry to the Manhattan Bridge, the efforts of a unique and heartening alliance seem about to come to fruition. As Mayor Lindsay said at the press conference, "Manhattan Landing is the result of an unprecedented partnership between government and the private sector."

The Downtown Lower Manhattan Association (DLMA), a group of businessmen, did the first Lower Manhattan plan (under former Mayor Robert Wagner) which goaded the city into doing its first comprehensive area plan. The Office of Lower Manhattan Development—an adjunct of the Mayor's office—was established to implement the City's plan. Directed by Richard Weinstein since 1969, this is the first of Lindsay's horizontal agencies — "a substantial and significant governmental invention," according to Weinstein—designed to coordinate activities of the vertical agencies. Weinstein has worked closely with the DLMA and its chairman, David Rockefeller, who, Lindsay says, "has been the spark plug and the adhesive tape that has pulled together so much of this plan." Most of the private sector involvement has been realized through the efforts of the DLMA, says Weinstein who emphasizes that the daily professional confrontations between his office and the DLMA solved many problems before they arose. He says the future of cities such as New York depends on cooperation at this scale between public and private sectors.

Manhattan Landing will consist of 88 acres of new land and 25 acres of restoration sprinkled with new structures in the South Street Seaport area.

The participating mortgage formula developed for the first phase of housing—consisting of 3500 units, 1750 on either side of Jeannette Park—is designed to result in rents of $115-120 per room per month in 1976. (Conventional financing would produce rents of $180 per room per month which is not considered marketable.) Private lenders are to supply 75 per cent of the money at below par interest rates, as low as 7 per cent it is hoped. 20 per cent is to come from the Housing Development Corporation which will sell bonds that will be paid back so this is not really public subsidy. 5 per cent will come from developers' equity. The second phase of housing, also 3500 units beside Jeannette Park, may or may not be financed this way but there is an understanding now that this formula will continue to be used.

Another 2500 units are to be built above a municipal garage which will provide the platform for the housing. In this case, a tax abatement formula designed to spur construction on vacant land will also contribute to achieving the low rental range. It is hoped that the development of the South Street Seaport, which will include approximately 500 housing units, will provide the amenities that will reduce the critical turnover of employees in Lower Manhattan which is attributed to a lack of shops, restaurants, theaters, etc. The Seaport will be a self-sustaining cultural enterprise because the revenue from commercial enterprises, such as restaurants and spice shops, on land given to the Seaport by the City, will go back into the Seaport. This will enable them to continue rehabilitating ships and such programs as taking ex-narcotic addicts out in summer to teach them sailing.

This project is expected to house up to 50,000 people—mostly junior executives and middle management—and to bring in $27 million in taxes (on land now earning $500,000) which, it is thought, will contribute more to helping the low-income housing problem than incorporating low-income housing here, which can't be done as there is no subsidy money available.

The architects so far designated are: Davis, Brody & Associates for housing around Jeannette Park developed by DeMatteis and Uris; Horowitz and Chun for the garage and housing above it to be developed by Arlen and Tishman. Edward Larrabee Barnes is doing a feasibility study for the Trump Organization for an office-apartment-hotel-transportation building on the site of the Staten Island Ferry Terminal.

The Board of Estimate will debate the plan on May 17th; then each lease will come up for its approval. A public hearing before the City Planning Commission will take place in early May. Construction of the platforms could begin in 12 to 18 months. Over half of the space should be ready for use by 1976 and completion is expected between 1980 and 1985.

NADER ON HOUSING

Ralph Nader predicted recently that deficiencies in housing would be an issue in the 1970's comparable to the automobile issues of the 1960's. And he said his office would become more and more active in trying to help the aggrieved home owner.

His speech came down hard on FHA standards and what he considers the lack of explicit warranties on housing. FHA was described as the "leaky, shaky umbrella now facing the greatest crisis in its history." There must be an intensive investigation of HUD that results in a jolt felt clear up to the top, he told the industry representatives.

He urged Secretary Romney to:
1) Appoint a well-funded investigative task force to determine exactly how widespread are the FHA malpractices, where they occur, and to develop evidence to be turned over to the Justice Department. This Task Force should have all the legal and accountant expertise it needs.
2) Appoint HUD people to determine what can be done to satisfy the aggrieved parties.

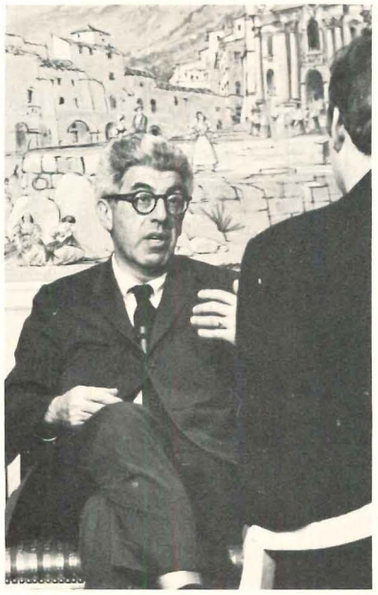
It is apparent that Nader and his raiders will be investigating voluntary standards, and probably building codes too, in their quest for greater consumer input to standards drafting and promulgation.

2

MAJOR RENEWAL FOR ROCHESTER'S SOUTHEAST LOOP

Gruzen & Partners are the architects and planners for a mammoth urban renewal project to be carried out in Rochester, New York under the auspices of UDC-Greater Rochester, Inc., a subsidiary of the New York State Urban Development Corporation. The new town, downtown, will include 3100 units of housing, office space, commercial space, a new school, a theater, and numerous other cultural facilities. A new, 6-acre park, at the heart of the project, will be designed by Halprin and Associates. The developers hope to offer a variety of amenities that will attract people from all social, economic and racial backgrounds.

Construction of the first housing units—(photo above) is now underway. Completion of the entire project is scheduled for 1978.



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LIFESTYLE 2000

In Chicago last month, some 300 architects and product designers heard experts from six different fields discuss their views of what we can expect in life styles and environment by the year 2000. Sponsored by American Iron and Steel Institute, the seminar was called "Lifestyle 2000: Designing for the Third Millennium."

One of the six speakers, Barry Commoner, author of the best seller on ecology, *The Closing Circle,* analyzed causes of our present environmental crisis. He said that a series of adverse displacements have occurred: detergents for soap; synthetic fibers for natural fibers; plastics and aluminum for steel and wood; and chemical fertilizers and pesticides for natural acreage. In these changes, new technologies have greater impact on the environment than older ones. Resolution of the crisis requires massive redesign of present technology, said Commoner, director of the Center for the Biology of Natural Systems of Washington University, St. Louis, Missouri.

Thomas Martin Payette, president of the Boston architectural firm of Markus, Nocka, Payette and Associates, Inc., spoke on the subject of structures. He said that our society is living in a man-made environment established on the wrong priorities and goals. He is hopeful that the social goals of young architects will help evolve buildings which are more meaningful and more suited to human needs.

Richard E. Paret, assistant vice president of American Iron and Steel Institute, described new and more versatile steels which will continue to help shape the future of civilization. He explained that steel is not one, but a family of 30,000 related materials, half of which were developed in the last decade.

The seminar was presented with the endorsement of the Midwest Chapter of the Industrial Designers Society of America and the Chicago Chapter of the American Institute of Architects. Other speakers were Max Kaplan of the University of Florida, Arthur J. Poulos of Poulos Design Associates, Inc. and Jeffrey T. Hamilton of NASA.

4

NEW ENERGY CONSERVATION AWARD

The Owens-Corning Fiberglass Corporation announces a new award program to encourage an awareness of the need to conserve our natural energy reserves and to reduce environmental pollution. The competition is open to all registered architects and licensed engineers practicing in the United States. Completed building or buildings in construction or under design at the date of entry may qualify. Entries must be submitted by August 31, 1972 and a letter of intent to enter must be received by Owens-Corning not later than June 30, 1972. For further information: Energy Conservation Award Program, Owens-Corning Fiberglass Corporation, Fiberglass Tower, Toledo, Ohio, 43659.

KENNEDY SUPPORTS WEST FRONT

Senator Edward M. Kennedy (D., Mass.) strongly supported The American Institute of Architects' opposition to the extension of the West Central Front of the U.S. Capitol, the last remaining original facade of the building. Speaking to the Fifth Annual Public Affairs Conference, sponsored jointly by the AIA and the Consulting Engineers Council, Senator Kennedy proposed a full round of public hearings and debate on what he termed these "ominous new plans."

5

AT HOME IN THE 80s

To explore lifestyles in the decade to come, BASF Wyandotte Corporation, a large U.S. chemical company, commissioned two teams of designers, sociologists, physicians and economists to plan some domestic interiors for the 1980s. Maximizing the use of space, the teams abandoned conventional concepts of single-use spaces. They favored multi-purpose areas and multi-functional furniture. Food preparation and service units are shown above along with a multi-use work station.

The design teams were headed by Professor Herbert Hirsche, dean of the Institute of Art in Stuttgart and a leading industrial designer in Germany and Professor Arno Votteler who teaches design at the Institute of Art in Brunswick, Germany.

AIA's NEW FAIAs

The AIA has announced that 79 members have been elected to the College of Fellows, a lifetime honor bestowed for outstanding contribution to the profession. Formal investiture will be held in ceremonies on May 8, during the AIA Convention in Houston. The 1972 Fellows are: Bruce A. Abramson, St. Paul; Gregory Ain, Los Angeles; Richard M. Arnold, Phoenix; Edward F. Bartz, Jr., Belleville, Ill.; Thomas J. Bissett, Columbia, S.C.; Robert Lewis Bliss, Salt Lake City; Robert D. Bolling, Los Angeles; David Rice Braden, Dallas; Joseph Myron Brocato, Alexandria, La.; Harry Alexander Bruno, Oakland, Calif.; James I. Campbell, Baltimore; DeVon M. Carlson, Boulder; Henry Nichols Cobb, New York City; William J. Conklin, New York City; Herman G. Cox, Jr., Fort Worth, Tex.; Raymond David Crites, Cedar Rapids; (Miss) Betty Lou Custer, St. Louis; Leo A. Daly, Omaha; Homer Delawie, San Diego; Martin David Dubin, Chicago; David L. Eggers, New York City; William Lloyd Ensign, Washington, D. C.; John Fisher-Smith, San Francisco; John Frederick Gane, Philadelphia; Abraham W. Geller, New York City; Raymond Girvigian, South Pasadena, Calif.; Myron Goldsmith, Chicago; E. Carleton Granbery, Jr., New Haven; Francis S. Haines, Honolulu; Ernest H. Hara, Honolulu; Julian Hoke Harris, Atlanta; Morton Hartman, Chicago; Frank L. Hope, Jr., San Diego; Fred E. Hummel, Sacramento; W. Byron Ireland, Columbus, Ohio; Joe J. Jordan, Philadelphia; Carl F. W. Kaelber, Jr., Rochester, N.Y.; William Louis Larson, Omaha; Richard R. Leitch, Newport Beach, Cal.; Eason Harris Leonard, New York City; Allen Yuen Lew, Fresno, Cal.; Robert J. J. Locatell, Atlanta; Louis R. Lundgren, St. Paul; Leslie B. Mabrey, Corpus Christi, Tex.; William Marshall, Jr., Norfolk; Robert B. Martin, Lincoln City, Ore.; Carrell S. McNulty, Jr., Stamford; Robert C. Metcalf, Ann Arbor; Maynard W. Meyer, Milwaukee; Henry Forster Miller, Orange, Conn.; Hugo V. Neuhaus, Jr., Houston; Julius Victor Neuhaus III, Houston; Rai Yukio Okamoto, San Francisco; Raymond Charles Ovresat, Chicago; Patroklos John Papadopulos, Chicago; H. Morse Payne, Jr., Cambridge; William Merriweather Peña, Houston; Mark A. Pfaller, Milwaukee; Darrel D. Rippeteau, Watertown, N.Y.; Edward John Romieniec, College Station, Tex.; Frederick William Salogga, Decatur, Ill.; Carlos R. Sanz, Santurce, Puerto Rico; John H. Schruben, Chicago; Nils Mark Schweizer, Winter Park, Fla.; Wallie E. Scott, Jr., Houston; Hugh Shepley, Boston; Joseph Newton Smith III, Atlanta; Macon S. Smith, Raleigh; Robert Stanton, Carmel, Cal.; Douglas E. Steinman, Jr., Beaumont, Tex.; Walter Stromquist, Palo Alto, Cal.; Edward Sullam, Honolulu; Gene R. Summers, Chicago; Alan Yamato Taniguchi, Austin, Tex.; Anderson Todd, Houston, Tex.; Wilhelm Viggo von Moltke, Cambridge; John Louis Wilson, New York City; Clark D. Wold, St. Paul; Thomas W. D. Wright, Washington, D. C.

Advancement of the new Fellows brings the total membership of the College of Fellows to 975.

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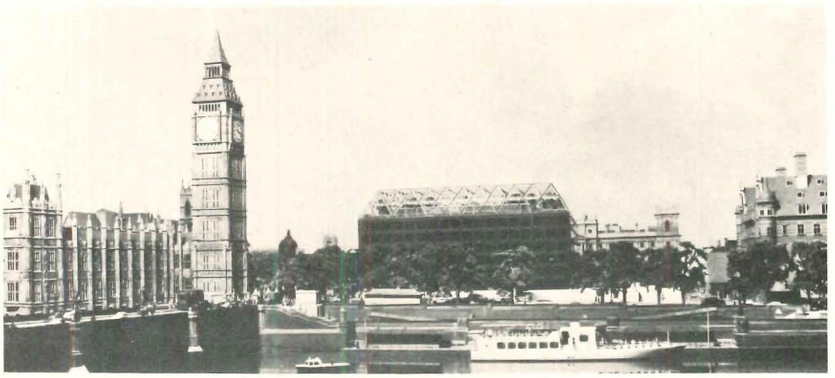
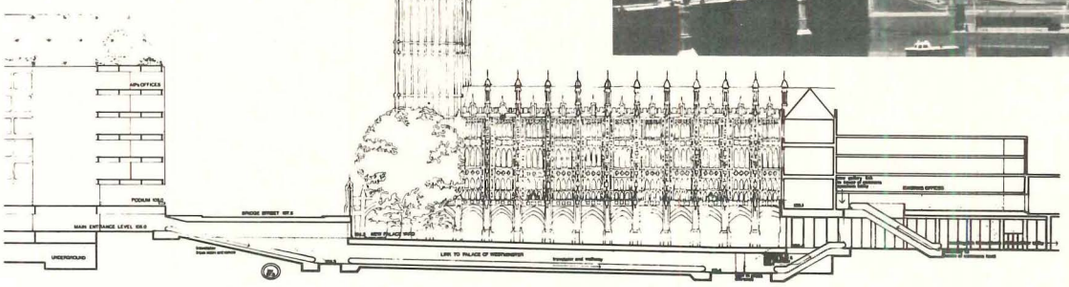
New Parliamentary Building, London, first prize winner of a British Commonwealth competition, designed by Robin Spence and Robin Webster, will be opposite Big Ben and connected by a traveling sidewalk to Parliament. The bronze and glass clad block, topped by a structural steel grid, will house offices and amenities for 450 members of the House of Commons. Expected completion is 1978.



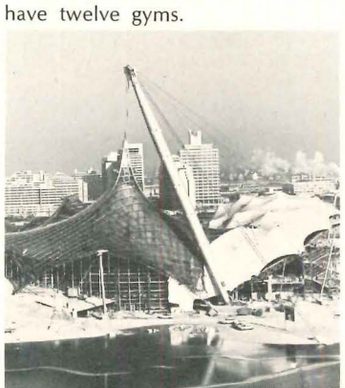


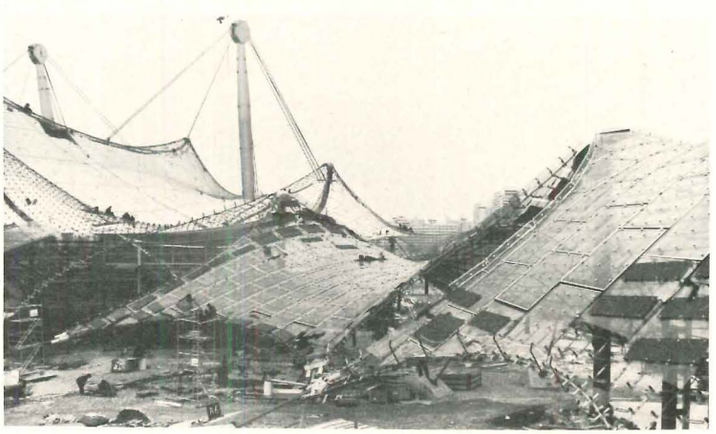
Architecture as Landscaping at 1972 Summer Olympics in Munich

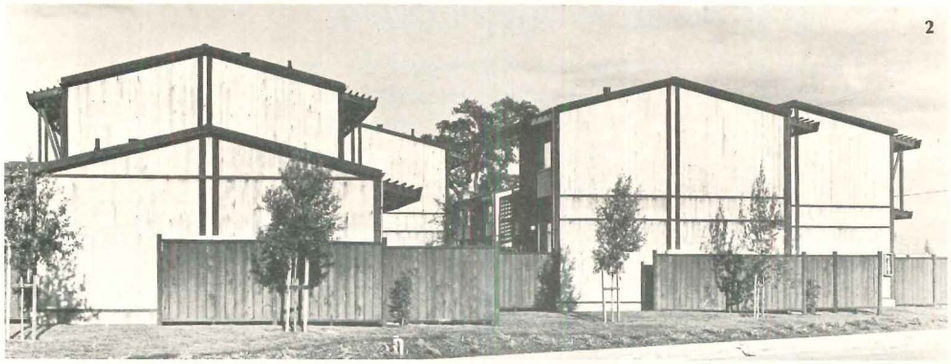
Behnisch and Partner of Stuttgart, first prize winners of a nationwide competition in 1967 for the design of the 1972 Olympics facilities, conceived of the project as creating a landscape. The 740-acre-site, four kilometers from central Munich, consisted of a former airfield and exhibition ground and a dump for World War II debris and earth from subway excavations. Here it was possible—as not in Mexico or Tokyo—to concentrate almost all necessary facilities in one area. By landfill and excavation a 60-meter-high mountain (10 on site plan opposite) and an artificial lake (9) were created. On the north embankment is an open-air theater (8) at the edge of the 20-meter-high central plateau which is surrounded by the major structures: the stadium (5), sports arena (6) and swimming arena (7) conceived of as valleys supplemented by grandstands. The plateau enabled these stadia to be built according to the ancient model of earth stadia. Several other features—extending the plateau pavement into the foyer and using landscape colors in the seats, but above all the roof (by Behnisch & Partner with Frei Otto and Ewald Bubner, Leonhardt + Andrä)—integrate these structures with the landscape. It is meant to flow under the roof; and walls and ceilings are as light and transparent as possible to permit this flow.

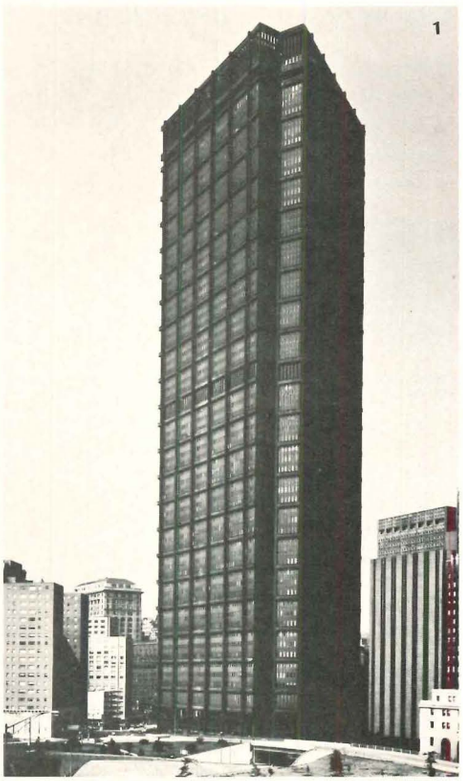
In addition to instigating four kilometers of new subway construction, 34 kilometers of road building or improvement and 32 bridges, the Olympic development will provide Munich with permanent sports, entertainment and recreation facilities, the largest college of physical education in Europe, and 4800 condominium and lease apartments designed by Heinle, Wischer & Partner and Eckert & Wirsing.

The size of the stadium—47,000 seats and 33,000 standing places with a maximum of 195 meters between spectator and athlete—was determined primarily by post-Olympics needs. The sports arena will house boxing and congresses later. The swimming arena has five pools and the school will have twelve gyms.









American Institute of Steel Construction Awards: (1) U.S. Steel Building, Pittsburgh, Harrison & Abramovitz, & Abbe; (2) Pierce Apartments, Gilroy, Cal., Dukor Assocs.; (3) Superbay Maintenance Facilities, San Francisco and Los Angeles, joint venture of Lev Zetlin Assocs. and Conklin & Rossant. Not shown: Tempe Municipal Building, Ariz., Michael & Kemper Goodwin Ltd.; Richmond Coliseum, Va., Ben R. Johns, Jr.; Northway 10 Executive Park, Elnora, N.Y., Robert F. Lavery; Alza Corp. lab and offices, Palo Alto, McCue Boone Tomsick (RECORD, June 1971, pages 128-129); Parker Hannifin Headquarters, Irvine, Cal., Albert C. Martin and Assocs. (RECORD, May 1972, pages 120-121); Sears Roebuck offices, Alhambra, Cal., Albert C. Martin and Assocs.; Malcolm X College, Chicago, C.F. Murphy Assocs. (RECORD, May 1971, pp. 98-99); Burlington Corporate Headquarters, Greensboro, N.C., Odell Assocs. Inc. (RECORD, Feb. 1972, pages 118-121); Service Group, SUNY, Old Westbury, N.Y., James Stewart Polshek and Assocs. (RECORD, Feb. 1972, pages 97-100); Rapid Transit Stations (RECORD, Nov. 1971, pages 129-132) and John Hancock Center (RECORD, Jan. 1967, pages 137-144), Chicago, Skidmore, Owings & Merrill; Paradise Steam Electric Generating Station Unit 3,, Drakesboro, Ken., Tennessee Valley Authority. The jury; John P. Eberhard, AIA; James H. Finch, FAIA, Dahlen K. Ritchey, FAIA; Edward J. Teal, M. ASCE; Max O. Urbahn, FAIA.

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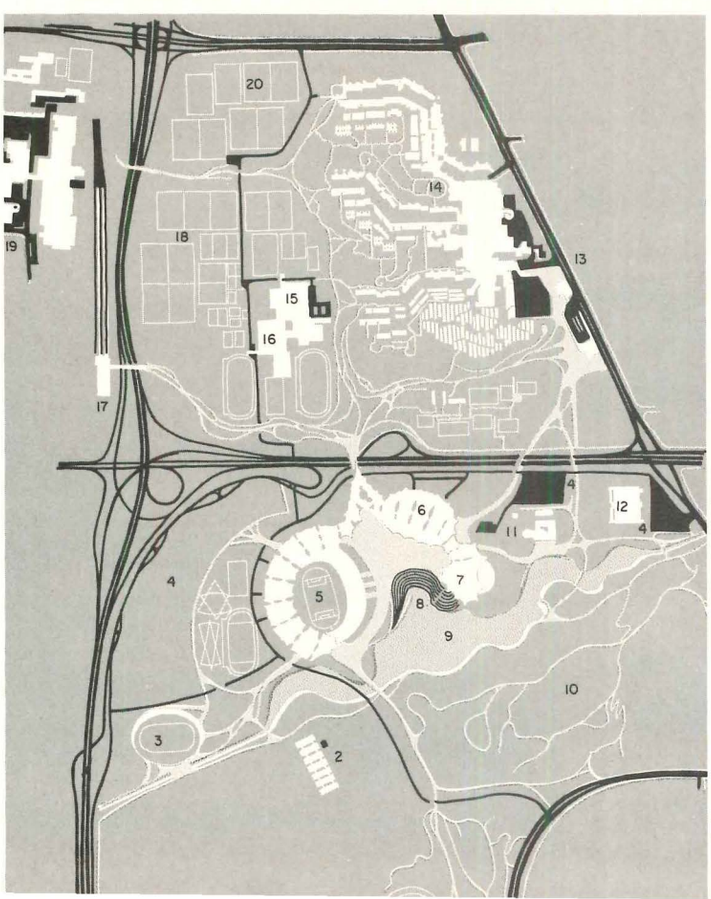
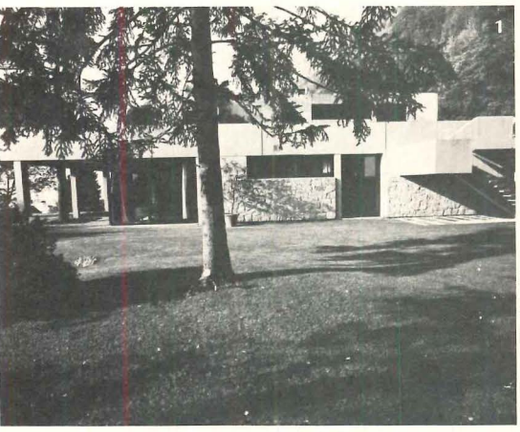
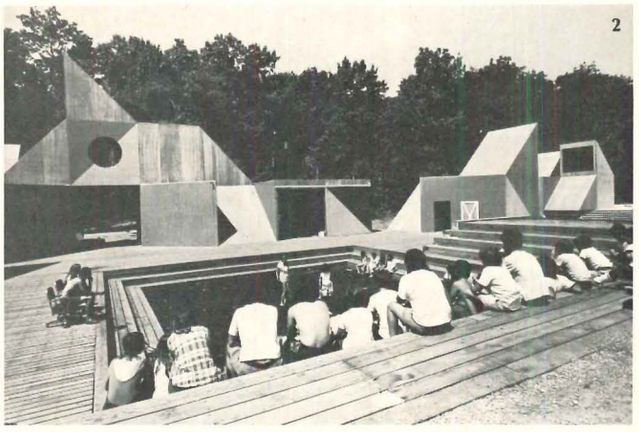
1 Equestrian stadium
2 Olympic Construction Company
3 Cycle stadium
4 Car Park
5 Stadium
6 Sports arena
7 Swimming arena
8 Open-air theater
9 Artificial lake
10 Panoramic view
11 Television tower
12 Small sports hall
13 Underground railway station
14 Olympic village
15 Radio and television center
16 Volleyball court
17 Metropolitan railway station
18 Training and warming-up facilities
19 Press city
20 Hockey fields

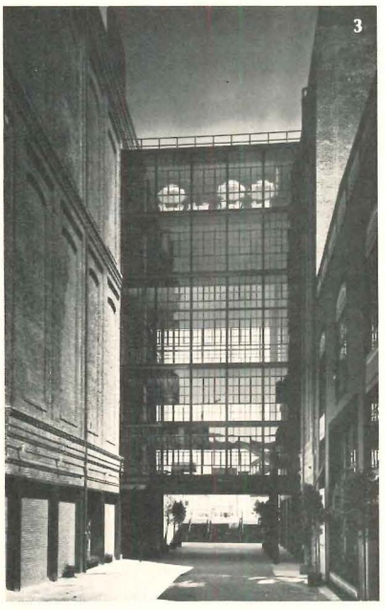


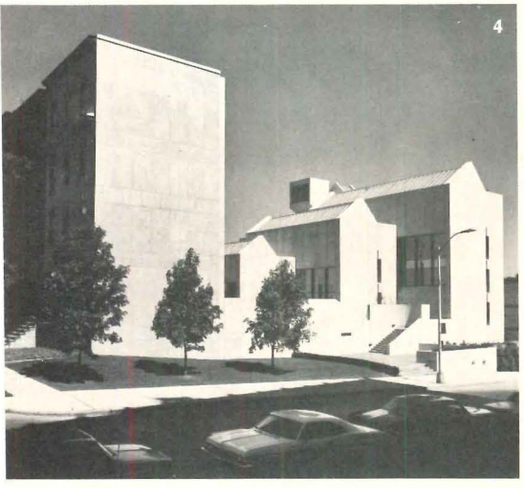
The 1972 American Institute of Architects Honor Awards and Bartlett Awards

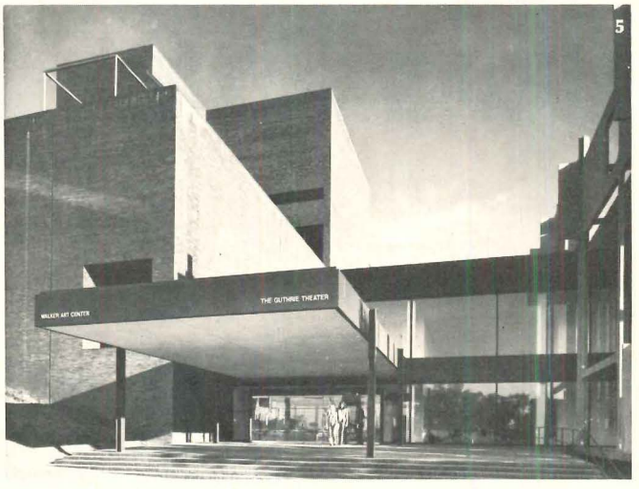
Jurors for the 1972 Honor Awards program were: Henry N. Cobb, AIA, chairman, New York City; Antonin Aeck, AIA Association of Student Chapters, Atlanta; Gerald L. Allison, FAIA, Honolulu; John G. Dinkeloo, AIA, Hamden, Connecticut; Harry M. Weese, FAIA, Chicago; Harry C. Wolf, AIA, Charlotte, North Carolina; Milton L. Grigg, FAIA, adviser, Charlottesville, Virginia. The premiated designs were selected from 470 entries. The jury for the Bartlett Awards consisted of members of the Potomac Valley Chapter of the AIA: William Baltzer Fox, James F. Hilleary and Edward H. Noakes.



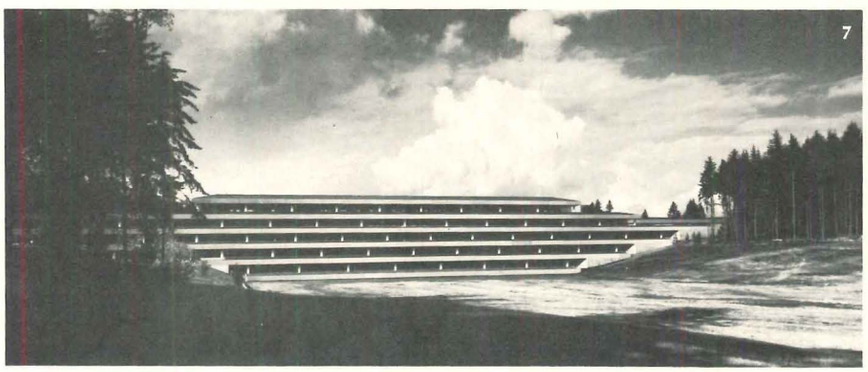


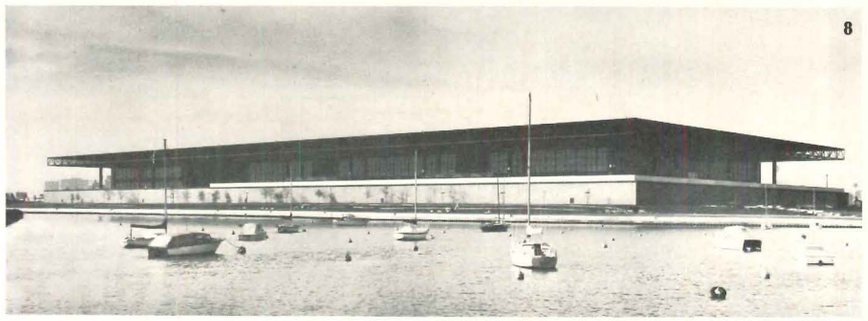


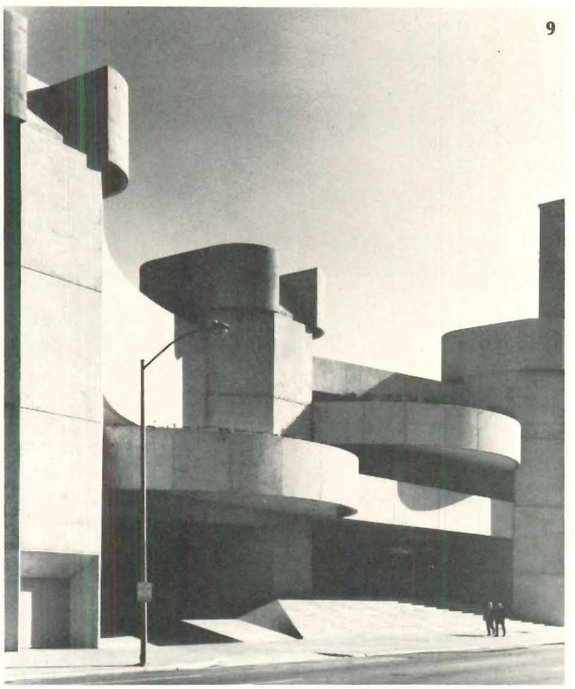




(1) Koerfer House, Lago Maggiore, Switzerland, Marcel Breuer and Herbert Beckhard (RECORD, November 1966, pages 132-133); (2) YM-YWHA Day Camp, Mount Olive, New Jersey, Claude Samton & Associates; (3) Ice Houses I & II, San Francisco, Wurster, Bernardi and Emmons, Inc.; (4) New York State Bar Center, Albany, James Stewart Polshek & Associates (RECORD, December 1971, pages 94-99); (5) Walker Art Center, Minneapolis, Edward Larrabee Barnes (RECORD, July 1971, page 34); (6) Mummers Theater, Oklahoma City, John M. Johansen; (7) Weyerhaeuser Headquarters, Tacoma, Washington, Skidmore, Owings & Merrill; (8) McCormick Place On-the-Lake, Chicago, C. F. Murphy Associates (RECORD, May 1971, pages 102-105); (9) Alley Theatre, Houston, Texas, Ulrich Franzen & Associates. Numbers 7, 8 and 9 received the Bartlett Awards "in recognition of their accessibility to the physically handicapped."







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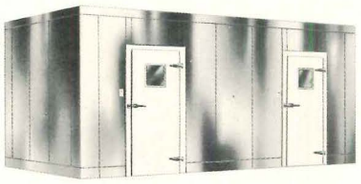
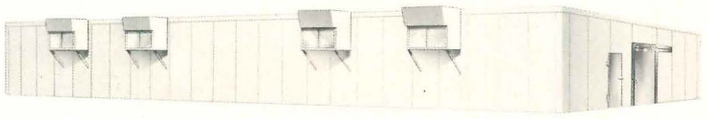


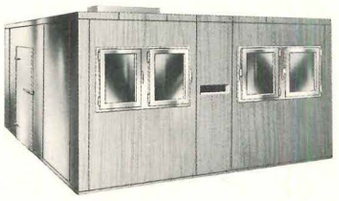
Notre Dame, Ind.

University of Notre Dame Athletic and Convocation Center
20′x10′ Combination Cooler/Freezer
Architect: Ellerbe Architects, St. Paul, Minn.
Dealer: Aslesen, Minneapolis, Minn.



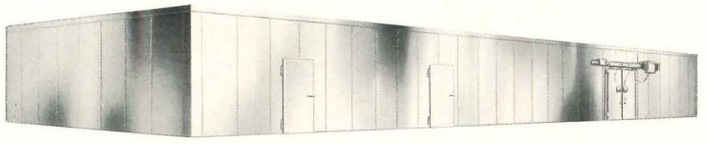
Washington, D.C.

Andrews Air Force Base
96′x36′x10′ Refrigerated Warehouse
Architect: Vollrath Refrigeration Inc., River Falls, Wis.
Dealer: Alto Inc., Alexandria, Va.



Los Angeles, Calif.

Straw Hat Pizza Palaces
12′x14′x8′4″ Reach-In Cooler
Architect: Design Services Inc., Menlo Park, Calif.
Dealer: Design Services Inc., Menlo Park, Calif.



Clearwater, Fla.

Pinellas County School Board
24′x98′x10′7″ Commodity Storage Cooler
Architect: R. D. Bateman Co., Tampa, Fla.
Dealer: R. D. Bateman Co., Tampa, Fla.

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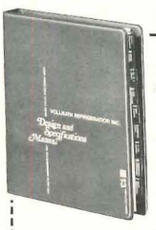

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Goodyear shortens runway and

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the walk between freeway

New Speedwalk and Speedramp systems save Cleveland air passengers a 900 ft. walk. Round trip.

Cleveland Hopkins had a problem—how to shorten the walk from the new garage to the main terminal building.

Goodyear had the solution—a unique design that draws on Goodyear experience with Speedwalk and Speedramp passenger conveyor systems at airports around the world. One section of the two-part Cleveland installation is the first system ever to combine horizontal and inclined transportation on a single belt.

Here and at other airports, Speedwalk systems move people and their baggage comfortably and effortlessly. Passengers travel in separate lanes at speeds up to 180 feet per minute. The Speedramp (incline belt passenger conveyor), unlike conventional escalators, has no steps to make problems for wheelchairs, baggage carts and strollers.

Goodyear transport systems are also at work in shopping centers, large factories, stadiums and office complexes. Goodyear has them on line now, ready for delivery—whenever you want to keep ahead of the crowd. For an informative brochure, write: The Goodyear Tire & Rubber Company, Box 52, Transport Systems, Akron, Ohio 44309.

GOODYEAR
TRANSPORT SYSTEMS

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OFFICE NOTES

NEW FIRMS, FIRM CHANGES

Albert C. Martin and Associates, planners, architects and engineers announce the appointment of Robert Welty Braunschweiger as project director.

Robert L. Barnett, AIA, Architect & Associates of Beverly Hills, California announces that Ian Kenneth Carter has joined the firm as an associate architect.

Beyer-Blinder-Belle, Architects & Planners are pleased to announce that Robert E. Meadows and Yogesh Sethi have been made associates of the firm.

Hall and Goodhue, architectural and city planning firm, with offices in San Francisco and Monterey, announces the promotion of three associates to principals and directors of the corporation. The three licensed architects are Gerald E. Ervin of the San Francisco office and Donald E. Evenson and Russell D. Haisley of the Monterey office.

Neuhaus & Taylor, Architects and Planning Consultants, nationally-recognized architectural firm with offices in Houston, Dallas and New York have named Colonel William H. Lillie, Jr., USAF-Ret. as their Washington, D.C. representative.

Charles Luckman Associates, national planning, architecture and engineering firm announces that David Margolf, AIA has joined their firm as director of project management.

Eliot Noyes and Associates announces that Alan Eliot Goldberg has been appointed senior associate in the architectural department.

Harold Roth and Edward Saad are pleased to have William F. Moore join them as a partner. The firm will now be known as **Roth Saad Moore Architects.**

Shepley Bulfinch Richardson and Abbott have announced that Gerrit Zwart became an associate of the firm effective January 1, 1972.

Skidmore, Owings & Merrill, Architects/Engineers with offices in San Francisco, New York, Chicago and Portland, recently announced the election of John Fisher-Smith, AIA, and Richard H. Ciceri as associate partners of the firm.

J. Karl Justin, AIA, has been appointed vice president for administration of the New York architectural **Office of John Carl Warnecke FAIA.**

Morton B. Braun, AIP, Alan McClennen Jr. and Chia-Ming Sze, AIA announce the formation of **Braun McClennen & Sze Inc.,** architects and planners. Their offices are located at 18 Eliot Street, Cambridge, Massachusetts.

Walter Burde, AIA and Eugene W. Bayol, Jr. AIA are pleased to announce the formation of a firm to practice architecture and planning under the name **Architects Burde, Bayol & Associates.**

New **Kodak** Colorado Division requires optimized control of thermal environment for its optimum rated film/paper/plates

Kodak has gone West to Windsor, Colorado with a new 3000 acre production and distribution complex for film, finishing, paper and printing plates.

Low tolerance control of setpoint temperature/humidity is critical for maintaining *uniform,* quality production in the currently completed 1½ million sq. ft. facility. High-efficiency air-conditioning/heating systems have integral heat transfer coils for such *balanced* environmental requirements. Aerofin Heat Exchanger Coils share in this responsibility. Reliable performance, plus remarkably high exchange coefficients have earned Aerofin industry leadership. Call our specialists on any new or renovation job with demanding coil controlled environment specs.

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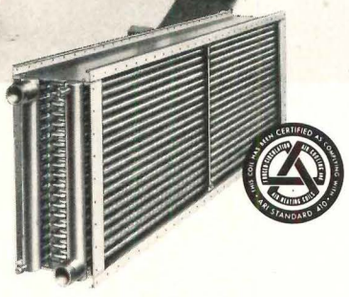
Mechanical Engineers: Giffels and Rosetti and Eastman Kodak Company

Mechanical Contractors: U. S. Engineering Co., and L. E. Meyer Inc.

General Contractor: Phelps Construction Company, Greeley, Colorado



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REINFORCED CONCRETE: COMPELLING IT IS.

American National Bank Building, Amarillo, Texas
Architects: Kelly/Marshall & Associates, Inc., Tulsa
Structural Engineers: The Engineers Collaborative Ltd., Chicago
Contractor: WRG Construction, Tulsa

COSTLY IT ISN'T.

Amarillo reaches for the sky.

Striking design soars for 31 stories in the American National Bank Building. The tallest structure in Amarillo. And the architect's choice for this highly effective, yet highly practical, treatment was reinforced concrete joist floors: lightweight aggregate plus Grade 60 reinforcing steel.

Design freedom. And a tight rein on costs.

The lack of high soil bearing capacity for the substructure didn't limit expressive use of space and shape in this structure. Piers drilled into the site's silt and clay use friction forces and end bearing. The choice of lightweight concrete joist floors resulted in the lowest possible weight for the span lengths and meets the fire rating requirements without relying on fire resistive ceilings. Concrete columns of 4,250 psi and 6,000 psi strength were used. The joist floors were all structural lightweight concrete of 4,250 psi strength. All together, more than 2,000 tons of reinforcing steel (7.2 psf) went into the job. And when the final structural costs were tallied up, $11 per square foot was the very respectable figure for the building's 557,000 square feet, complete except for partitions, floor coverings and ceilings in tenant spaces.

Standing up to a Texas-style wind.

An unusually high wind load requirement of 40 pounds per square foot faced the designers. Another good reason for their choice of reinforced concrete. They combined both functional strength and eye-appealing contour in the shear wall and frame seen on the building's narrow dimensions. The second through sixth floors were designed for garage parking for bank customers and tenants. Here again, the versatility of reinforced concrete permitted supporting the shear-wall loads on a seven-story-high rigid frame. Result: a garage with six sloping ramp floors for unencumbered parking space.

Beating the clock is an economy move.

Time and again, the speed of construction with cast-in-place reinforced concrete and the immediate availability of rebars show how to stretch the building dollar. The American National Bank Building is no exception. No particular construction problems cropped up. The 21-month construction schedule was met easily. Helping all the way were Grade 60 rebars, used in straight, cut lengths. Standard steel pan forms for joists, with wide band beams of the same depth, gave a flat soffit unobstructed by beams. No truss bars were used. And all rebars were bundled and shipped as needed for easy placement.

Grade 60 makes the difference.

Grade 60 reinforcing steel is the strong point for Strength Design. With its 50% greater yield strength, it makes for slimmer columns, more usable floor space, lower construction costs.

Reinforced concrete: compelling, not costly.

Get away from the stereotypes and get into the building system that has it all: design freedom, fast construction and early starts, less maintenance, availability, proven economy. Cast-in-place reinforced concrete. It lets your imagination and your pocketbook stay friends.

Large, open parking ramps. Lightweight concrete in long-span floor joists gave lowest possible weight for required fire rating without ceilings.

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Professional critics have been virtually unanimous in regarding Harry Weese's Arena Stage as a major landmark in American architecture. Wholly original in concept, superbly functional, and elegant in detailing, it has "an ambiance which suggests that magic is made, after all, in a working place," as one commentator remarked. Among other significant developments which were foreshadowed in this exciting structure was the utilization of roof perimeters as an important element in contemporary design, particularly when executed in metal.

Our initial gratification when Mr. Weese and his associates selected Follansbee Terne for these roof areas has thus merely been enhanced with the passage of time. And we were therefore doubly gratified, nearly a decade later, when Terne was again specified on the adjacent Kreeger Theater, a building of comparable distinction.

FOLLANSBEE
FOLLANSBEE STEEL CORPORATION
FOLLANSBEE, WEST VIRGINIA

NORMAN R. McGRATH photo

KREEGER THEATER, WASHINGTON, D.C. WITH ARENA STAGE IN BACKGROUND.
ARCHITECT: HARRY WEESE AND ASSOCIATES, CHICAGO, ILLINOIS, WASHINGTON, D.C.
ROOFER: MATHY COMPANY, FAIRFAX, VIRGINIA.

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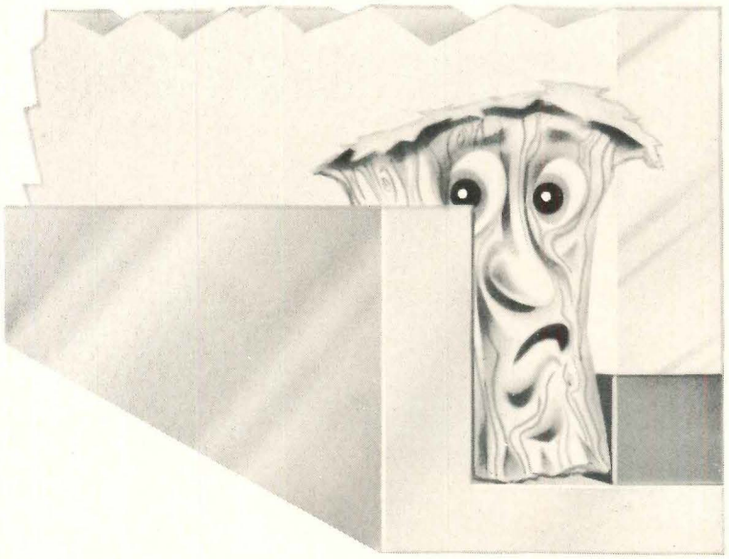
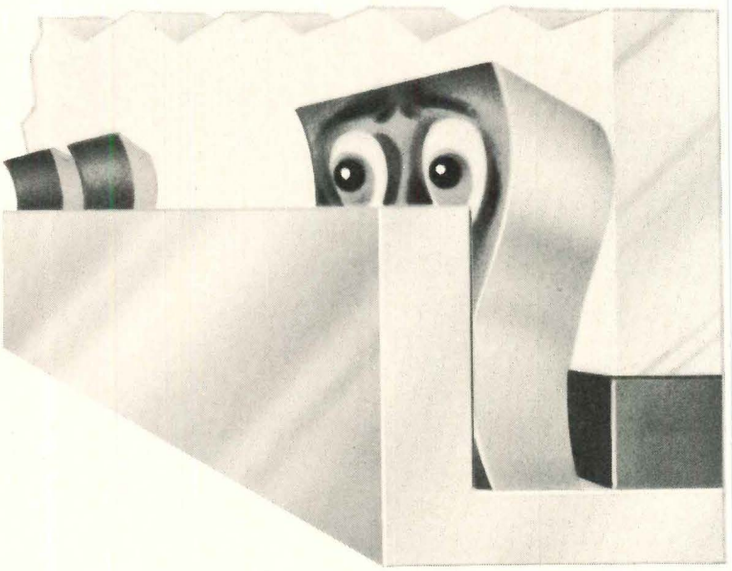
To avoid glazing problems caused by faulty shimming, avoid three of these shims.



The makeshift shim. It might do the job for a while.



The misplaced shim. It can't do the right job when it is in the wrong place.

All but the Pre-shimmed Tremco 440 Tape can cause problems that might crack or break glass, or cause sealant pump-out or failure.

If a shim is unevenly spaced it creates pressure points which could cause glass breakage. A makeshift shim, like a splinter of wood or piece of floor tile, could cause sealant adhesive failure resulting from improper wind load transfer from glass to seal. And if there is no shim at all, the pumping action of the glass will soon squeeze out the sealant.

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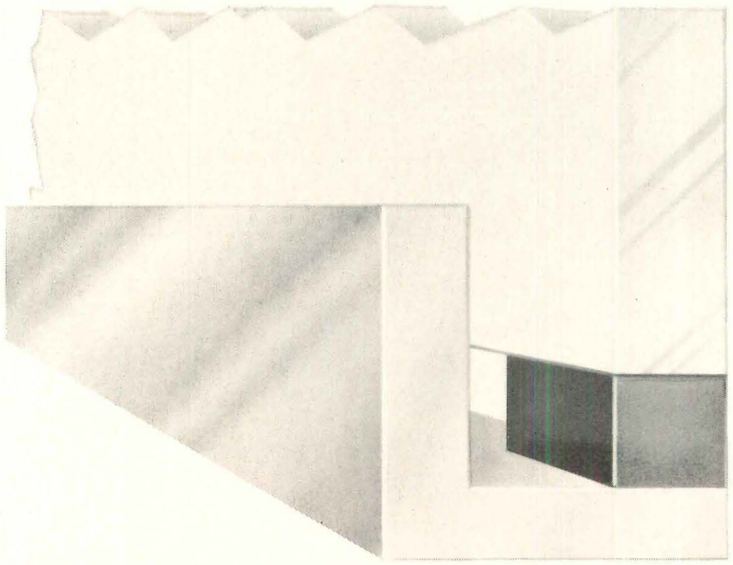
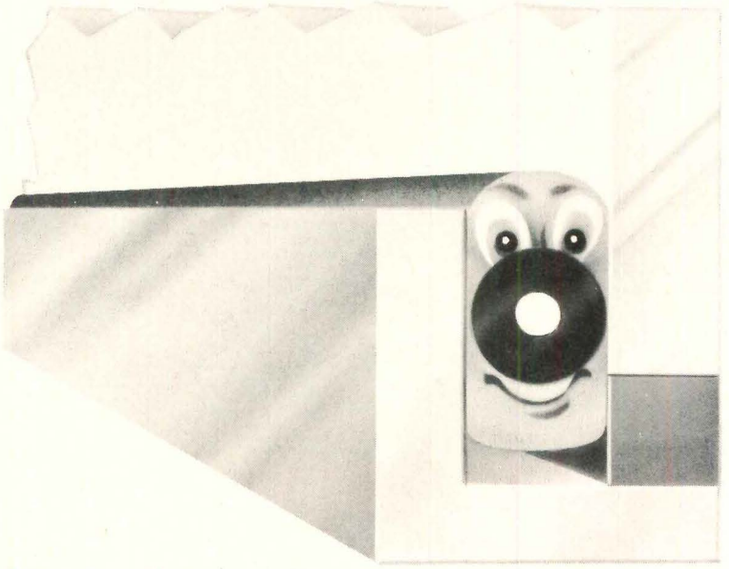
This shim — a continuous elastomeric rod reinforced by a fiberglass core — distributes loading stress uniformly around the perimeter of the frame.

So you don't get pressure points. Or sealant squeeze-out. Or adhesive or cohesive failure.

And with the trend to larger, heavier, more



The forgotten shim. Whoops. Someone forgot to put it in.



The Pre-shimmed Tremco Tape. It puts a continuous spacer-cushion all the way around the perimeter.

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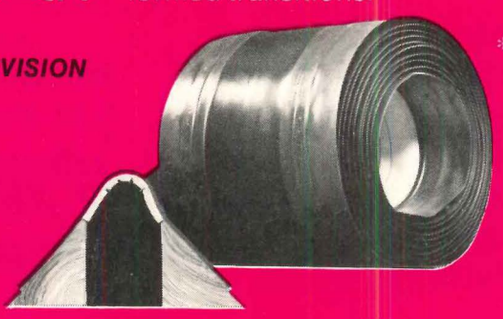

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Financial management of the professional firm

By Bradford Perkins
Vice president, D'Orsey Hurst and Co., Inc., a division of McKee-Berger-Mansueto, Inc.

"Profit has no place in the practice of architecture!" That was the laudable sentiment repeatedly expressed in response to a recent national survey. But sentiment, unhappily, does not provide the cash required for extra research and design effort, nor the working capital required for growth and for large projects, nor for the salaries currently demanded by both principals and employees. The question should not be *whether* to make a profit but rather *how* to make a profit sufficient to those needs.

Since the various aspects of financial management—profit planning, fees, accounting, management controls, taxes, and cash management—have been covered in detail in a number of full-length books, this article will concentrate on providing a brief overview and setting the general guidelines for answering the "how?" of financial planning and control.

The key steps to profit planning

The first steps, as noted in the first two articles of this series, are 1) a statement of goals and 2) a plan for their achievement. The process of profit planning is discussed in the AIA publication *Profit Planning in Architectural Practice,* but the essential elements are: a clear definition of the firm's and its principal's financial goals, a budget for every area of the firm's operation and an understanding of the cost-volume-profit interrelationship.

There are no correct or incorrect goals, but typically design firms try to allocate 20 per cent of their accrued fees as pre-tax profit over and above the principals' base salaries. As several AIA studies have shown, however, most firms are actually able to achieve only eight to ten per cent allocation. But according to the published profit achievements of some firms, there is no reason why 20 per cent should not be an achievable goal for most offices.

The percentage objective will, of course, vary somewhat with the second financial goal—the salary target for the principals and staff. Outside of the large firms in the major cities, most respondents feel $20,000 to $30,000 salary plus profit sharing is reasonable compensation for principals. Staff salary targets are, of course, considerably lower even for key personnel. Considering the education, effort, skill, liability, responsibility and investment required of a principal, prevailing small-office targets are too low, and the salaries paid to employees are often absurd even from the selfish management viewpoint of morale and turnover control. More reasonable objectives will, of course, not change this situation overnight, but as a guideline for change, they are an important first step.

Other factors which also have a significant impact on the appropriate profit target are growth plans, client types, and related factors. For example, a firm with ambitious growth plans should achieve a high level of profits to support its increasing working capital requirements, but it also has to spend more in business development, research and other areas to stimulate the growth.

A firm that does most of its design work on large commercial or industrial structures should be able to set a higher profit target than one specializing in single-family homes. Inherent profitability varies significantly from one building type to another, with degree of complexity.

With these variables in mind, look back through last year's expenses and, based on this record and expected changes during the coming year, develop a realistic twelve-month projection for each area of expense. This analysis should distinguish between direct (project related) costs and indirect (overhead) expenses.

The analysis must then be tied to a budgeted fee volume, for the essential concept in a profit plan is the interrelationship of cost, volume and profit. In the most basic terms this concept can be summarized as follows: a firm makes a profit when the sum of the gross margin (the amount left after all direct project costs) of all earned fees (the amount of the fees earned on all projects whether billed or not) exceeds the firm's indirect costs. In other words, a firm with a constant overhead can make a profit by either having a low volume with a high gross margin, a high volume with a lower gross margin, or, of course, a high volume and high margin.

A firm's profit plan should be a flexible guide for determining at various points during the year which of three basic actions should be employed to keep the firm on target: 1) cutting direct costs to increase the margin, 2) cutting indirect costs to lower the overhead, and/or 3) drumming up new commissions, even at lower margin as in residential projects, to provide the necessary volume. This may seem very basic, but most firms still think that to win the battle of profitability on every project is the only way to win the war of profitability for the firm as a whole. It is one way, of course, but widely fluctuating volume is as great a threat to profitability as is narrow margin.

Fee structures are part of business development

Having developed a set of goals and a plan, the next step is obtaining the required workload. Although the basic guidelines for business development were outlined in the previous article of this series, one essential aspect, not always considered as a part of business development, needs further discussion: establishing an appropriate method and level of compensation.

More than 80 per cent of design professionals' fees are set on the basis of a percentage of construction cost. Among the many shortcomings of this method is the fact that it is so arbitrary that it often does not represent an equitable (to either the owner or the architect) compensation for the services provided. As a rule of thumb, many good clients pay too much and most bad ones pay far too little.

Architects are finding now that an increasing number of clients are receptive to many of the other methods discussed in another AIA publication, *Methods of Compensation for Architectural Services.* Of the dozen ways outlined in that book, we strongly recommend the professional-fee-plus-expenses approach developed in accordance with a careful analysis of how much work and associated cost will be required by the project. If the client insists, a guaranteed maximum should be established at least ten per cent above any acceptable lump sum or percentage fee. The argument here, of course, is that the fee-plus-expenses method provides the client with an opportunity to save on the architect's fee if he helps the job run smoothly; but the price of this opportunity is a protective cushion for the architect if the client and project prove unusually difficult.

The current economic slowdown has also re-emphasized one more argument for

a method other than the percentage of actual construction cost. Projects are once again coming in under the budget and design firms are finding their expected income seriously cut.

Even when the project cost runs over budget, many clients will refuse to pay the increase. Further, if the architect's consultants are also on a percentage, overruns on their part of the project may also seriously reduce the architect's expected gross margin. Even if the client is not sophisticated enough to analyze the full consequences of a proposed method of compensation, the design professional should be able to explain them.

Accounting and management controls can make the difference

Assuming that the firm has work, and has established equitable fees, the major problem remains how to control the firm's own operating costs. Good accounting and controls do not make money for a firm, but they can be just as important as a successful business development effort in preventing losses.

There are two basic aspects of this area of financial management controls; one is procedural and the other is a matter of firm policy. The procedural aspect is covered in sufficient detail in still another AIA publication, *Financial Management for Architectural Firms—A Manual of Accounting Procedures*. Although every firm has some unique requirements that will lead to deviation from this recommended format, the AIA book's basic accounting procedures will be adequate.

What the AIA book does not cover are some less technical aspects of accounting such as who should do it, how much should it cost, and when should it be automated. The answers to each depend, of course, on the firm's long-term objectives, the complexity of its operations, and, most of all, the quality of personnel involved.

Some rules of thumb are: 1) A small firm (less than ten) probably should use an outside accountant coordinating with a combination secretary/bookkeeper within the firm. 2) If a firm plans to grow much beyond ten, it should plan on hiring an experienced full-time bookkeeper who can draw support during peak periods from a secretary/bookkeeper and advice from a local CPA. 3) If the firm intends to grow beyond 25, it should consider a business manager of at least associate status supported by a full-time bookkeeper and an automated accounting system.

The financial management in large firms should be directed by a full partner with extensive management education, experience, and interest. Again, a very rough guideline for cost would be that the total cost of the financial management area of the firm would run between four and eight per cent of the firm's gross volume. This guideline does not vary much with the size of the firm, for there are few efficiencies of scale. The larger the firm, the more formal is the reporting required.

As a firm's size increases, an increasing amount of the accounting burden should be transferred to a computer. The exact timing will depend on the quality of the firm's staff—the better the staff, the later automation is appropriate. But a growing firm should seriously consider automation when it sees that it will eventually have more than twenty-five employees. The basic reason for this change is that the principals begin to lose their once-intimate feel for all aspects of the firm's operations at about this point, and, therefore, must rely on reports in addition to personal observation in order to continue effective management.

Management controls needed as firm size increases

Most of the new reports that will become necessary at the twenty-five man level are management controls rather than basic accounting records. The two AIA publications on Profit Planning and Financial Management also cover this subject—as does one of the American Management Association's better books, *Management Controls for Professional Firms*. While all of these publications have slightly different formats or emphases which reflect the management style and requirements of different firms, there are a number of basic elements common to all control programs. The most important of these can be summarized in brief as follows:

1. *A monthly, accrual basis, profit and loss statement*

Most firms do not get such a statement or if they do it is on a cash basis. Cash-basis accounting is adequate for very small firms, taxes, and cash flow purposes; but it is a dangerously misleading basis for management reporting. For example, on the cash basis the firm usually loses money while it is growing, makes abnormally high profits when it first levels off or whenever a big check comes in, and appears profitable during the first months of decline—all because cash income is out of phase with cash expenses. Therefore, if a firm maintains cash-basis books for tax purposes, it should make the appropriate accrual adjustments when it develops its monthly statements.

2. *The balance sheet*

Most firms do get this report on a regular basis but it is rarely useful as a management tool.

3. *Income projections*

All firms should maintain at least a twelve-month projection of their current backlog of signed contracts to help in manpower and business development planning. One of the most common management shortcomings among professional firms is a failure to foresee and take corrective measures for impending peaks and valleys in the workload.

4. *Project Cost Controls*

The most commonly discussed but least understood tools are the project cost controls. As was pointed out earlier, job profit —except on a gross margin or "contribution"—basis can be a misleading factor. Therefore, the important thing to control is direct project costs—payroll, consultant fees, travel, reproduction, etc.

The first step in direct cost control is the establishment of a budget for each project phase. Just as with the project fee, the budget should reflect a realistic evaluation of the time and expense involved. The calculation should not be some arbitrary allocation in accordance with some formula. Many firms, for example, use the AIA phase-payment breakdown, but this tends to front load the income for most firms and, thus, makes the later phases look even worse than they normally would.

If someone, such as a project manager, is to be held responsible for the budget, he should be involved in its preparation. If he is not, he will claim that any overruns were due to the fact that he had to live with an unrealistic budget which he did not set.

Once the project is underway, the control system should provide a monthly summary of the phase costs for the most recent month, costs to date, a calculation of the cost to date divided by the budget, and an estimate of the per cent complete. If the cost-to-date/budget calculation exceeds the per cent complete, the project may be in trouble and should be watched.

5. *Indirect Cost Controls*

By themselves, direct cost controls are not fully effective if they are not accompanied by indirect or overhead cost controls. Each area of indirect expense should be budgeted for a twelve-month period and monitored on a monthly and year-to-date basis. Any overruns or variances from the budget should be noted and followed up.

The important monitoring consideration be that the reports should highlight the variable expense items—telephone, employee downtime, travel and entertainment, etc.—for most indirect expenses are fixed and as such do not require much monitoring.

Profit and management decisions can be affected by tax laws

Assuming that the firm sets the right goals, maintains the project volume and controls costs, it will make a profit. Because of the existing tax rates, however, as much as half of that profit can be spent on taxes. Therefore, it is extremely worthwhile to have a thorough understanding of the current tax

continued on page 204

FRONTIERS IN SPACE CONTROL

Hager introduces new concept in concealed hinging!

RACONTEUR #550

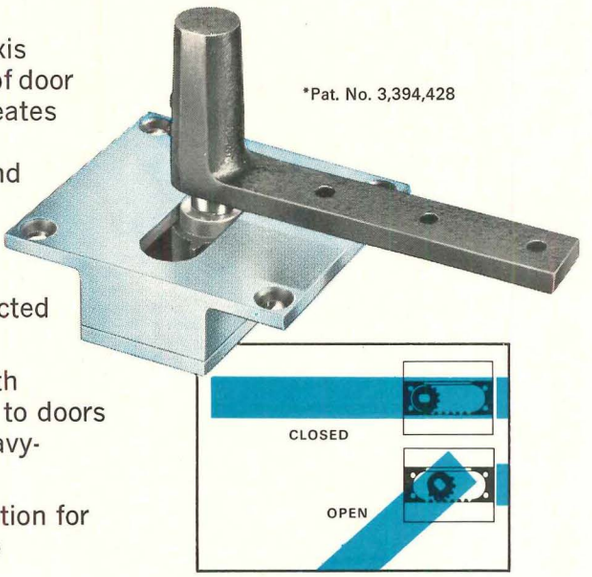
The rack and pinion pivot that gives a door hairline fit

Raconteur #550 moves the door laterally, edging the axis away from the jamb as the door opens, so no rounding of door edge is ever needed. This built-in clearance feature creates new wide range of opening applications. Doors can now be fitted flush with only a hairline between door and jamb. The better appearance is dramatic.

Raconteur has only one moving part in each pivot. No intermediate pivot is used. The bottom pivot has extended flange for extra support and the fully-protected gear can even be set in cement.

Raconteur #550 maintains sag-free anchor and smooth gliding action for doors up to 150 lbs. It is applicable to doors 1⅜″ and over thickness. The gear compartment of heavy-weight brass is 3¼″ long, 1¼″ wide and 1″ deep.

For detailed specifications and easy-mounting description for Raconteur #550 see your hardware distributor or write



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CURRENT TRENDS IN CONSTRUCTION

George A. Christie
Vice President and Chief Economist
McGraw-Hill Information Systems Company

Construction outlook 1972: first update

The new directions that were taken in national economic policy last August 15th have begun to show some results. In the opening quarter of 1972, measureable progress was being made against several of the broad goals of the New Economic Program:
Faster growth—the previously sluggish recovery of industrial production accelerated in January and February.
Unemployment—the jobless rate edged down from December's 6.0 per cent to 5.7 per cent by February.
Inflation—Prices were still showing the expected "post-freeze bulge," but Phase II was nevertheless providing an important degree of control over inflation. Even the blistering pace of construction costs had slowed significantly.

With the office of the chief executive up for grabs in November, it's a fairly safe bet that we won't be seeing any major shift in economic policy as long as the NEP appears to be moving us toward the ideal election platform of full employment and stable prices.

The common thread of most forecasts for the 1972 economy (ours included) is that the tax cuts and public spending measures adopted last fall will help to accelerate the tenuous recovery that has been limping along for more than a year now. As momentum builds, we should come close to realizing the potential gain of $100 billion, or 9½ per cent, in total output this year. And with prices under the restraint of Phase II controls, real growth this year will be a healthy 6 per cent, while inflation is held to something like 3-3½ per cent.

This is still a moderately bullish forecast, but it has been gaining credibility over the six months that have passed since it first made its appearance. It anticipates a much better performance than we've seen for the past couple of years, but no more than should be expected at the stage of the business cycle we've now reached.

So how will 1972's economic environment affect construction markets? It will set in motion the reversal of some of 1971's extreme trends.

This year's economic conditions should encourage a fairly strong rise in nonresidential construction contracting—last year's soft spot. Public works are being stepped up to help accelerate recovery; and as recovery accelerates, we'll get more industrial and commercial building. Housing has peaked, and will be diminishing in each successive quarter, even though this year's total starts will be almost identical with 1971's record volume. This sequence isn't much different from the way we saw 1972 shaping up last October, and it means that for the time being the *Dodge Construction Outlook* needs only a few interim adjustments.

Contracting for industrial buildings now looks even a bit stronger than it did only a few months ago. The latest McGraw-Hill survey of manufacturers' capital spending plans shows they've upped their sights by more than a billion dollars just since last fall, despite low operating rates.

Commercial building is also gaining, even though there's not much life in the overbuilt office category right now. Store and warehouse construction is where all the action is, and it can be reported that a dependable, old relationship is alive and well (and may be going on at your local shopping center). It's the one where a spurt of homebuilding normally leads to the need for more retailing facilities after a short interval. In early 1972, we're getting most of the impact on store building of last year's housing boom. With another big residential year in progress, this recent rise in store contracting isn't about to fade.

Institutional building—with hospital/health facilities rising sharply and educational construction declining—is behaving about as expected. (Note that in educational building it's not that this year is turning unduly weak. Rather, it was last year's *gain* that was out of line with the trend of this essentially no-growth market. Things are now returning to normal after a 1970/71 aberration that had more to do with financial conditions than with the basic need for educational facilities.

In total, the 1972 outlook for nonresidential buildings remains much as before—a gain of 8 per cent in contract value, paced by the recovering industrial and commercial sectors.

Residential building, however, is doing a bit better than our earlier expectation, and the October forecast could now use some upward revision. In recognition of this year's hot first quarter, we've raised our 1972 housing forecast by 150,000 units to a total just about equal to 1971's record 2.1 million units. But we still can't go along with those who are looking for a volume in the 2.2 to 2.3 million range. Our outlook is for a gradually diminishing rate of starts through the year, reaching about 1.8 million by the fourth quarter. The value of 1972's residential building will be up 4 per cent, due partly to higher costs, and partly to a slight shift of the mix toward one-family units.

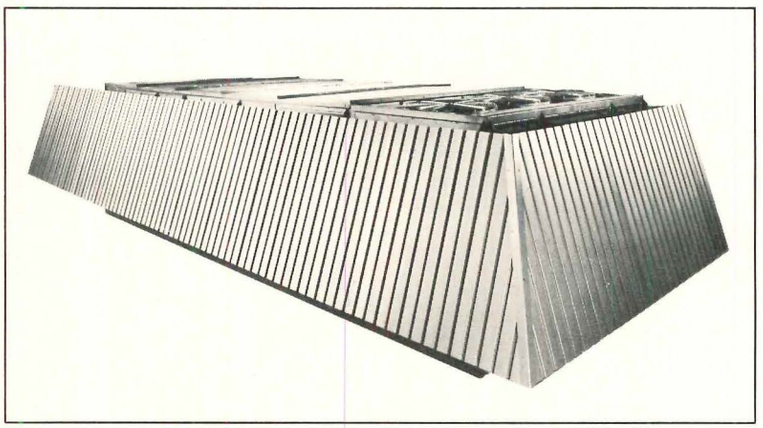
NATIONAL ESTIMATES

construction contract value (millions of dollars)		1971	1972 forecast	per cent change
nonresidential buildings	office buildings	$ 4,748	$ 4,750	—%
	stores & other commercial	4,910	5,875	+20
	manufacturing	2,611	3,400	+30
	educational	5,661	5,400	− 5
	hospital & health	3,206	3,675	+15
	other nonresidential buildings	4,532	4,550	——
	TOTAL	$25,668	$27,650	+ 8%
residential buildings	1 & 2 family homes	$21,890	$23,700	+ 8%
	apartments	11,419	11,000	− 4
	nonhousekeeping	1,540	1,600	+ 4
	TOTAL	$34,849	$36,300	+ 4%
	TOTAL BUILDINGS	$60,517	$63,950	+ 6%
nonbuilding construction	streets, highways & bridges	$ 7,358	$ 8,500	+15%
	utilities	5,034	5,000	—%
	sewer & water supply	3,462	3,800	+10
	other nonbuilding construction	3,273	3,750	+15
	TOTAL	$19,127	$21,050	+10%
TOTAL CONSTRUCTION		$79,644	$85,000	+ 7%
DODGE INDEX (1967=100)		144	154	

The only real news in multizones this year

AAF Mark 13

Here's what it is, how it works.



The Mark 13 multizone eliminates that "big box" effect on the roof. Through the use of decorative fascia on a support system, units can now be blended into the overall effect of the building's architecture.

Roof integrity is completely protected because the facade system is supported by the Mark 13 unit itself. Sixteen vertical supports are welded onto AAF's exclusive pentapost framing. Arm supports are sized for a mansard effect or a straight vertical facade. Mounting channels are bolted to the arm supports.

AAF can supply a standard aluminum alloy fascia in ten contemporary colors — sandstone, brick red, gold, green, blue, black, tan, light bronze, medium bronze and dark bronze. The support system can also be paneled in an endless number of other facade materials—plastic, steel, laminates, fiberglass, reinforced vinyl, ornamental screening or decorative treillage. The building design itself generally determines the material.

It's the end of the big box era in roof mounted multizones.

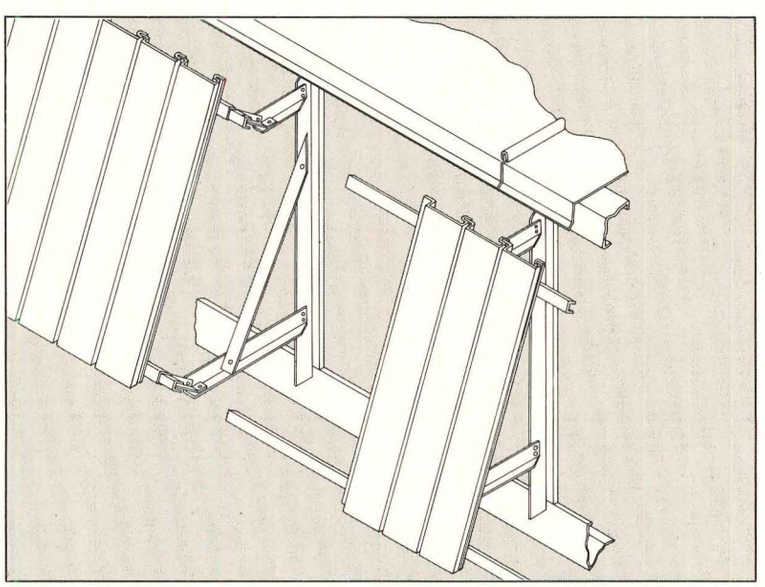
That's not all the news. The Mark 13 unit itself is new. For example: solid state controls for reliability and ease of programming. There's a new refrigerant/reheat capability to supply "free" heat to some zones without activating the heating section in marginal and summer weather. A new high efficiency gas furnace, with a fool-proof forced draft system which eliminates problem-causing vent fans, is among four choices of heat.

All in all, the Mark 13 is unsurpassed in engineering advances and dependability.

For more information write for Bulletin MZRM 103, Manager, Air Handling Products and Systems, AAF, Box 1100, Louisville, Kentucky 40201. In Canada: 400 Stinson Blvd., Montreal 9.

Better Air is our Business.

Facade frames are fastened directly to the rigid steel framework of the multizone unit so that no additional supporting structure is required. The frames project far enough to permit access by service personnel for all normal service functions without removal of fascia panels.



The architectural facade system consists of the facade frame and the fascia. The frame consists of vertical supports, arm supports and mounting channels.

AAF American Air Filter

AIR HANDLING PRODUCTS AND SYSTEMS

For more data, circle 34 on inquiry card

INDEXES AND INDICATORS

Percival Pereira
Dodge Building Cost Services
McGraw-Hill Information Systems Company

UNIT COSTS FOR ALTERATION AND REMOVAL

The following unit prices are representative of work in the New York metropolitan area and can be adjusted for local estimates by application of the Cost Differential column in the table at right (Atlanta = .78 times listed price, etc.).

Demolition of minor buildings

wood	0.12/cu ft
masonry	0.18/cu ft
concrete block	0.15/cu ft

Remove concrete

6-in. slab on ground with mesh	0.38/sq ft
with bars	0.66/sq ft
suspended slabs & beams	2.50/cu ft
columns	2.80/cu ft

Remove walls

masonry, 12-in. exterior brick	2.00/cu ft
concrete block, 8-in.	0.78/sq ft

Patch holes through concrete

walls 12-in. thick	3.20/sq ft
slab, ground, 4-in.	1.20/sq ft
slab, suspended	3.20/cu ft

Remove

plaster ceiling (labor only)	0.15/sq ft
ceiling suspension system (labor only)	0.23/sq ft
ceramic wall tile (labor only)	0.22/sq ft
ceramic floor	0.20/sq ft
terrazzo floor	0.31/sq ft

Point & rake

exterior face brick	0.72/sq ft

Sand blast exterior

brickwork (no scaffold)	0.28/sq ft
stone (no scaffold)	0.40/sq ft

1941 average for each city = 100.00

MAY 1972

Metropolitan area	Cost differential	Current Indexes non-res.	residential	masonry	steel	% change last 12 months
U.S. Average	8.3	376.4	353.4	368.6	359.3	+ 7.74
Atlanta	7.8	479.0	451.6	466.1	455.9	+ 6.39
Baltimore	7.9	395.5	371.8	384.5	374.3	+ 7.92
Birmingham	7.3	345.6	321.4	333.4	328.7	+ 8.50
Boston	9.0	383.0	361.8	379.4	368.3	+11.61
Buffalo	9.1	419.8	394.2	414.7	400.9	+ 9.80
Chicago	8.4	429.5	408.4	415.3	408.2	+ 8.37
Cincinnati	8.7	405.9	381.9	394.9	385.1	+ 7.66
Cleveland	9.3	421.8	396.9	412.1	402.3	+ 6.40
Columbus, Ohio	8.3	401.1	376.6	389.2	381.9	+ 6.49
Dallas	7.6	368.9	357.3	361.8	354.9	+ 7.13
Denver	8.1	403.5	379.6	398.8	385.0	+ 5.87
Detroit	9.5	422.3	402.3	421.8	406.0	+ 8.64
Houston	7.6	359.2	337.3	350.8	344.0	+ 5.39
Indianapolis	8.0	354.8	333.2	346.0	338.3	+ 7.44
Kansas City	8.1	354.0	334.5	344.3	337.1	+ 6.08
Los Angeles	8.2	417.6	381.7	405.9	397.7	+ 9.23
Louisville	7.7	374.6	351.8	367.0	358.5	+ 8.69
Memphis	7.7	358.8	336.9	346.9	341.0	+ 7.25
Miami	8.0	397.0	378.2	387.4	378.9	+ 6.99
Milwaukee	8.5	429.4	403.2	424.1	410.5	+ 6.36
Minneapolis	8.9	406.9	382.8	400.7	388.8	+10.01
Newark	8.9	374.9	352.1	369.6	360.5	+ 7.23
New Orleans	7.3	356.2	336.2	350.6	342.8	+ 7.27
New York	10.0	416.7	387.4	403.8	393.7	+ 7.53
Philadelphia	8.7	399.3	380.4	392.3	383.1	+10.87
Phoenix	7.9	214.6	201.5	207.1	203.7	+10.22
Pittsburgh	8.8	369.3	347.4	362.5	352.0	+ 8.09
St. Louis	8.7	391.3	369.3	386.3	374.3	+ 7.34
San Antonio	7.6	145.1	136.3	141.7	138.4	+ 2.22
San Diego	8.0	149.9	140.8	146.9	143.5	+ 7.73
San Francisco	9.3	548.0	500.9	544.2	526.3	+11.58
Seattle	8.6	373.2	334.0	369.7	355.6	+ 4.93
Washington, D.C.	7.8	355.3	333.7	344.7	337.2	+ 8.06

Cost differentials compare current local costs, not indexes. All the indexes on this page are based on wage rates for nine skilled trades, together with common labor, and prices of five basic building materials are included in the index for each listed city.

HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

Metropolitan area	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971 (Quarterly) 1st	2nd	3rd	4th	1972 (Quarterly) 1st	2nd	3rd	4th
Atlanta	298.2	305.7	313.7	321.5	329.8	335.7	353.1	384.0	422.4	424.0	445.1	447.2	459.2	472.5			
Baltimore	271.8	275.5	280.6	285.7	280.9	295.8	308.7	322.8	348.8	350.3	360.5	362.5	381.7	388.1			
Birmingham	250.0	256.3	260.9	265.6	270.7	274.7	284.3	303.4	309.3	310.6	314.6	316.4	331.6	340.4			
Boston	239.8	244.1	252.1	257.8	262.0	265.7	277.1	295.0	328.6	330.0	338.9	341.0	362.0	377.3			
Chicago	292.0	301.0	306.6	311.7	320.4	328.4	339.5	356.1	386.1	387.7	391.0	393.2	418.8	422.8			
Cincinnati	258.8	263.9	269.5	274.0	278.3	288.2	302.6	325.8	348.5	350.0	372.3	374.3	386.1	399.9			
Cleveland	268.5	275.8	283.0	292.3	300.7	303.7	331.5	358.3	380.1	381.6	391.1	393.5	415.6	415.2			
Dallas	246.9	253.0	256.4	260.8	266.9	270.4	281.7	308.6	327.1	328.6	341.4	343.4	357.9	364.9			
Denver	274.9	282.5	287.3	294.0	297.5	305.1	312.5	339.0	368.1	369.7	377.1	379.1	392.9	398.3			
Detroit	265.9	272.2	277.7	284.7	296.9	301.2	316.4	352.9	377.4	379.0	384.6	386.8	409.7	416.9			
Kansas City	240.1	247.8	250.5	256.4	261.0	264.3	278.0	295.5	315.3	316.6	329.5	331.5	344.7	348.7			
Los Angeles	276.3	282.5	288.2	297.1	302.7	310.1	320.1	344.1	361.9	363.4	374.2	376.4	400.9	407.8			
Miami	260.3	269.3	274.4	277.5	284.0	286.1	305.3	392.3	353.2	354.7	366.8	368.9	384.7	391.5			
Minneapolis	269.0	275.3	282.4	285.0	289.4	300.2	309.4	331.2	361.1	362.7	366.0	368.0	417.1	401.7			
New Orleans	245.1	284.3	240.9	256.3	259.8	267.6	274.2	297.5	318.9	320.4	327.9	329.8	341.8	350.9			
New York	276.0	282.3	289.4	297.1	304.0	313.6	321.4	344.5	366.0	367.7	378.9	381.0	395.6	406.5			
Philadelphia	265.2	271.2	275.2	280.8	286.6	293.7	301.7	321.0	346.5	348.0	356.4	358.4	374.9	394.2			
Pittsburgh	251.8	258.2	263.8	267.0	271.1	275.0	293.8	311.0	327.2	328.7	338.1	340.1	362.1	364.5			
St. Louis	255.4	263.4	272.1	280.9	288.3	293.2	304.4	324.7	344.4	345.9	360.0	361.9	375.5	385.5			
San Francisco	343.3	352.4	365.4	368.6	386.0	390.8	402.9	441.1	465.1	466.8	480.7	482.6	512.3	535.3			
Seattle	252.5	260.6	266.6	268.9	275.0	283.5	292.2	317.8	341.8	343.3	347.1	349.0	358.4	363.0			

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.

This pioneering lighting/ceiling installation in Tacoma is an 11-month wonder.

Barely 11 months from the day Keene's Sechrist Lighting division received preliminary drawings from Skidmore, Owings & Merrill, this remarkable concept in fluorescent downlighting was a reality.

Sechrist had manufactured and delivered the last of 1,889 custom lighting fixtures. Each is a 22-inch cube with an acrylic lens deeply recessed in the housing, and every other one is equipped with a tulamp ballast. All were installed in perfect alignment, their white "U" lamps diffusing a warm glow within a geometric pattern of dark reveals.

How did Sechrist meet a tight deadline with a large order of fixtures no one had ever seen before? By smoothly meshing engineering and production know-how. Sechrist lighting experts worked long and hard with the architectural engineers and electrical contractors to design and fabricate the special fixtures.

In the words of the architect's project manager, "The project required fast action, and Keene was responsive to our needs."

If you create unusual lighting designs, let us show you a brief slide presentation documenting this project. You'll see why you can count on Sechrist's special projects team to execute your ideas successfully—on time and on budget. Call us at (303) 534-0141, or write Keene Corporation, Sechrist Lighting, 4990 Acoma St., Denver, Colo. 80216.

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We've just begun to grow.

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PHOTOGRAPH: TOM UPPER

Main banking floor of the Bank of Washington Plaza, Tacoma, Washington.
Design concept developed by Skidmore, Owings & Merrill, Architects, Engineers, Portland, Oregon.
General Contractor: Donald N. Drake Co., Portland, Oregon.
Electrical Contractor: Carl T. Madsen, Inc., Tacoma, Washington.

CPR urethane provides more insulation, seals any shape, fights fire, resists chemicals, adds strength, absorbs sound.

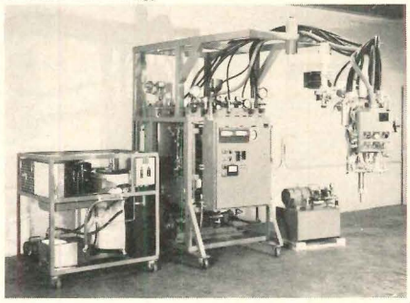
Great stuff. But if I specify, who will apply it?

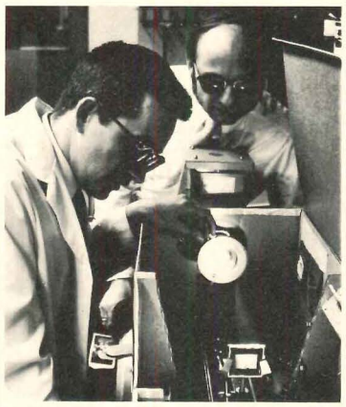
There's a network of applicators and fabricators across the nation, trained and equipped by CPR. They have the skilled personnel and the right equipment to pour, spray-in-place, or supply board stock.

They make use of the wide range of dimensionally stable CPR materials, such as the UL-classified isocyanurates: KODE 25™ and CPR 421 spray, both having low smoke-emission properties and high temperature tolerance.

So specify urethane insulation wherever you feel it's right for the job. There's a qualified CPR applicator or fabricator in your area, ready to help.

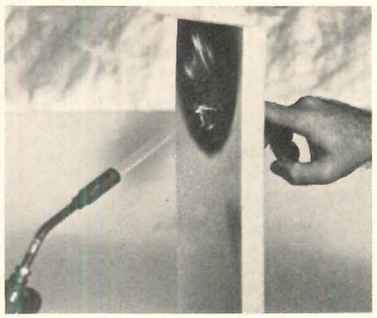
The Upjohn-owned Admiral Equipment Company, manufacturer of urethane application equipment, makes CPR the first and only urethane systems supplier offering a complete urethane capability through equipment, materials, and technology.





Upjohn's Donald S. Gilmore Laboratory provides CPR customers with the support of one of the world's most extensive facilities devoted to urethane product development and new applications technology.

KODE 25 is a new, urethane-type rigid isocyanurate foam insulation material, classified by Underwriters' Laboratories, Inc., with a Fire Hazard Classification Flame Spread Rating of 25, according to UL 723 and ASTM E-84 test method (UL Tunnel Test). This means higher fire retardance and a temperature tolerance to 300°F. It passes most building codes.



CPR is your single source for the most up-to-date data and information on urethane applications. Ask us what you want to know.

CPR DIVISION THE UPJOHN COMPANY, Dept. A
555 Alaska Avenue, Torrance, Calif. 90503

☐ Please send me more information on CPR insulation.
☐ Please send the name of your representative in my area.
☐ I would like a CPR sales engineer to call.

Upjohn
chemicals plastics research
CPR

Name_____ Position_____

Company_____

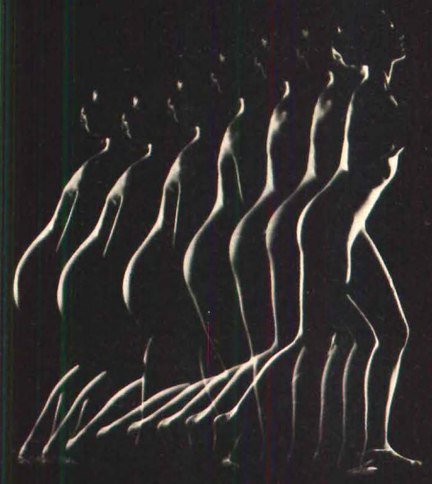
Address_____

City_____ State_____ Zip_____

For more data, circle 37 on inquiry card

For more data, circle 38 on inquiry card

Furniture that's built the way people are built. Soft, smooth, no sharp edges.



Steelcase Soft Seating.

Furniture without edges for a sometimes sharp, hard-edged world. Sculptured Fiberglas shells cradle deep, double-thick cushions and rest on gently contoured, almost unseen, acrylic bases.

Sofa and club chair cushions feature Steelcase Continental Soft Leathers or urethane. Complementary tables are crowned with thick mirrored bronze solar glass.

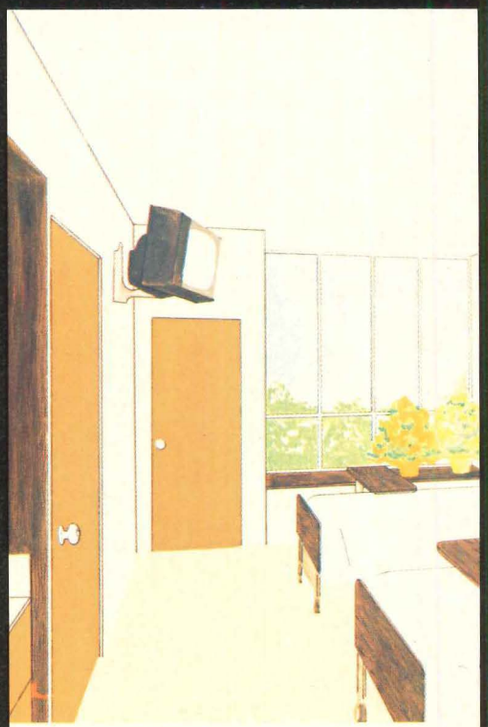
Steelcase Soft Seating. Designed for comfort. In offices, reception areas and homes. For people who appreciate a world without sharp edges.

See Soft Seating in our showrooms in fifteen major cities. Or write for folder. Steelcase Inc., Grand Rapids, Michigan; Steelcase Canada Ltd., Toronto.

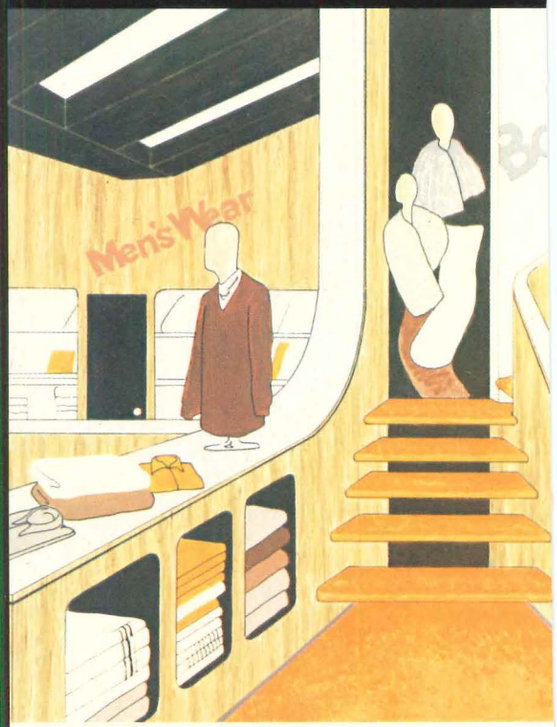
Steelcase

In contract, specify the Wilson-Art look....

SCHOOLS:
Durable Wilson-Art laminated plastics help create an environment for study that is durable enough to take the hard knocks of school life. Write for Brochure #101



HOSPITALS:
Hospitals, nursing homes, and clinics are kept cleaner, easier, with low-maintenance Wilson-Art laminated plastic surfaces. A sanitary environment is much easier and more economical to maintain with Wilson-Art. Write for Brochure #102



RETAIL STORES:
Imaginations can run free with design ideas—all carried out with beauty and with functional benefits. That's what the Wilson-Art Look in laminated plastics is all about! Write for Brochure #103

When the chips are down, you can depend on Wilson-Art.

Wilson Art®
LAMINATED PLASTICS
RALPH WILSON PLASTICS COMPANY TEMPLE, TEXAS
ARCHITECTURAL PRODUCTS DIVISION DART INDUSTRIES INC

When surface material requirements range from beauty and esthetics to durability and function (and you want to be sure of complete coordination), it's time to specify the Wilson-Art Look. You, and your client will be pleased—for a long time to come!

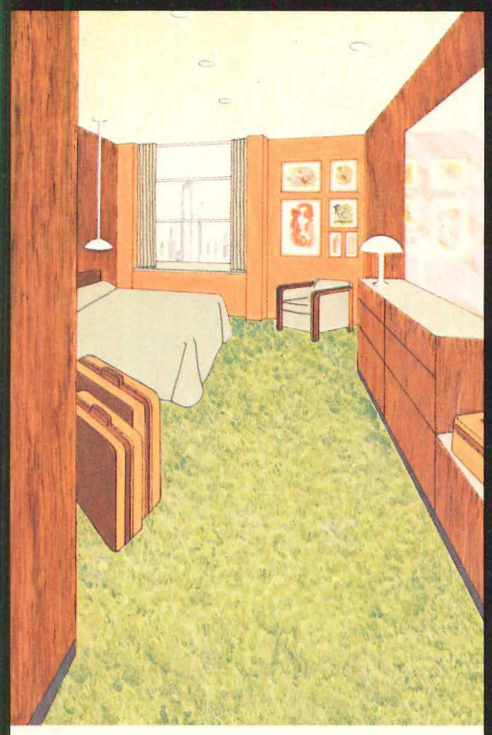
Specification of Wilson-Art laminated plastics for contract applications allows design freedom, perfect color coordination, and one-supplier simplicity.

And because Wilson-Art specializes in contract we can offer you—the specifier—a total "hard-surface" decoratives package. Wilson-Art DOR-

there's more than meets the eye!

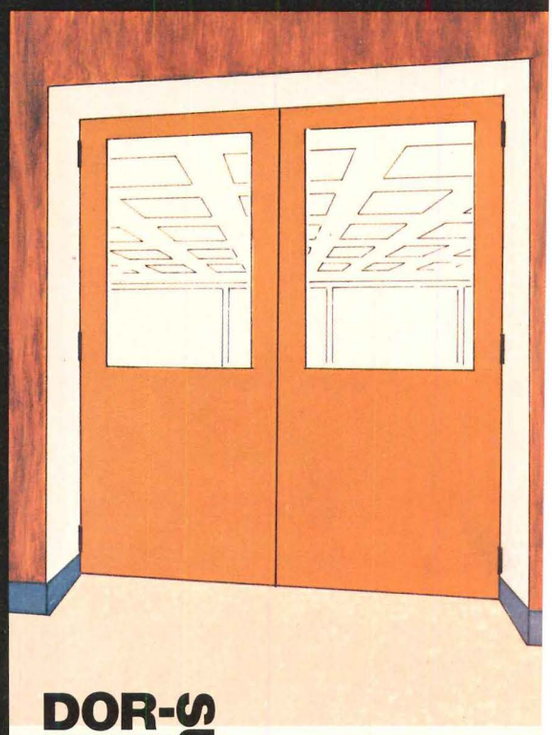
RESTAURANTS:

In serving areas, Wilson-Art helps create an appetizing mood. In food preparation areas, Wilson-Art laminated plastic offers a sanitary, functional surface approved by the National Sanitation Foundation. Write for Brochure #104



HOTELS/MOTELS:

A simple change in specifications —you've got two (or two hundred) uniquely distinctive rooms, all from the same basic design . . . all specified from more than 140 Wilson-Art laminated plastic woodgrains, solids and patterns! Write for Brochure #105



DOR-SURF

—a tough new face, from Wilson-Art! Doors surfaced with 1/8" thick Wilson-Art laminated plastic DOR-SURF are exceptionally tough, impact and abrasion resistant, and cost about the same as conventionally finished doors. (Matching Wilson-Art for fire doors also available.) Write for Brochure #106

SURF for impact and abrasion resistant doors; three types of Wilson Wall Panel Systems; a variety of finishes, including deep, heavily textured Cuero finish; over 140 solid colors, woodgrains and patterns; plus immediate service anywhere in the United States.

See how much better it is to specify Wilson-Art. Call the Architectural Design Representative nearest you.

Atlanta 404 373-2223	Chicago 312 437-1500	Los Angeles 213 941-1219	Miami 305 822-5140	New Jersey 215 923-5542
New York 914 268-6892	San Francisco 415 782-6055	Seattle 206 228-1300	Temple, Texas 817 778-2711	

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When the chips are down, you can depend on Wilson-Art.

Wilson Art®
LAMINATED PLASTICS

RALPH WILSON PLASTICS COMPANY TEMPLE, TEXAS
ARCHITECTURAL PRODUCTS DIVISION DART INDUSTRIES INC

We gave the most beautiful building in Chicago the air.

The architects of Chicago's award-winning Lake Point Tower apartments needed a heating and air conditioning system that would allow them to keep the smooth, flowing design of their building.

General Electric custom designed our Zoneline™ heating-cooling unit to meet their needs.

They had their luxurious-looking building and solved some other problems, too. Like the problem of the sunny side of the building being too hot while the shady side was too cool. Our Zoneline units just cooled one side of the building while heating the other.

And with hundreds of different people living in the apartments, there were lots of different temperature demands. Everyone isn't happy with a 75-degree norm. Our Zoneline units allow each tenant to set his own temperature. Whether he faces the sun and wants the temperature cooler or doesn't and wants it warmer.

At GE we have many types of Zoneline terminal package air conditioners. One of them solved a problem in Chicago. But all of them are flexible enough to solve heating or air conditioning problems in any structure, anywhere.

Look up your GE Air Conditioner distributor in the Yellow Pages, and give him a call. He'll be glad to give you the air.

GENERAL ELECTRIC

Lake Point Tower, Chicago
Developers: Hartnett-Shaw & Associates
Architects: Schipporeit-Heinrich, Inc.
Structural Engineer: William Schmidt & Associates
General Contractor: Crane Construction Company, Inc.
Mechanical Engineer: William Goodman

For more data, circle 40 on inquiry cad

Be sure you specify architectural finishes based on Dow Corning® brand silicones. More than nine years of actual in-place field performance demonstrate that finishes made with Dow Corning silicones can be specified for a 20-year life in any climate. You can select from a full spectrum of colors.

Silicone-based coatings give steel and aluminum siding, panels, roofing, fascia, and trim unmatched protection from sun, wind, and weather. They resist blistering, chalking, chipping, and peeling, and have excellent color retention. They are easily touched up in the field if marred.

Yet the cost of silicone-based finishes is almost identical with that of organic coatings, and 50 to 70% less than other kinds of high-performance coatings that have no demonstrably better performance.

A colorful new brochure on coil-coated panels using these finishes, and the names of paint manufacturers who supply them, is in the current Sweet's Architectural and Industrial Construction Files. Or write Dow Corning Corporation, Dept. A-2301, Midland, Michigan 48640.

Silicones for coatings from

DOW CORNING

DOW CORNING

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For "life-of-the-building" beauty ...and proved performance.

you haven't seen the Flexalum Venette® yet, here's your chance to see 16,400 of them.

The IDS Center's soaring expanse of glass represented a unique opportunity for Venette . . . not just because of the impressive number of blinds needed, but because Venette's ultra-slim one-inch louvers are so beautifully unobtrusive when viewed from across the street.

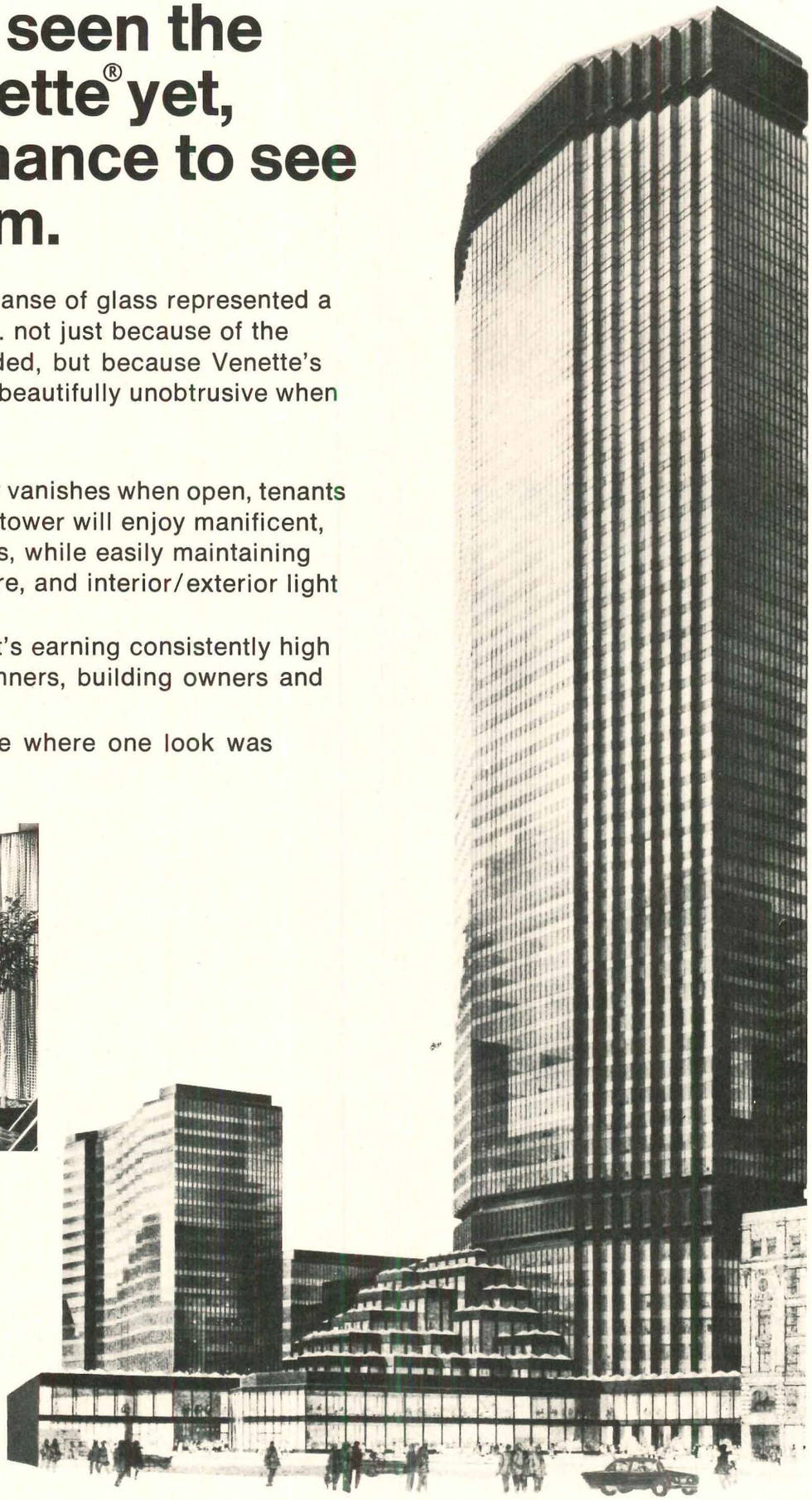
Or, across the room.

And because Venette virtually vanishes when open, tenants of the upper floors of the 51 story tower will enjoy manificent, unobstructed views of Minneapolis, while easily maintaining fingertip control of solar heat, glare, and interior/exterior light balance.

Why not look at the blind that's earning consistently high scores with architects, space planners, building owners and tenants?

Like the IDS Center — a case where one look was worth 16,400.

Model IDS suite shows Venettes installed at pre-set angle.



Architect: Philip Johnson & John Burgee, New York City.

Owner: IDS Properties, Inc., a subsidiary of Investors Diversified Services, Minneapolis, Minn.

Gen. Contr.: Turner Construction, Chicago, Ill.

Venetian Blind Contr.: Julian Shade, Inc., Milwaukee, Wisc.

ALCAN ALUMINUM

ALCAN

Listed in Sweets, Spec-Data, or write Alcan Aluminum Corporation, 100 Erieview Plaza, Cleveland, Ohio 44114

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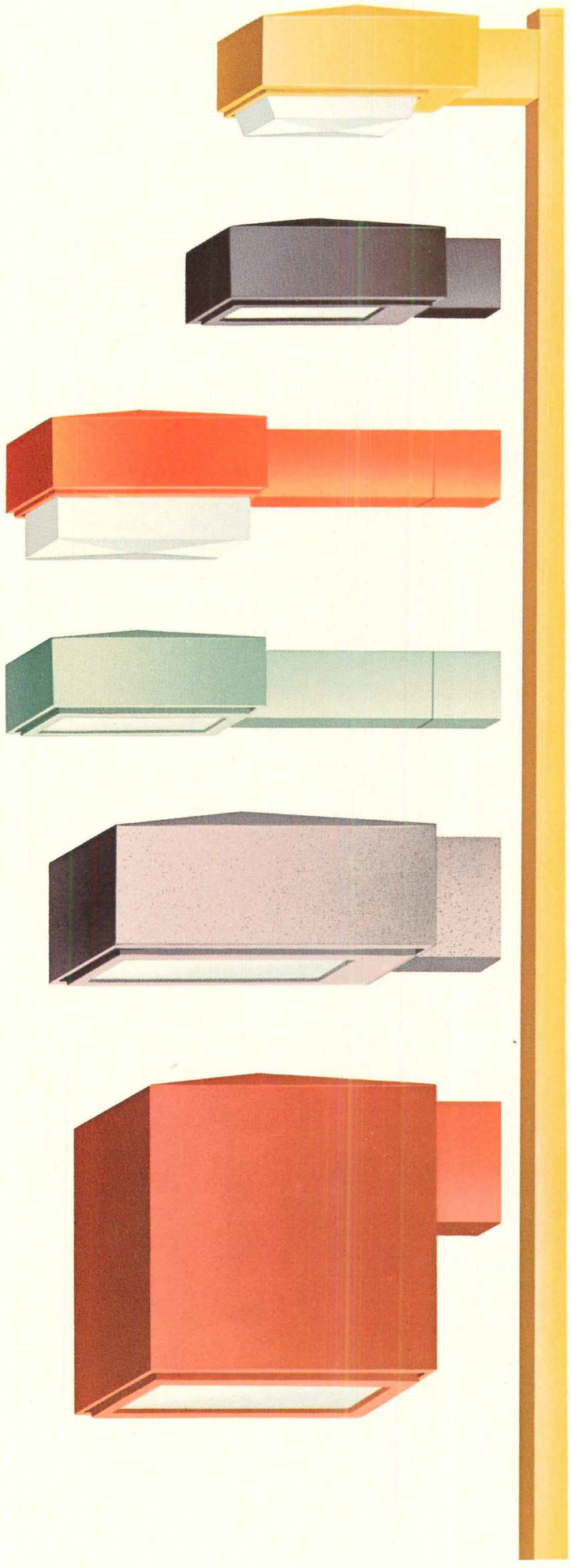

Westinghouse outdoor lighting turns the night on with new shapes and colors.

Today's architecture is clean and simple. We've designed an outdoor light that works with it—the ALS (Architectural Lighting System).

The ALS is designed for streets, malls, parking lots—anywhere attractive, functional lighting is required. The important word is "attractive." With its straight line design, the ALS fits with today's architecture.

Available in four shapes, six wattages, three lamp types, and sixteen colors, the ALS is truly versatile.

Westinghouse can also supply square steel, aluminum, and wood poles to complement the ALS. And you can color match the poles to the fixture.

For flexibility, the ALS can be mounted one, two, three, or four to a pole.

Day or night, our ALS will turn people on.

If you'd like to learn more about the ALS, write Westinghouse Electric Corporation, Outdoor Lighting Division, P.O. Box 5817, Cleveland, Ohio 44101. G-1-72

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You can be sure...if it's Westinghouse

Holds the temperature steady.

RADA'S THERMOSTATIC HOT AND COLD WATER MIXERS.

Neither pressure drop nor temperature rise can upset the steadiness of Rada control. That's the kind of double-pronged safety you can count on with our thermostatic mixing valves.

Rada has a bimetallic brain which automatically adjusts for both temperature and pressure fluctuations in the hot and cold water lines. Scalding or freezing bursts are things of the past and Rada-safety becomes a built-in fact.

Specify Rada for your next job. It's the doubly safe mixing valve for showers in schools, hospitals, nursing homes, hotels and recreational shower rooms as well as industrial plants.

You'll find Rada valves are available in a variety of sizes, and flow rates. With connections sized from ½" to 2", they are designed to meet all specific requirements for shower, tub/shower, or gang-shower installations.

The Rada Thermostatic Hot and Cold Water Mixers. Ask for them and make safety part of the specifications.

Richard Fife Inc.

1140 Broadway, New York, N.Y. 10001
Phone: (212) 683-0745

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HOUSE OF TEAK

The most comprehensive inventory in America

From around the world, bold inventories of kiln dried hardwood lumber and veneer-ranging from domestic Ash to exotic Zebrawood.

CHESTER B. STEM, INCORPORATED
GRANT LINE ROAD, NEW ALBANY, INDIANA

STEM
EMINENCE IN WOOD

For more data, circle 45 on inquiry card

There's something entirely new in reflective materials ... it's PLEXIGLAS T.M. MIRROR

Plexiglas Mirror is an image reflecting acrylic plastic sheet that is lightweight, breakage resistant, installed easier and safer than glass mirrors and available colorless and in six transparent colors. Plexiglas Mirror can be cut, routed, drilled and machined. It can be decorated by silk screening, spray painting or other techniques. Write for our free brochure on Plexiglas Mirror.

ROHM AND HAAS
PHILADELPHIA, PA. 19105

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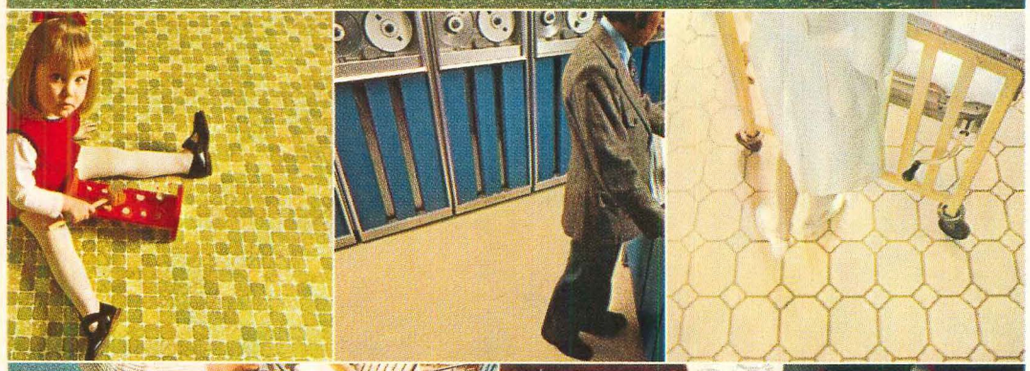
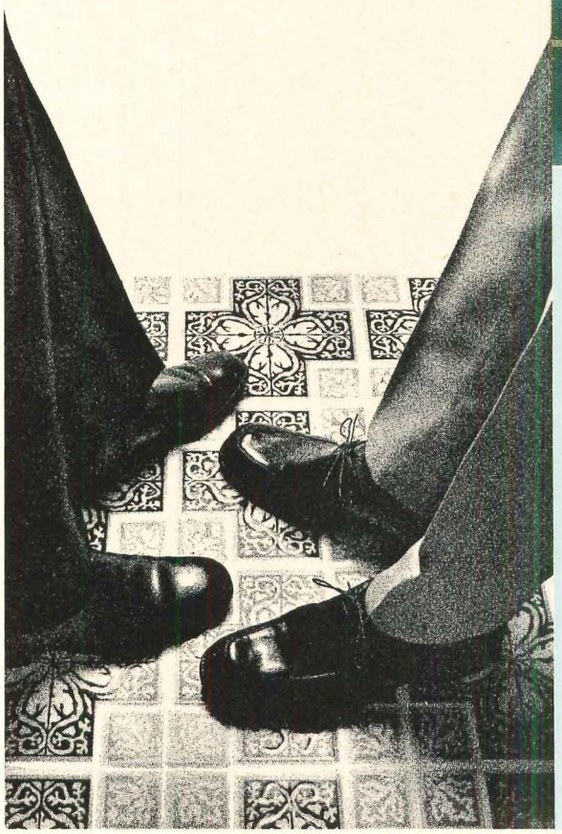
GAF MAKES FLOORINGS FOR ALL KINDS OF FEET.





A floor covering should be chosen not only to withstand the number of feet that will go over it, but for the particular type of feet as well.

That's why, when it comes to resilient floorings, GAF makes over 300 types, patterns, and colors—to try to have exactly the one you'll need.

For instance, for a medium traffic area you might choose new Fashioncraft(TM) floor tile. This 3/32" grade comes in a striking assortment of high-fashion designs, making it a worthy candidate for residential areas, too. Or ask us about the GAF Thru-Chip® lines which offer no-wax maintenance in heavy traffic areas.

But perhaps you'll decide sheet goods can do the job better.

In that case, GAF offers sheet vinyl that comes up to 12' wide, is cushioned for softness and quiet, and needs no waxing or scrubbing.

Whether you're catering to high heels, office furniture legs, or shopping cart wheels, consider GAF. After all, we've got over 300 different ways to help.

All are fire-safe; and meet Federal specifications where applicable.

For more information, contact: GAF Architectural Flooring, Dept. L-5, 140 West 51 Street, New York, New York 10020.

gaf® Bright Future VINYL FLOORS

For more data, circle 47 on inquiry card

Glass or gold panels? It's tenants' choice with Andersen Perma-Shield® Casements.

The ease with which the sash of Andersen Perma-Shield® casements can be removed and replaced *from inside* inspired an interesting architectural feature in this professional office building in Louisville, Kentucky.

One third of the openings are glazed with 1-inch Mirawall insulated panels in a yellow gold color. The other two thirds have Andersen's standard welded insulating glass. So each tenant can arrange the glass/panel combination to fit his needs for privacy, aesthetics, and so on.

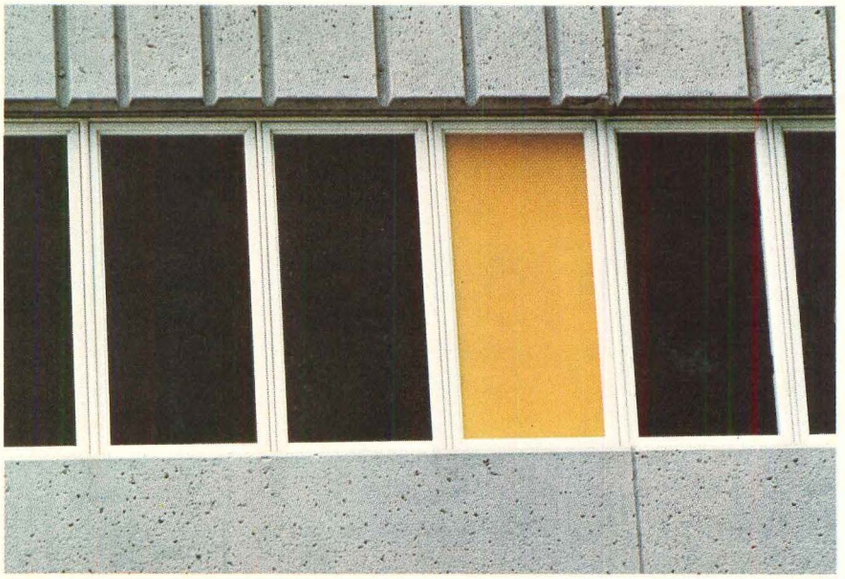
The arrangement is easily changed to suit a new tenant's needs. It is therefore a random one, but could be ordered if desired.

Important to the architect was the fact that the installed price of the Andersen casements was about equal to that of aluminum alternatives which lacked many features offered by Perma-Shield.

And, as always, the minimum maintenance required by Perma-Shield was a leading factor in their selection.

Andersen features, plus an architect's imag-

Building: Newburg North Professional Park, Louisville, Kentucky.
Architect: Robert F. Crump, Louisville, Kentucky.



ination, have once again resulted in a handsome, distinctive building with high tenant appeal.

Further information on all Andersen Windows, and the design opportunities they offer, is available from your Andersen dealer or distributor, in your Sweet's File (Sections 8.16/An. and 8.6/An.) or by writing us direct.

Andersen Windowalls®
ANDERSEN CORPORATION BAYPORT, MINNESOTA 55003

AW®

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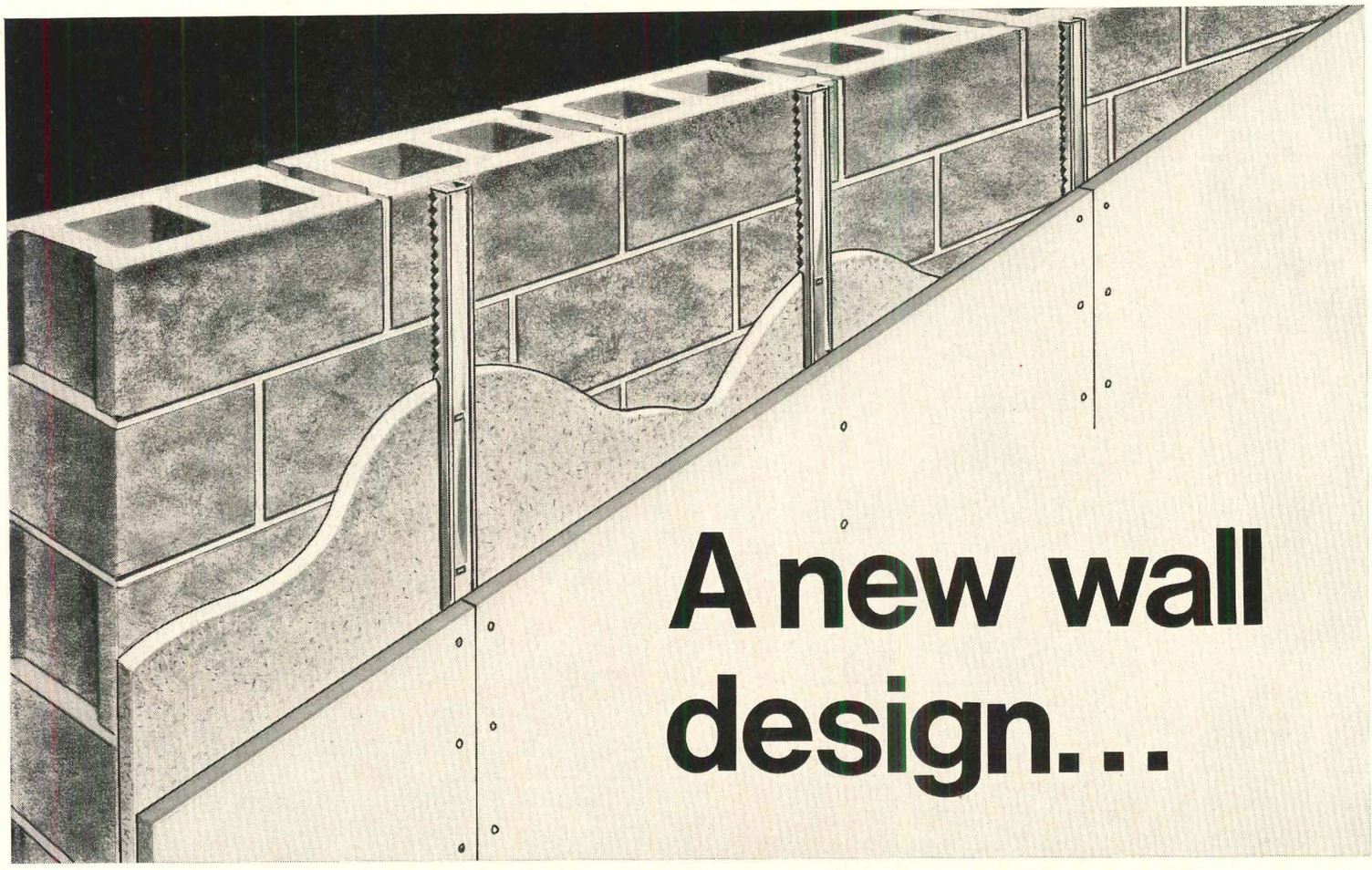


A new wall design...

THE ZONOLITE THERMO-STUD SYSTEM

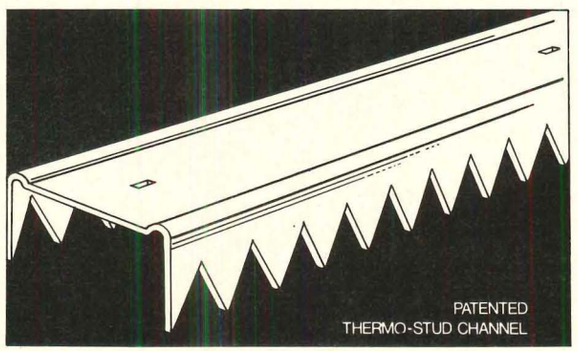
When you insulate a masonry wall and finish with gypsum drywall, try the Zonolite Thermo-Stud System.

Positive, mechanical fastening eliminates tricky adhesives so there's no waiting for cure and no worry about bond failures.

Wood furring strips aren't necessary so there's no interruption in the insulation. That means no thermal shorts and no shadowing.

The secret: moisture resistant, lightweight Zonolite Polystyrene Foam with its excellent insulating values held in place with the Thermo-Stud serrated furring channel. The channel pierces the foam and is then secured to the wall with a hardened nail. This unbeatable combination of a rigid insulation board and a metal stud provides a smooth firm surface. Immediate application of the drywall is possible using self-tapping screws to attach it to the Thermo-Stud channel.

All this plus an installed cost competitive with other insulation methods.



We'd like to tell you more. So, send the readers service card for complete data today. Or write directly to W. R. Grace & Co., Construction Products Division, 62 Whittemore Ave., Cambridge, Mass. 02140.

GRACE ZONOLITE

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Bally belongs.

For mass feeding in the clouds or here on earth Bally Prefabs set the standard for Walk-In Refrigeration

Bally Walk-In Coolers and Freezers belong everywhere mass feeding takes place. They can be assembled in any size for indoor or outdoor use from standard panels insulated with four inches of foamed-in-place urethane, UL 25 low flame spread rated. Choice of stainless steel, aluminum or galvanized. Easy to enlarge . . . easy to relocate. Refrigeration systems from 35°F. cooling to minus 40°F. freezing. Subject to fast depreciation and investment tax credit. (Ask your accountant.) Write for 28-page book and urethane sample. **Bally Case and Cooler, Inc., Bally, Pennsylvania 19503.**

Bally®

ADDRESS ALL CORRESPONDENCE TO DEPT. AR-5

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Clark announces...

The first major improvement in Fire Doors since 1952!

Our new Class "A" rated fire door is the first important advance in fire door construction since the introduction of the composite door in 1952. It opens and closes fast enough to be used wherever you'd use a conventional door . . . so you need only **one** wherever you previously needed both a fire door and an industrial door. Because we supply the vertical casings, door, and hardware as one "package" — ready to install — on-site construction is drastically reduced.

Vertical casings — simplify installation . . . transfer most of weight from wall to floor . . . a Clark exclusive.

Door stop — saves wall by transferring impact of closing doors from wall to special shock-absorbing binder.

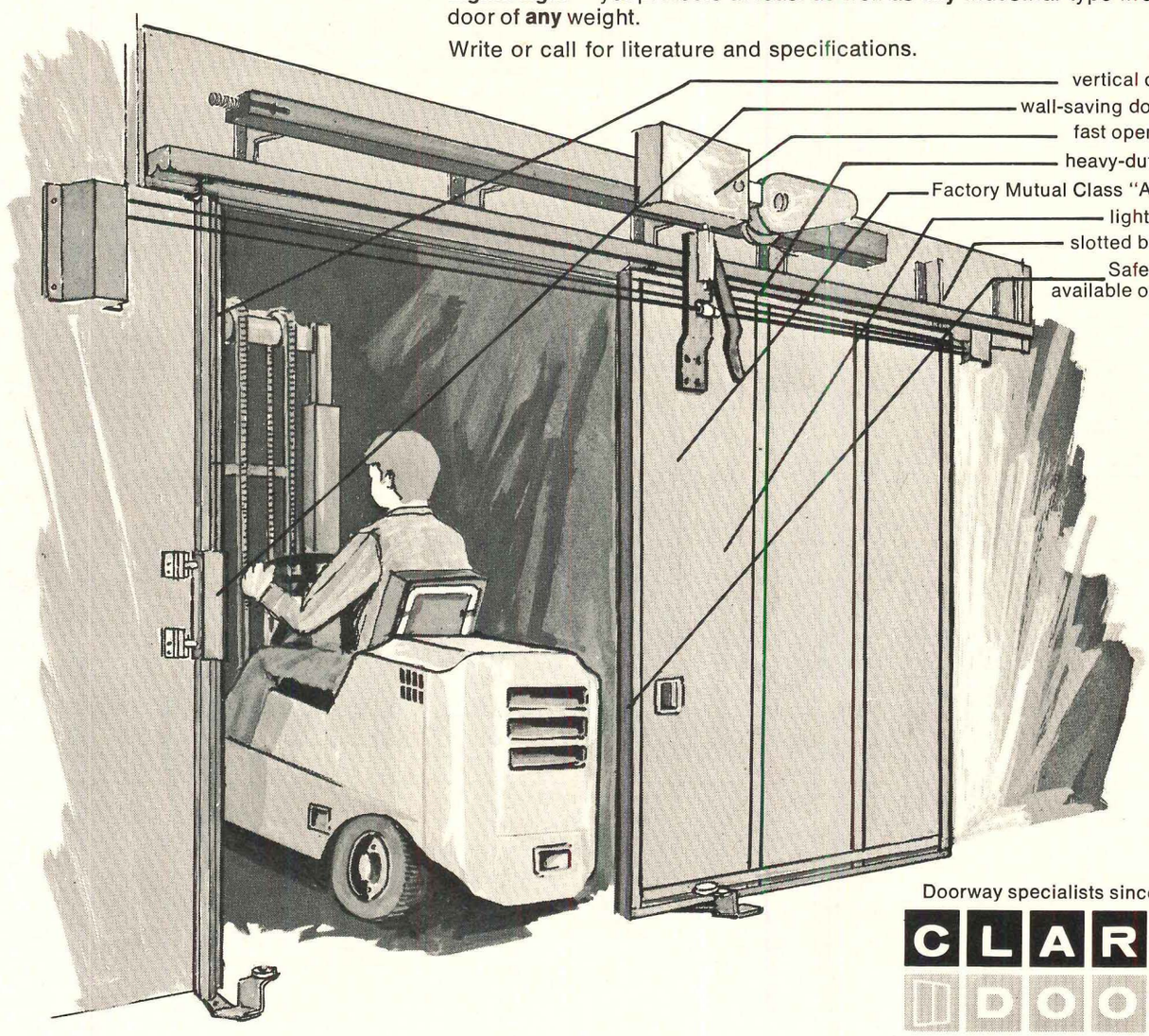
Slotted brackets — on door header . . . permit easier adjustments to conform to local fire laws . . . another Clark exclusive.

Heavy-duty track — 10-gauge track designed for "1000 operations a day" for many years without sag or undue wear.

Fast operating — reduces drafts, vehicle collisions, etc.

Lightweight — yet protects at least as well as **any** industrial type fire door of **any** weight.

Write or call for literature and specifications.



Doorway specialists since 1878.

CLARK DOOR

69 Myrtle Street, Cranford, N. J. 07016 (201) 272-5100, Telex 13-8268

For more data, circle 51 on inquiry card

If you scratch our new PVF coating, what happens to the aluminum substrate?

Nothing.
A protective layer of aluminum oxide forms on the substrate surface. This natural protection resists corrosion and discourages flaking or adhesion loss.

Obviously, any organic coating will deteriorate in time. When it does, it becomes spongelike in texture. Retains considerable moisture. Wet cycles last longer. The hydrophilic cells trap such contaminants as sulfur dioxide. At this point, the corrosive effects of electrolytic action usually become apparent with most substrates. You get chemical attack at the interface; underfilm problems causing flaking or loss of adhesion; staining or streaking.

But if the substrate is aluminum, the effects of electrolytic action do not become apparent. An aluminum substrate *protects* rather than destroys an organic coating.

Specify our new PVF coating on the sidewalls of your next building. We call it Alcoa® Super Alumalure® finish. Available in 10 superb, trend-setting colors, Alcoa Super Alumalure finish offers the advantages of a super-tough fluorocarbon coating, at a price you can live with.

For details, write Aluminum Company of America, 1055-E Alcoa Building, Pittsburgh, Pa. 15219.

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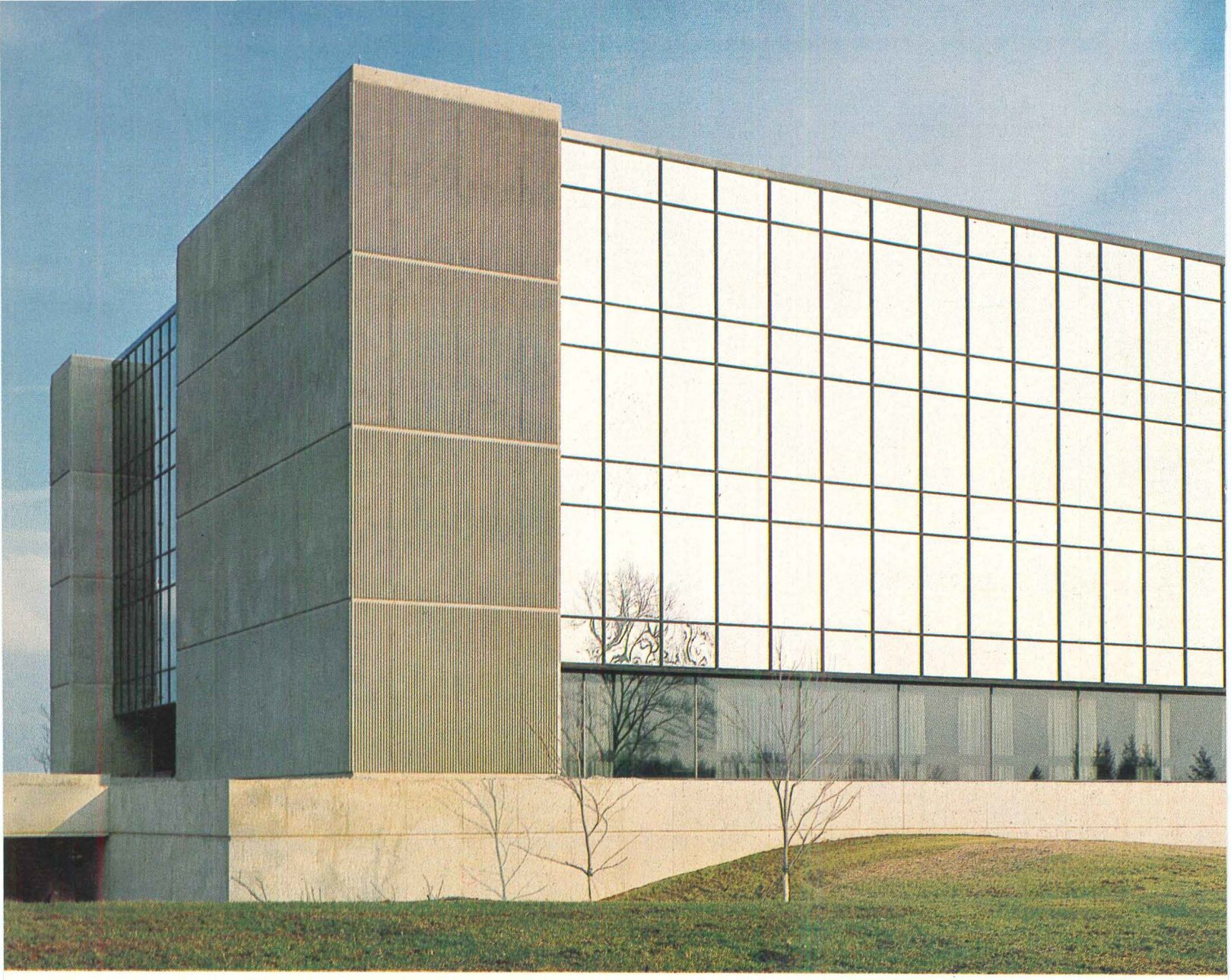
Change for the better with Alcoa Aluminum

ALCOA



With our help, the Ashland Chemical minute, second and

One of the beauties of our Vari-Tran® reflective glass is what it reflects: scudding shreds of cloud; the four seasons of a tree; the color of the sky at dawn, midday and dusk. And as they change, so changes the image in the glass.

Architects Kellam & Foley took full advantage of Vari-Tran's reflective qualities when they designed the Ashland Chemical Co. Headquarters Building. Located on a spacious open tract at Dublin, Ohio, the building presents an ever-changing facade to passers-by.

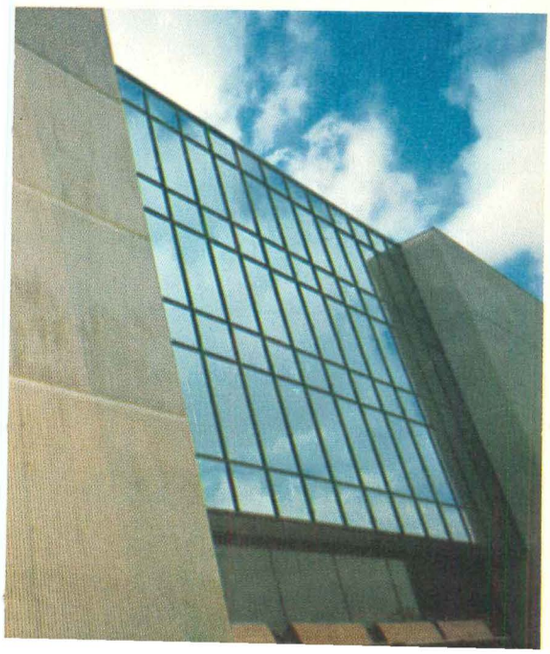
Of course, they also knew that because Thermopane® insulating units made with Vari-Tran reflect the sun's heat and light, they reduce the size of air conditioning equipment needed. To say nothing of cutting operating costs.

Which is to show that in architectural glass as well as everything else—handsome is as handsome does.

We'll be glad to tell you the rest of the story (including the fact that Vari-Tran now comes in gold, silver, grey, blue and bronze tones). Drop a note to Libbey-Owens-Ford, Toledo, Ohio 43695.

For more data, circle 53 on inquiry card

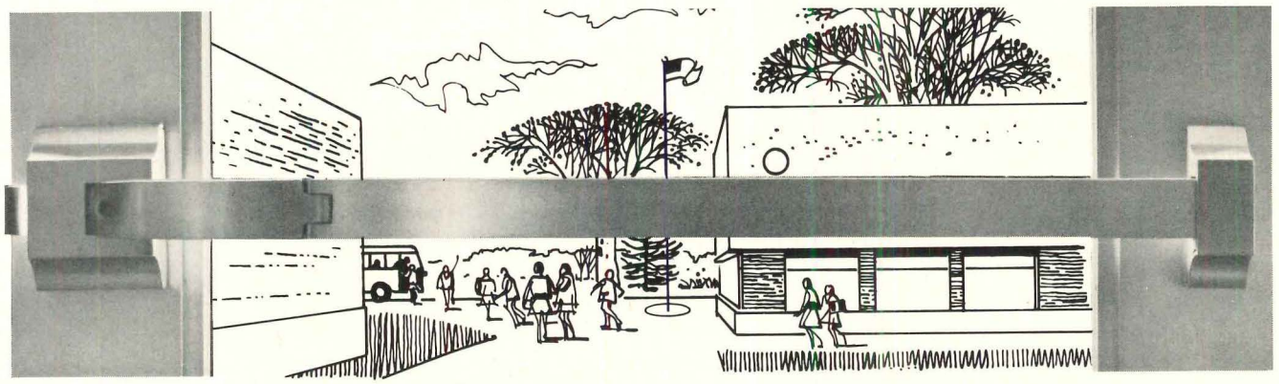
Building changes by the day, hour, the batting of an eye.



Owner: Ashland Oil, Inc. Architects: Kellam & Foley, Columbus, Ohio.
General Contractor: Martin & Nettrour, Pittsburgh, Pa.
Glazing Contractor: Ohio Plate Glass Co., Columbus, Ohio.

L-O-F GLASS

L-O-F making progress... in architecture.



It's non-handed. It can take abuse. And it's attractive.

How's that for a versatile device?

the **Eaton** door device

(formerly Reed device)

With straight-thru operation—not down—it's non-handed.

With simplified design—cross arm operates bolt directly—it can take heavy wear.

As you can see, it adds just a simple straight accent line to the door.

For more details see your Eaton Representative or contact Eaton Corporation, Lock and Hardware Division, Eaton Door Devices, Box 58, Wood Dale, Illinois 60191.

EATON Security Products & Systems

2023

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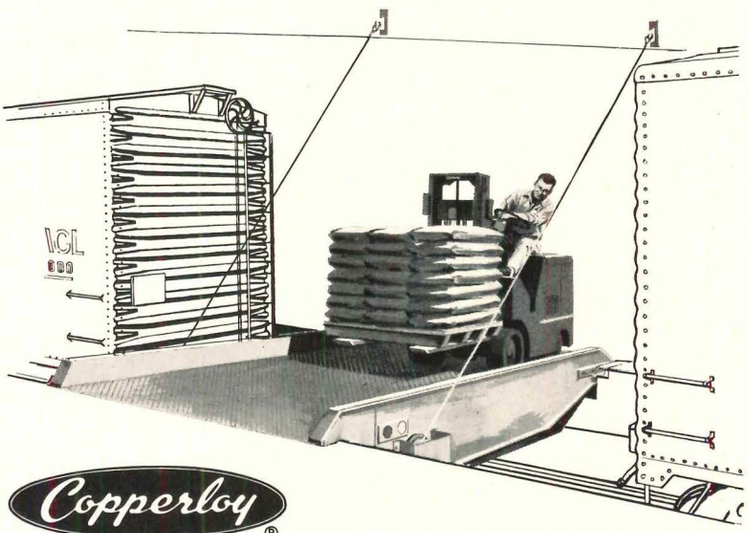

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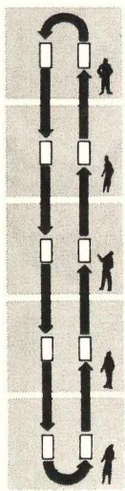

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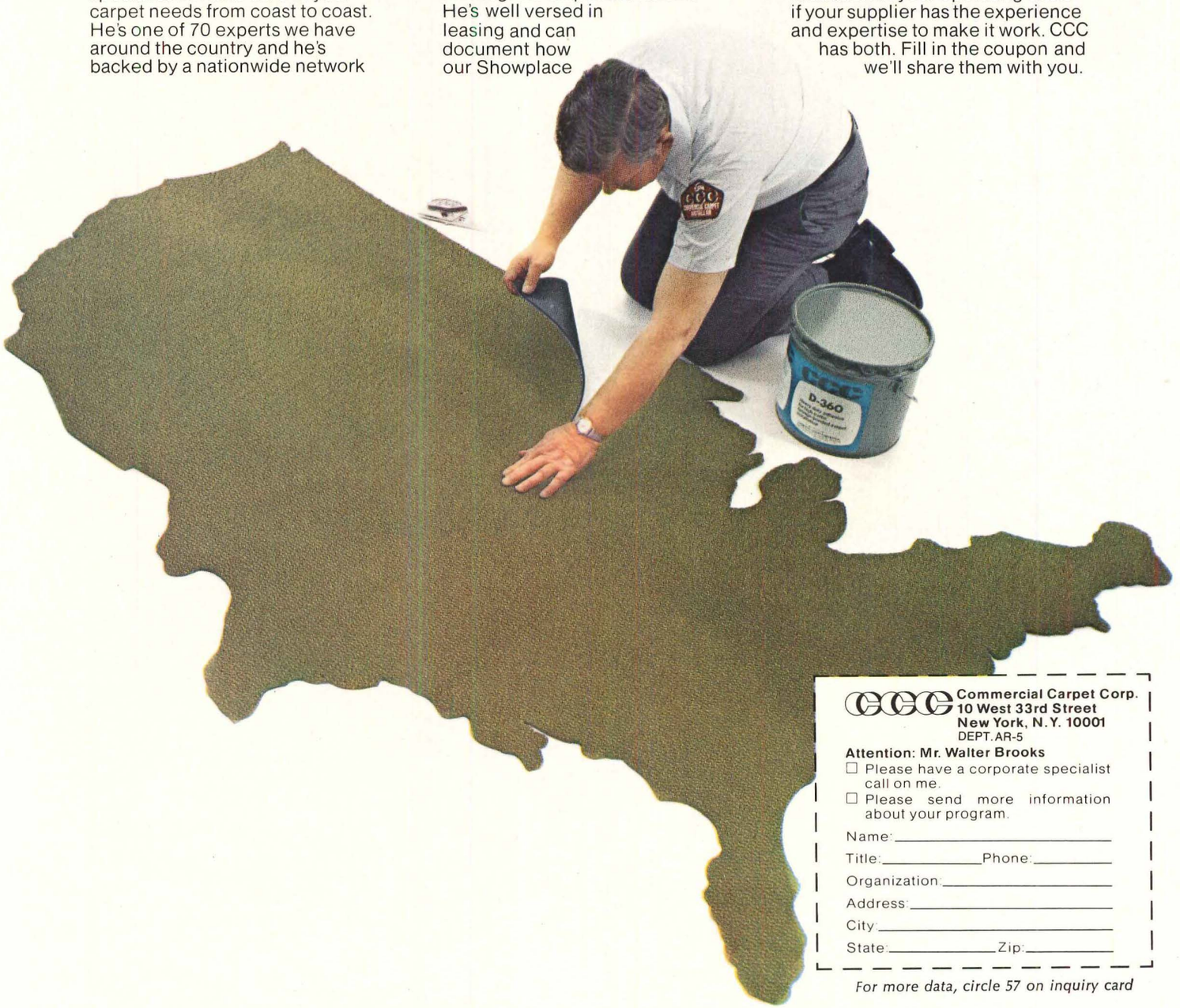

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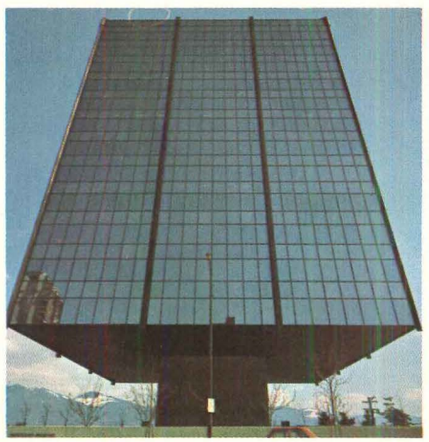
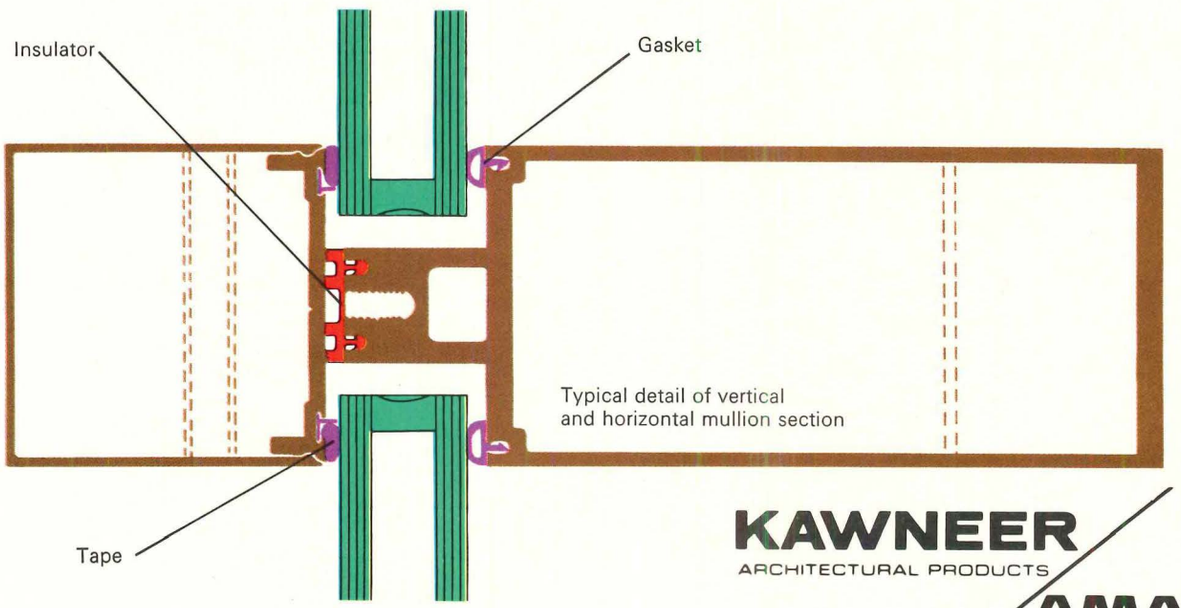


Architects: Rhone & Iredale, Vancouver, British Columbia



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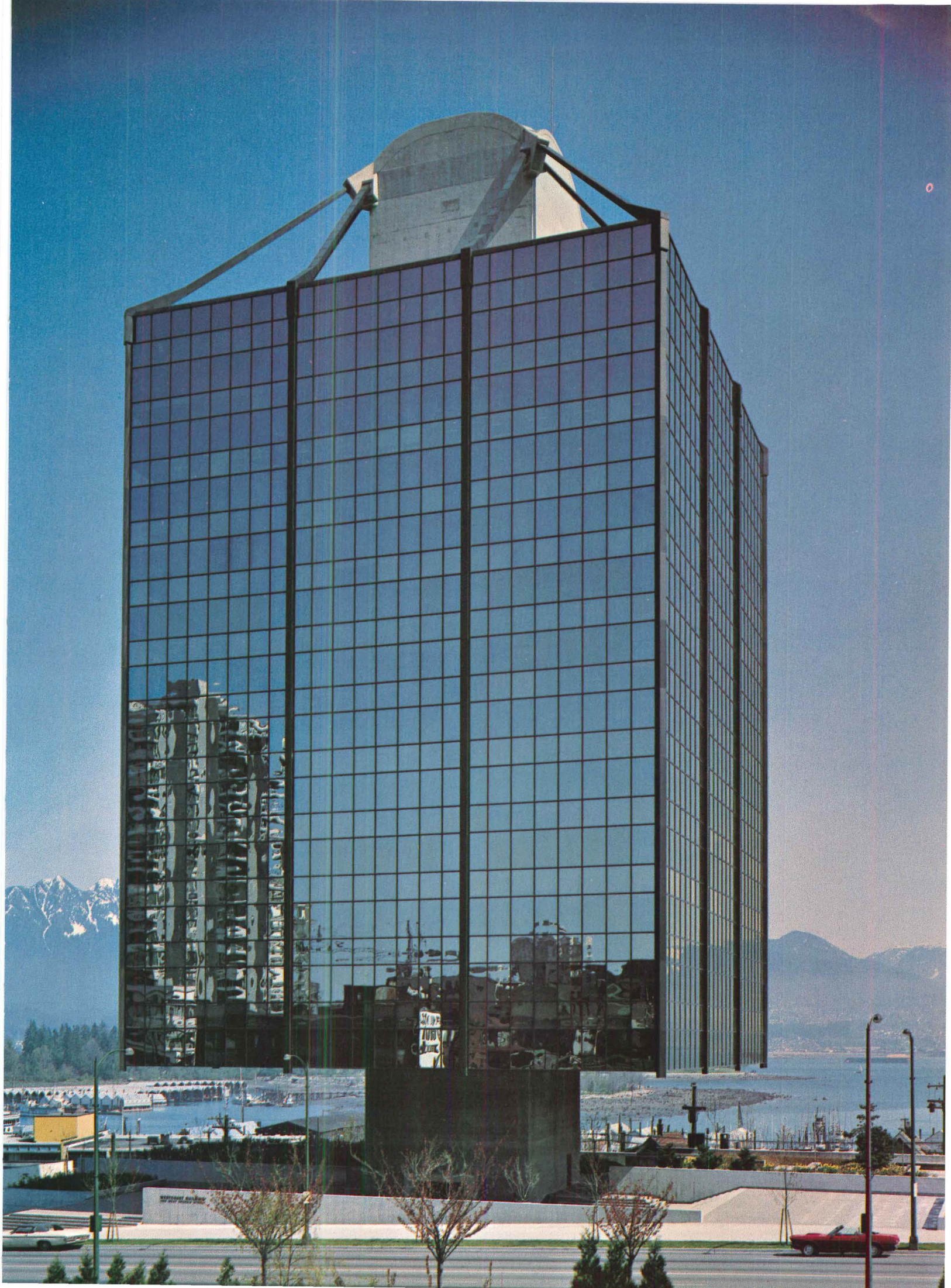

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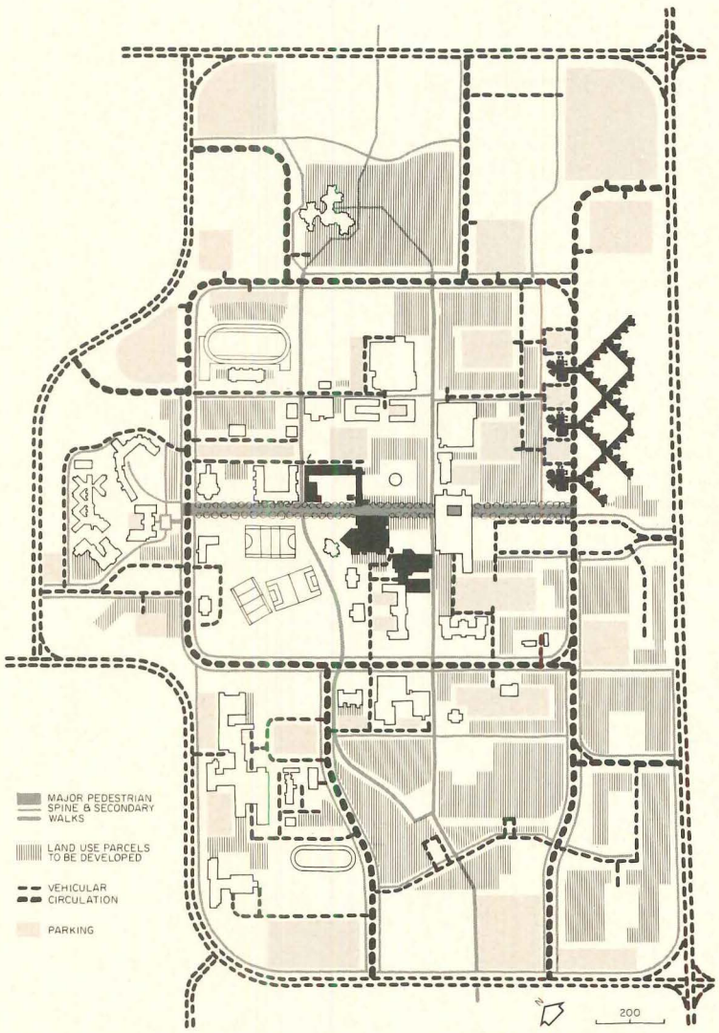
DESIGNING FOR GROWTH: THE METAMORPHOSIS OF A RURAL CAMPUS INTO A UNIVERSITY TOWN



The University of Guelph in Ontario is about sixty miles west of Toronto. Founded as a university in 1964, it comprises three earlier institutions: Ontario Agricultural College, Ontario Veterinary College and the Macdonald Institute. The curricula of these schools has been augmented by academic programs in arts and sciences. The expanded teaching program called for a greatly expanded enrollment, and the school will have increased from approximately 2.5 thousand students in 1964 to 15 thousand by 1980.

In early 1964, the Guelph administration hired Project Planning Associates Limited to prepare the master development plan for its 800-acre site. Sert, Jackson and Associates and Richard Dober served as consultants on campus planning. The basic concept agreed upon by the planners was that the new university be designed as a town. There were six reasons for this: economy in land use and servicing costs; reduction of circulation time for students, faculty and staff; the desire to integrate the existing valuable buildings with their disparate scales, colors, textures and uses into a satisfying unity with the new development; the belief that in all places and at all times an urban environment has been a fruitful milieu for social and intellectual stimulus; the recognition that the charm of towns depends on the integration of diverse but thoughtful design; and the fact that 25 thousand people working in a confined area form a town, whether this is recognized and planned for or not.

The over-all circulation plan of the university reduces the need for automobile circulation by resident students and staff, and by commuting students once they have driven to school. The academic center is located along a main north-south pedestrian spine established by the master plan. A secondary pedestrian axis extends to the east and west. As the master plan (left) indicates, existing campus open spaces are reinforced and new open spaces created.

Ken Barton

Ken Barton

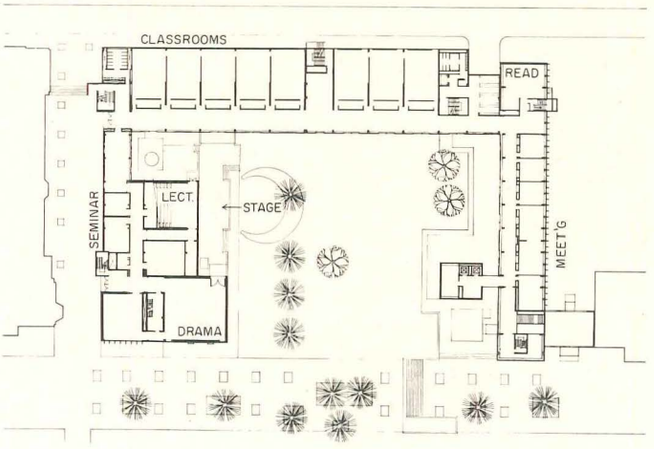
The Arts Building (this page and opposite) and the Library (overleaf) are the first buildings to be completed in the new academic core of the campus. This reinforced concrete structure combining brick with precast cladding has 59 classrooms, 17 special purpose rooms including studios and lecture halls and 276 faculty offices. As the photo (left) indicates, the Arts Building has been related to the older Tudor-style administration building in such a manner that it forms a well-scaled street. The photos (right and below) show the relationship of the building to the brick-surfaced north-south pedestrian spine. Wherever possible, fine old trees and existing campus green have been emphasized and preserved as can be seen in the photo at bottom left on the opposite page.

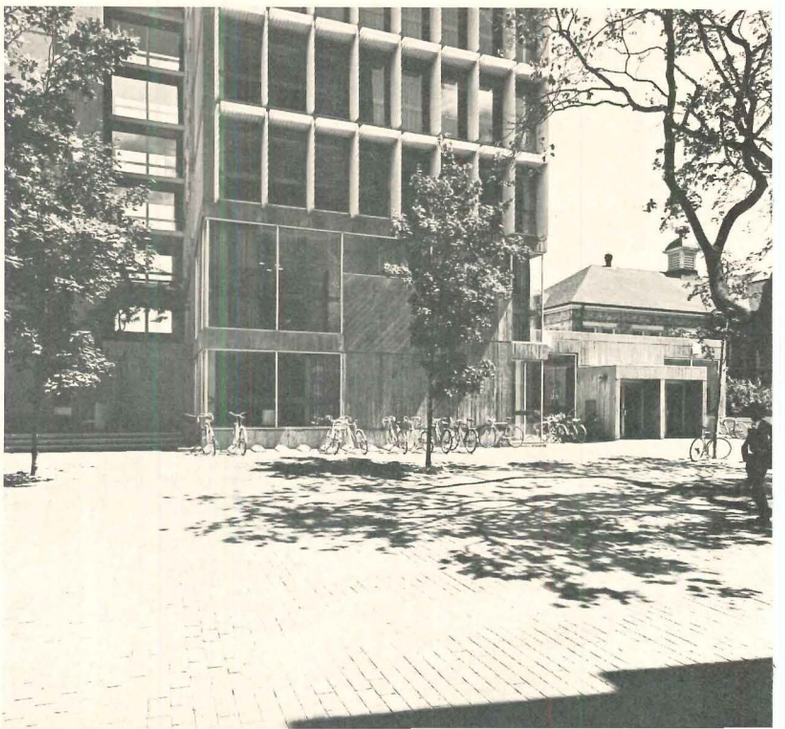
The tower shown at right is the office portion of the Arts Building. The two remaining wings of the U-shaped structure combine two- and three-story elements as can be seen in the photo (left). The newly designed buildings embrace a certain range of heights, determined by their uses and related to the scales of the existing campus buildings. In general, the new class and laboratory buildings will have a height of three stories since they are conceived as walk-up, rather than elevator buildings.

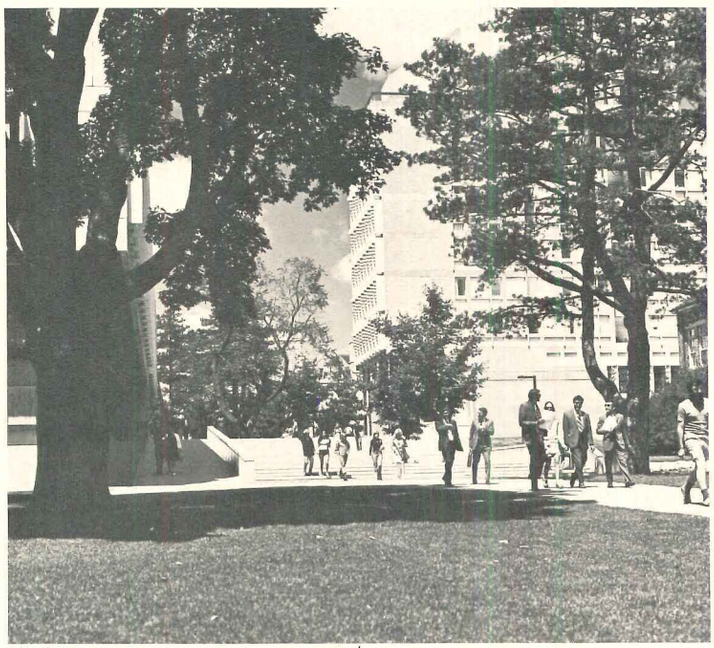
The Arts Building incorporates an internal pedestrian way for use in bad weather. For the purpose of unifying the central campus, this internal way will be developed in as many buildings as possible to facilitate circulation in both north-south and east-west directions.

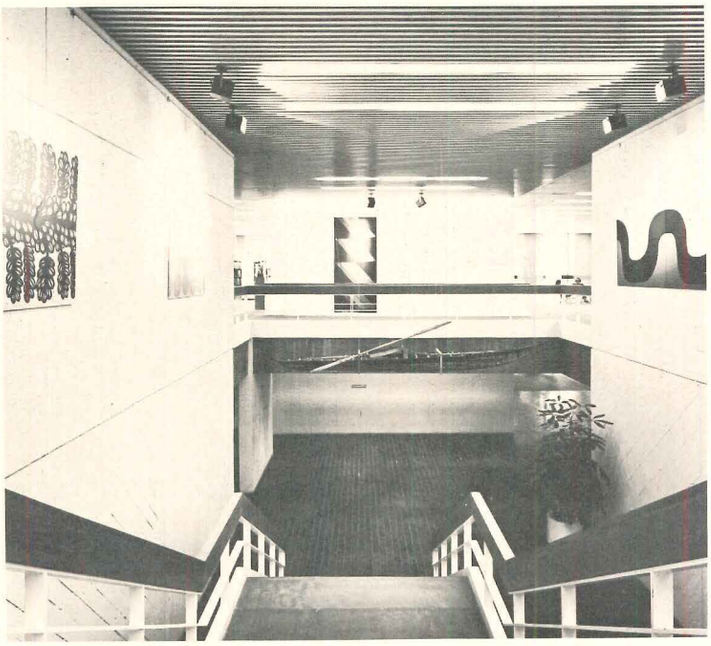
ARTS BUILDING, GUELPH UNIVERSITY, Guelph, Ontario. Architects: *Hancock, Little and Calvert Associates;* design consultants: *Sert, Jackson and Associates Inc.;* landscape architects: *Project Planning Associates, Ltd.;* structural engineers: *M. S. Yolles Associates, Ltd.;* mechanical and electrical engineers: *R. E. Crossey and Associates, Ltd.;* furniture consultants: *Dudas, Kuypers, Adamson, Ltd.;* acoustical engineer: *V. L. Henderson;* soil mechanics: *William Trow Associates, Ltd.;* general contractor: *Pigott Construction Company, Ltd.*

The first floor level of the Arts Building contains nine large classrooms, a lecture room and drama workshop, several seminar rooms and an outdoor stage. The tower wing at this level contains reading rooms, meeting rooms and student club rooms. Total cost of the building without furnishings was $21 per sq ft.









All photos by Michel Proulx except as noted

The McLaughlin Library is shaped by its position in the master plan. The court which it defines in conjunction with the Arts Building is controlled by the diagonal placement of Massey Hall, an older building which has been preserved. The angular projection in the Library plan (below) corresponds to this diagonal (see master plan, page 89).

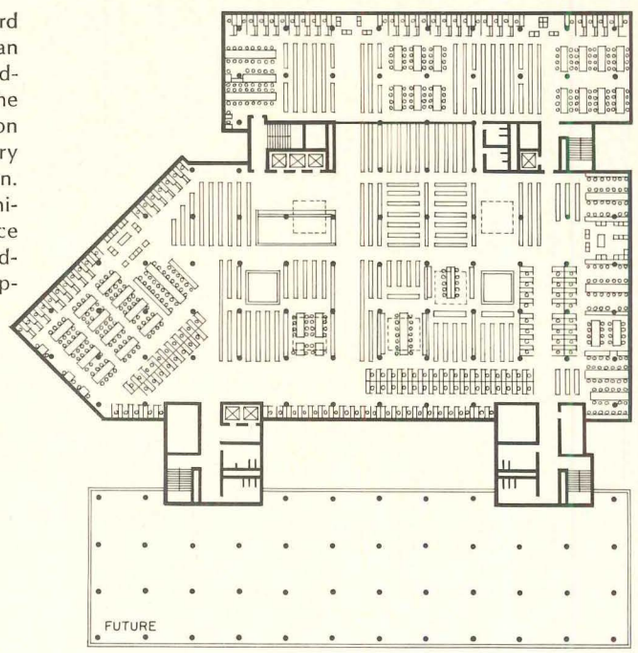
The Library shares a common language of forms with the Arts Building. Both buildings have a scale and character which expresses the activities accommodated. The vocabulary of materials for both buildings is in a color range which harmonizes with the older stone buildings.

The Library has been constructed of poured-in-place reinforced concrete with precast cladding. It has been designed for 650 thousand volumes and accommodates well over three thousand readers. It is a subject oriented, open access library with reader space provided among the book stacks. Reference and other information facilities are located on each subject floor. Unlike most libraries, it lacks a central service core. Four corner towers contain the essential services.

All library furniture was specially designed for this library (see photos opposite page, bottom). The interior lighting is of interest. The principal lighting fixtures are specially designed light box units at the top of the columns. Except in a few locations, no overhead lighting has been installed. Instead, an underfloor electrical power distribution system provides power for fluorescent lights located on individual bookstacks and carrels.

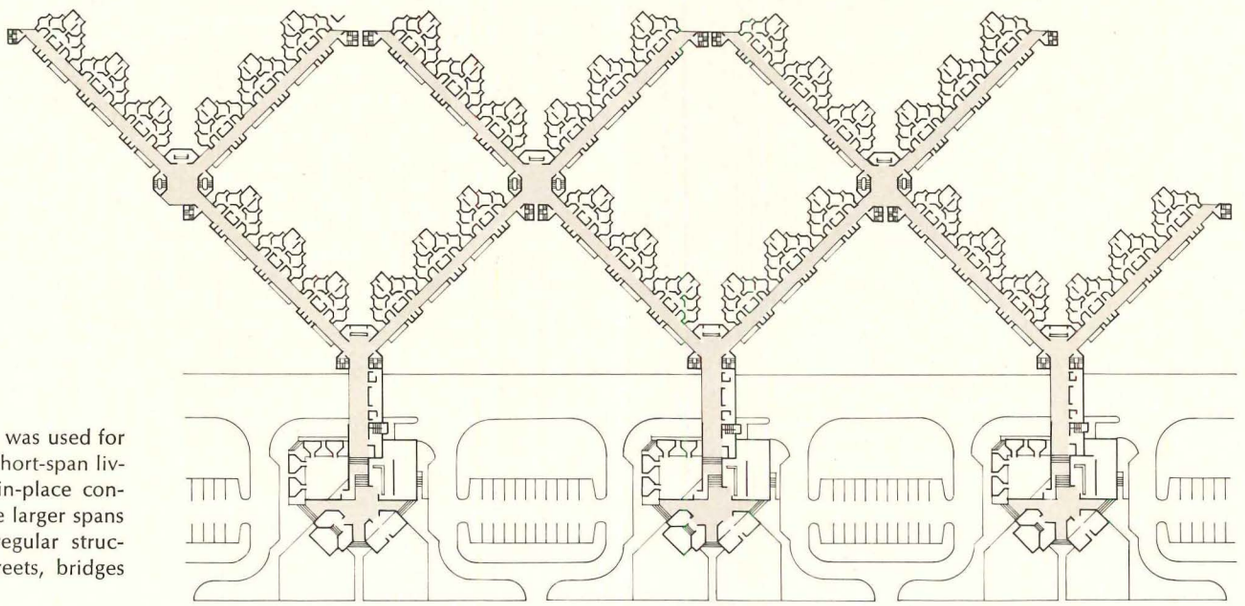
McLAUGHLIN LIBRARY, GUELPH UNIVERSITY, Guelph, Ontario. Architects: *Hancock, Little, Calvert Associates*—project architect: L. S. Langmead; design consultants: *Sert, Jackson and Associates, Inc.;* landscape architects: *Project Planning Associates, Ltd.;* structural engineers: *M. S. Yolles Associates, Ltd.;* mechanical and electrical engineers: *R. E. Crossey and Associates, Ltd.;* acoustical engineer: *V. L. Henderson;* furnishings: *Al Faux Associates, Ltd.;* general contractor: *Perini (Western).*

The Library has six floors. The third and fourth floors are similar in plan (right) and provide stack and reading space for the humanities on the second floor and social sciences on the third, as well as temporary space for university administration. The main floor is devoted to technical processes, general reference space, a fine arts wing and a reading area. Physical, natural and applied sciences are on top floors.



L. F. Webster

L. F. Webster

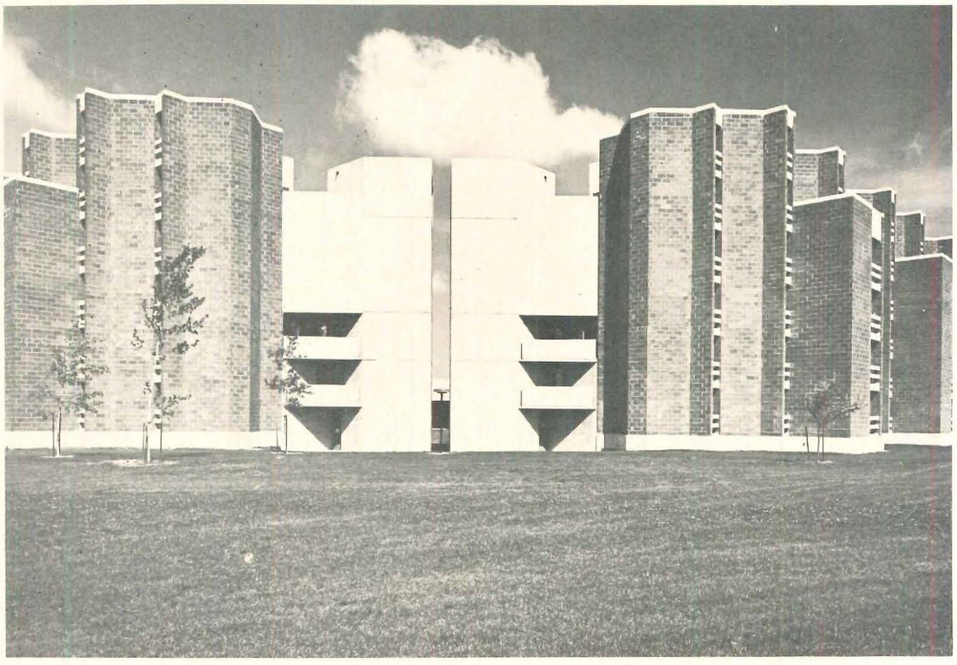


Load bearing masonry was used for the vertically aligned short-span living quarters. Poured-in-place concrete was used for the larger spans and the vertically irregular structures such as the streets, bridges and dining halls.

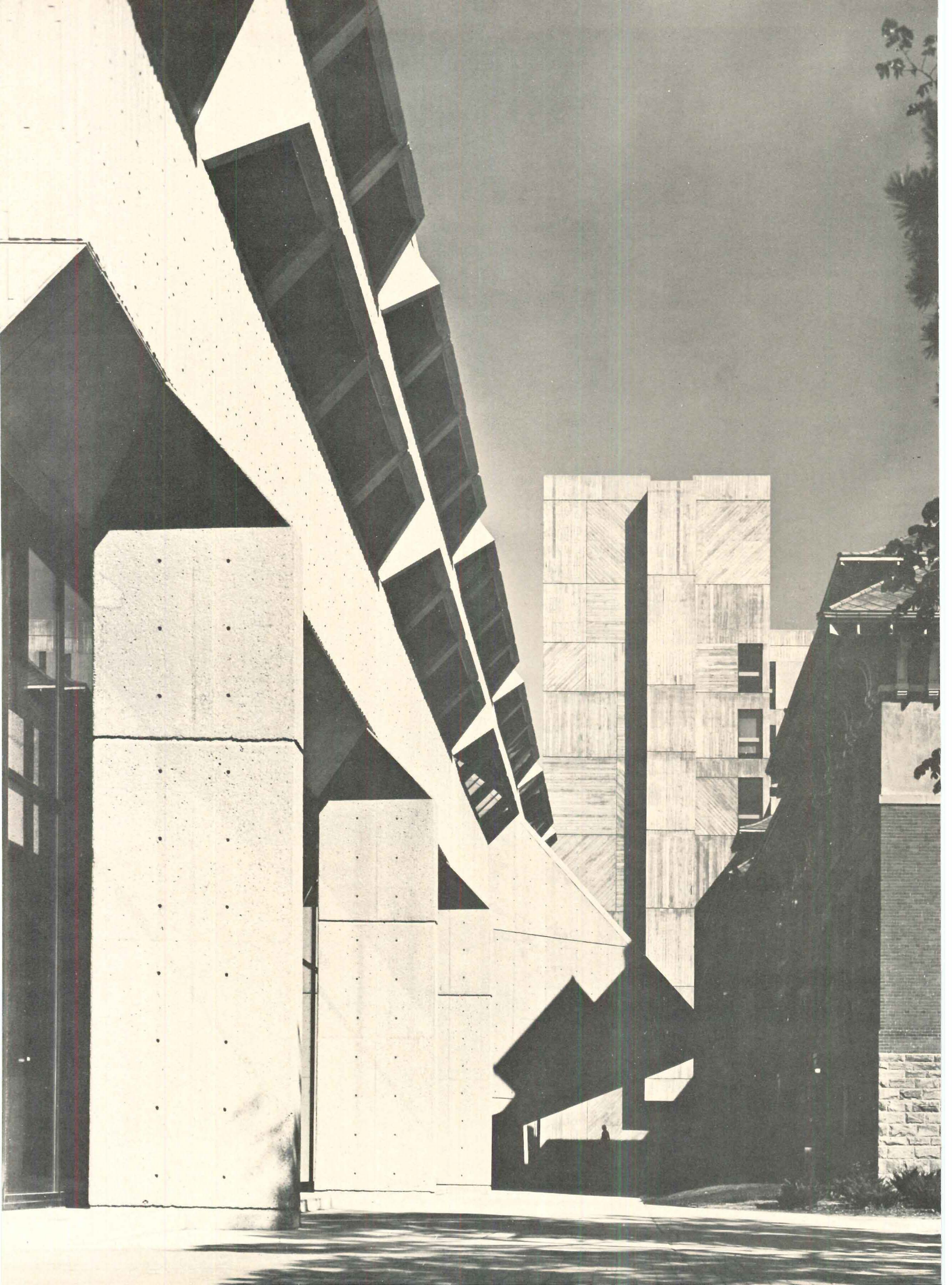
Housing Complex 'B' is located at the southern end of the north-south pedestrian spine. Another dormitory unit has been constructed at the northern end, and dormitory groups have been planned at the far ends of the east-west pedestrian spine. Instructional facilities and communal buildings are sited within the inner ring road which defines an area which can be traversed in ten minutes walking time. The four dormitory groups at the compass points lie just beyond the inner ring road.

Housing Complex 'B' lies just to the east of the major campus entrance. In plan it is in the form of six V's, forming a uniform grid system. Each residence is entered from a dining hall and common room complex joined to the residence by an enclosed bridge which spans the inner ring road of the campus. The bridges lead to an interior street which joins all the houses at the third floor level. From this street, the students have access by stairs to four bedroom floors above, and two below. As the plan indicates, basic social groups of six and 12 are combined into houses of approximately 46 students, under the supervision of a married faculty member or senior student. Density is 140 persons per acre with over 60 per cent in single rooms.

The great majority of the bedrooms each has its entrance, window and closet at one of the four corners, making four clear walls available for furniture. These rooms interlock in clusters of four. On the opposite side of the corridors are rectangular single and double bedrooms. On the fourth and fifth floors these bedrooms form deep overhangs creating a facade (left) which is different in its expression from the facade created by the clustered units.



HOUSING COMPLEX 'B' GUELPH UNIVERSITY, Guelph, Ontario. Architects: *John Andrews Architects;* structural engineers: *Seethaler & Bernard;* mechanical engineers: *R. E. Crossey & Associates, Ltd.;* electrical engineers: *Jack Chisvin & Associates;* landscape architects: *Project Planning Associates, Ltd.;* contractor: *Ellis-Don Ltd.*

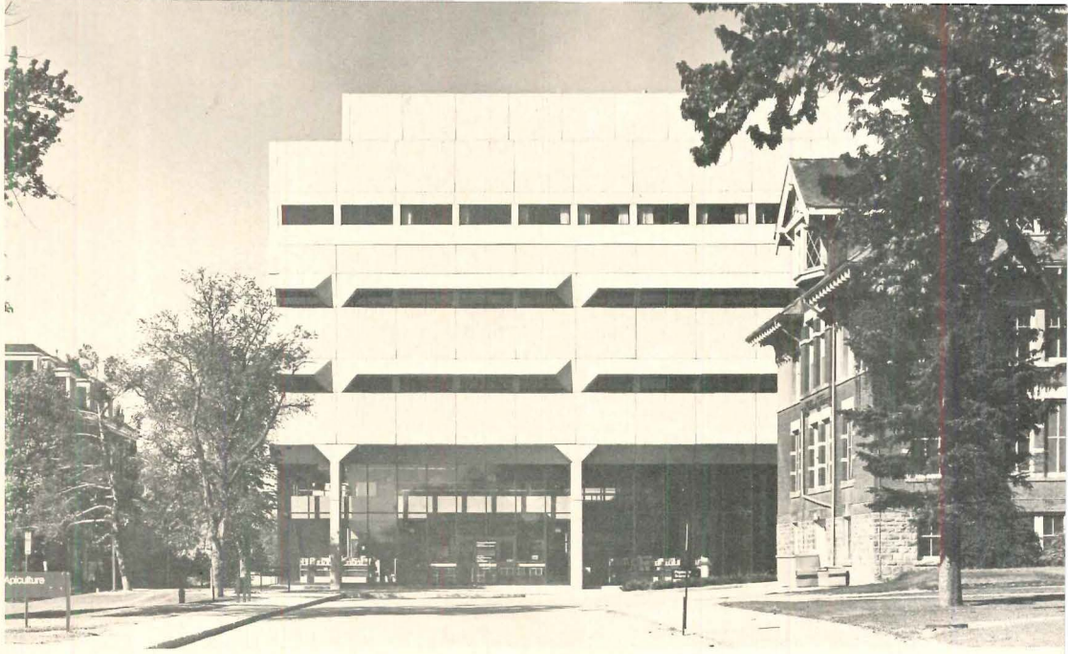


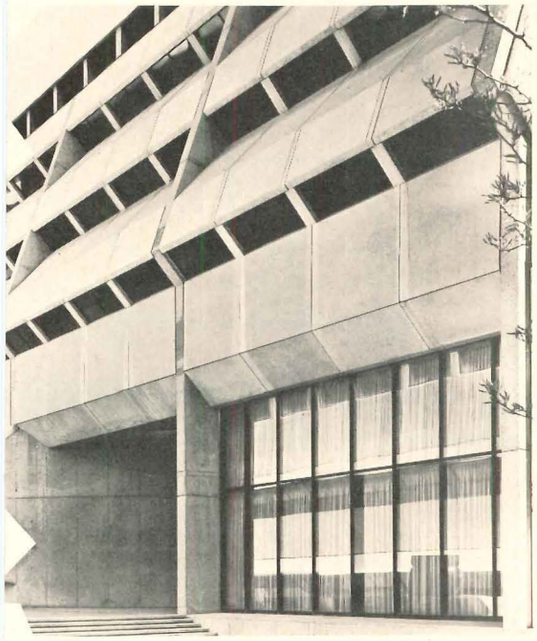
The Physical Sciences Complex is located on the west side of a quadrangle which will be, when completed, the heart of the campus. It is closely related to the Library to the north and to the proposed university center to the east and to the south. A compact structure, it increases the intensity of use and the urban character of the academic core, encouraging communication and contact, reducing walking distance in harsh weather and facilitating optimum scheduling of its own classrooms and laboratories as well as those of nearby buildings. The new complex is directly attached to the older chemistry and microbiology building, forming, a continuum which ties the older structure more closely to the academic core. An objective of the master plan is to draw all of the campus buildings into a visual continuum so that they may cease to be a series of isolated facades.

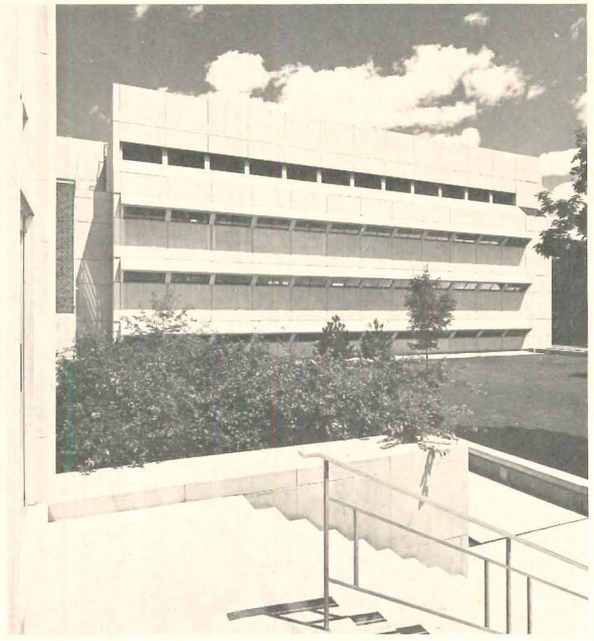
The basic planning concept provides a central corridor on each floor lined by offices and laboratories with the mechanical services stacked in continuous vertical shafts serving each floor. The stepped-back section of the west face (photo at right middle) expresses the interior program requirements and permits light to penetrate to the courtyard below. The triangulated windows minimize the exposure to east and west sunlight but provide good visibility from within.

The facilities provided for in the chemistry wing include laboratories, offices, lecture rooms and ancillary areas, all contained in three levels. The physics wing houses lecture theaters, laboratories, seminar rooms, offices and administration areas on five levels. The university bookstore has been included in the Physical Sciences Complex on the ground floor to generate activity.

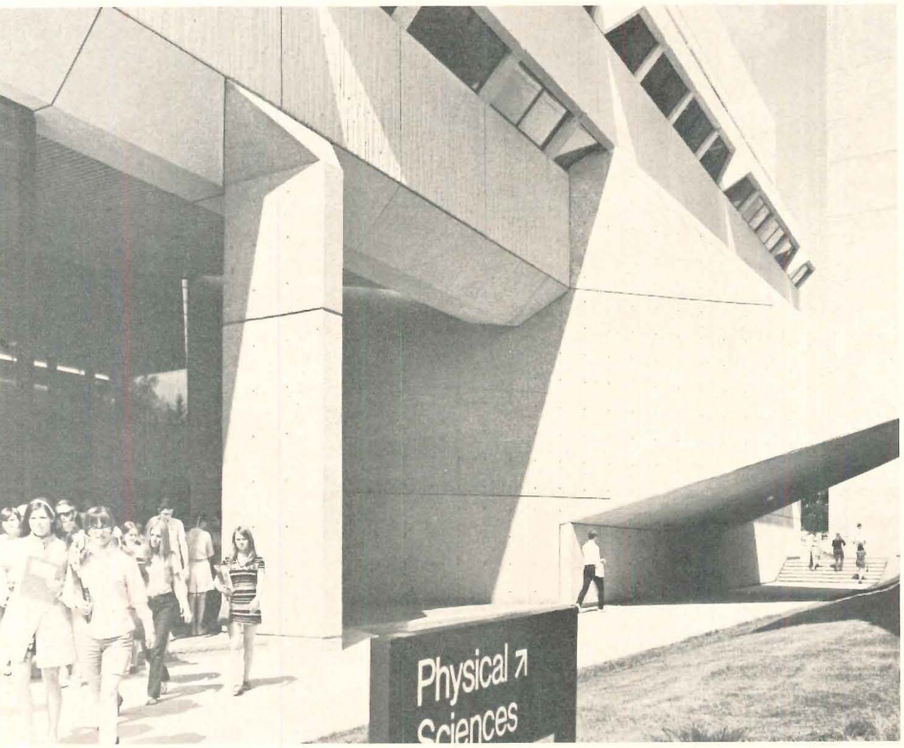
PHYSICAL SCIENCES COMPLEX, GUELPH UNIVERSITY, Guelph, Ontario. Architects: *Craig, Zeidler & Strong*—partner-in-charge: *William A. Strong;* structural engineers: *J. Maryon & Partners;* mechanical engineers: *G. Granek & Associates;* electrical engineers: *J. Shisvin & Associates;* precast contractor: *Beer Precast Concrete Ltd.;* general contractor: *Pigott Construction Ltd.*



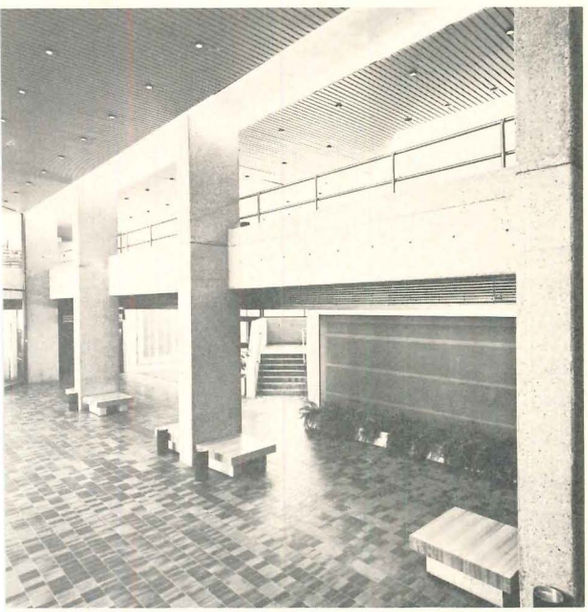


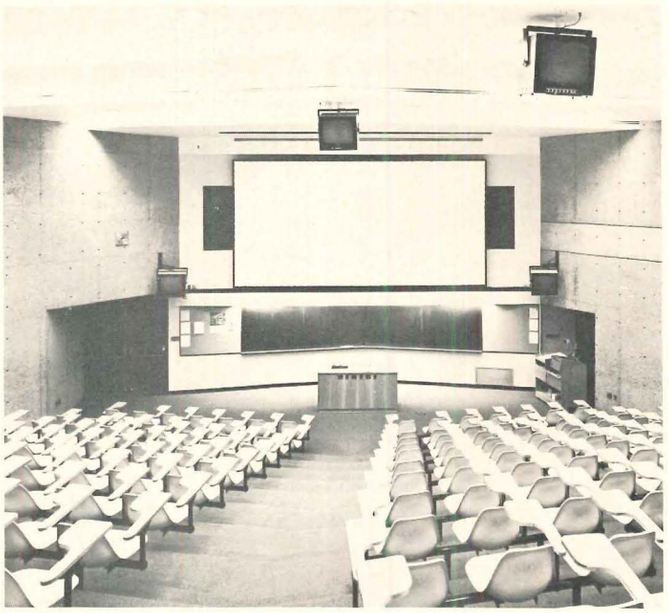


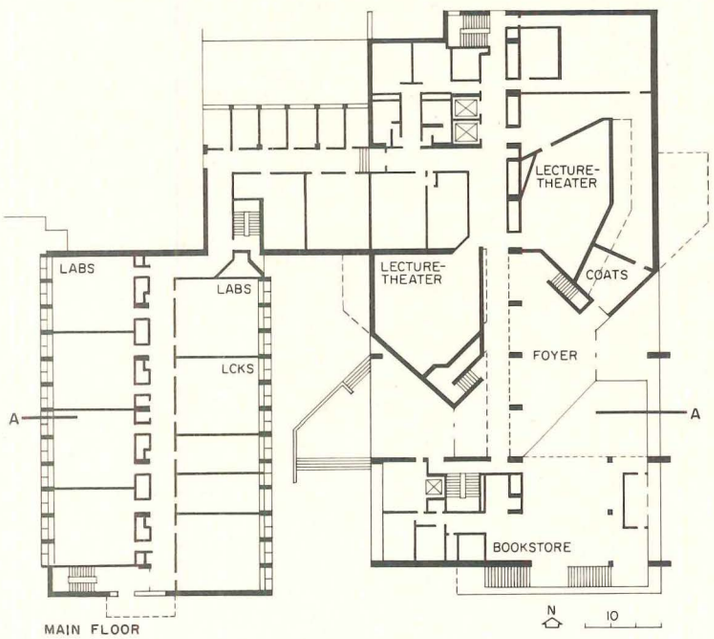
The view (opposite page) is taken toward the Library showing one of its service shafts. The cantilevered projection of a portion of the Physical Sciences Complex facade, which can be seen in this picture, is a lecture hall with a sloped floor. The main entrance of the building is adjacent. The Physical Sciences Building is constructed of poured-in-place concerte columns with a one-way ribbed slab floor. The columns are bush-hammered and the exterior is precast textured concrete, sandblasted to impart warmth.

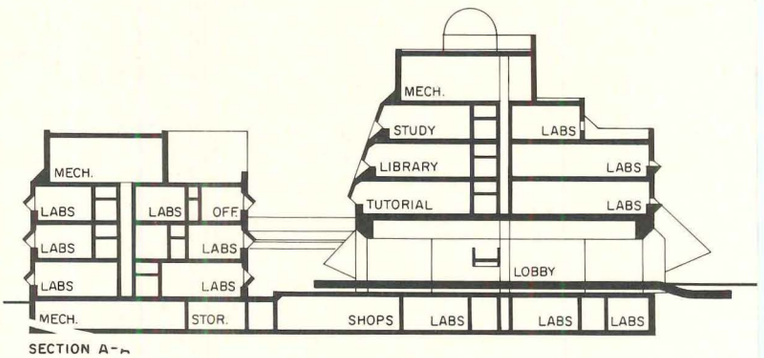


The entrance (left) leads to the two-story lobby (below left). Lecture facilities of the type shown (below right) can, taken together, accommodate a total of 750 students. On the interior the cast-in-place walls are sandblasted. Partitions are of painted concrete block. Ceilings are removable metal slats. Flooring is generally vinyl in corridors, vinyl asbestos in laboratories and quarry tile in the lobby. Carpeting is used in the offices and theaters.









SECTION A-A

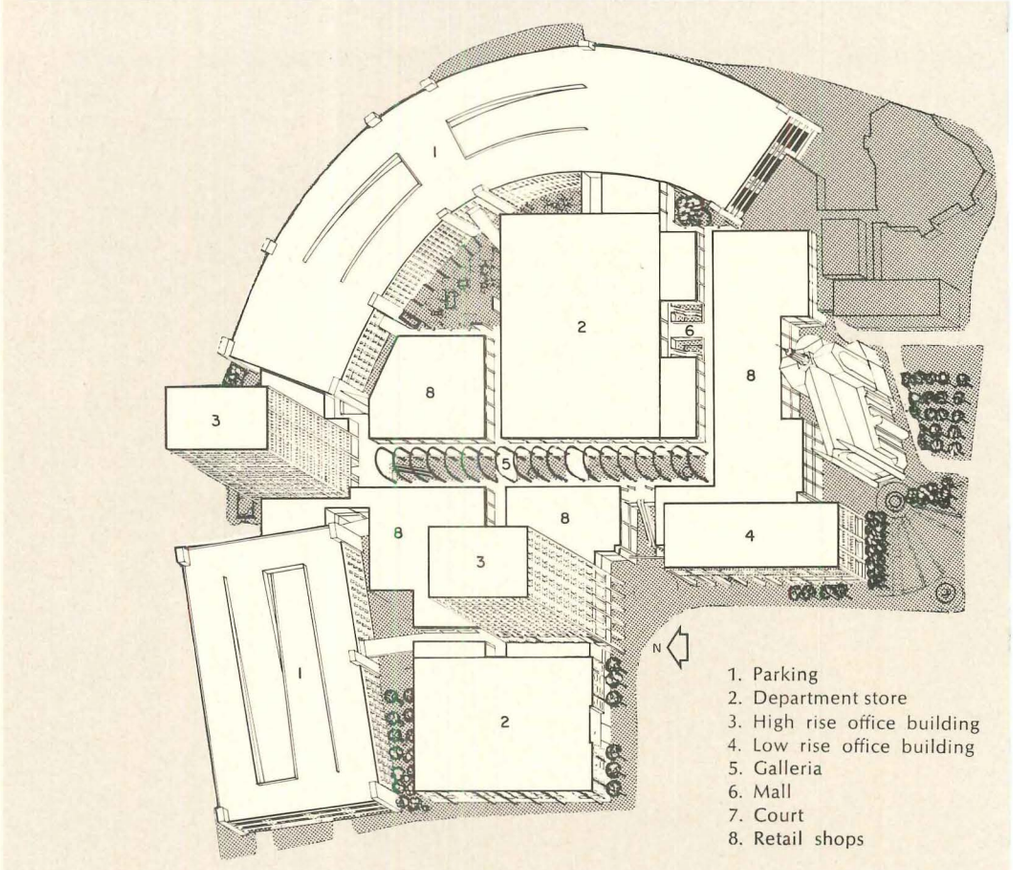
Ezra Stoller © ESTO photos except as noted

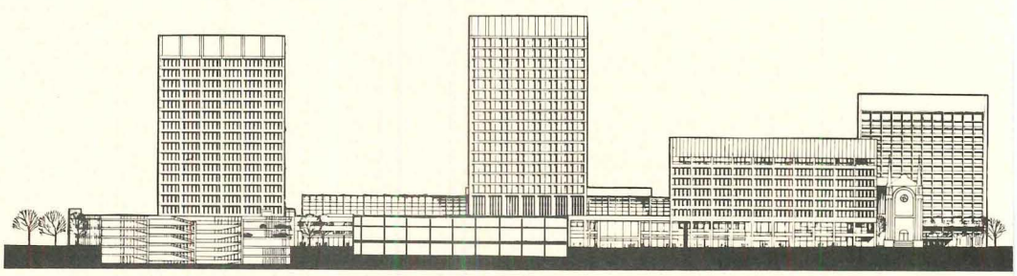
Downtown shopping with suburban amenity

Worcester Center, a handsome new commercial complex in an old Massachusetts town, is proving that "downtown" doesn't have to die. The Center designed by Weldon Becket and Associates, has all the facilities and conveniences of a suburban shopping center plus the strong potential for becoming an important community focus. It provides an unusual and exciting experience in urban shopping.

WORCESTER CENTER

This handsome new complex of buildings in the redevelopment area of Worcester, Massachusetts is more than the shopping center it looks to be, for it is the catalyst that is reversing the trend to the suburbs which has caused the decay and deterioration of the downtown business district of the city. Physically, too, it is more than a shopping center: by location and by design, it is intended to become the focus for community activities of various kinds. Its most extraordinary feat, however, is that it brings to downtown the facilities and amenities of a suburban shopping center. It has both the parking—4300 spaces under cover—and the direct access from an expressway that have made the suburban center successful. But by making the center a fine environment in which to be, the developers—The Berenson Corporation and Beacon Construction Company—have provided the community with a major source of pride and a facility which it can use in many ways. This first phase of the Center includes two office buildings, two major department stores, two five-story parking structures, four retail shop buildings and—centerpiece of the complex—a great two-story glass-roofed street, the Galleria.

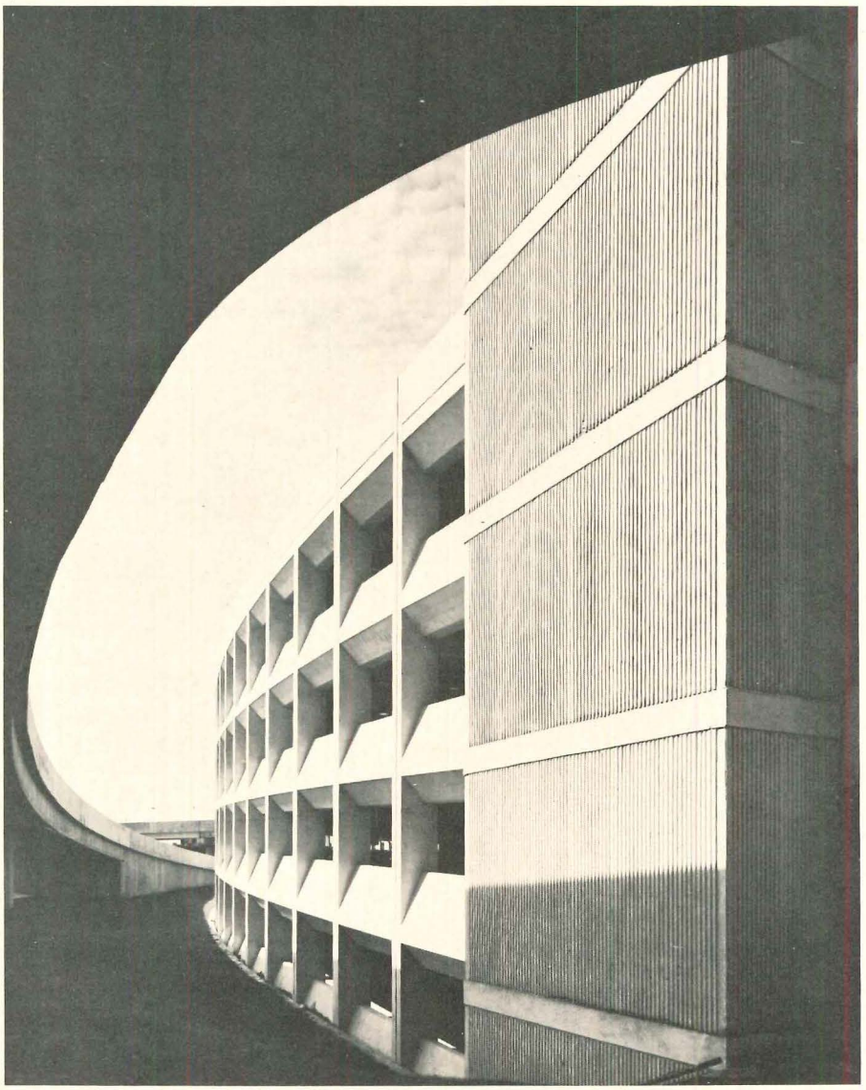


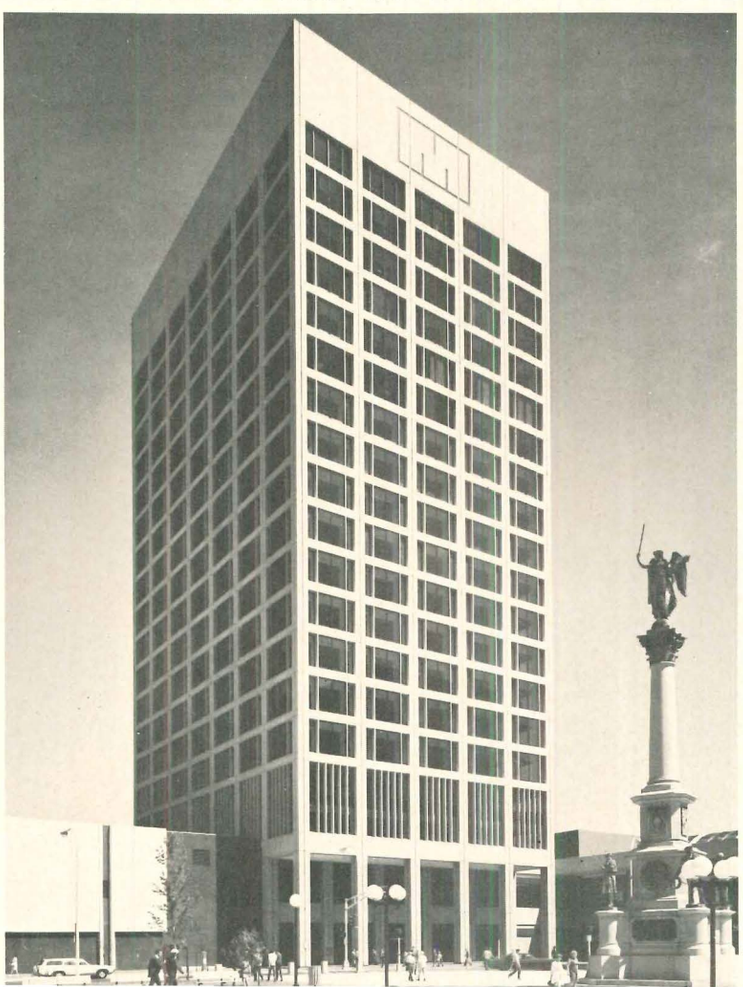


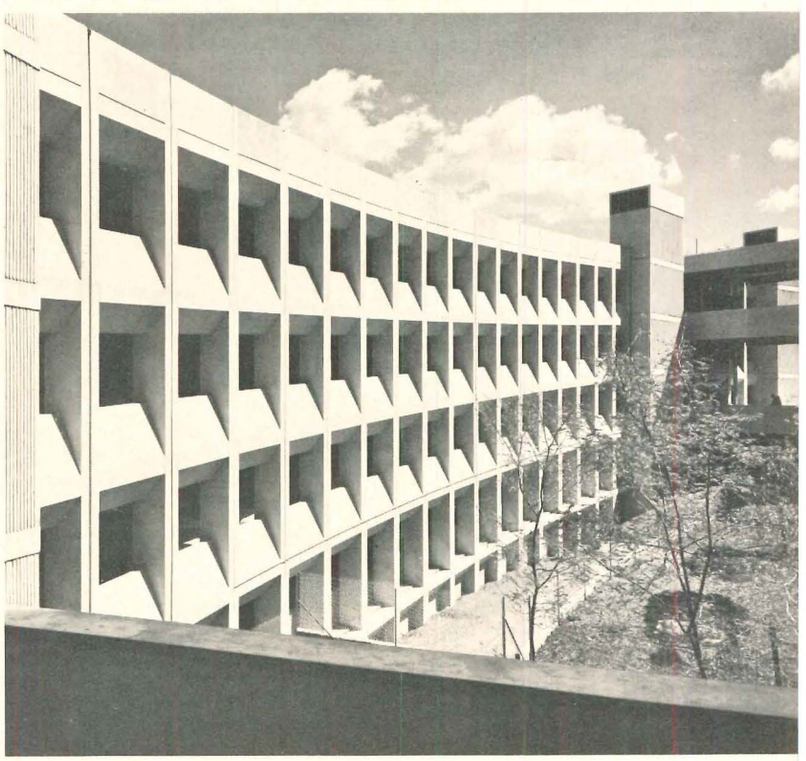
Daniel P. Duffy

Daniel P. Duffy

A new four-lane ring road encircles the Center, linking it with two downtown areas and Expressway I-290. Adjacent to the ring road are two five-story parking structures (right), strong elements in the overall design and important as buffers against traffic noise. The basic scheme was developed from a master plan by Sert, Jackson and Associates commissioned by the Worcester Redevelopment Authority.







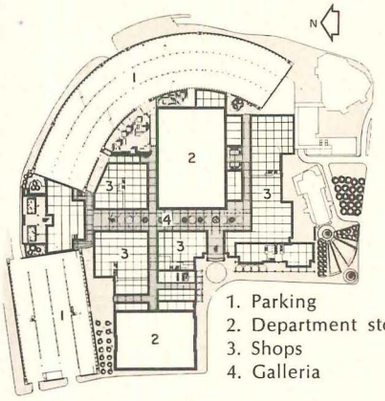
The sparkling Galleria with its vaulted skylight of white precast concrete arches, steel ribs and bronze Plexiglas, 60 feet above the floor at its center, is the center's special delight. Along its 475-foot length are some of the $800,000 worth of art works selected as integral parts of the architectural design by Annie Damaz: six fountains, benches, planters, moving light sculptures, and a mosaic-patterned brick floor by Paul Friedberg; stainless steel sculptures by Paul van Ringelheim, suspended from the center of the vault; nine ball-light fixtures (and the overall lighting which is as effective by night as the day-lighting is by day) by Seymour Evans & Associates; directional and informational pylons by Chermayeff and Geismar; and a sunburst over the escalator at the main entrance by Otto Piene.

WORCESTER CENTER, Worcester, Massachusetts. Architects: *Welton Becket and Associates, Fred van Gaasbeek, project architect, Marvin Gosinsky, David Beer, project designers.* Engineers: Wayman C. Wing, *structural; Cosentini Associates, mechanical/electrical.* Landscape architects: *M. Paul Friedberg & Associates.* Lighting: *Seymour Evans & Associates.* Art program: *Annie Damaz.* Graphics: *Chermayeff and Geismar Associates.* General contractor: *Beacon Construction Company.*

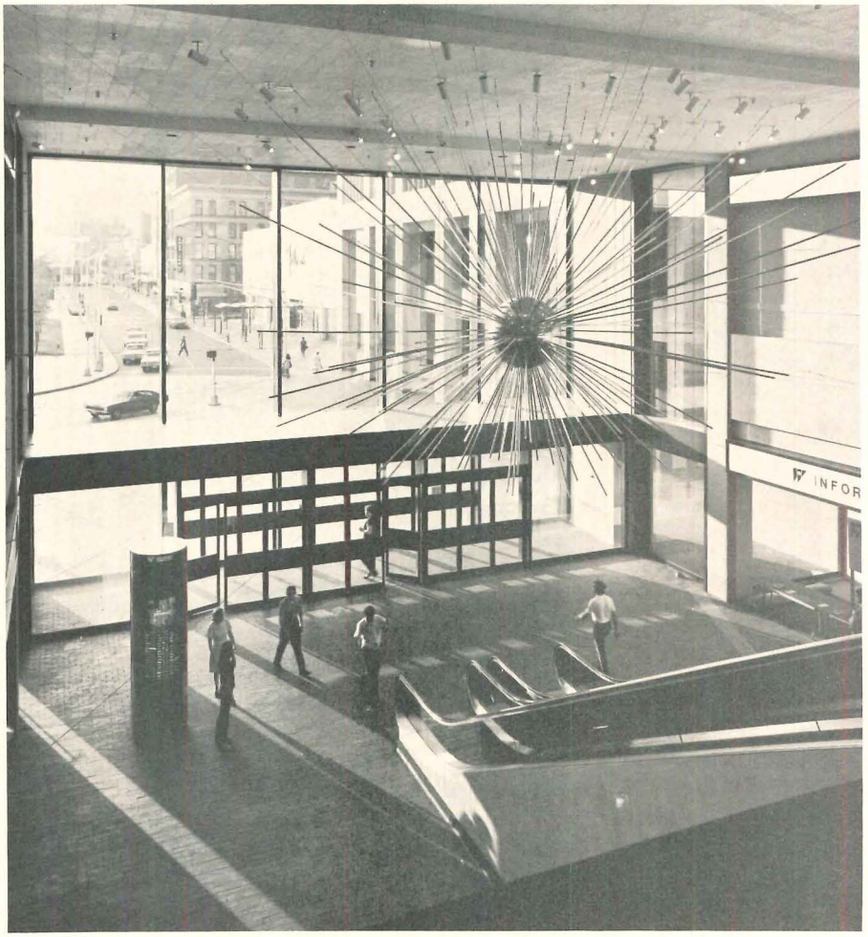
Gorchev and Gorchev

Gorchev and Gorchev

The Galleria, with its limited palette of colors and materials, its landscaping, fountains, light and art points up the sophisticated character appropriate to a downtown urban location. Lacking street frontage, Jordan Marsh makes entrance from garage (above) interesting.



1. Parking
2. Department store
3. Shops
4. Galleria



A basic decision of the architects and collaborating artists was to use the circle as a motif for design. Paul Friedberg's mosaic paving (above) of light brick, laid in concentric circles, reflects this as do the information and direction pylons (below) of Chermayeff and Geismar. Light fixtures, planters, fountain bases, also use the motif. As the Center develops further—a third office building is under way, a hotel is in planning—it is expected to expand its role in the community.

David Beer

A report from Australia:

THE ENVIRONMENTAL CRISIS DOWN UNDER

Australia is following the lead of the United States in the rapidity of its urbanization and technological development, and in the extent of its exploitation of natural resources. Although her total population of under 13 million is only slightly larger than that of New York City alone, Australia shares many of its major environmental problems with the United States and other more densely populated advanced nations in the rest of the world. At a conference held in Sydney last May, which was sponsored by the Royal Australian Institute of Architects, leading Australian, United States, British and Japanese professionals discussed the future consequences of today's unplanned growth, and proposed strategies to circumvent its negative effects. Since Australia's problems are essentially global in nature the ideas and solutions presented at the conference should be of interest to architects and planners everywhere.

Text and photographs by Mildred F. Schmertz

Australia's problems are those of the planet

Australia is a sparsely populated island of three million square miles with fewer than thirteen million inhabitants, 88 per cent of whom are urban dwellers—a higher percentage than in any country in the world. Australia's major cities—Sydney, Melbourne, Brisbane, Canberra, Hobart, Adelaide, Perth and Darwin—have an aggregate population which exceeds that of New York City alone by only a few million. It is a white man's country, Western in its institutions, with few racial or cultural disharmonies. The Australian government carefully monitors the ethnic composition of its immigration. Its native aborigines represent only one per cent of the population and although they are unspeakably treated and becoming restless, they are not yet organized to effectively confront white Australia and may never be.

Australia is experiencing rapid economic development and intense foreign investment in its rich mineral deposits, on the part of the U.S., Great Britain and Japan. Foreign economic ownership and control has brought post-war prosperity and a high level of employment. Unemployment has for years ranged between one and 1.5 per cent as compared to the current U.S. rate of 6.1 per cent and Canada's 6.6 per cent. Inflation has become noticeable only in the 1970's, the cost of living increasing by seven per cent in 1971.

Such bare statistics suggest that, except for the current inflation, Australia is a good place to live and work and is getting better all the time. Why then did the Royal Australian Institute of Architects on the occasion of its Centenary Convention last May, decide to hold an international conference ominously entitled "The Consequences Of Today"? Because many of Australia's leading architects recognize that the quality of life for the Australian population as a whole has not increased to a degree commensurate with economic growth, and that on the contrary, it has declined disastrously in ways which parallel the environmental deterioration of more highly industrialized countries. In planning the centenary conference the architects hoped that solutions proposed for Australia's new problems would be found applicable to countries in all stages of development.

Poverty

Four per cent of urban Australians struggle to survive below a severe standard of need, and eight per cent exist below a slightly higher income floor. At least an additional eight per cent can be classified as poor and thus 16 per cent of the white Australian population form an impoverished class.

As in the U.S., technologically or economically deplaced rural workers are migrating to the cities. Rural Australia is in an unprecedented crisis. Great Britain on entering the European Common Market ceases to be a market for farm exports and

China has stopped buying wheat. Because of a decline in the wool market due to the development of synthetic fibers, the average wool-grower owes more money than his land is worth. Australia is totally unprepared for rural depopulation. No facilities exist for training the dispossessed farmer in the skills he will need to join the industrial work force. Abandoned rural housing stock is not being replaced in the cities, thus exacerbating the existing housing shortage.

The housing sprawl

It has been claimed that in Australia more people own their own single-family detached houses than in any other country in the world. Only a very small percentage live in flats. This is not as comfortable as it sounds. Well-to-do Australians lead unostentatious lives by U.S. or European standards in comparatively modest and pleasant suburban villas. But the lower middle class and blue collar workers live in economically segregated housing often at great distances from the husband's place of work. On the outskirts of Sydney new housing developments are being built without roads, shops, schools, clinics, day care centers, facilities for community life or any other amenities. The houses are occupied by one-car families. Mass transportation is inadequate. The husband takes the car to work leaving his wife and children stranded all day long in loneliness and mud.

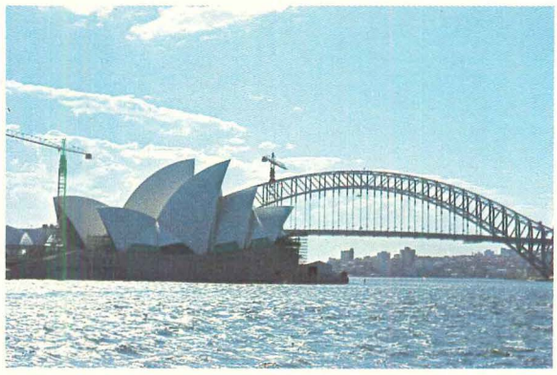
Australians suffer from soaring land and construction costs, and inadequate roads and sewers. Only in Canberra, Australia's famous Commonwealth capital planned by the American architect Walter Burley Griffin, are new houses linked to an existing network of paths, roads, sewers, parks, schools, clinics and community centers.

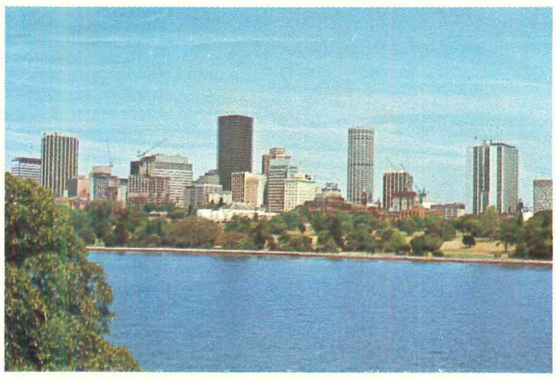
Pollution of air, water and land

On some days the air in traffic-jammed downtown Sydney contains 40 parts per million of carbon monoxide—more than usually occurs in any city of the U.S.—even Los Angeles. Australia's limited water resources are being polluted by industrial and urban waste. Mining of her vast mineral riches has gotten out of hand.

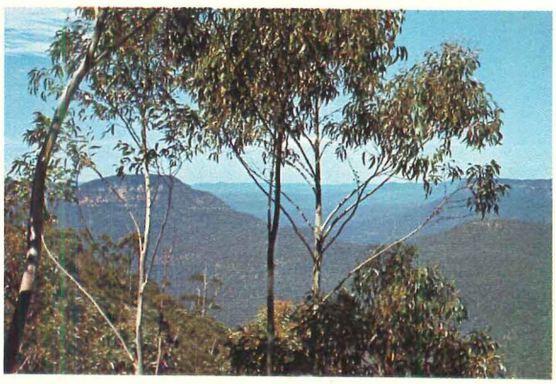
The eastern coast of Australia possesses two regions of great ecological and scenic wealth which are also priceless recreational lands for coastal city dwellers. Both are threatened with total ruin by foreign-owned mining interests. The Blue Mountains, which can be reached by train from Sydney in a little more than an hour, are part of Australia's national park system. So far, however, only enraged citizen protest has prevented their being mined by U.S. companies for low-grade coal to be sold to Japan.

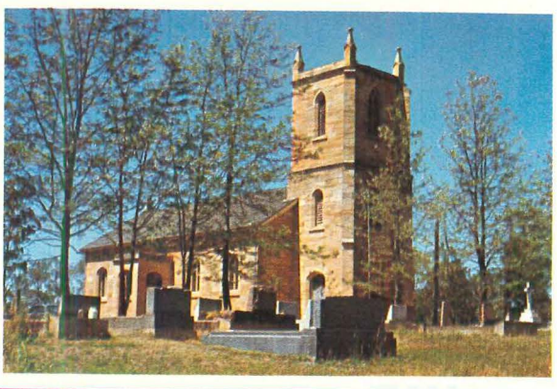
Two thousand miles of the east Australian coast with its surfing beaches and sand dunes are being mined for rutile (a source of titanium) causing the ruin of exotic plants, the extinction of wild life, the erosion of



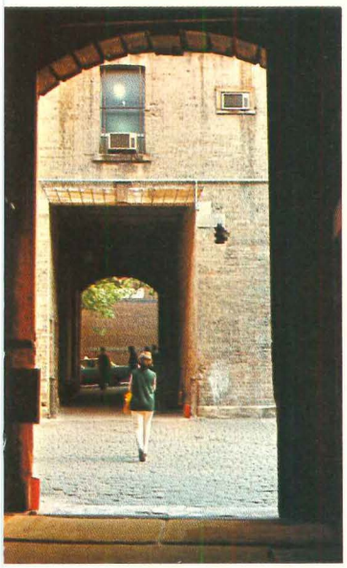


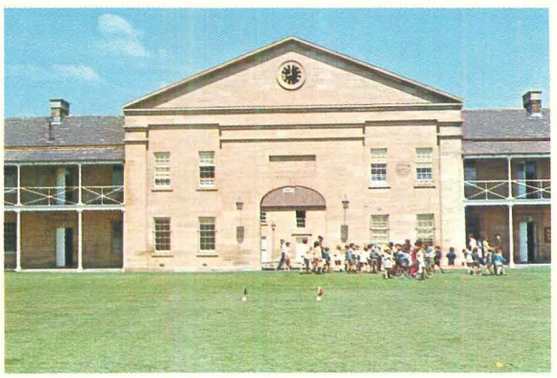
Sydney has a magnificent harbor, ideal for boating. Australians still consider it clean enough to swim in, behind shark nets. From across the water looking beyond Argyle Place toward North Sydney, it is a splendid sight as are the Sydney Opera House (now scheduled for completion in 1974) and the Harbor Bridge as seen from the deck of a ferry (middle). Even the downtown skyline with its ill-assorted collection of post-war office buildings becomes scenic when mitigated by water and distance (right).





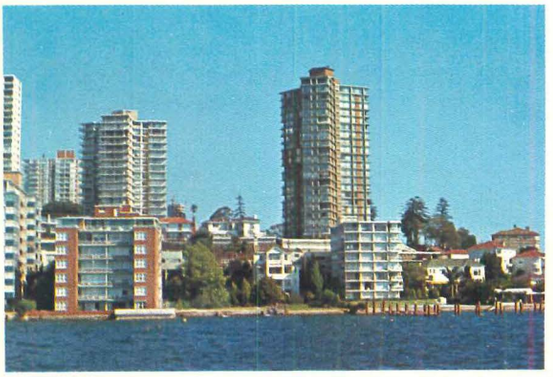
Unspoiled country like the Blue Mountains is not far away. They can be reached by train in a little over an hour. Weekend cottages are within walking distance of the small mountain stations along the way. These little vacation towns that have grown up along the railway are a 19th century legacy, still intact, which make it possible to own or rent a mountain cottage without also owning or using a car. These mountains are endangered by mining interests (see text) and will be protected only through citizen vigilance. The old church is only one of many beautiful or curious buildings to be found in the countryside a few hours drive from Sydney.





The city is beginning to respect its architectural heritage. Shown above is a portion of a 19th century area known as the Rocks which includes warehouses which have been remodeled into shops. The Victoria Barracks, a handsome late colonial structure (top middle) is open to the public. The house (top right) built in 1840 has been privately restored. Paddington (right) is a hillside neighborhood close to downtown Sydney which consists almost entirely of Victorian terrace houses. Once a slum, the area has been gradually restored, first by artists and intellectuals who scorned suburban life and wished to remain in town, and later by prosperous business and professional people. It has now become quite fashionable.

For many Australians, Sydney is still a good place to live...



Upper income town dwellers are well housed. The terraced apartments (right) overlook the harbor at Darling Point. Designed by the architectural firm of Ancher, Mortlock, Murray & Woolley they adapt to the hillside exceedingly well. Unfortunately most of the new high-income multistory housing constructed on Sydney's harborside cliffs resembles the buildings across the bay (far right). Wrong for the site, they still provide a comfortable life style.

shoreline and loss of the beaches. Since Australia is composed largely of vast areas of arid "outback" hardly fit for human habitation, Australia's conservationists consider it shocking that their government collaborates with foreign investors in the mindless destruction of the eastern coast. Unfortunately for Australia's future, the balanced climate, varied topography and the richness of animal and plant life make this fragile and lovely mountain chain, coastal plain and shore one of the few regions of Australia which are truly hospitable to man. If it goes, there will be little left.

Inadequate government mechanisms

Australia's federal Commonwealth government does less for its cities than the federal governments of the U.S., Canada or West Germany, for example, although its proportionate share of revenue is very much greater than in the latter countries. The cities themselves have not developed systems of local government which are structured to handle urban problems. Of the major Australian cities, only Brisbane has what the U.S. would consider a consolidated structure of city government.

In Australia the city governments are subordinate to the states. Unlike American cities they are excluded from the management of their police force, housing, education and other functions usually handled at the local level. Except for local property taxes the states retain and have authority over all sources of revenue including monies obtained from the federal government.

All income taxes are collected at the federal level and the states are dependent upon Canberra for tax redistributions. The state governments, like those in the U.S. favor their rural constituents. Gasoline taxes flow back to the states for rural road construction. Many federal-state cost sharing projects are high-visibility endeavors conceived for prestige purposes and votes. So far, there has been no significant federal or state funding for urban planning and development or environmental regulation. The cities lack both the authority and money necessary for the development and implementation of plans. A new master plan, however, has been prepared for Canberra, and the Council of the City of Sydney has made public its Strategic Plan, prepared by a team which included McConnel, Smith and Johnson Architects.

Public apathy

Australian architects and planners ask themselves privately if the Australian public will get behind the efforts being made by Australian intellectuals to set urban and environmental priorities. Many observers have noted that the typical Australian is quick to give serious matters a mental brush-off: "She'll be right mate" he says and continues to vote his pocket book. Over fifty years ago D. H. Lawrence wrote in *Kangaroo* of "the profound Australian indifference which is not really apathy. . . . The bulk of Australians don't care about Australia . . . because they care about nothing at all, neither in earth below or heaven above. . . . And they live in slovenly defiance of care of any sort, human or inhuman, good or bad. . . . It seems to me they think it manly, the only manliness, not to care, not to think, not to attend to life at all, but just to tramp blankly from moment to moment and over the edge of death without caring a straw—the final manliness."

Today Donald Horne in *The Lucky Country* sees no improvement in his countrymen: "Themselves calculating, materialistic and optimistic, Australians find it hard to accept that quixotry, pessimism, spirituality, desire for defeat, boredom, love of rhetoric or risk, of wielding power for its own sake —all ratbaggery these—may often impel action."

If these critics are right, the Australian mass public cannot in its present condition be expected to ponder, as citizens, so delicate and subtle an issue as the quality of life. But the speakers at the RAIA conference warned that they must.

Pragmatists and Cassandras

The RAIA conference speakers included architects and planners from the U.S.: Serge Chermayeff, Ian L. McHarg and the economist James H. Weaver; architect Fumihiko Maki from Japan; and architect and planner Sir Robert Matthew and sociologist Raymond Pahl from Great Britain. The other speakers were Australian and included two leading sociologists Fred Emery and Raymond G. Brown; the biologists Stephen V. Boyden and Sir Macfarlane Burnet; business leaders Gordon P. Barton, F. S. Buckley and Michael Baume; the historian Hugh Stretton and politicians E. G. Whitlam, Member of Parliament and Leader of the Opposition and the Honorable Ian Sinclair, Minister for Primary Industry.

Of those few speakers who commented upon problems specifically Australian, perhaps the most interesting proposals were offered by political opposition leader Whitlam: "It is my conviction that the great national issue for 1972 can and should be made the urban issue. The powers and policies required for effective urban development should for the first time take the center of the national stage. I invite you to participate in this great undertaking. . . . [further] the Commonwealth Government could take such an approach by establishing a Department Of Urban Affairs . . . [which] will encourage the states to strengthen their planning authorities . . . [Such a department's power to appraise applications for urban grants] will provide an incentive for planning authorities to coordinate their designs before making an approach."

Of the many speakers who chose to deal with environmental degradation at the scale of the universe, the economist James H. Weaver, and the biologist Sir Macfarlane Burnet demanded the most drastic counter measures. Burnet urged that all over the world every possible incentive be used to reduce family size to no more than two children; to reduce production of all goods which are in excess of the primary human requirements; to eliminate all advertising in favor of simple information as to where consumers can find what they need; to ban all imports except knowledge and such raw materials as are not locally available, to export only what is required to balance the imports and, most revolutionary of all, to close down all marginal and pastoral land for conversion to national parks. Burnet is aware, of course, that the establishment of such a list runs counter to established human attitudes. As he pointed out: "to change the universal objective of every country from expansion of population, of national production, of armed forces, of import and export trade, and from a rising standard of living, to almost the opposite in every instance may be completely impossible . . . [nevertheless] science and technology, and the use of high level intelligence to manipulate our legal conventions have produced the vast organizations that are destroying the non-recurring resources of the earth and producing from them weapons, poisons, explosives, unnecessary vehicles and every other frightening manifestation of what human nature is and how it can be manipulated for someone's gain."

Economist Weaver began by expressing his amazement that architects who depend for their livelihood on an expanding economy and a high rate of technological development should be taking a look at its negative results. He then called for less technology, the elimination of automobiles from our central cities, the taxation of polluters thus raising the cost of pollution-creating goods and reducing the number produced and sold, comprehensive national land use planning, decentralization of government and industry, distribution of income on a basis other than jobs, and a restructured and reduced work week. He proposed that we construct pollution-free cities "for those who might prefer to do without air, water and noise pollution and are willing to do without cars, airplanes, motorcycles, gasoline powered lawn mowers, etc." He even suggested that we admit people to our parks and other beautiful natural areas by lottery allocating non-transferable tickets for people to visit Yosemite, Hawaii, Tahiti and the Riviera.

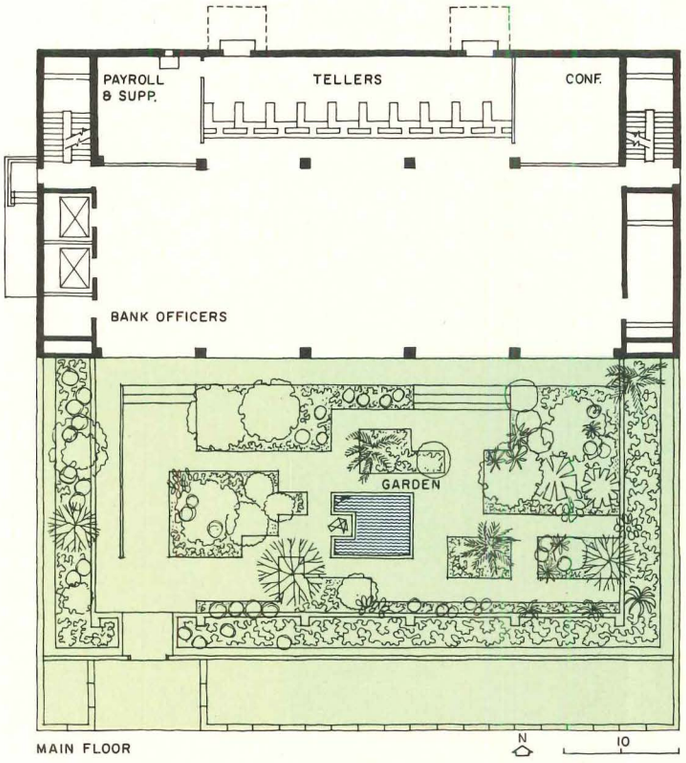
Finally, Weaver told his audience that we must share the earth's output fairly "since it is obviously impossible (from an ecological point of view) for today's poor countries to industrialize and pollute the environment like Americans, Europeans and Australians. If everyone in the world behaved like we do life on the planet would come to an end."

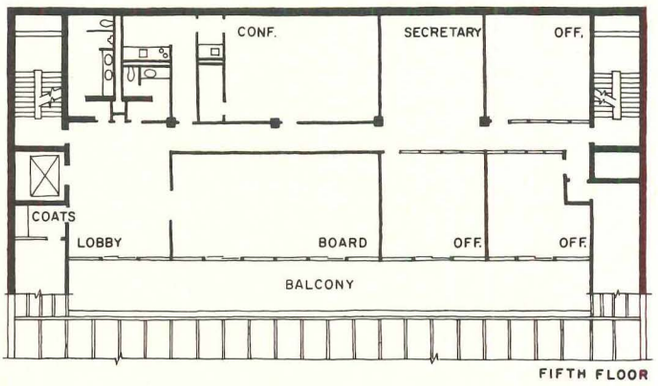
C & I BANK: A WEDGE FOR MEMPHIS

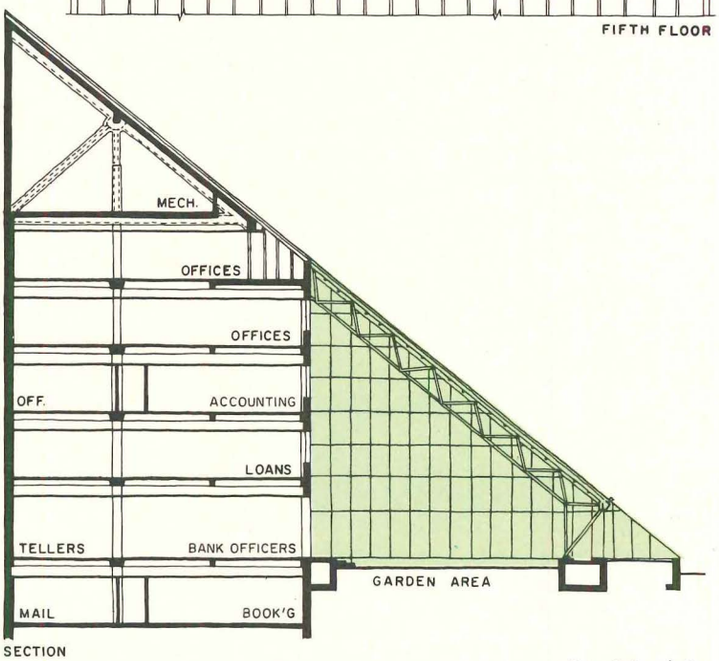
When a traditionally conservative bank decided to revitalize its corporate image, architects Gassner-Nathan-Browne were retained to design a new and decidedly non-square headquarters. Now, the bank's customers can linger, between deposits, in a lush, urban garden sheltered by a tilted and colorful space frame.

The new C&I Bank in downtown Memphis combines an owner's wish for greater visibility with an architect's desire to develop a highly individualized building form. The result is a striking, 44,000 square foot, triangular structure brightened by a large, richly planted entrance plaza on its south side. The plaza is covered in gray-tinted solar glass supported by a system of sloping, steel pipe trusses. The volume enclosed is strongly sculptured, generously tufted with greenery and patterned with a shifting filagree of shadows cast by the overhead truss system. To keep the greenhouse atmosphere from becoming objectionable, the designers have installed a perimeter air supply system at floor level and a dew point exhaust fan that prevents excessive condensation on the sloping glass wall.

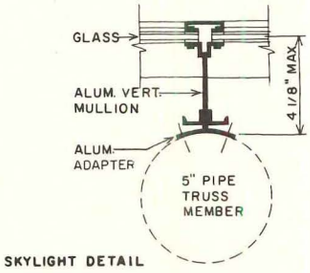
The main banking floor is adjacent to the garden. The tellers' area is located so that it can also serve drive-in customers at the rear. Floors are carpeted for comfort and acous-



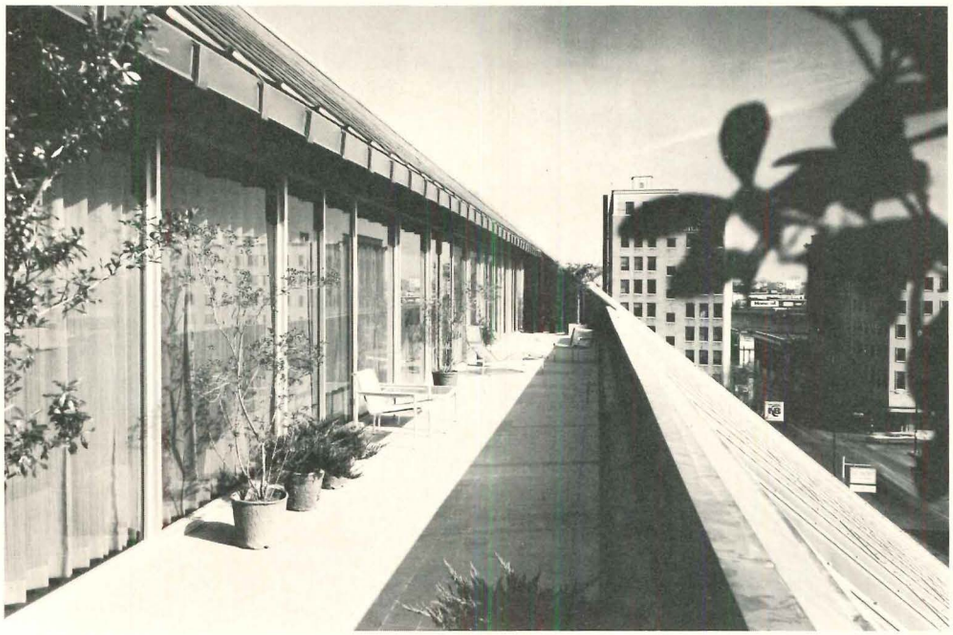




The detail at right reveals that special metal adapters, welded to the mullions, lift the glazing line several inches over the structure of tube sections. Plans above show a regularized structural bay 18 feet wide and 32 feet deep.



Otto Baitz photos



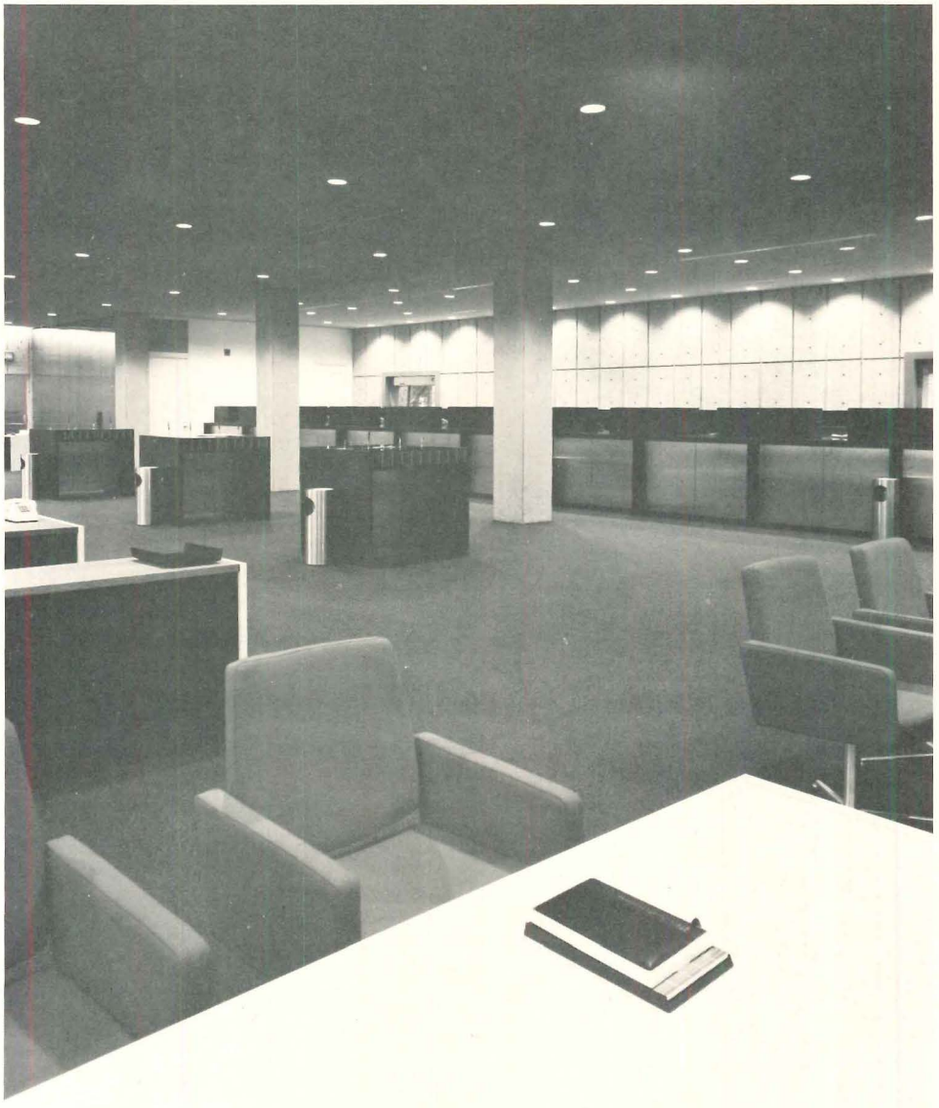
tic control and furniture is arranged in logical, but flexible groupings.

Above the banking floor (see section) are three levels of ancilliary space that overlook the enclosed garden. The fifth floor is executive office space and provided with a long balcony facing south. The uppermost level, forming the apex of the triangle, is mechanical space that vents to the north.

All exterior walls are poured-in-place architectural concrete, sandblasted and sealed with silicone. Above the fifth floor, the building has a metal, standing seam roof.

The building's strong but simple form, the assurance of its detailing and the amenities it offers, make it a welcome addition to the city's inventory of new commercial space.

COMMERCIAL and INDUSTRIAL BANK, Memphis, Tennessee. Architects: *Gassner-Nathan-Browne*. Structural engineers: *William J. LeMessurier, Associates;* mechanical engineers: *Office of Griffith C. Burr, Inc.;* landscape architects: *Robert C. Green & Associates;* contractor: *J. A. Lucchesi Construction Company, Inc.*



The bank's interiors display a high level of comfort and craftsmanship. Colors are vivid red for chairs, white plastic laminate for desk tops and counters, muted blue-gray for carpeting. Natural daylight extends well into the main floor banking space. Recessed fixtures wash the walls behind the tellers.

Industrial buildings: toward higher standards for design

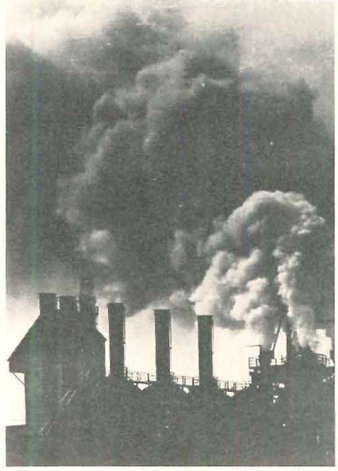
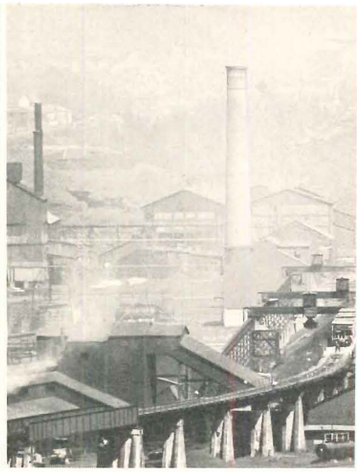


photo courtesy of EPA



Paul Conklin photos

Drive along any road toward a major airport and, chances are, plants and light manufacturing buildings will line the road left and right. Leave any city by train and, as you lurch through the city's margins, staggered rows of warehouses and factories will crowd your vision. Sail down any inland waterway and count the pulp mills, the petrochemical plants, the tank farms and the gravel quarries. Nearby, often on these same waterways, are sewage treatment facilities and municipal incinerators—the Rosencrantz and Guildensterns of industrial buildings playing out their thankless roles mostly in sullen anonymity.

But despite their variety and profusion, particularly along avenues of transport, and despite the fact that many millions of workers spend half their waking hours there, too many industrial buildings reflect little more than an owner's desire to keep rain off his machinery. Crude in massing, clumsy in detail, noisy, sometimes dangerous, fretted with large signs and bad graphics, these buildings provide us with a familiar brass knuckle esthetic—an esthetic we have accepted, until recently, with tolerance; an esthetic we can easily associate with time clocks, lunch pails and three-fingered jointer operators.

Whether this easy acceptance will continue now seems uncertain. There are many hopeful signs that as environmental concerns mount, as social values receive increasing emphasis, as a new work ethic begins to emerge, swelling numbers of us will look more closely at the places we work. Architects, as designers of these work spaces, will be among those looking and listening most critically.

Toward safer employment

Thousands of complaints, ranging from fumes, dust, dirt and noise to unsafe chemicals and radiation poisoning are received by the U.S. Department of Labor each year. Under pressure from the mounting number of such complaints, Congress passed the Occupational Safety and Health Act of 1970 (Public Law 91-596). Under this law, which covers 57 million workers, certain occupational hazards are being identified and removed. Many spokesmen for industry, however, argue that the law's provisions are too expensive to implement. Some of their arguments are persuasive. In any event, much systematic research on worker safety remains to be done and funds for such research have not been bountiful.

Toward more agreeable workplaces

The buildings in this study are offered as evidence that good design can emerge in ordinary industrial materials and throughout the broad range of industrial types. The structure for The Republic (page 114), Parker Hannifin (page 118) and P. J. Carroll (page 122) are corporate headquarters as well as manufacturing facilities. This flagship feature doubtless influenced their budgets, but each is economically constructed out of simple, rolled steel shapes. The Hermetic Motor Plant for Westinghouse (page 120), is clad in corrugated metal sheet and handsomely detailed inside and out. The Air Freight Building #1 and the Adams Wastewater Plant (page 126) are executed inexpensively and unpretentiously in concrete for municipal clients who cared about quality and looked to architects who would provide it. Each of the six establishes a level of design and amenity that points toward a new standard.

Architects and clients

The owners of several of these buildings were already knowledgeable about design and construction techniques. As manufacturers of components to the aerospace industry, Parker Hannifin executives understood flow diagrams and how planning requirements are translated into building programs. They understood industrial assembly, stresses, steel detailing, welding techiniques and dynamic loading. They also understood that appearance counted. "The result," says Michael O'Sullivan, project architect for Albert C. Martin, "was that we understood and believed in each other from the beginning."

Newspaper publisher Robert N. Brown was also concerned about quality. His paper has a civic image and a reputation for integrity. He was also building on a prime, downtown site in Columbus, Indiana—a city conscious of its distinctive buildings.

The Adams Wastewater Plant presents the special case of independent architects retained for their design services by an enginering firm who maintained primary responsibility to the client. The results of this cooperation are seen on page 126.

Not all owners will be engineers. Not all sites are prime. But architects, designing with industrial components for clients who care about quality, can do much to raise the general level of design.

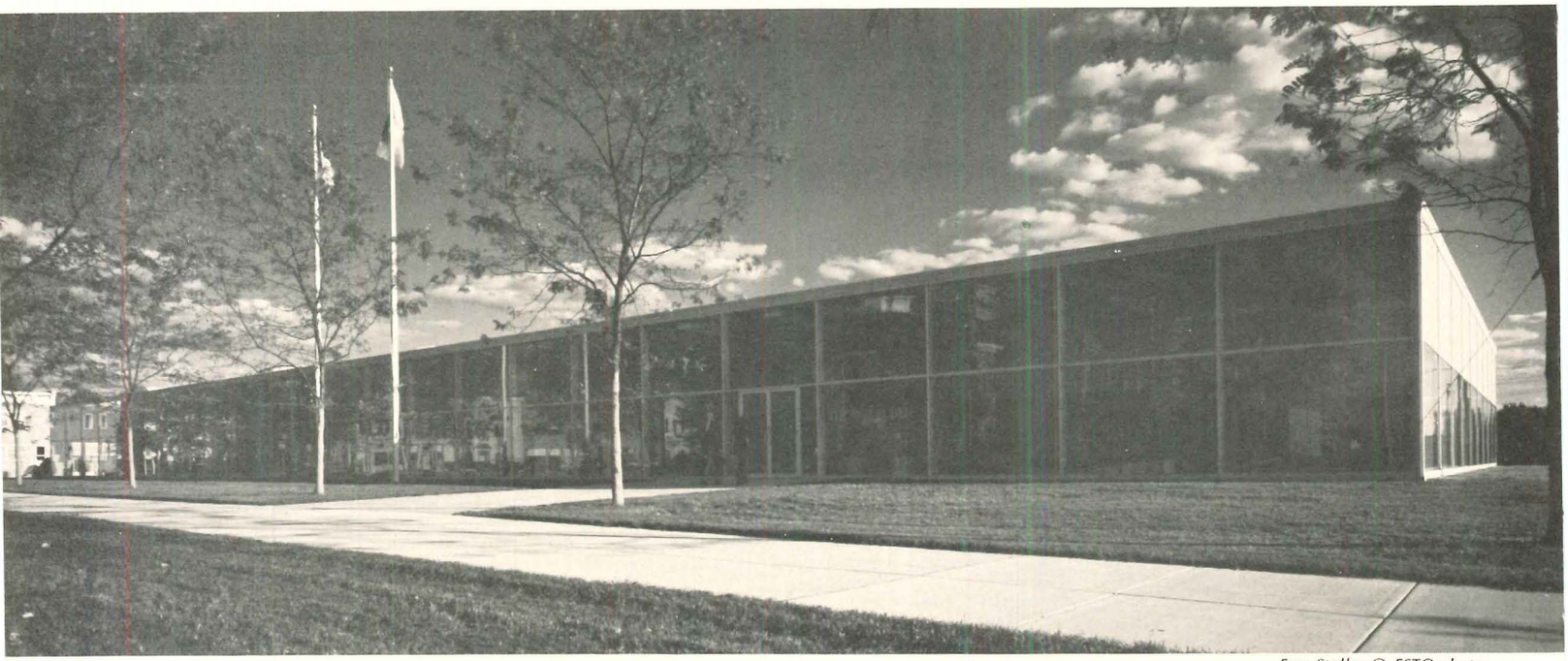
Industry depends for its continued good health on multiplying consumers and intensifying their de-

text continued on page 128

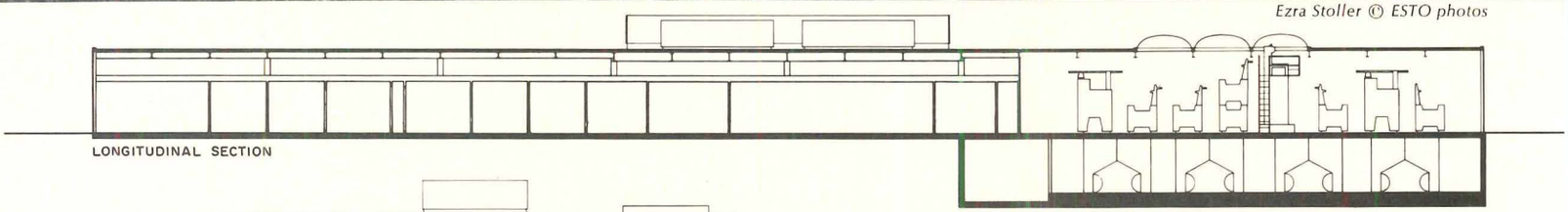
BUILDING TYPES STUDY 434 ®

The Republic:
A century-old, Midwestern newspaper builds with elegance and civic pride in a city noted for the distinction of its buildings and the architectural awareness of its citizens.

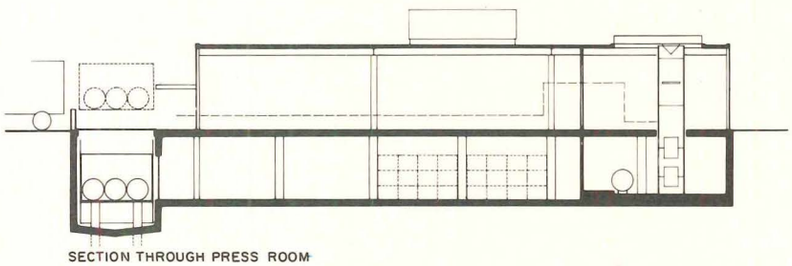
Relatively few businesses of any kind live long enough or achieve sufficient eminence to justly be called "civic institutions." *The Republic*, a hundred-year-old Columbus, Indiana daily *is* a civic institution. When owner-publisher Robert N. Brown decided to move and build again, he settled on a prime, downtown site opposite the city courthouse. He commissioned Skidmore, Owings & Merrill (Myron Goldsmith, partner-in-charge) with whom he had worked before, because he is an owner who cares and because Columbus is a city that cares. Delicately framed and detailed in light steel and sheathed in tempered glass, the finished building has a decidely "non-industrial" look. The decision to use large and vulnerable expanses of glass was not taken without considerable thought. A newspaper office, after all, is frequently the target of people with grievances both real and imagined. But because of the owner's confidence in his community and his conviction that a newspaper press is an exceptionally handsome piece of industrial design, the building was



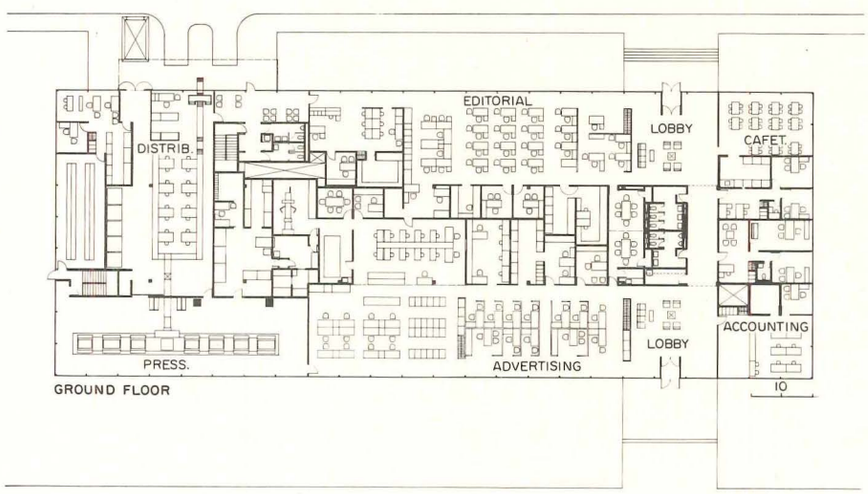
Ezra Stoller © ESTO photos



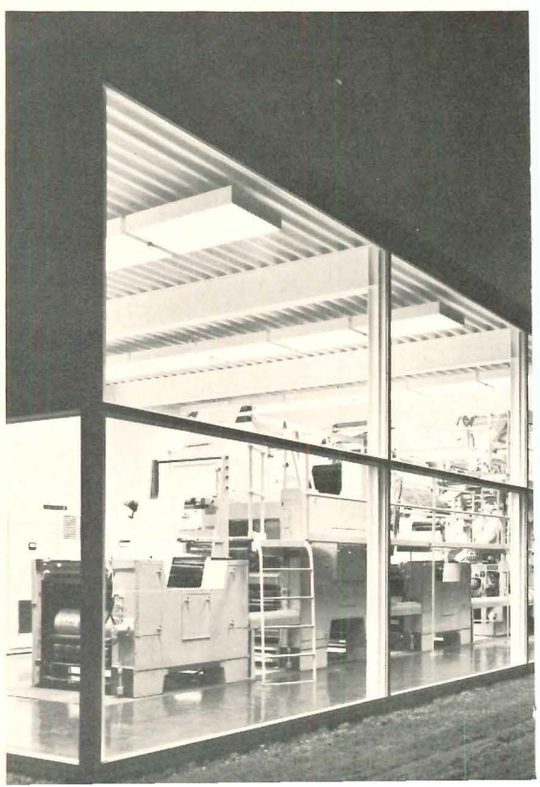
LONGITUDINAL SECTION



SECTION THROUGH PRESS ROOM



GROUND FLOOR



largely enclosed with glass. As a result, much of the journalistic process is continuously visible. "Few other industries," says Brown, "can do this with such impact."

The program, drafted jointly by owner and architect, called for general office and editorial space in addition to press and composing rooms. By floating the press on a special pad with footings independent of the main foundation, vibration through the building is minimal. By isolating the press acoustically behind a glass wall, the office spaces are quiet even during the daily press run which lasts about an hour. Across the glass barrier, the sound drops from approximately 90 decibels to a faint, scarcely audible rumble.

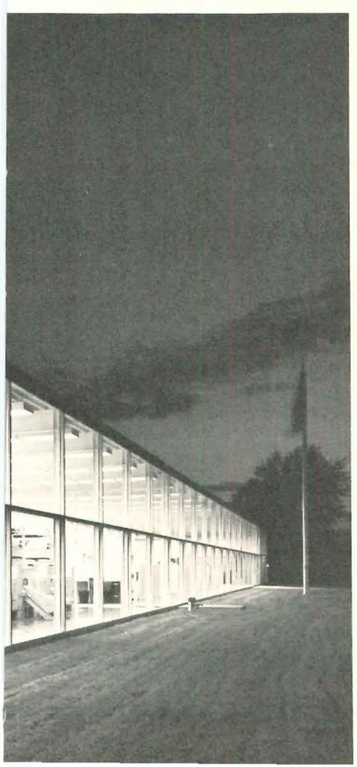
Lithographic offset printing does not generate any significant contaminants so special pollution control devices are not required. Normal newspaper wastes—paper, ink, silicone treated wrappers—are hauled away under contract. There is no incineration on the site.

The building employs single and multi-zone air conditioning units with ceiling diffusers and floor grilles at the perimeter walls. Mechanical spaces are located in the partial basement. Cost for the structure, less land and fees, was just over $30 per square foot.

The owner does not anticipate major expansion. The new building was oversized by the architects to accommodate some natural growth. If unanticipated expansion occurs in future, it will probably be in the form of a new press room to be located elsewhere on the site. For this reason, the architects planned and designed the build-

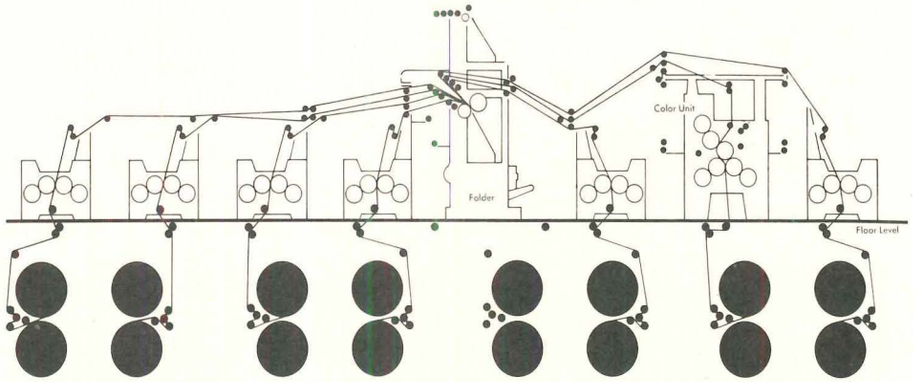
The new building for "The Republic" is an important part of the city's downtown renewal plan (also by Skidmore Owings & Merrill) that will soon include a two-block shopping mall. The architects kept the profile of the new plant as low as possible in deference to historic Bartholomew County Courthouse which stands just a block to the north—and is reflected gracefully in the new building's long glass wall.

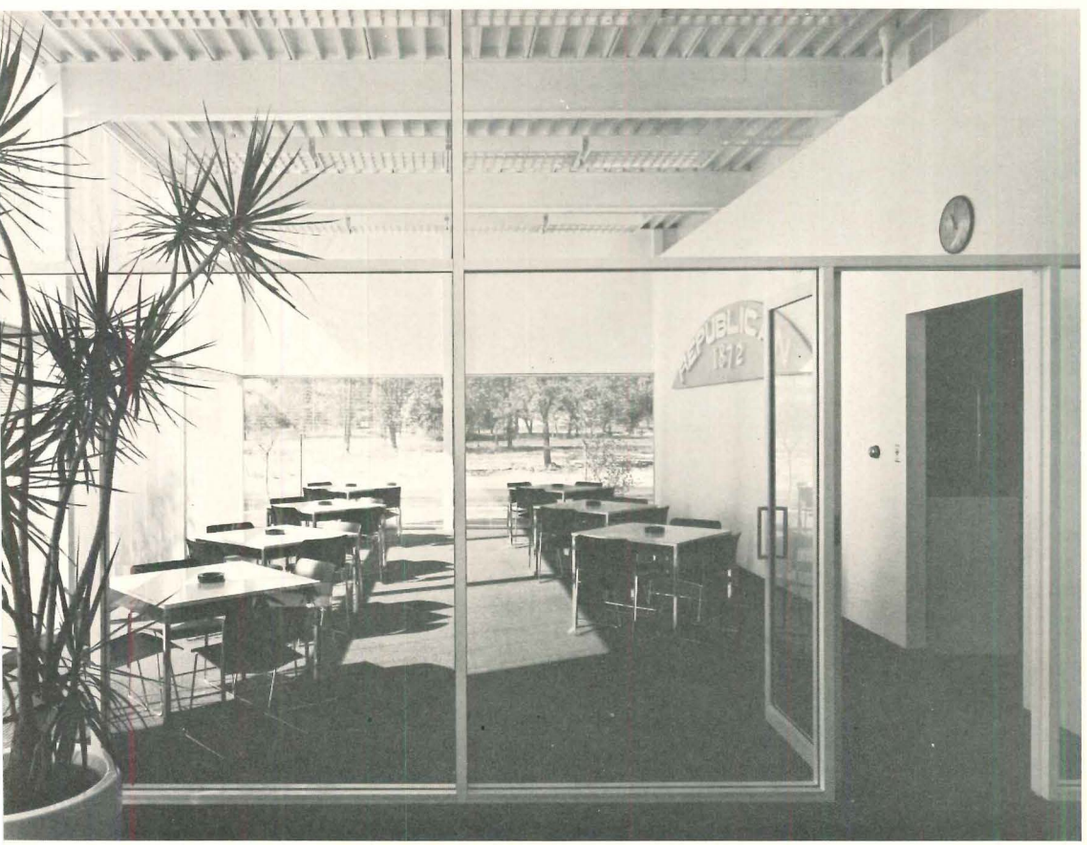
THE REPUBLIC, Columbus, Indiana. Architects and engineers: *Skidmore, Owings & Merrill* (Myron Goldsmith, partner-in-charge; George Hays, project manager; Jin H. Kim, senior designer; George Larson, interior design; Philip Thrane, job captain). Contractor: *Dunlap Construction.*



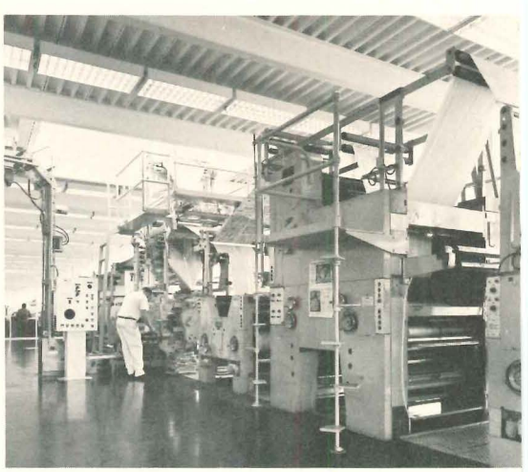
ing as a discrete entity.

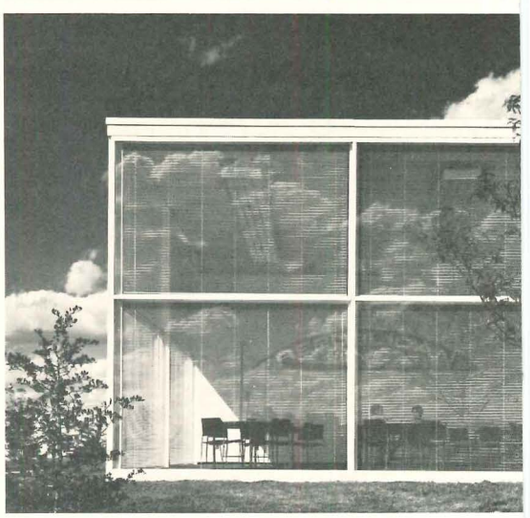
The Republic plant is an exceptional industrial building in terms of its location, its public function, the level of its finishes and the way in which its excitement is generated. Static in form, elegant in detail, the building shell is crisp but withdraws visually to emphasize its contents—especially at night (see photo below). As the photographs indicate, every surface, every intersection and every detail betrays a high level of design concern. This concern extends to the selection and place-





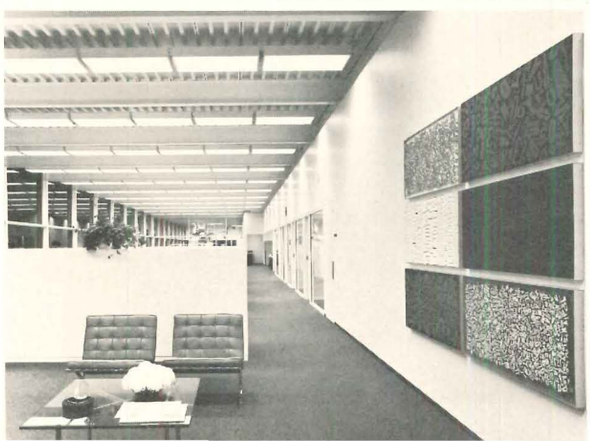
Rolls of newsprint 30 inches wide and 42 inches in diameter are located in the reel room under the press. The web feeds into each printing unit as shown. Printing is done simultaneously on each side as the web passes between two rubber covered cylinders. Printed webs are then collected in the center of the press where they are folded and cut to page size. At full capacity, this press can print 40,000, 28-page papers per hour.





ment of furnishings, the forthright use of bright primary color accents against a neutral background and the variety and richness of a small but carefully selected art collection. Says Brown of this highly individualized collection: ". . . although the building is quite modern in design, an effort was made to tie it in with some of the earlier history of the newspaper and of the community." In the main reception area, for instance, artist Norman Ives has designed a mosaic in low relief by arranging old wood type blocks into jumbled, abstract patterns (photo below). Seen through the glass wall of the employee's lounge (photo, opposite right) is the original sign rescued from the old building before it was razed. In the south lobby hangs a lithographic mural showing in aerial perspective what the city of Columbus is presumed to have looked like in 1886.

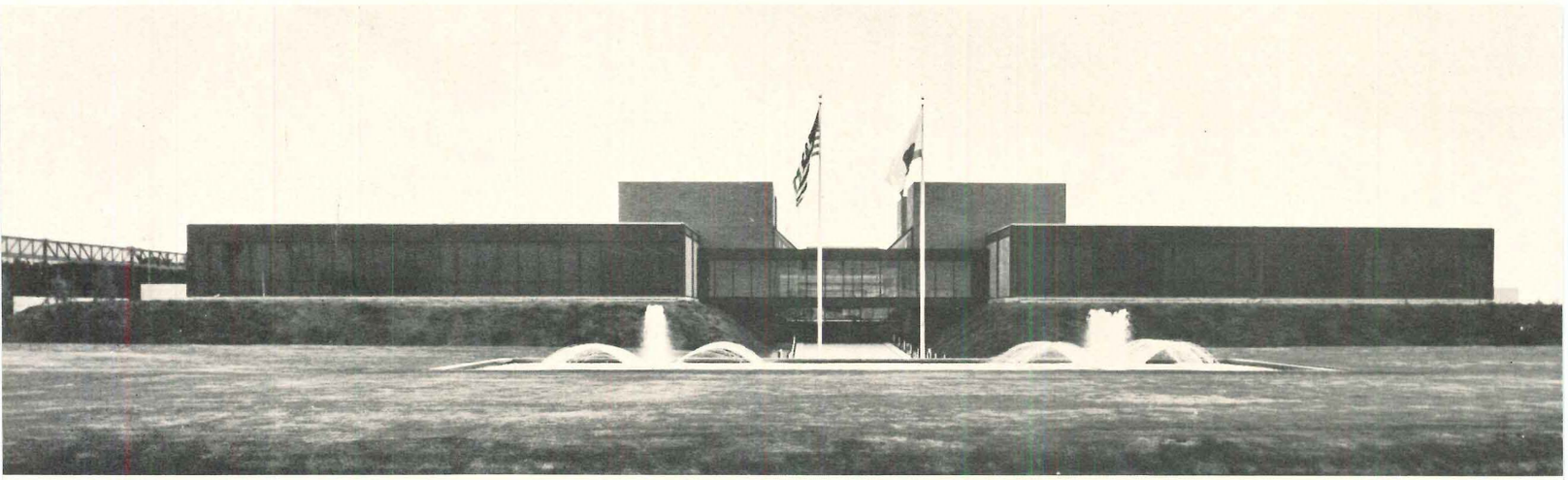
Stimulating, comfortable, dignified and intelligently planned, The Republic newspaper plant, by almost any measure, is very near the high end of the industrial building spectrum.

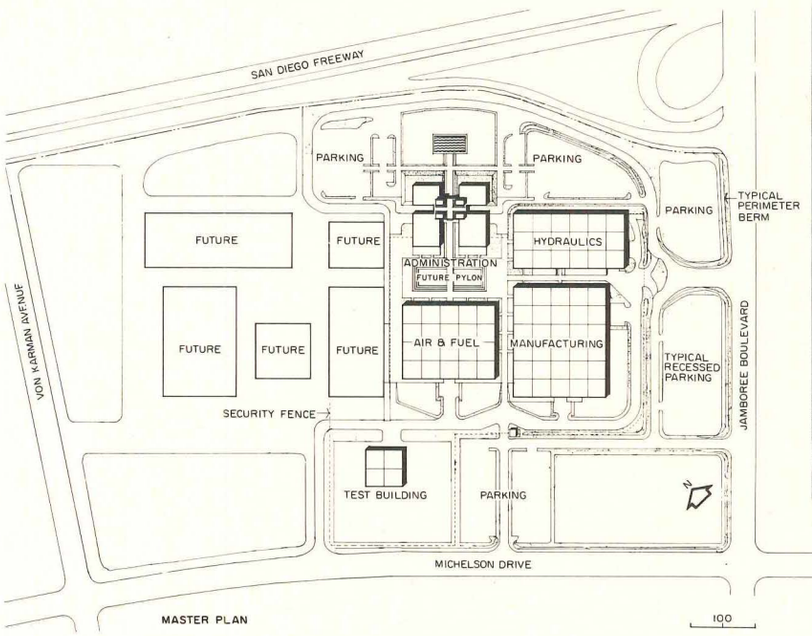


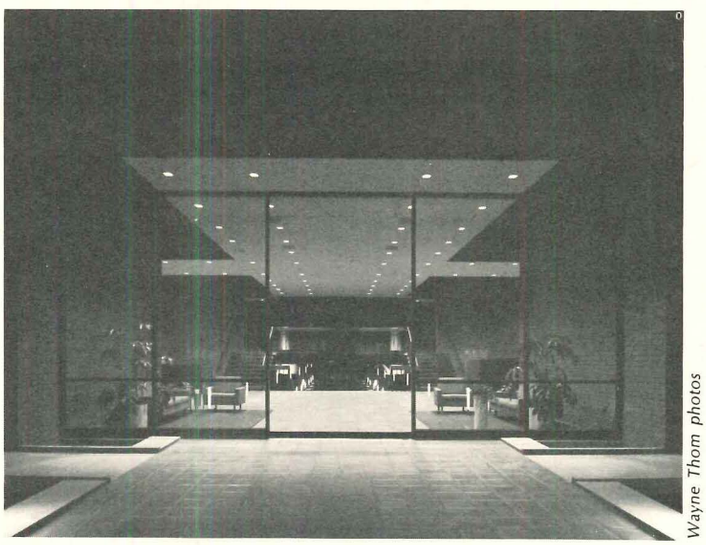
Parker Hannifin Corporation: This manufacturer of aerospace components wanted a contemporary image that would instill confidence in his product and credibility in his industry. What he got does both.

On a 74-acre site outside Los Angeles, A. C. Martin and Associates have planned and designed a headquarters and manufacturing facility for the Parker Hannifin Corporation which designs and builds components for the aerospace industry. The 4-building facility encloses some 300,000 square feet and is planned for incremental expansion as production requirements change. To provide this flexibility, the architects designed a moment-resisting frame composed of open web steel trusses supported on 12-inch diameter pipe columns laid out on a 60-foot-square grid. Infill panels are lightweight, tilt-up concrete with a sand-blasted finish. The panels are demountable in the event of expansion. The open webs of the trusses are glazed along the outside walls to admit daylight. Costs were within the budget—$23 per square foot for the office and administrative areas, $11.50 for the manufacturing spaces.

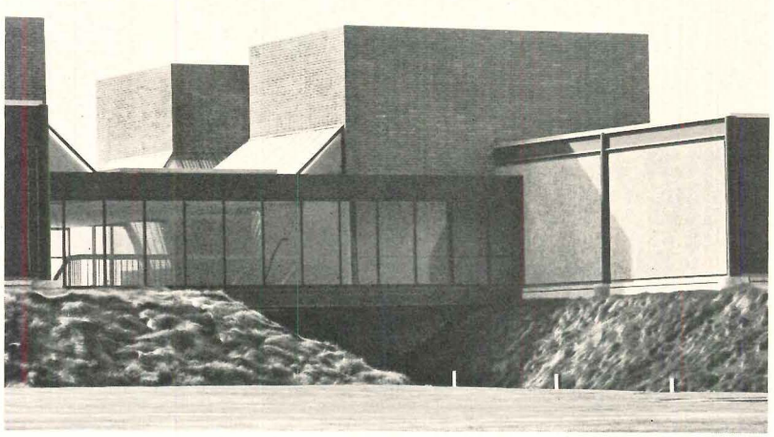
The client was aware from the beginning that what he needed was a factory. But he was convinced that within his budget, a pleasant level of employee comfort and

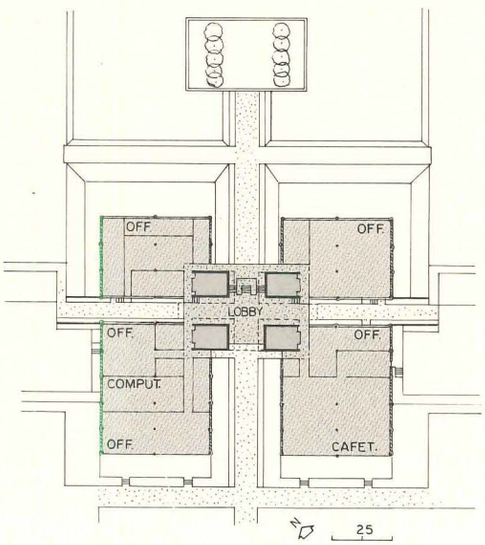






Wayne Thom photos

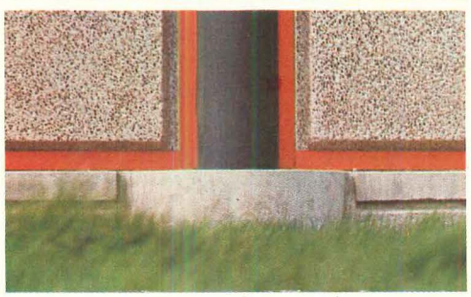




amenities could be achieved. He was right. At reasonable costs and within a fixed structural system, the architects have provided a surprising richness. The buildings are grouped in a campus-like arrangement around a landscaped court. Parking areas are screened with earth berms. The steel detailing is consistent and surehanded. Added richness is provided by the use of narrow bands of color accents—blue at the fascia, red to outline the infill panels (photos below). A handsome sequence of signs identifies each part of the complex and marks the routes between buildings. Berms are also used by the architects to screen the parking areas and to soften the effect of the encircling fence required by government security regulations.

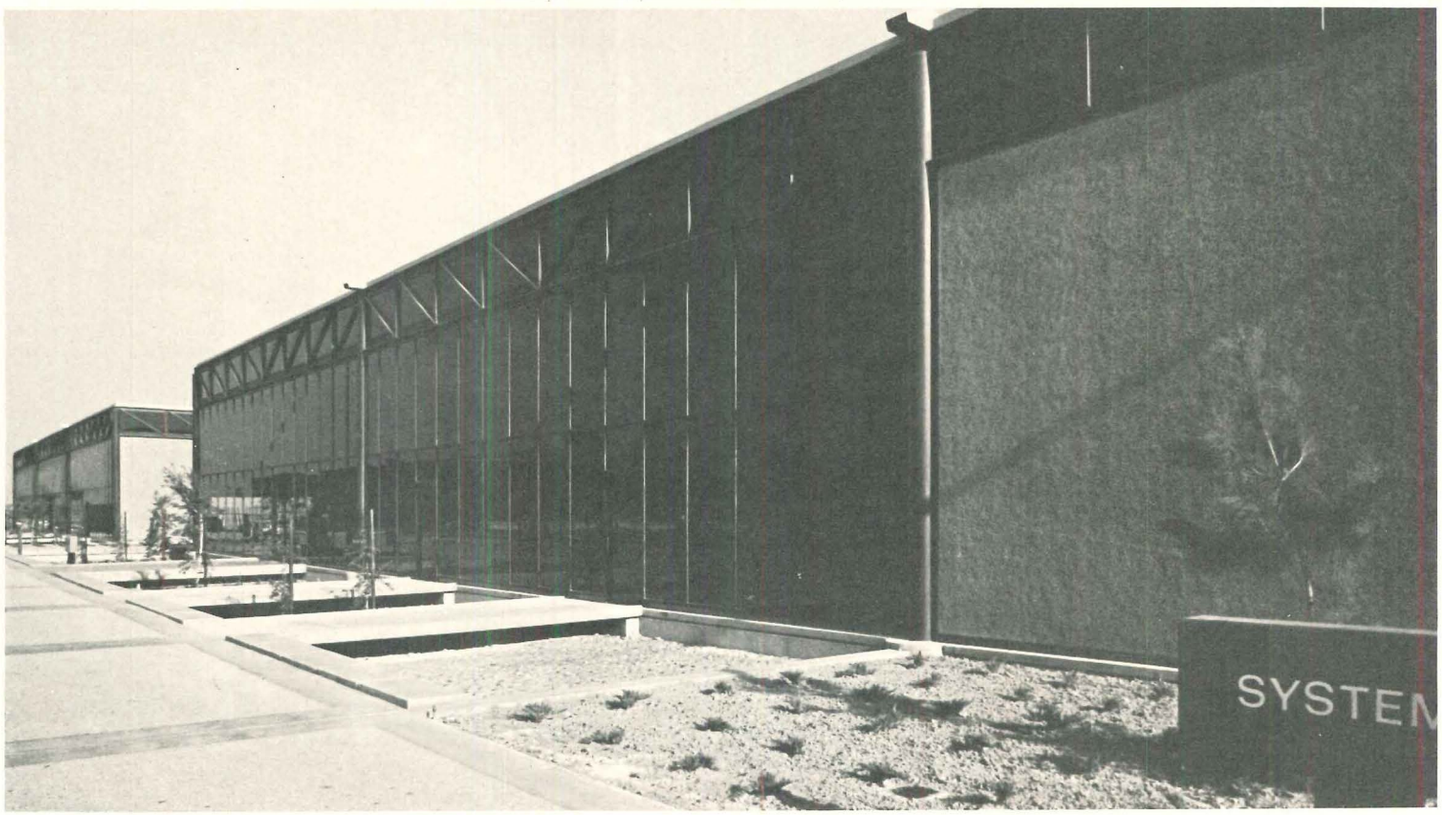
Because the firm is involved in research and testing, certain flammable chemicals and volatile fuels are in more or less frequent use. Operations that require the handling of such materials are largely confined to a deeply bermed chamber at the south end of the site. The industrial park in which this building is located placed deed restrictions in its leases that established upper limits for industrial noise. In order to comply with these restrictions, the architects located the noisiest test equipment in this same bunker. Inside, a network of filter traps protects against hazards created by accidental spillage of hydraulic oil or other troublesome liquids.

On the assumption that a building's quality affects the performance of those who use it, Parker Hannifin was willing to make a substantial, long-term investment in its people and its product.



A large reflecting pool graces the main approach and the twin fountains and flagpoles reaffirm the plan's axial symmetry. Major expansion will occur in the form of a new building cluster to the west of the existing complex (see master plan).

PARKER HANNIFIN CORPORATION, Irvine, California. Architects and engineers: *Albert C. Martin & Associates (John Day,* partner-in-charge; *W. Jay Smith,* project director; *Michael O'Sullivan,* project designer; *Aram Tatikian,* job captain. *Bill Huddleston,* structural engineer; *Don Teske,* electrical engineer; *Tony Tang,* civil engineer; *John Swiatnicki,* interiors; *Robert Morgan,* graphics; *Vince Walsh,* estimator); soils engineer: *Moore & Tabert;* landscape architect: *Erikson, Peters & Thom;* contractor: *Robert E. McKee, Inc.*



Westinghouse Hermetic Motor Plant: Corrugated metal cladding and crisp steel details in a Tennessee plant for a large, national corporation with a growing reputation for architectural quality.

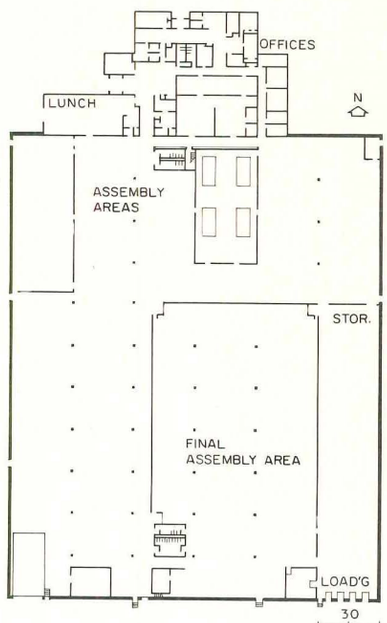
At this plant for Westinghouse in Athens, Tennessee, medium-sized (24 lb) motors are manufactured for subsequent use in refrigerators and air-conditioning units. After lengthy discussion with their client, architects Heery and Heery planned an integrated building instead of the more traditional bi-nuclear scheme that spaces out offices and manufacturing areas by inserting reception and service functions in between. This integrated solution mixes office and manufacturing areas together, thus reducing the inefficiencies of separation and reinforcing, in each employee, a heightened sense of belonging to the same large Westinghouse family. While this egalitarian impulse complicated certain of the internal circulation problems, it also provided a design opportunity. Large and small bay functions can be combined to animate the exterior by breaking down its scale and stepping the wall planes in and out.

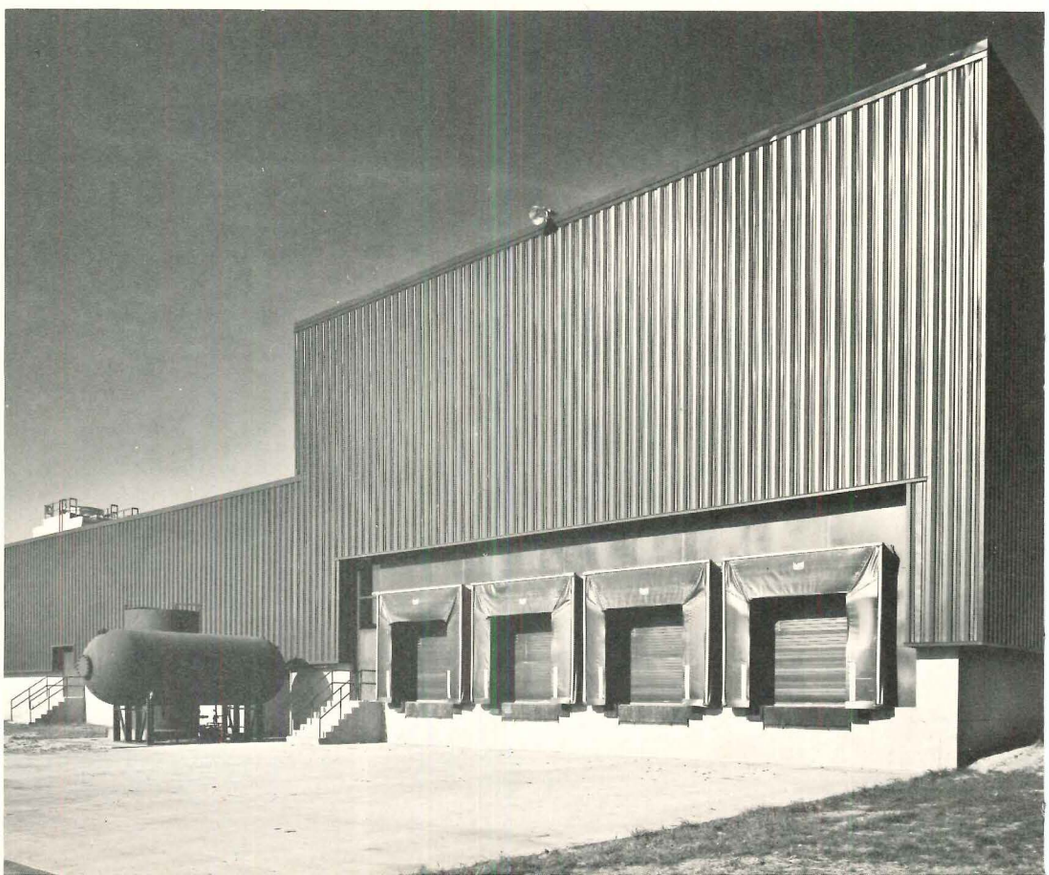
The building is framed in simple steel shapes and clad in corrugated metal sheet which, of course, textures the elevations consistently. The interiors, in the motor as-

Joseph W. Molitor photos

The site is pleasant parkland outside Athens, Tennessee. The level of the approach road is slightly depressed. The static, almost serene, quality of the exteriors contrasts sharply with the fluid, sweeping lines of motion in the high bay assembly areas (photos lower right). Light steel framing in columns, trusses and struts augments this kinetic character.

WESTINGHOUSE HERMETIC MOTOR PLANT, Athens, Tennessee. Architects and engineers: *Heery and Heery* (John Wurz, project director; Mack Scogin, project designer); contractor: Reittenbach Engineering Company.





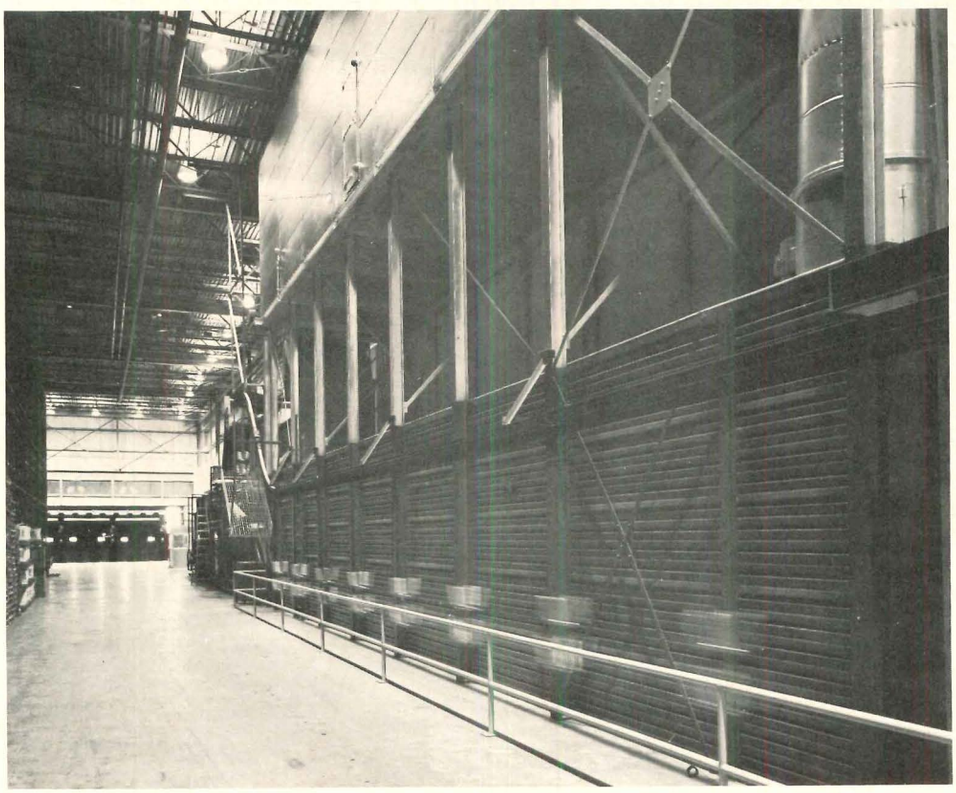
sembly areas, are mechanistic but dynamic —continually set in motion by long, sweeping lines of conveyors.

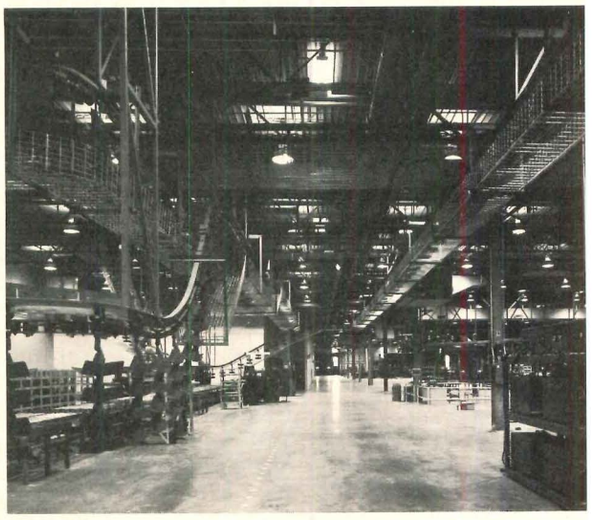
No unstable or especially hazardous materials are employed in this particular manufacturing process. Molten aluminum is the only potentially dangerous material in use and it is kept inside the injector where the threat it poses to personnel is minimal. The only process wastes are metal scraps which are collected in a hopper and returned for resmelting.

Heat and noise levels, however, are sufficiently high to require special treatment. The architects isolated heat and noise generating equipment behind masonry walls and floated some equipment on special pads to reduce vibration. These spaces evacuate surplus heat directly to the outdoors.

The high level of design concern extends to the sitework and landscaping. Pedestrian approaches and entrances are carefully studied. Shrubs, paving and small trees soften the visual impact of hard edges and crimped metal. Outdoor lighting fixtures are selected and placed for safety, efficiency and appearance.

As in the other buildings in this study, the Westinghouse Hermetic Motor Plant reaches for a level of amenity and design quality not often enough encountered in industrial building. By limiting the design vocabulary to simple geometric forms and by combining those forms with skill, the architects have created a workplace that is efficient, comfortable and thoughtfully planned. Why should the owner, the architect, the employee or the public continue to settle for less?

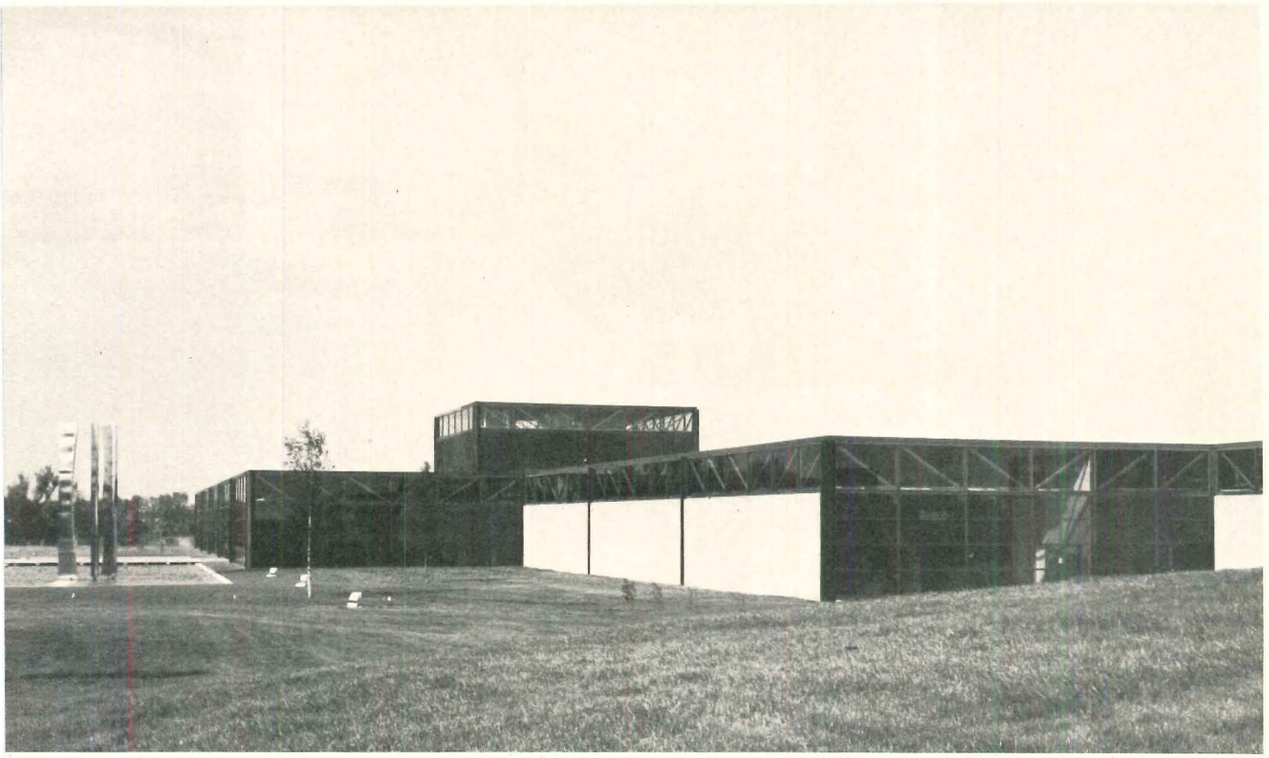




P. J. Carroll & Company, Ltd.: A new home in Dundalk for a tobacco processing firm that has long been, and continues to be, a significant presence in the industrial life of Ireland.

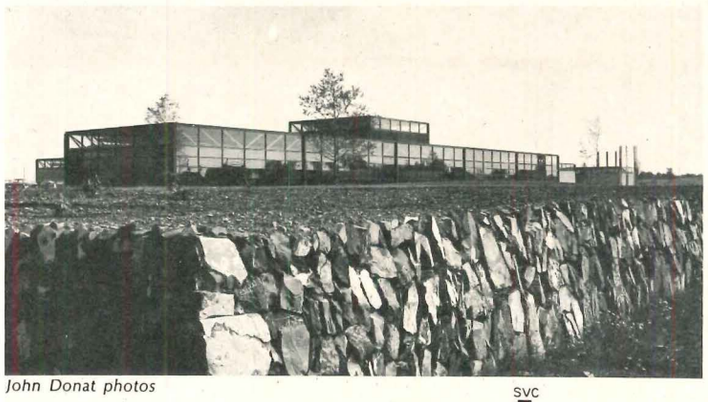
Carroll's tobacco factory has been a familiar landmark in Dundalk since its founding in 1824. in 1967, after numerous modernizations, the company's directors reluctantly abandoned the old site and purchased thirty acres just outside the city. They commissioned Michael Scott & Partners (Ronald Tallon, partner-in-charge) to design a new facility—a facility that would provide the comfortable, hygienic surroundings necessary to contemporary, heavily automated tobacco processing. The architects, after visiting new tobacco factories in various countries, prepared the drawings for the building shown in the photographs below.

Efficient operation and worker comfort were prime requisites. Because the business is competitive and the technology subject to periodic improvement, flexibility was also important. The Scott design addresses itself to all these needs. The entire four-acre structure is fashioned by the repetition of a single structural unit: a steel bay with a clear span of 67 feet 6 inches in both directions. The bay is framed out above with steel roof trusses 7 feet 6 inches deep—a depth suffi-

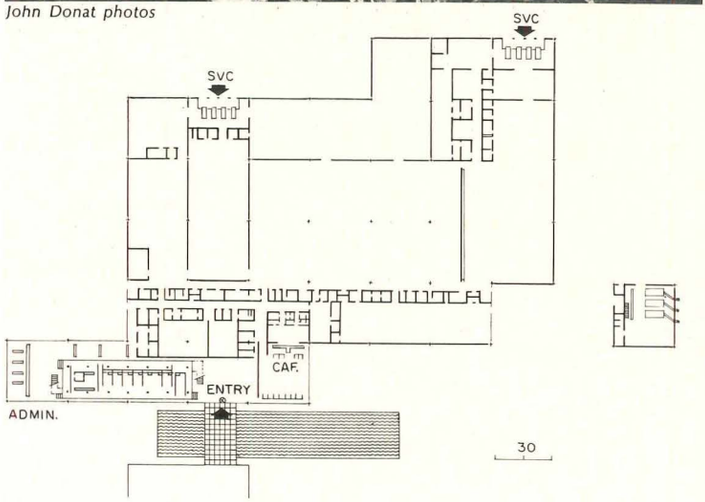


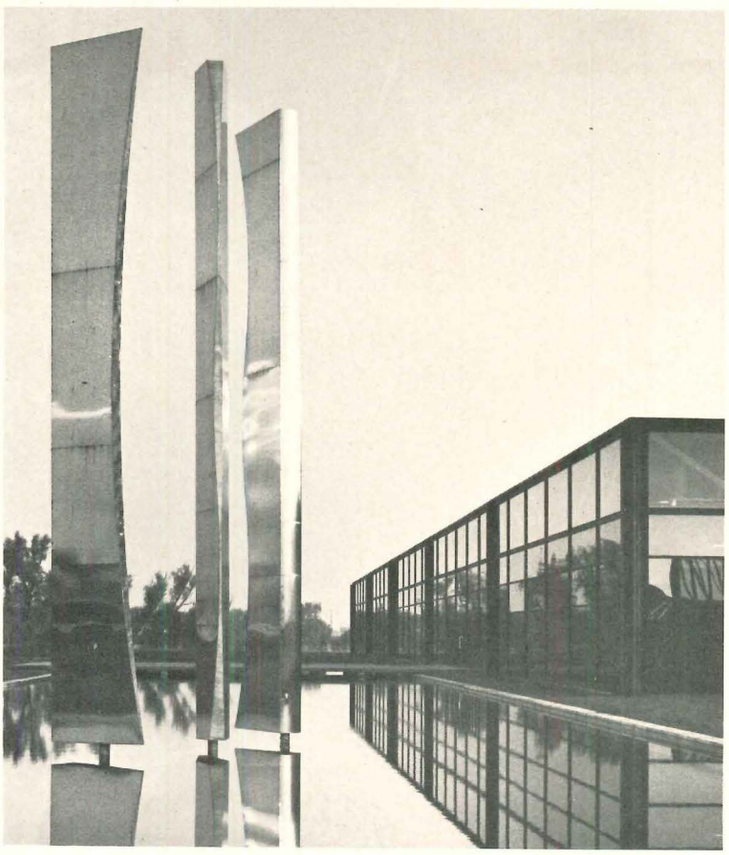
Though interior spaces vary widely in finish and function, the 67-by-67-foot structural bay is legible throughout. Parking for employees is at the site perimeter.

P. J. CARROLL & COMPANY, LTD., Dundalk, Ireland. Architects and engineers: *Michael Scott and Partners* (Ronald Tallon, partner-in-charge; Patrick Reeves, assistant architect; Charles Jenkins, mechanical engineer; Lawrence Kyne, electrical engineer). Structural consultants: *Ove Arup and Partners;* quantity surveyor: *Seamus Monahan.*



John Donat photos





cient to house and distribute all the complex mechanical and electrical services the factory requires. The whole structure is fully sealed and air conditioned.

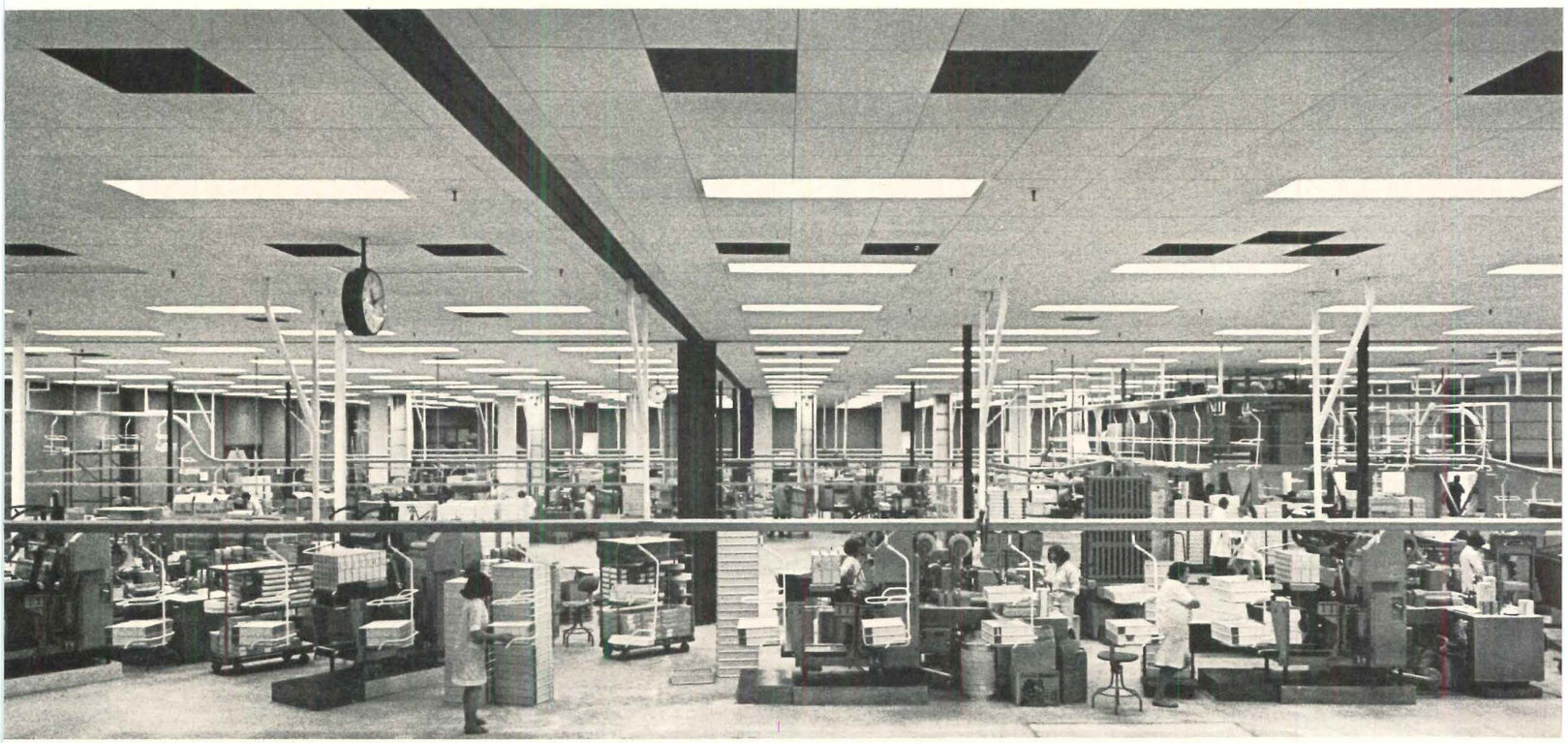
Expansion will be in 5000-square-foot increments to be located as functional requirements may dictate. This flexibility, inherent in the basic planning, strongly influences the building's appearance inside and out. The modular bays are clearly readable and do not lose their definition whether the infill panels are grey brick in the processing areas or bronze glass in the offices.

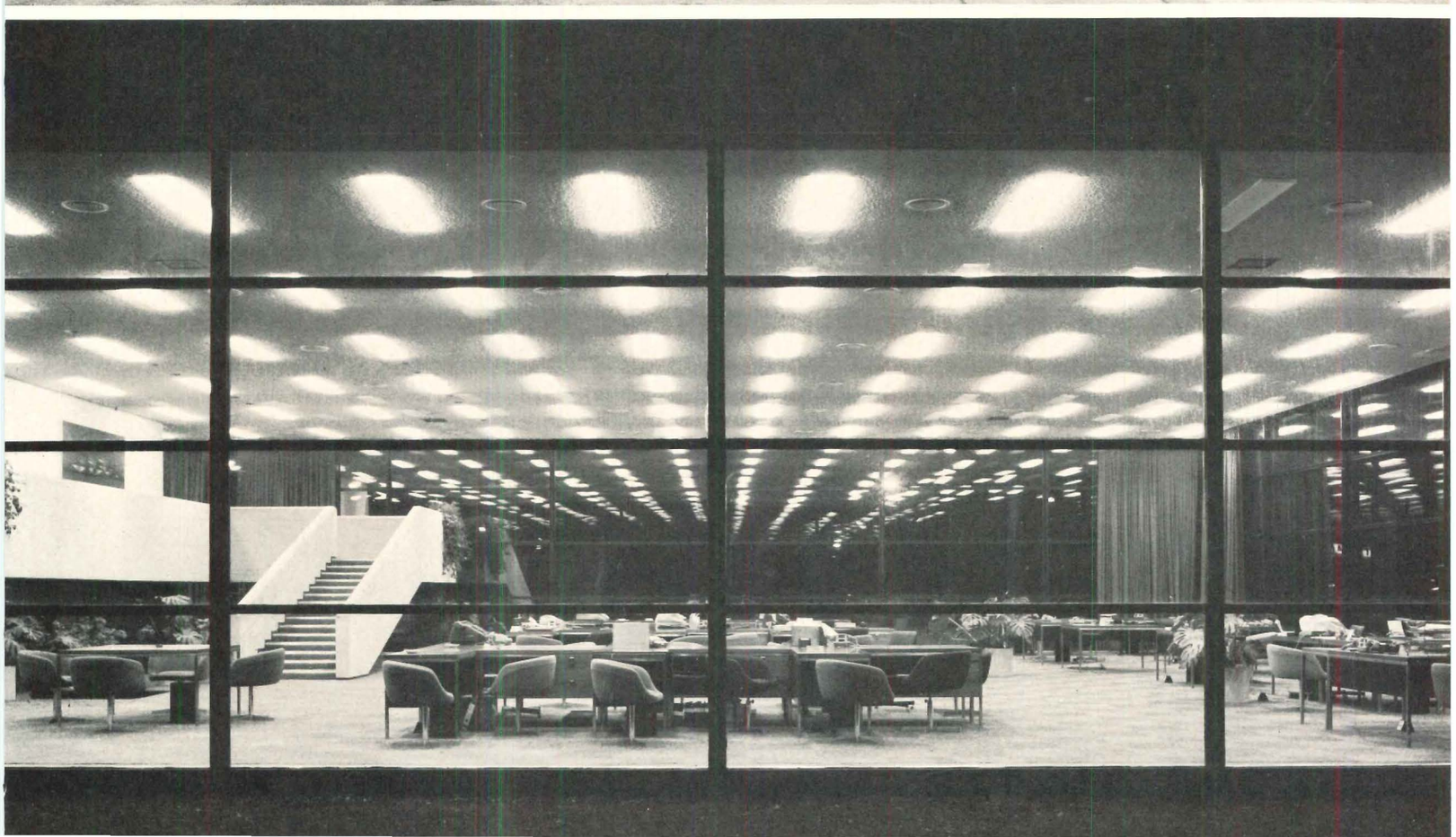
The structure meets the ground precisely, but around the building the land undulates gracefully to create a series of barely perceptible swales. Seeded with grass and lightly spotted with trees, these generous park areas are an amenity to be enjoyed by owners and employees alike.

Visitors to the Dundalk factory approach over a bridge that spans a generous reflecting pool. Rising up from this pool, like a welcoming sentinel, is a tall, three-shafted, stainless steel abstract. Elsewhere in the building, tapestries, canvasses and sculptures by leading Irish artists express the company's desire to broadly identify the arts with industrial enterprise.

Rationally planned and efficiently assembled out of simple, preformed parts, the Dundalk plant uses the coherent, international language of industrial building and uses it well.

The architects express confidence that the new Carroll factory will be one of the most modern tobacco processing plants anywhere for many years to come. Total cost was approximately $4.5 million.

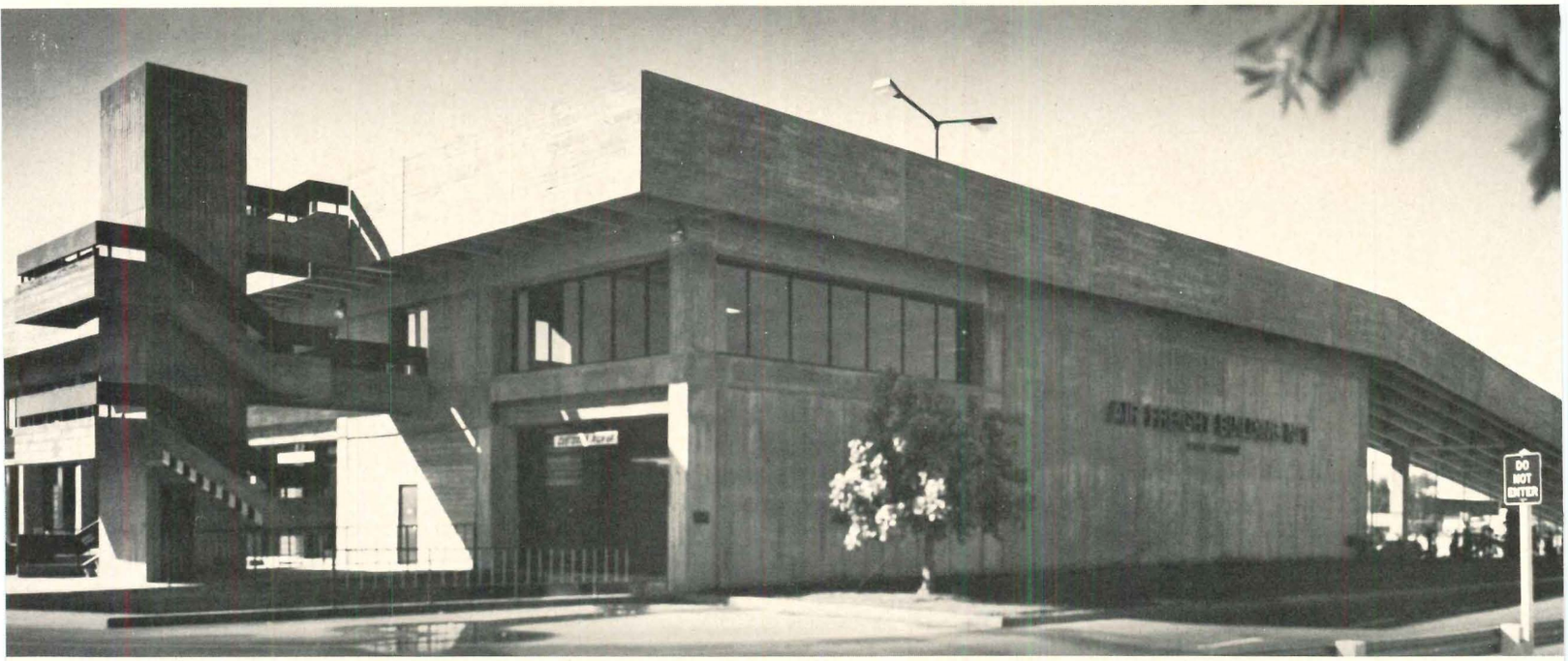


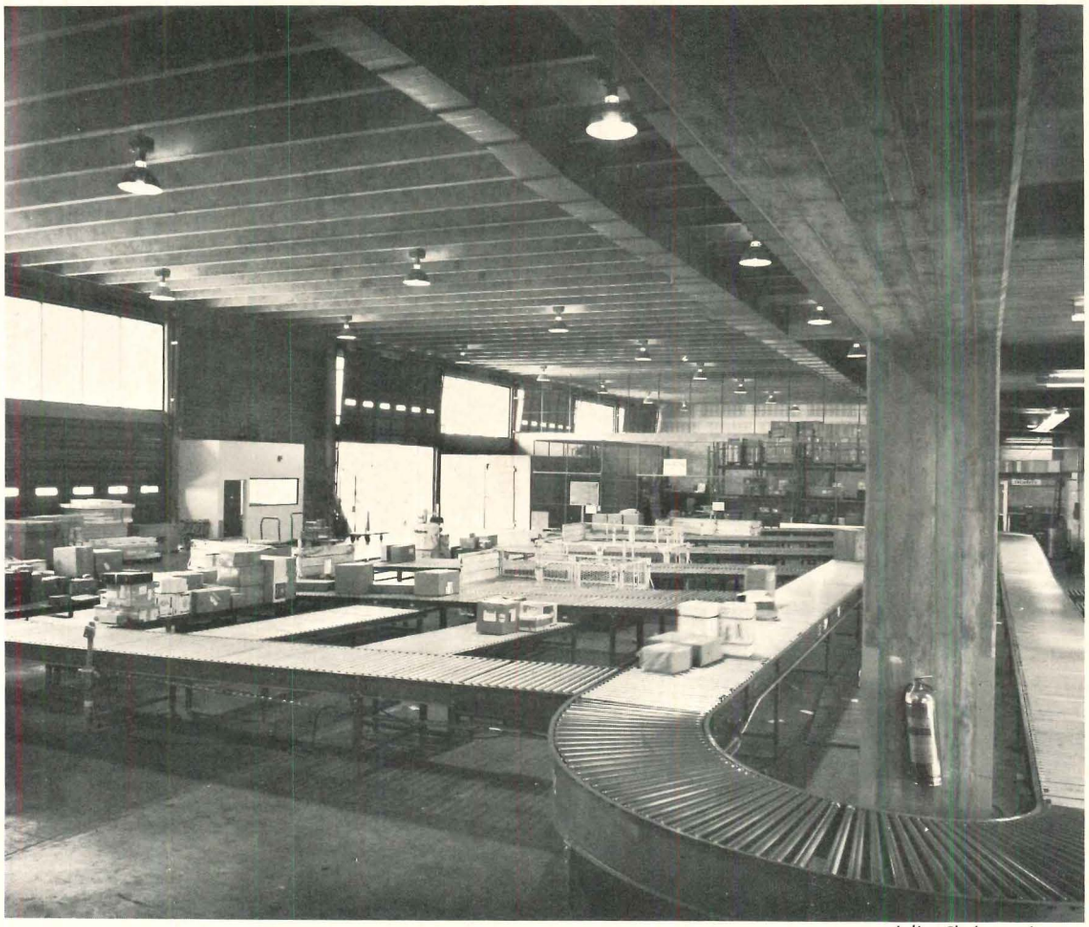


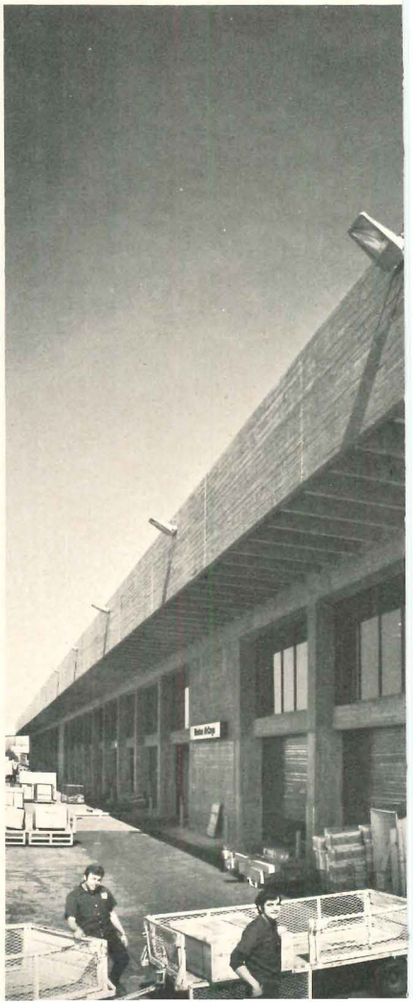
Air Freight Building #1: More for parcels than for people, this rugged, multi-client cargo building develops its design strength from basic user needs.

The concentrations of service buildings around airports are seldom fortunate enough to include a structure as strongly conceived or as handsomely constructed as Air Freight Building #1. Located at the Los Angeles International Airport, this structure by Parkin, Architects is used to process air cargo. Warehousing functions predominate. Like most such buildings, the general public seldom enters it but it gets constant, rugged use so durability counts.

The architects spent many hours interviewing representatives of the major airlines who would be renting space in the completed structure. Out of these interviews, several needs emerged. The clients wanted automobiles parked off the ground so the decision was made to place a parking deck on the roof of the building. Perhaps more than any other, this decision affected the planning and influenced the building's final appearance. Not only was an automobile access ramp necessary, but external stairs would be required to reach the roof deck parking. In addition, the parking decision pointed to the suitability of concrete as the







Julius Shulman photos

basic building material. Walls, slabs and columns are poured-in-place.

The plan has an almost diagrammatic clarity. Most of the ground floor is given over to warehousing. Above, on a partial mezzanine, is supervisory office space that is expressed on the elevation by a long strip of horizontal glazing. Roof deck parking is shielded from view by a deep parapet. The basic structural module is a concrete bay 24 feet wide. By combining these bays, an interior volume 24 feet high develops and extends for 600 feet. Planes and other airport vehicles can approach to a loading apron anywhere along this entire length (photo below).

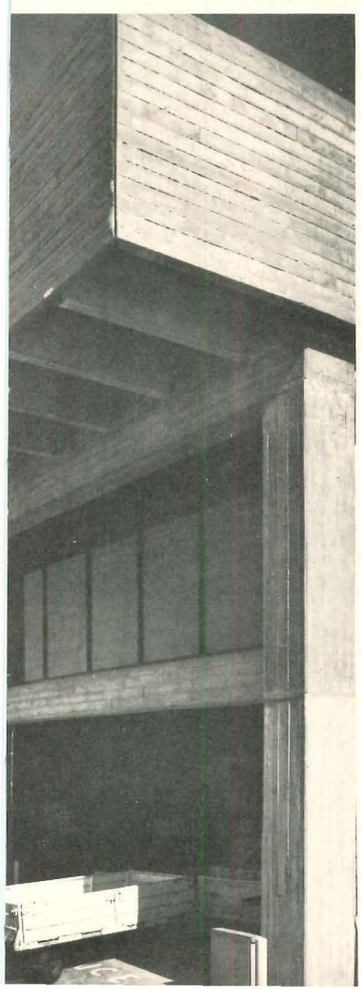
The building's strength is its simplicity and its integrity. At no time have the architects invested their design with false pretention or monumentality. They have generated and combined simple forms in a direct and appealing way, making the most of all architectural exigencies. Details are kept as simple as possible. The architects attribute much of the success of their building to the freedom they were given during programming and conceptual design—a freedom, we might add, that they had to earn.

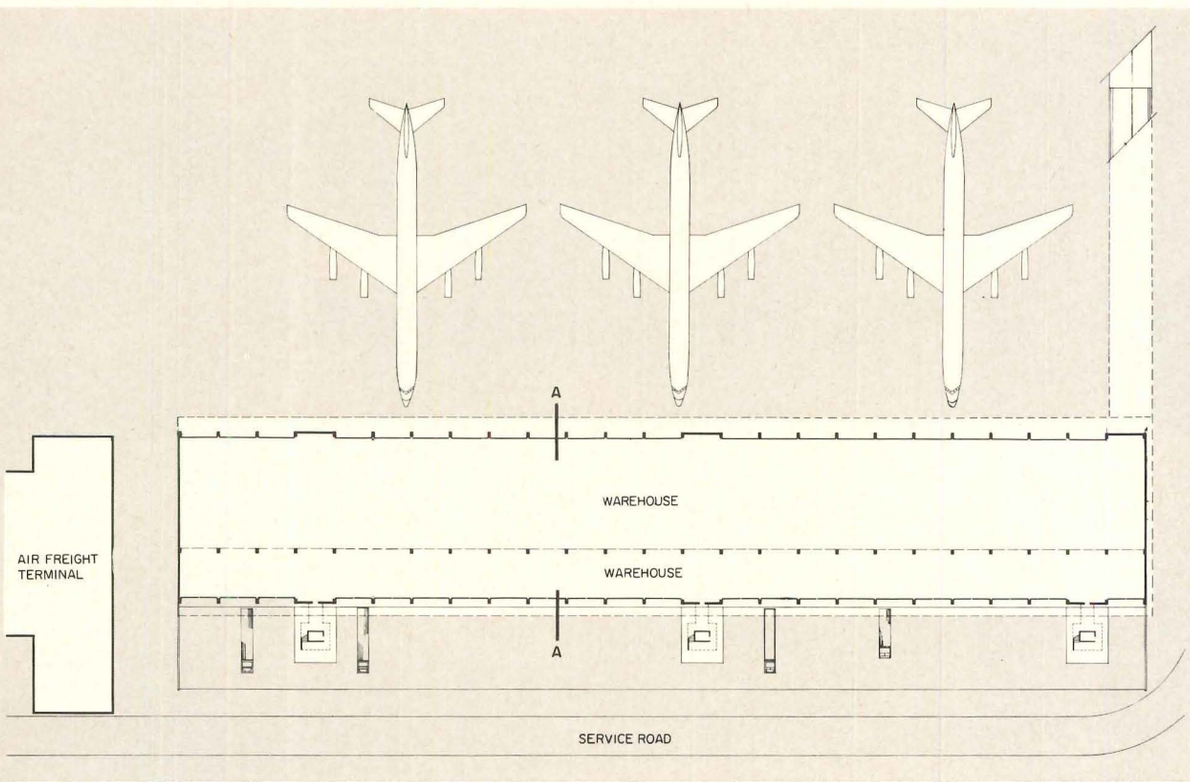
Because this air freight building is not complex in function or elaborate in level of finish, the architects were able to maintain an especially firm control of costs from beginning to end. Final cost of the building, less fees, was $1,427,000.

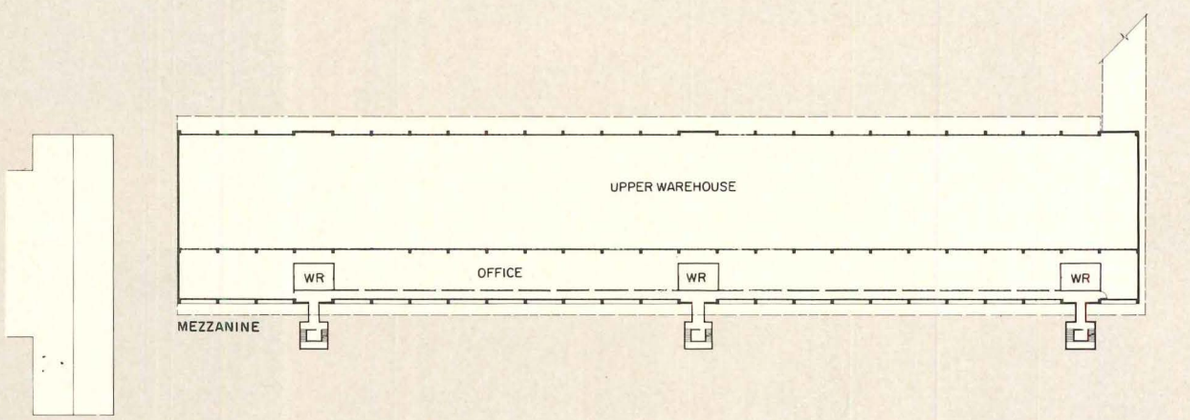
Though a limited budget building, largely poured-in-place and with almost no interior finishes, the architects have generated a surprising design richness.

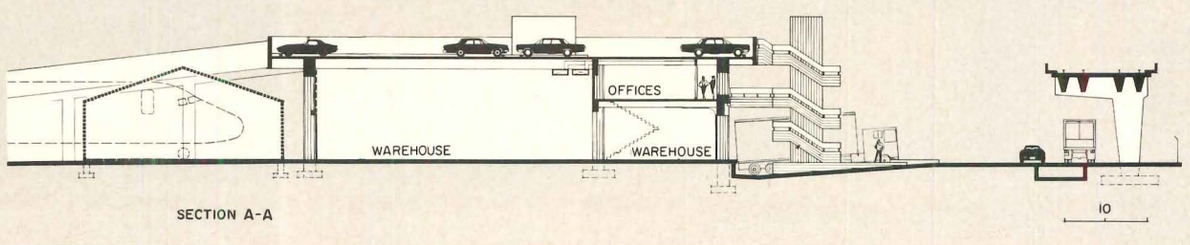
Parapet, wall planes, columns and beams are all imprinted by the wood forms in which they were poured. This uniform texturing contributes to the feeling of durability and creates a series of pleasing, low-maintenance surfaces.

AIR FREIGHT BUILDING #1, Los Angeles, California. Architect: Parkin, Architects (Lloyd S. Laity, partner-in-charge; David Brody, designer); structural engineers: *Johnson and Nielsen;* mechanical engineers: *Hugh Carter Engineering Company;* soils engineers: *Leroy Crandall & Associates;* landscape architects: *Lifescapes;* contractor: *Vinnell Corp.*





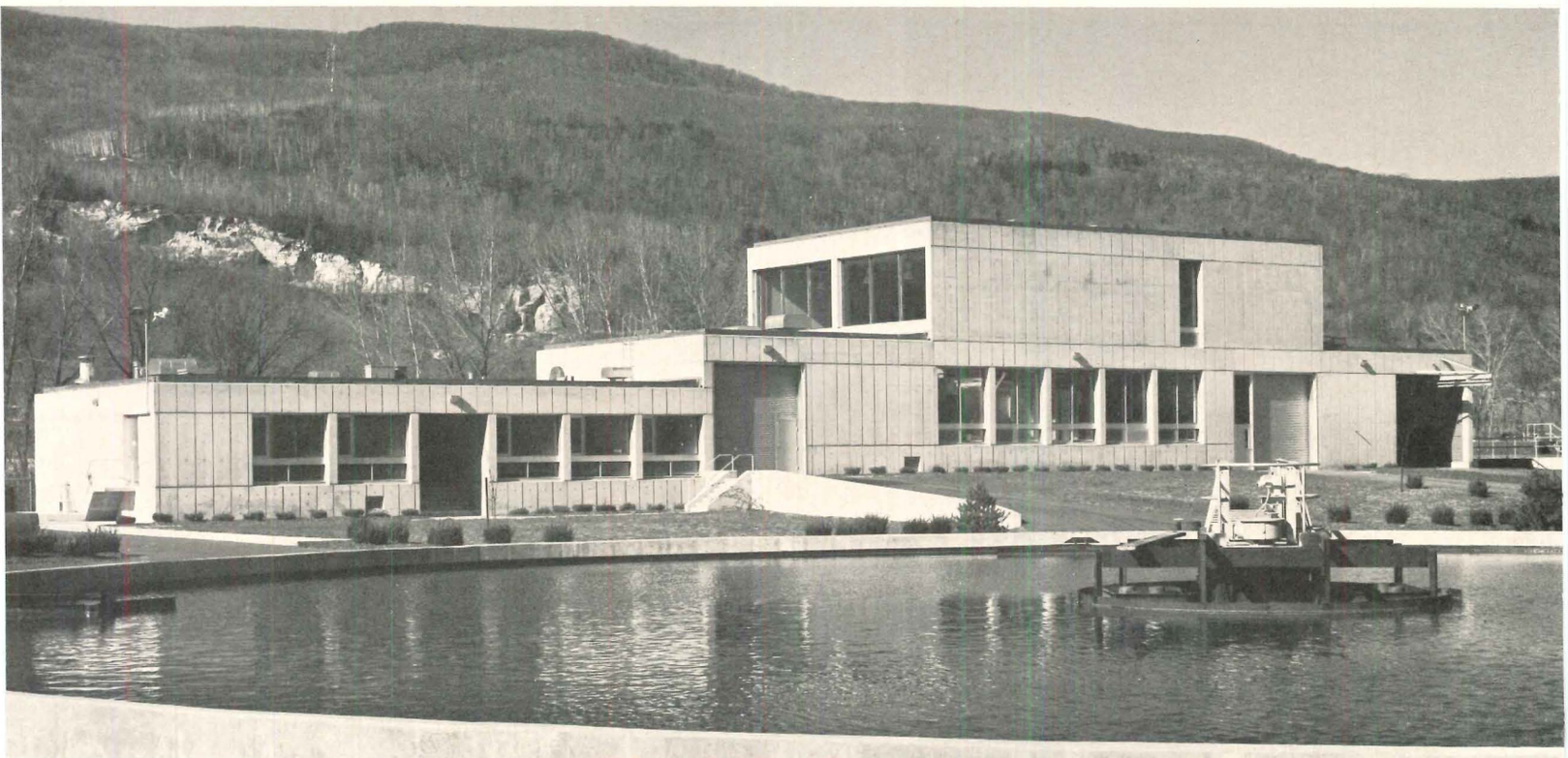


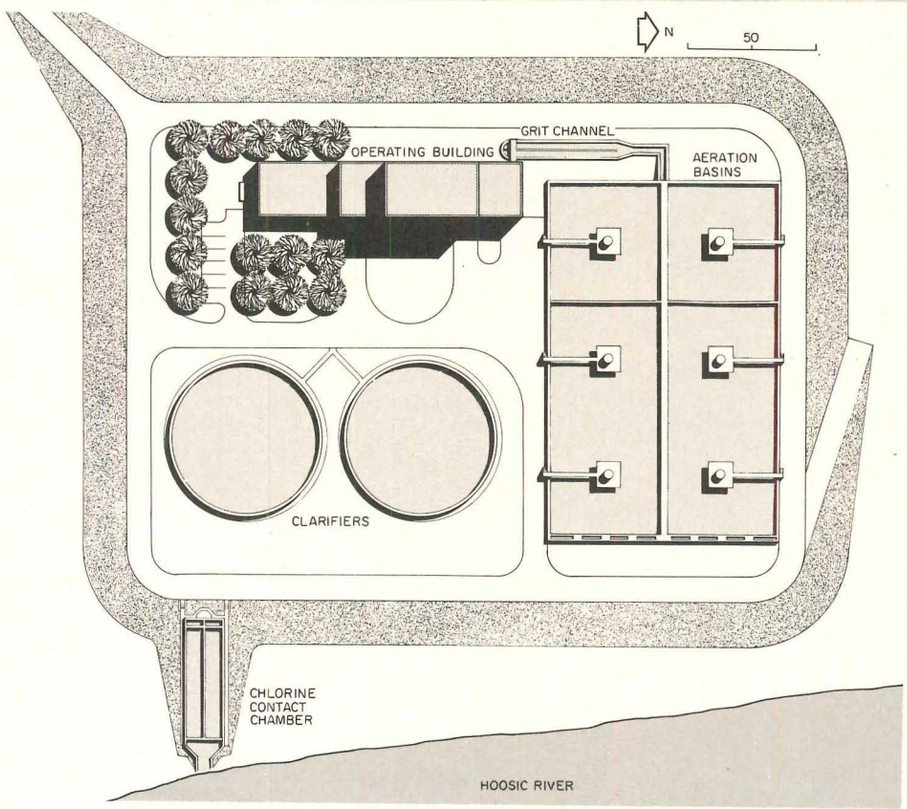


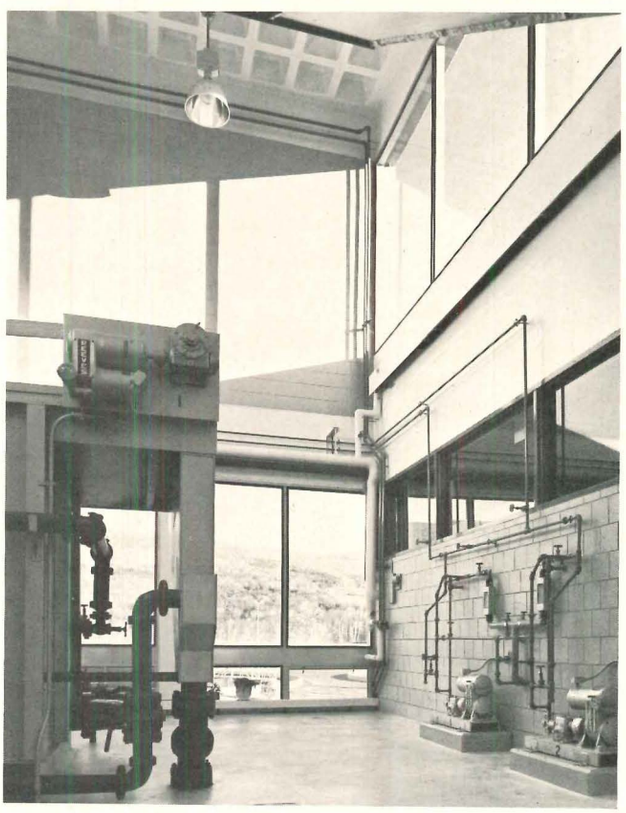
Adams Wastewater Treatment Plant: An exceptionally handsome industrial structure built on a modest, municipal budget by architects and engineers who are deeply committed to improving design quality.

Set against a background of great natural beauty in the foothills of the Berkshires, this municipal sewage treatment plant indicates what can be done with a building type that has had little genuine architectural attention —a building type that usually loses design integrity by default. Much of the success of the Adams plant is attributable to the close working relationship established between architects Johnson-Hotvedt & Associates and engineers Camp, Dresser & McKee who maintained overall responsibility for the project. Several excellent buildings have already come from this union. Among them is the Brockton Water Filtration Plant (RECORD, February, 1971). By pooling their expertise and by offering a combined service, the team has been able to construct buildings of high design quality that conform to the strictest technical requirements for sanitary engineering.

The architects have shunned the typical solution—a series of small outbuildings with apologetic, palely imitative neo-Georgian facades turned toward the road. Instead, they have concentrated this industrial proc-







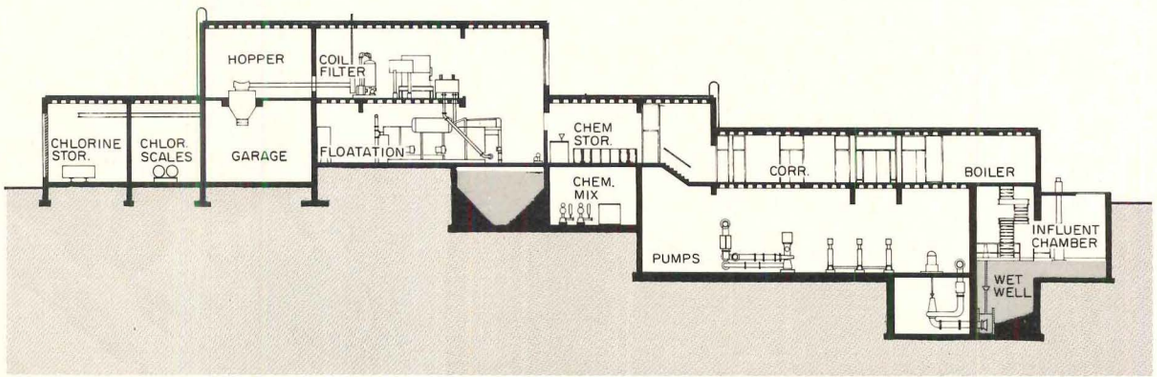
ess into a single, integrated structure and expressed the building's functions in vigorous, contemporary terms. The massing is direct, clearly and simply reflecting the functions and volumes contained within. Exterior surfaces are planar but carefully rusticated for scale and appearance. In spite of the concentration of its functions, this sewage treatment facility does not seem bulky or overmassed. And thanks to careful design attention, it never sacrifices its pleasant, human scale.

The Adams plant is simply constructed. The structure is concrete, poured-in-place, using ordinary plywood forms. Floors are two-way waffle slabs, windows are aluminum sash and the roof is built-up. Engineering determinations were, of course, critical. Each end of the building had to be located at a precise elevation on the site. The section, below, clearly describes the sub-grade levels and volumes that had to connect the building's fixed end points.

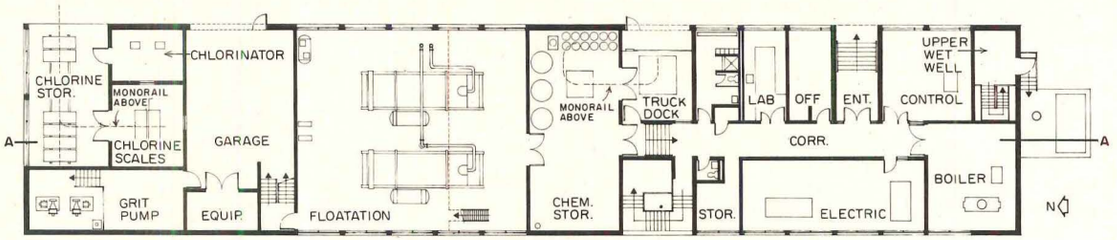
The designers elected to open the interior spaces and flood them with as much daylight as possible. In addition, they visually organized the heavy mechanical requirements by careful placement of equipment and color coding. Color is also used, with restraint, on the large overhead doors at several locations on the building's exterior. Cost of the entire plant, including all tanks, apparatus and site work was approximately $3 million.

When more architects are seriously committed to designing pollution control facilities, Adams Wastewater will still be a model. Until then, this excellent facility is very nearly unique.

In this industrial process, both the raw material and the finished product is waste. Raw sewage is received from the municipal sanitary system and is immediately screened to remove foreign materials. It is then transferred to aeration basins (see site plan) where oxygen is introduced to heighten the bacterial process of coagulation. Partially consolidated wastes are then transferred to clarifiers where solid and liquid wastes are separated by settlement. Liquid wastes are sanitized in a chlorine chamber before being released into the river. Solid wastes are conducted to sludge holding tanks where thickening agents are added. Final product is trucked.



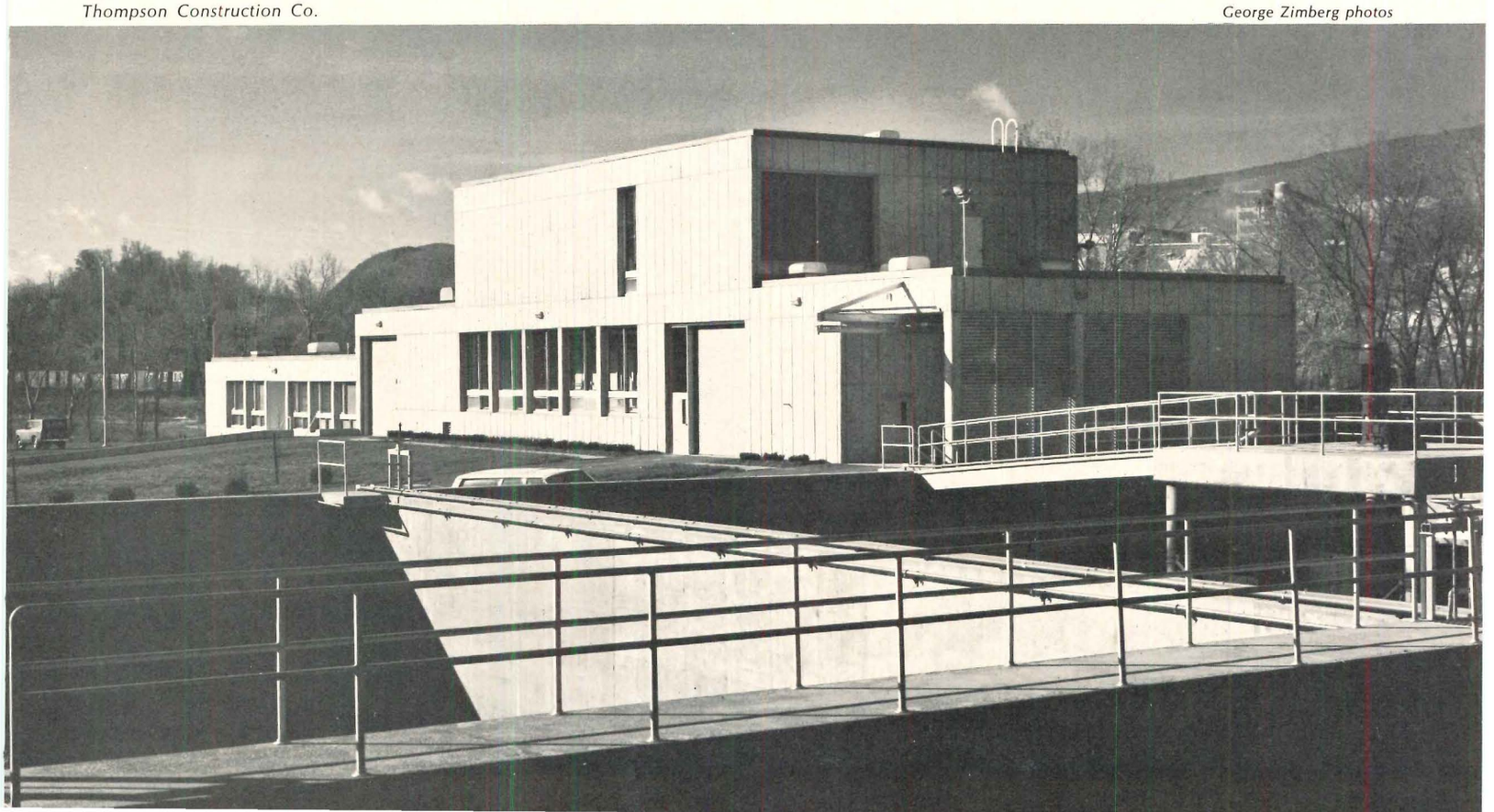
SECTION A-A



MAIN FLOOR

ADAMS WASTEWATER TREATMENT PLANT, Adams, Massachusetts. Architects: *Johnson-Hotvedt & Associates.* Engineers: *Camp Dresser McKee, Inc.*, soil engineer: *Haley and Aldrich*. Contractor: *Thompson Construction Co.*

George Zimberg photos



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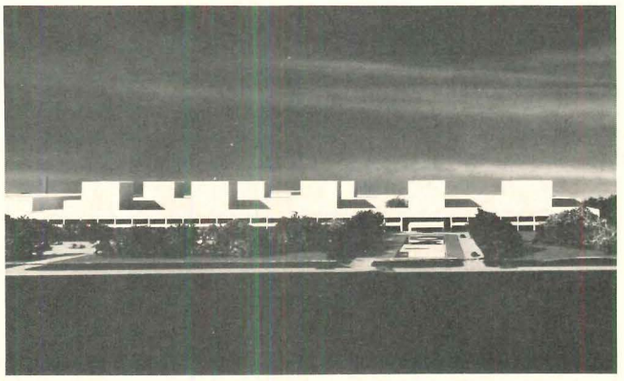

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text continued from page 113

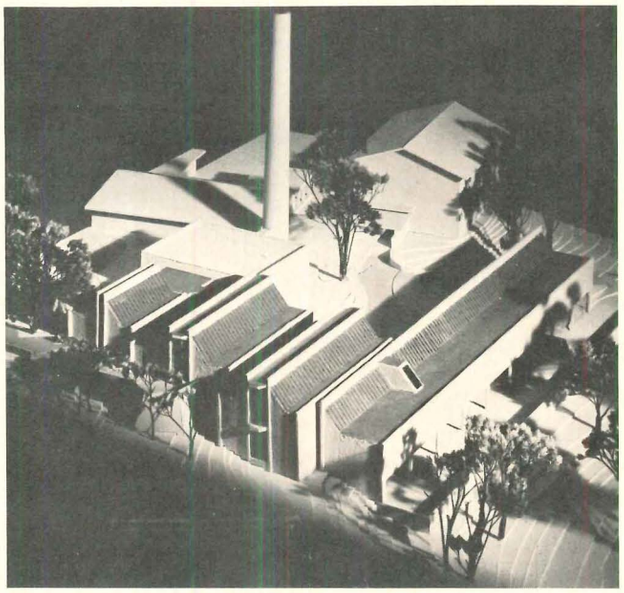
sire for goods. During the recent recession, when neither happened, industrial building dropped off by about 25 per cent. Now, if current projections hold up, industrial building is turning upward again. A new generation of plants and factories (photos right) is starting into construction.

They will almost certainly be safer buildings. Whether they will also be more agreeable workplaces, we cannot yet know. Powerful forces, economic and social, still mitigate against good design in industrial buildings. And many an owner is not really convinced that quality counts. He hires public relations firms and advertising agencies, and pays dearly for their services, but he sometimes forgets that, in the public eye, his building is an important clue to the character of his company and the quality of its products.

Industrial buildings need a great deal more attention from the design professions—especially in those areas that cannot be quantified in decibels or parts per million. Industry, after all, is a force that leaves a permanent imprint (and sometimes deep scars) on the landscape and the society in which it functions. Decisions made in industrial board rooms about new building programs profoundly influence town and city planning. They affect the employment patterns of millions of Americans. Through its products, industry alters our life styles and our ways of thinking about almost everything.

Unless the whole environmental movement is but a fad, borne aloft on a cross current of history, Americans are beginning to care, as they never have before, about the quality of their physical surroundings. The movement's main thrust, of course, has been toward pollution control, but the victories of the anti-billboard lobby and other champions of the visual environment cannot be scornfully dismissed. And a younger generation of workers, paralleling the experience of their college counterparts, is refusing to accept unwholesome factory conditions with the tired fatalism of the past. Have we arrived at a new standard? Not yet.

The design of industrial buildings also presents architects with a special opportunity. RECORD associate editor Robert Jensen, in an earlier piece on industrial buildings, observed that "economy, efficency and clarity are the values on which (industrial buildings) should be based and these are just the values that modern architecture was invented to express." To these values we must now add environmental concern. *—Barclay Gordon*



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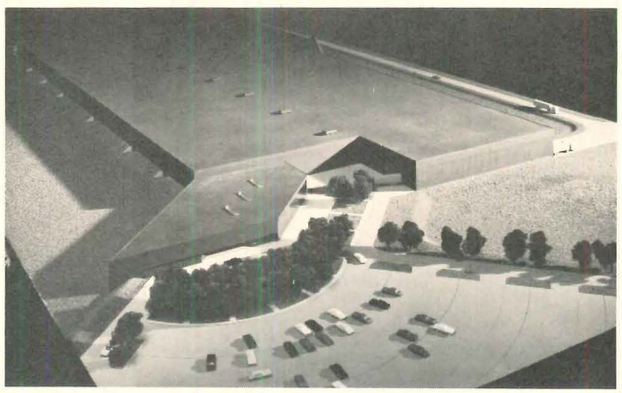

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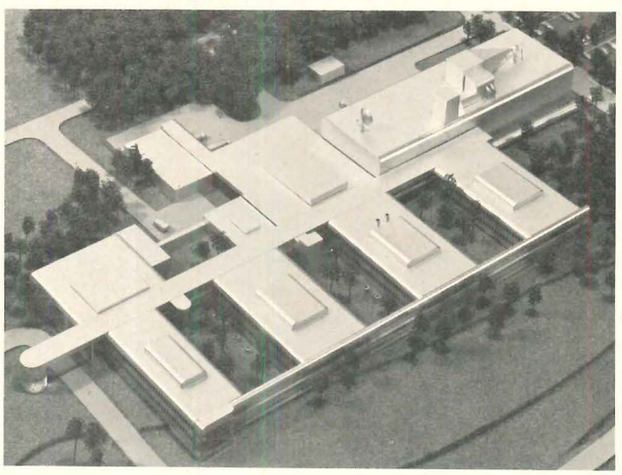

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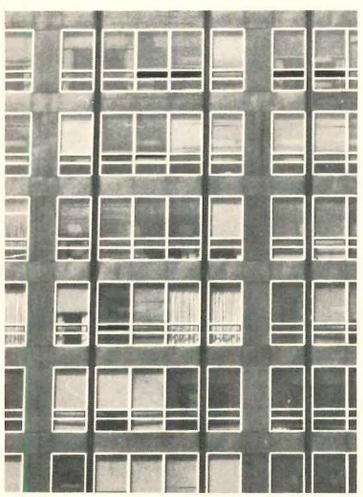
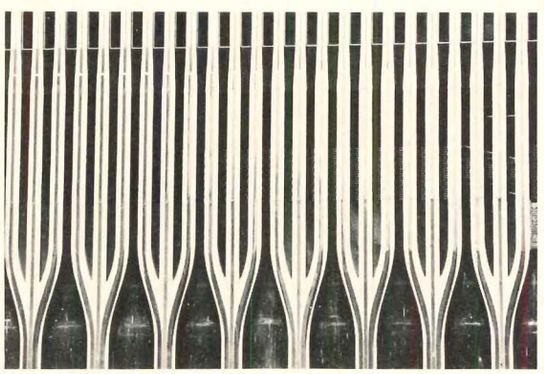
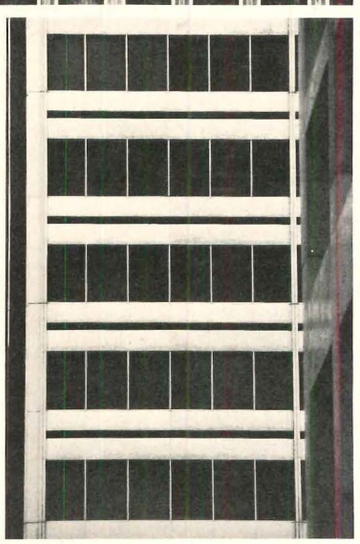
1. Charles Evans Industrial Building, *Richard Meier,* architect; 2. Philip Morris Plant, Richmond, Virginia, *Skidmore, Owings & Merrill,* architects; 3. Cathedral Greeting Card Plant, Washington, D. C., *Hugh Jacobsen,* architect; 4. Westinghouse Underground Transformer Plant, Jefferson City, Missouri, *Kivett & Myers,* architects; 5. Comsat Laboratories, Clarksburg, Maryland, *Daniel, Mann, Johnson & Mendenhall,* architects.

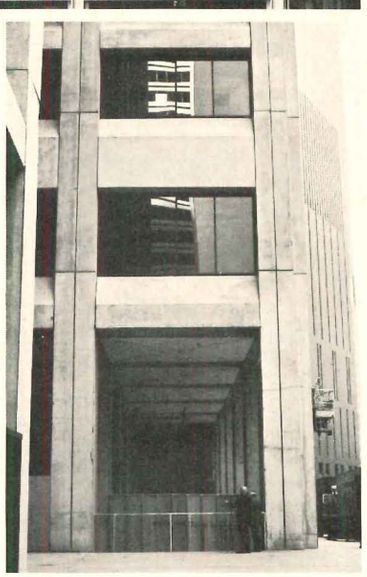
PART 1 OF 2

Solving today's curtain wall problems: comprehending them, and then providing expert attention









Practically every curtain wall is different. Even stock systems vary in some details from job to job. Custom designs are generally the rule in large, high-rise buildings, witness this random sampling of walls from office buildings on the tip of Manhattan.

Because curtain walls are complex assemblies of glass, metal, stone and concrete, steps need to be taken to minimize problems through: better understanding of the curtain wall as a system, appreciation of the influences of the market place, and recognition of field problems that affect design and specifications.

Technologically, the modern curtain wall has come a long way in 20 years. At the time the UN Secretariat and Lever House were built, a break was made from relatively simple window technology to curtain wall systems which have grown ever more sophisticated, and with which problems are significantly different. The behavior of curtain walls in warding off the effects of the weather is highly complex. They may look simple, but are far from it. Rather, they are involved assemblies of structure, metal and glass working, with much interrelationship and interdependence of elements. Further, there is much to know about finishes, and many subtle things to know about sealants. Yet, the know-how for the design and construction of curtain walls that will have a minimum of problems exists today.

Unfortunately, however, problems with curtain walls have not disappeared. Though some of the manifestations of problems—leakage, broken glass—remain the same as in the early days, the reasons for them are quite different. Twenty years ago little was known about the physical behavior of curtain walls; glazing gaskets were being used for the first time, and new high-performance sealants were introduced only after the putty type failed to work in new situations. Since that time vast knowledge has accumulated, and many new effective materials have been made available.

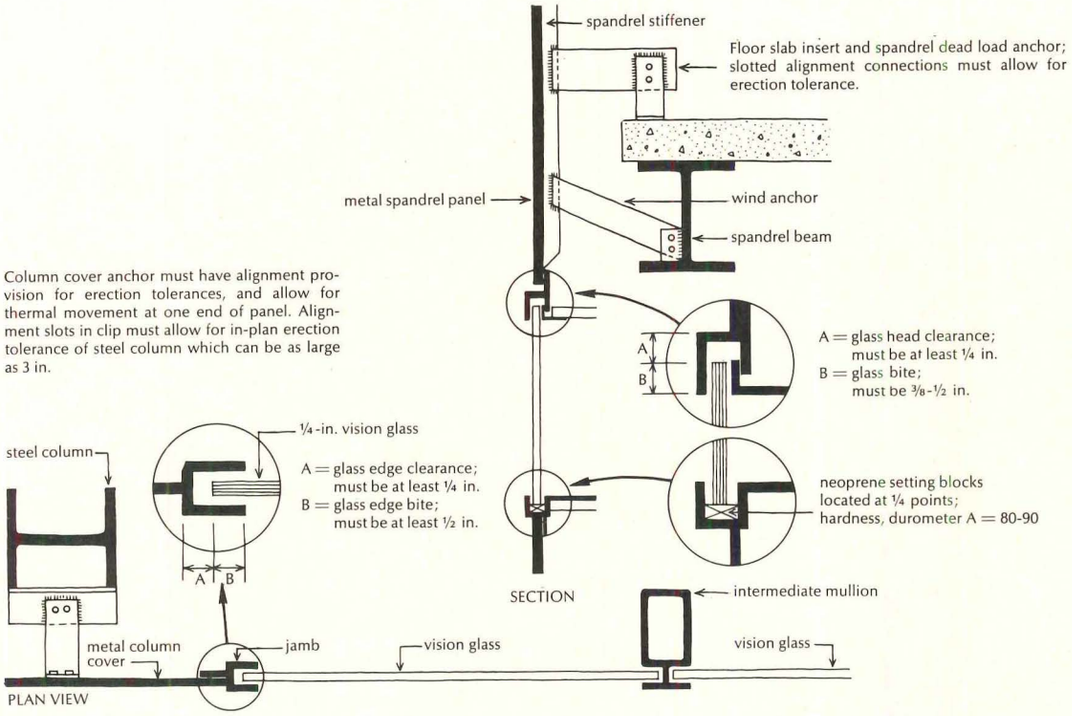
Curtain walls and the building process are more complex—so are the problems

So, why failures today? Mainly, the reasons are these:

1. The curtain wall has not been comprehended by designers as a system. For example, the deformation of a wall under wind loading may not be deleterious structurally, but on the other hand, this movement could open the glazing system to water penetration.

An architect might assume that any wall configuration should be possible. While this might be so strictly from a fabrication standpoint, it is not realistic with respect to resistance to water penetration. Some wall shapes literally invite the rain to come in. Thus there is a technical discipline —not just to be reckoned with, but perhaps even exploited in terms of design expression.

2. The realities of field tolerances and thermal expansion and contraction have not been taken fully into account. Columns



note: curtain wall components are at a larger scale for clarity

Not accounting for building tolerances can lead to trouble—for the wall, and for the glass.

It tolerances are not properly considered in the design of curtain wall anchorages, it may be difficult for the erectors to get glass openings plumb and square. When this happens, glaziers are tempted to trim the glass on site which reduces its strength, particularly with respect to thermal loading. Further, erectors may find it difficult to align the curtain wall components.

An example of a tolerance condition is this: it is accepted practice to permit steel columns to be off the building line as much as 2 in. out and 1 in. in with respect to the core; therefore, the column cover anchor must allow for this, and the floor slab insert and spandrel anchor must accommodate both spandrel beam deflection and column tolerances.

can be out of line by several inches; spandrel beams will have a certain deflection that may or may not be what was anticipated; glass, as cut, may vary slightly from the dimensioned size.

3. Structurally, curtain walls are being designed closer and closer to the loads they have to withstand in the field. In the early days, curtain walls were considerably overdesigned. Manufacturers, themselves, tended to be conservative because of inexperience in the engineering and fabrication of modern curtain walls. But by now they have a much broader experience. The main reason, however, for manufacturers designing and fabricating curtain walls closer and closer to minimum required strengths is that the market place has become much more competitive. Further, their factory and erection labor costs are much higher. So, walls are no longer conservatively designed; and there is less and less room for error in design load assumptions, for accommodating construction deficiencies, and for coping with unforeseen contingencies (such as the construction of a new building nearby that changes the wind load pattern).

4. The rush of owners to get buildings enclosed, occupied, and producing income may force subcontractors into poor construction practices. Because glazing openings may turn out to be neither plumb nor square, glaziers may resort to nipping corners and seaming edges in order to get the glass to fit, and in the process weakening the glass. The owner may accept, to his later chagrin, improperly erected sections of curtain wall rather than slow down construction.

As mentioned earlier, the two most common failures associated with curtain walls are leakage and glass breakage, with the former being by far the more prevalent. Of course there can be other problems that have no potential physical harm to property or people, but may be disturbing psychologically — e.g., creaking and popping noises caused by movement of the curtain wall against the building frame; vibration of large panes of glass caused by wind; defects in the appearance of the curtain wall such as staining, lack of color match, oil-canning, show-through from the back of panel reinforcement, etc.

Glass failures can be dramatic, but are patently avoidable when care is taken

Aside from accidents, glass breakage occurs when it is overloaded by wind, or, in the case of tinted glass, when it is overstressed thermally; occasionally, the two effects can be combined. Apparently, most of the glass breakage caused by the wind occurs during the construction period, or at least after the first few wind storms. Glass strength is a statistical matter, and, when practical factors of safety are used, a small amount of breakage can be expected—say 8 lights in 1000. Thus, during the early life of a building, the lights termed "weak sisters" are broken and replaced. Thereafter a building in which the glazing has been properly designed should be relatively free of trouble.

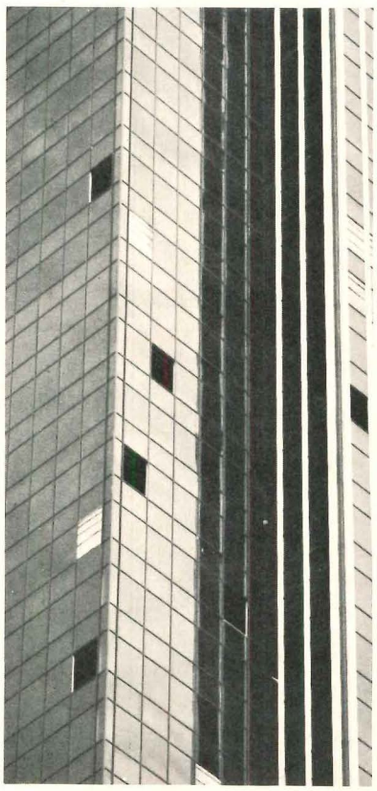
As a safety precaution, owners of high-rise buildings being built in downtown areas of large cities may have streets blocked off on very windy days, to avoid passersby from being hurt.

But breakage during construction is probably more prevalent than it used to be. At least it is more noticeable. For one thing, architects are calling for larger lights of glass and more of them. Further, it seems that the structure is hardly up when the curtain wall and its glass are installed, in part to enable other trades to work regardless of the weather. Thus it is easier for glass to be damaged by debris and through the carelessness of workmen.

(The strength of glass in resisting wind load is a function of its thickness and the polish of its surface; the glass is weakened by scratches and abrasions.)

Even undamaged glass can fail, however, if it is not properly supported. For example if the framing or gasketing that holds the glass can be excessively distorted, the glass may fail. If the gasket is too flexible because of shape, size, or insufficient hardness, a phenomenon called roll-off may occur, which may result in the entire light of glass being blown out of the gasket.

Glass breakage often is a direct result of proper erection practices not being followed, particularly with regard to handling and cutting of glass, and attentiveness in maintaining correct erection tolerances and plumbness and squareness of openings. It is often found in high-rise construction, particularly with stick-type curtain-wall systems, that tolerances for the building's structural system are greater than they should have been. Then, it turns out that glazing openings may not be plumb or square and that opening dimensions have not been maintained. The glazier's answer in order to get the glass to fit may be to trim the glass on the job which weakens it, particularly in its resistance to thermal load. And if a crack gets started in a light of glass because of thermal load, it can be more easily broken by wind.

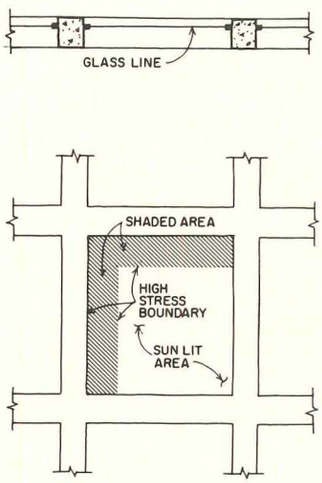


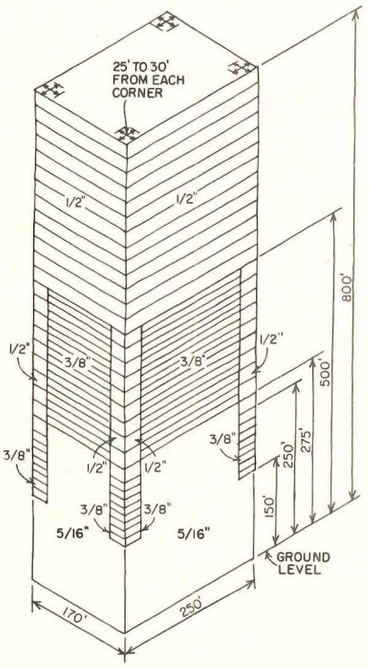
It's the unsuspected things that cause problems with glass breakage due to wind and to thermal load

Still not sufficiently recognized is the extent of negative wind loading at the corners of buildings—as much as 2.5 times the positive load on the windward side. This fact needs to be considered in the sizing of glass. If the glass lacks the recommended amount of bite, or is installed poorly, or gets damaged during installation, it obviously is much more susceptible to breakage at the corners.

The sketch at far right is a hypothetical example by Fazlur Kahn showing glass thicknesses based upon variation of wind load with building height and the wind load coefficients for both corner and interior areas of the facade. For practical reasons the glass thickness would be constant for a given floor.

Shading of tinted glass by building projections can result in high stresses. If the edges of glass are damaged, its strength to resist these stresses is lowered.





The result of proper tolerances not being maintained may be that some lights of glass do not have sufficient bite provided by the glazing pocket or gasket, perhaps only ¼ in. or so. Such lights are susceptible to wind damage.

Another common cause of breakage of glass during the construction period is that the glass lights may not be fully glazed in the beginning by the contractor. That is, the glazing system may be such that he can safely support the glass in the glazing opening, under normal conditions, without having fully installed all glazing materials—the sealant that goes in the rabbet, or the zipper that goes in the neoprene gasket. The glazing contractor might not finish the job for months. Because the glass is not tightly held, a high wind may blow out some of the glass.

When glazing openings are out-of-square, all sorts of makeshift arrangements may have to be resorted to—jacks to try to force the opening into square; torches to alter anchorages, specially cut glass to fit the openings, side-shimming of glass in an out-of-square opening to maintain proper bite on all edges.

Because of lack of control of opening dimensions, some buildings have suffered continuous glass loss for a year or more until all the glass that may have been nipped or cut on the job to make it fit was replaced.

Field problems are the most common, but occasionally the design is marginal

Obviously the proper installation of glass is a critical factor in obtaining designed-for strength. For example, glass-to-metal contact in the glazing rabbet can result in point loading that causes glass to break. To avoid this situation a clearance of around ⅛ in. should be maintained between the face of the glass and the face of the glazing stop. Face shimming is required in lights of glass over 100 united inches (i.e., total perimeter) in size. It is difficult to install intermittent shims properly so that they work, so a continuous face shim is frequently used, consisting of a relatively hard butyl tape that will not distort, or a softer tape that has a hard core.

There may be faults with the curtain wall components, themselves, that interfere with proper installation of glass. For example, it sometimes happens that welds are not ground down in glazing pockets. Occasionally a wrong component is supplied—such as a different clip than intended being used to hold a curtain wall panel to a mullion, causing glass to metal contact.

Field problems, however, are the more prevalent. A further example is that of welding spatter which can seriously damage glass if it is unprotected. The New York City building code calls for glass to be protected by a hardboard covering or its equivalent where glass may be close to welding operations or near material hoists (temporarily omitting the glass is another solution).

Sometimes field conditions combine to create difficult glazing conditions. Example: glazing opening too small; glass a little large; weather cold; glazing pocket minimal for esthetic reasons. Invariably, it seems, tolerances seem to accumulate against the installer. If glazing is done in cold weather with gaskets, and the glass is slightly large, the glazier is tempted to seam (file) the edges to avoid tearing the gasket.

Occasionally, particularly on "budget" jobs, everything can go wrong, resulting in extensive loss of glass. Design can be in error (with respect to tolerances and glazing techniques); fabrication can be faulty; installation can be poor. It is known that, under these circumstances, one owner had to replace 30 per cent or more of the glass that may have cost, after the fact, 50-60 per cent of the original cost of the wall.

Again, on "budget" jobs, the design may be so skinned down, that the wall itself is not strong enough to hold the glass. When the wind blows hard, the results may be catastrophic. A high-rise apartment building in the Midwest is known to have lost over 100 lights of glass during a winter wind storm, reportedly because the wall was not strong enough.

When sizing glass thickness, the designer must know the loads, consider the support

Once in awhile the glass that the designer selects is not thick enough for the most severe loading conditions to be encountered. Under optimum circumstance (i.e. proper bite, clearance, etc.), the glass might have been strong enough, but then, because of the way it was installed, the glass was not able to work to capacity.

On the other hand, the actual extent of the wind load on the glass in service is not always accurately predicted, particularly the negative loads created at corners of buildings which may be as high as 2.5 times the direct, positive load of the wind on the windward face of the building.

As is so with other aspects of building, occasionally there is the tendency to use values required by code (which are usually minimum) for design purposes. These

values may seem reasonable enough to a designer—who says to himself that a 30 lb per sq ft load is equivalent to a 100 mph wind, and, furthermore, he is aware of buildings in the vicinity that have used this value and weathered many a storm. But maybe the building he is working on has a number of re-entrant corners; maybe the building is in an unusual environmental situation (perhaps a canyon effect with wind); maybe adjacent buildings create an unusual loading condition. He may, therefore, be taking a much bigger risk than he realizes.

Though glass is not a ductile material such as steel, nonetheless like a steel plate it has its greatest capacity under load if it is supported along four edges. A number of recent buildings have used large lights of glass with butted edges and no intermediate mullions, the joint being sealed with silicone, to give the appearance of huge, unbroken expanses of glass. Obviously glass used in this way has less capacity than if it were uniformly supported along four edges, and, consequently the glass has to be quite a bit thicker.

The other cause of glass failure, mentioned earlier, is thermally-induced breakage that occurs with tinted, solar-heat-absorbing glasses when the edges have been damaged during installation, or in service, and particularly when there are uneven stresses caused by partial shading of the lights. This kind of failure is potentially less hazardous to passersby because the cracking can be noticed by building occupants or maintenance personnel, whereas glass failures caused by wind can come without warning.

Obviously, the more heat absorbent the glass, the higher the stress induced by the heat of the sun. Light-reflective glasses are loaded even more severely than the tinted heat-absorbing glasses because the reflective coating is on the air-space side of the inner light of a double-glazed unit. Thus, because more heat is trapped due to the "greenhouse effect," such glass can get hotter than ordinary tinted glass. Special consideration should be given to this problem with very large lights of glass.

The wind produces capricious effects on buildings, but they are predictable

Most glass and curtain-wall failures caused by wind have occurred in tall high-rise buildings. But engineers have the design tools to properly design glass; not perfectly, but satisfactorily—according to Leslie E. Robertson, partner in the consulting engineering firm of Skilling, Helle, Christiansen, Robertson, structural engineers for the World Trade Center and for the U.S. Steel Building. Analysis and design can be done for a building that can provide the same level of strength for all lights of glass, rather than having some strong and some excessively weak. Predictions of breakage rates will be reasonable. Technology does not preclude a reasonable design, says Robertson; validity is sufficiently high.

With buildings of unusual configuration, or buildings that are particularly large, Robertson feels that wind tunnel testing may be advisable. For a few thousand dollars, he says, a wind tunnel test can be performed from which wind loads can be predicted. The engineer can develop a good glass design with respect to strength that is rational and that seems to work. The cost of the wind tunnel testing and the resultant design of the glass may represent a cost savings or a cost increase from design by experience; in any case, according to Robertson, neither would be significant in terms of total building cost.

Obviously some discretion has to be exercised as to when wind-tunnel testing should be used. With many tall buildings that are not out of the ordinary, the range of pressures that can be expected are pretty well understood. An engineer can look at what has been done on other structures and have a reasonable understanding of what to expect, particularly when there are no remarkable differences between buildings. The designer must remember, however, that wind speeds in Florida are going to be higher than those in Los Angeles, and that wind load pressures are velocity-dependent to the second power. If you put the same glass design in both locations, you will have a problem.

An interesting phenomenon of wind with respect to glass breakage is that this is only partly associated with steady-state pressures. Actually, there are rapid fluctuations in pressure which are associated with the separation of flow of wind from the face of the building and reattachment of the wind to the face; the reattachment line fluctuates rapidly back and forth depending upon the angle of attack of the wind and the building configuration—corners, indentations in the facade, etc. Glass breakage seems to be associated more with fluctuating pressure than steady state pressure. Though glass behaves stronger the faster it is loaded, the fact that pressures are velocity-sensitive to the second power, means that a small increase in velocity produces a big increase in pressure.

Historically, the glass breakage problem has been recognized and considered in the design process. The same is true for leakage—there is a lot of expertise on how to keep out water, and many solutions are incredibly ingenious. What is not really known, however is how the large number of curtain walls erected in the last 10 years will behave under the catastrophic loading of the eastern seaboard's hurricane winds. For large, special buildings, mock-up walls are loaded in the laboratory to a presumed wind-load condition. On other buildings the calculation of strength could be described as more or less casual. Furthermore, there often are large differences between what is shown on the drawings and what is actually installed.

Owners generally buy curtain walls on the basis of a performance specification along with certain profile information prepared by the architect. The specification probably says very little about "hardware," i.e. anchorages, etc., and sizes of supporting members. The fabricator then produces a technical design. He basically accepts the responsibility for the wall resisting the forces of nature. If something goes wrong and the manufacturer is a reputable one, presumably he will fix the deficiency.

Shouldn't responsibility for structural integrity be given more careful thought?

But if there were, say, a large number of failures during a catastrophic hurricane, what might the courts find? Perhaps they might find that because of so many failures, a norm had been established. On the other hand, how can non-professional organizations establish norms and standards? The norm is what the norm is, and maybe it was not good enough. Who in the end has to accept the financial responsibility?

Analysis of the basic structure of many types of curtain walls is simple applied mechanics.

Structural design of many types of curtain walls (stick systems, for example) is straightforward, easy to understand.

But very substantial safety factors should be used in the design of connections to allow for fatigue problems, corrosion, etc. With custom curtain walls, however, it is possible to overlook design problems by not clearly thinking through how they really work (particularly when there are conditions such as stone, glass, metal intersections; huge metal panels, etc.). These are areas where the structural engineer could get more deeply involved. Structural engineers with experience in tall buildings ought to be able to review the structural strengths of curtain wall components. The trouble, of course, is fees; current architectural fees do want to bear this cost because now this cost is borne outside. Further, engineers would have to take on responsibility in terms of costs, contingent liabilities, etc. The courts feel that when architects or engineers "dabble" in design, they must take the responsibility for it.

How wise is it to continue to leave the responsibility for technical design and performance with the manufacturer? First of all, who else is there to do it? But is a better discipline needed within the industry? The industry is tremendously large, and there are many firms in it. What can be done to help ensure that all firms act responsibly? Trouble is it is easy for a firm to go into the business because not much capital is required, at least for the common types of curtain walls. There tends to be a big turnover of companies; and there are those who do not have a good over-all knowledge of the field. Further, even the better companies have difficulty in finding competent technical personnel today.

(to be concluded next month.)

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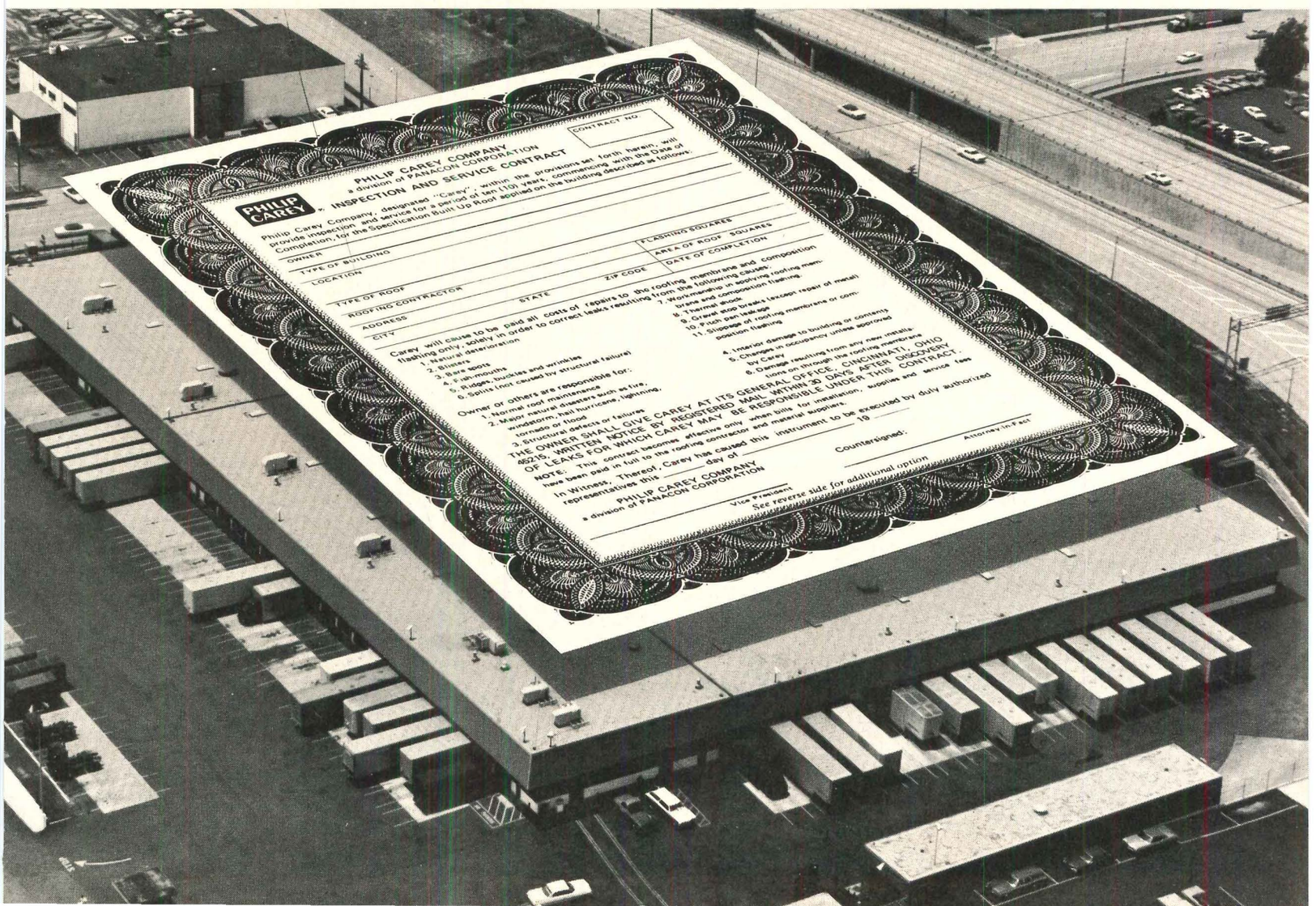

The first really new library furniture

Shelving integrated with study carrels.

Introducing... ES/II MEDIA CENTER By American Seating

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"System" implies a group of components forming a whole, and that's exactly what Media Center is . . . a complete modular concept in library furnishings, now available for the first time!

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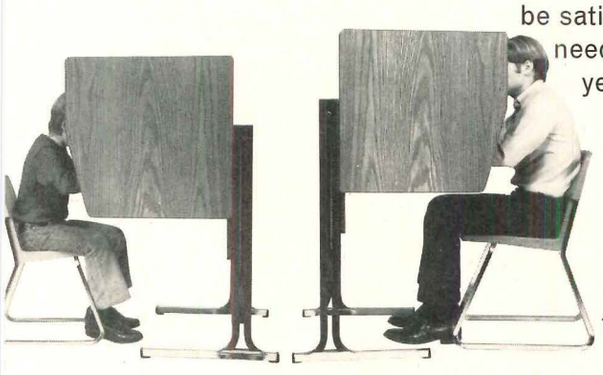

Study carrels meet both elementary or secondary school physical requirements.

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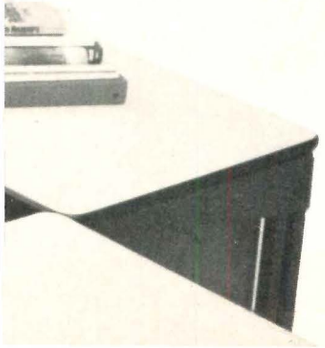

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Media Center really *is* the first new design in library furniture in fifty years. It's the systems approach that does it, that gives you, for the first time, the means with which you can provide the best in modern library service!

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American Seating has it all . . . with ES/II Media Center. And you, your school . . . should have it, too! *For descriptive brochure, write:* American Seating Co., Dept. AR-749, Grand Rapids, Mich. 49504.

Sloped-top reading table.

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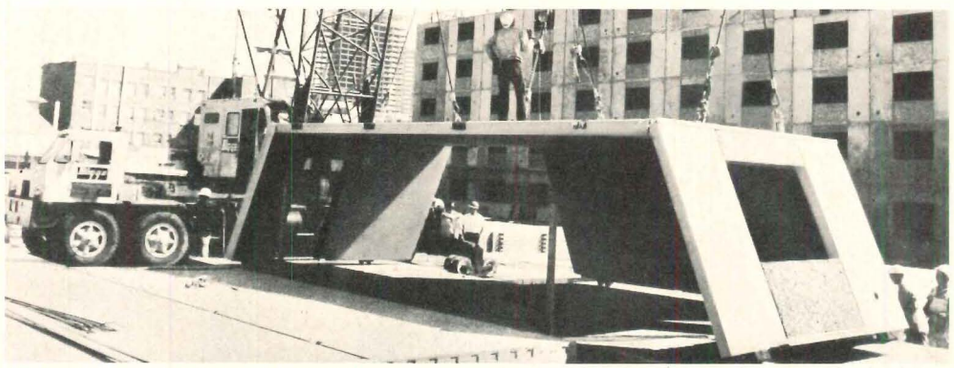
For more data, circle 61 on inquiry card

For more information circle item numbers on Readers Service Inquiry Card, pages 205-206

MODULAR FURNITURE GROUP / Squares and quadrants which can be grouped into a wide variety of configurations form the basis of this system. Floating back and arm sections lock securely in place with concealed steel connections, eliminating dust-trap pockets between seat and back. Covers can be replaced in minutes and are available in a range of materials and colors. Furniture is made of steel reinforced "self-skinned" urethane foam clad in a coat of dacron. All materials are virtually maintenance-free.

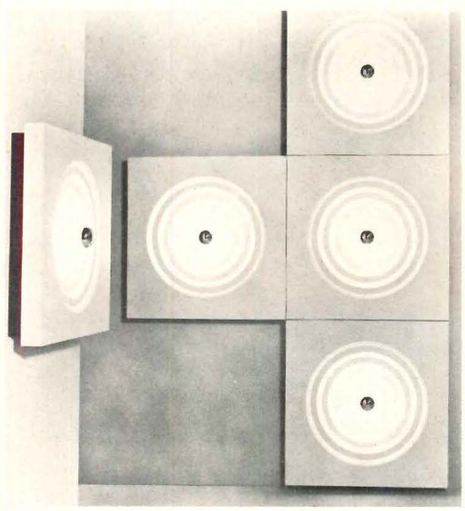
Table coordinates come in seven sizes and two heights to align with seats or backs. ■ Harvey Probber Inc., Fall River, Mass.

Circle 300 on inquiry card



CONCRETE STRUCTURAL SYSTEM / Hinged concrete structural elements poured at the construction site are cured. As units are individually lifted, hinged components fold to desired positions, and entire unit is placed on the building. No costly forms are required. ■ Foldcrete International Inc., Columbus, Ohio.

Circle 301 on inquiry card



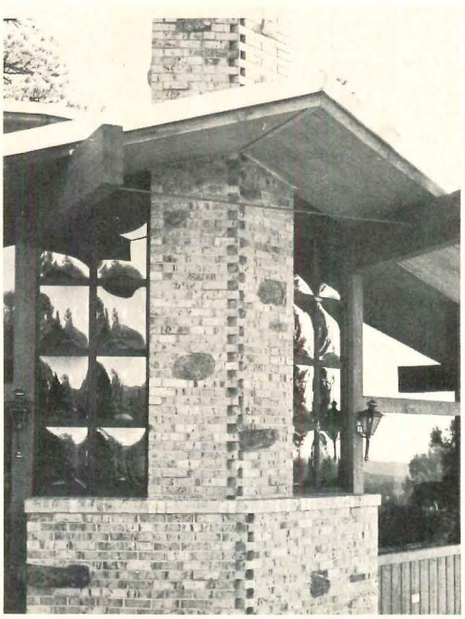
LIGHT SCULPTURE / Bull's-eye design can be mounted on ceiling or wall. ■ Lightolier, Jersey City, N.J.

Circle 302 on inquiry card

CONTOURED GLASS / Window panes reflect light without distorting objects seen from either side. Edges measure as specified at corners. Panes can be glazed into any type of window frame using standard procedures. Amount of light passing through panes is identical to that of flat window glass of the same type. ■ The Vexocave Co., Morrison, Colo.

Circle 303 on inquiry card

more products on page 147



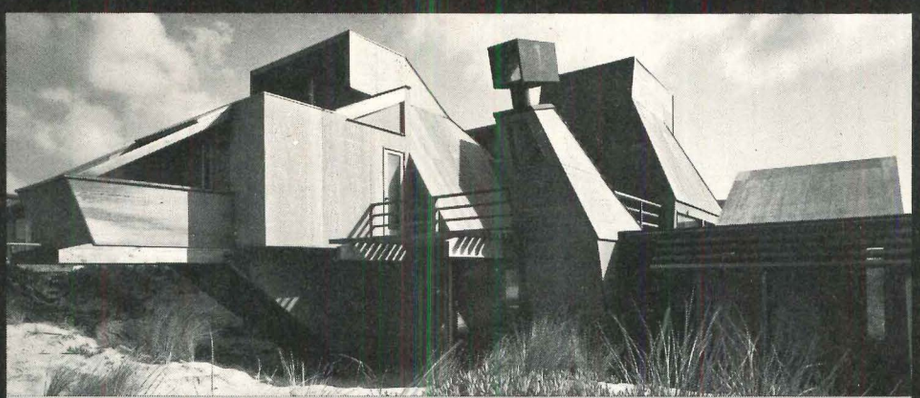
The Winners

1972 Plywood Design Awards

Jury comment: "There is no question that plywood is the building material of our time in the field of wood construction. Economical, light of weight, both structure and skin, bearing its own innate finish. A simple sheet of plywood fulfills the ultimate dictum of organic design. Form and function are one."

Commercial/Institutional Buildings Top Award $1,000: Douglas Barker (Smith, Barker, Hanssen, San Francisco). Project: Corte Madera Regional Branch of the Marin County Public Library, Corte Madera, California.

"A remarkably well-detailed space frame. Its 'sawtooth' roof system frees the flexible interior spaces of internal supports and floods them with natural light."



Residential/Single-Family Buildings Top Award $1,000: William Logan, AIA, (Neil Noll, Mike Lee Associates, Palo Alto, Calif.). Project: House at Pajaro Dunes, Watsonville, Calif.

"A superb example of plywood used as the basic material throughout the building—not just as a skin."

Vacation Homes Top Award $1,000: William Logan, AIA, for another house at Pajaro Dunes.

"Although the forms are many-faceted, there is an underlying unity that gives this structure a great sense of repose."

For information on the winners and citation awards, write 1972 Plywood Design Awards, American Plywood Association, Dept. AR-052, Tacoma, Washington 98401.

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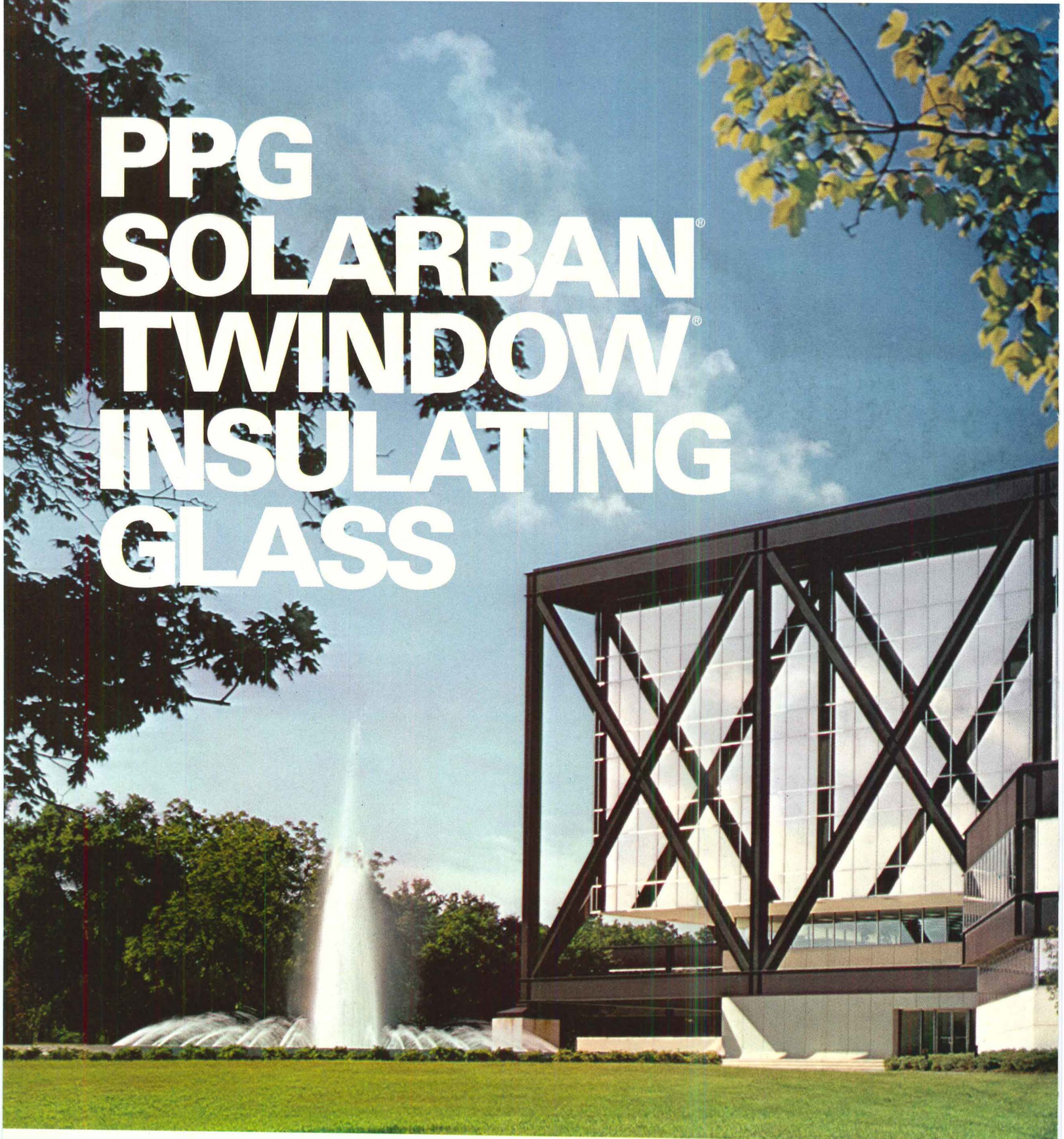

PPG SOLARBAN® TWINDOW® INSULATING GLASS

PPG Performance Glass creates a beautiful, comfortable corporate home for Burlington Industries.

This new headquarters building nestles in a parklike setting—"a glass cube suspended in a steel cradle."

The architect selected PPG's *Solarban* 575 (2) *Twindow* Insulating Glass to complement and reflect the massive structural steel shapes. And in doing so, he was also able to ensure optimum performance values for the owners. From indoors, the glass reduces brightness of sun, sky and clouds. So visual comfort is increased. In addition, the exceptional ability of *Solarban Twindow* Units to reduce solar heat gain and conducted heat loss results in substantial reductions in heating and air conditioning equipment costs.

See PPG about *Solarban Twindow* Glass—or the others in our family of Performance Glasses for your next building. Early in the design stages.

There's a PPG Glass that you can use as an active design medium to meet esthetic considerations, increase occupant comfort and contribute to a return on investment.

Write PPG Industries, Inc., One Gateway Center, Pittsburgh, Pennsylvania 15222.

PPG: a Concern for the Future

Owner: Burlington Industries, Inc., Greensboro, N.C.
Architect: Odell Associates Inc., Charlotte, N.C.

PPG INDUSTRIES

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MILSTAR Corporate Squares at The Chatterbox Restaurant in Jefferson Square office building and shopping center complex, Columbia, S. C.

Milliken revolutionizes restaurant carpeting with loose-laid MILSTAR® Corporate Squares

MILSTAR is the totally new concept in commercial carpeting developed by Milliken Research. Now in 18" carpet tiles it supplies a combination of innovations never before available for restaurants:

Longer Wear. Pile is fuse-bonded into vinyl plastisol, providing resilience and wear equal to or better than the finest tufted and woven constructions. Tuft lock is superior to any other cut pile construction.

Less Maintenance. Impermeable soil barrier back traps dirt on surface, contains spills in pile, makes cleaning easier.

Quick-Change Efficiency. MILSTAR Corporate Squares are dense-pile, snug-fitting, loose-laid tiles that need no adhesive. When spillage occurs soiled tiles can be replaced immediately by clean tiles on reserve. Results: Spilled food isn't tracked over carpet; maintenance cost is reduced; floor stays clean and attractive. Soiled tiles, easily cleaned, return to reserve.

This quick-change artistry is practiced successfully at The Jefferson Square Chatterbox Restaurant, shown above. Additional benefits: The carpet is anti-static, fade-resistant, with pile of 70% solution-dyed Acrilan® acrylic fiber and 30% super lightfast nylon. In numerous solid and coordinated tweed colors, MILSTAR Corporate Squares offer limitless possibilities for dramatically patterned floors. For details, call or write Deering Milliken, Inc., Contract Carpet Manager, LaGrange, Georgia 30240. (404) 883-5511.

A+ ACRILAN PLUS — THE NEW EXCELLENCE IN CARPET FIBER BY Monsanto

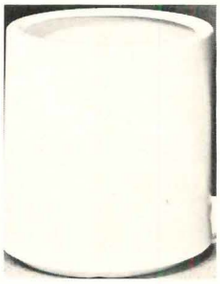
For more data, circle 64 on inquiry card

MILLIKEN

Floor Covering Business, LaGrange, Ga.

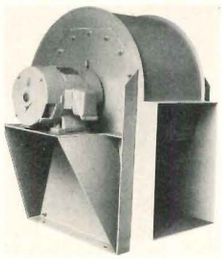
continued from page 136

FIBERGLASS PLANTER/One-piece unit will not leak. Colors offered are sandy white, gold, coral, brown and black. Planter is 18 in. in diameter and 19⅛ in. high. Weight is 8 lbs. Square and hexagon styles are also available. ■ Duk-It, Div. McDonald Products Corp., Buffalo.



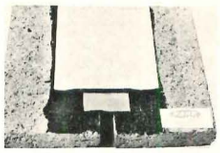
Circle 304 on inquiry card

CENTRIFUGAL FANS / Packaged, direct-drive units are available in 12 sizes and are suitable for supply and exhaust ventilation in commercial and industrial buildings. Advantages include high efficiency over a broad operating range, minimum maintenance, and sealed-seam construction providing airtight joints and exceptional rigidity. ■ ILG Industries Inc., Chicago.



Circle 305 on inquiry card

ADHESIVE / A method of sealing joints in precast panels uses a special adhesive plus an extruded plastic tape. When installed as shown, tapes comprise a "built-in" silicone slip joint. After joints are completed, panels are ready for concrete topping. No special equipment is needed. ■ Parr, Inc., Cleveland.



Circle 306 on inquiry card

GAS CHILLER-HEATER / Air-cooled unit produces cold water for cooling and hot water for heating and is designed for residential and small commercial installations. Changeover from heating to cooling can be accomplished in five minutes. Units are available in 3-, 4-, and 5-ton chillers with matching capacity water heaters. ■ Arkla Industries Inc., Shreveport, La.

Circle 307 on inquiry card

PORTABLE CHURCH FURNITURE / Pews are available in sizes ranging from 3 to 7 ft wide, and can be purchased factory assembled or knocked down for on-site assembly. Kneelers, bookracks, cup and card holders are available. ■ Endicott Church Furniture, Winona Lake, Ind.

Circle 308 on inquiry card

OUTDOOR LIGHTING / Luminaire features a pyramid-shaped reflector which directs a wide beam of light below eye level to illuminate walks, courts, and other open spaces. Aluminum cube with bronze finish protects fixture with thick acrylic windows. ■ Lightolier, Jersey City, N.J.

Circle 309 on inquiry card

more products on page 150

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If it's at all going to live up to its name, a convenience engineering copier should be as easy on your nose as it is on your legs.

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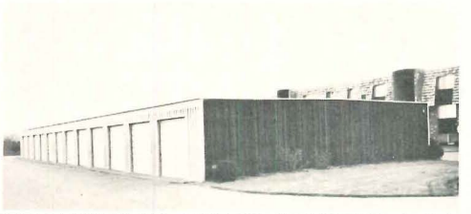


PRE-FABRICATED GARAGE STRUCTURE / Columns, framing and structural roofing and siding panels are cold-formed from high-tensile steel and heavily galvanized with zinc to provide a maintenance-free structure. Panels are furnished unpainted or with baked finish available in a choice of colors. Structures are designed for the apartment and townhouse market. ■ Childers Mfg. Co., Houston.

Circle 310 on inquiry card

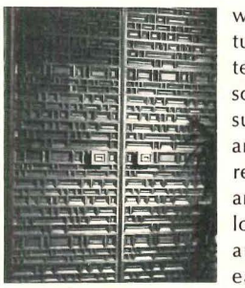
CONTRACT CARPET / Dense, nylon cut-pile is especially designed for public areas subjected to heavy traffic. ■ Philadelphia Carpet Co., Cartersville, Ga.

Circle 311 on inquiry card

BRICK-MAKING PROCESS / Bricks shown here are the result of a patented manufacturing technique in which an aggregate of inorganic waste material is mixed with small quantities of Portland cement and common chemicals, then pressure-molded into finished bricks. No thermal processing is required. ■ Certain-Teed Products Corp., Valley Forge, Pa.

Circle 312 on inquiry card

CARVED WOOD PANELS / Applications include walls, doors and furniture. Created by architect Sherrill Broudy and sculptor Daniel Moran, subtle sculptured forms are carved in all-heart redwood. Module panels are 9 in. wide and 36 in. long, and have a tongue and groove detail for easy assembly. Other lengths and hardwoods are available. ■ Forms & Surfaces, Santa Barbara, Calif.



Circle 313 on inquiry card

MICROFICHE READER-PRINTER / Available with 18x and 24x standard lenses at $695.00 (and 32x, 42x, and 48x optional lenses), this model gives a brilliant image on a high-contrast 12 by 12 screen with constant, uniform focusing. It delivers a dry electrostatic print in 10 seconds. Paper is easily loaded using cassette rolls. ■ Micro Information Systems, Inc., Atlanta.

Circle 314 on inquiry card

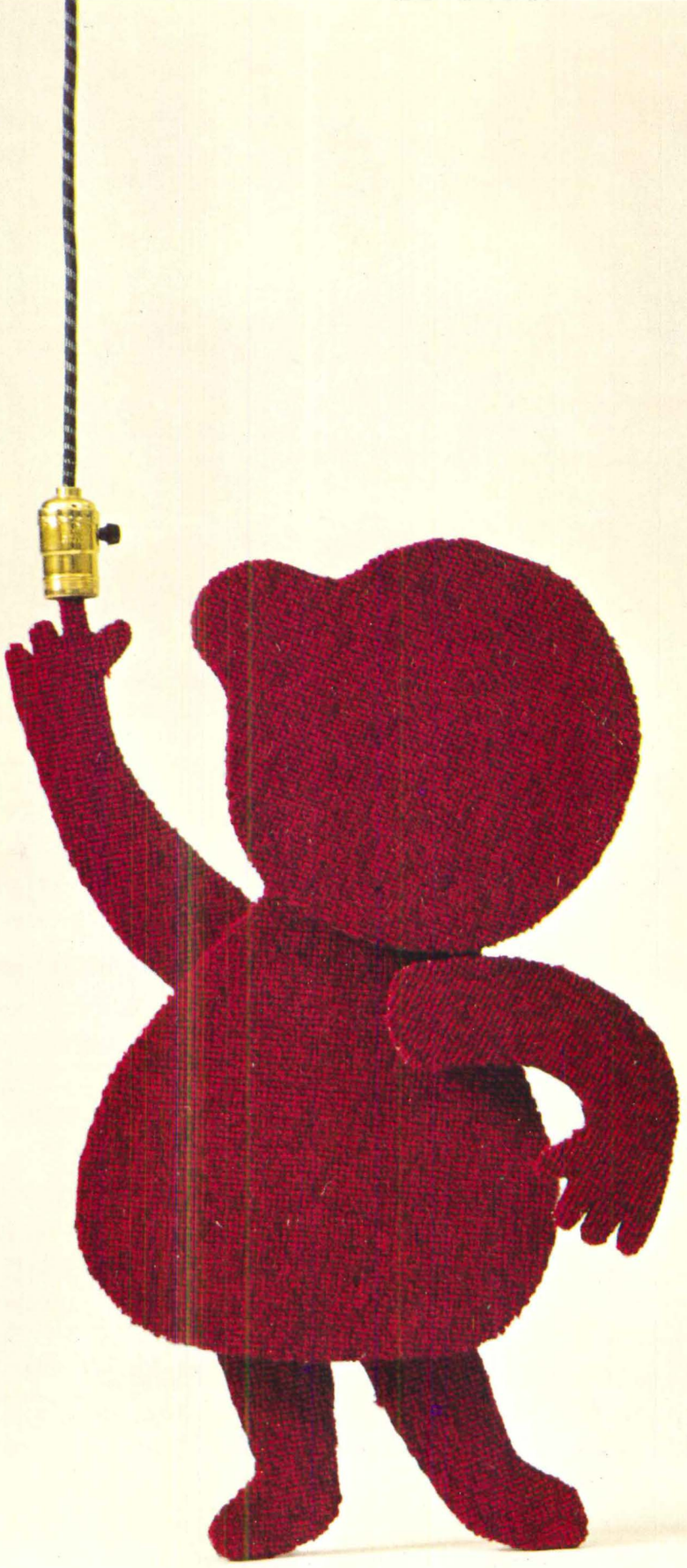
FIBERGLASS REINFORCED PLASTIC PANELS / A pre-fabricated framing system utilizing polyester panels reinforced with fiberglass from PPG Industries, and extruded aluminum support sections is available. The extrusions are fastened with metal pins and clips into a strong, unitized support network. Panels and trim, manufactured by Williams Bermuda Corp., Alhambra, Calif., are snapped into the metal framing. ■ PPG Industries, Inc., Pittsburgh.

Circle 315 on inquiry card

HEATING/COOLING ROOFTOP AIR CONDITIONER / For quick, low cost installation, the company offers a roof-curb which can be installed as an integral part of the roof structure, eliminating the need for further weatherproofing at the jobsite. All utility connections can be made within the confines of the curb. Factory-assembled units are ready for on-site operation. Four sizes ranging from 20 to 40 tons cooling capacity in five basic models are offered. ■ The Trane Co., La Crosse, Wis.

Circle 316 on inquiry card

more products on page 156



ACRILAN® 2000+

ACRYLIC

IS STATIC RESISTANT

Acrilan® 2000+
ACRYLIC

is static resistant, but it sure adds spark to this hospital.

In the new "therapeutic corridor" at South County Hospital in Wakefield, Rhode Island, you can touch a doorknob or a switch without a flinch.

But there's more to static resistance than that.

Carpets that build up static charges attract dust particles, get dirty quicker and are harder to clean. What's more, they can interfere with delicate electronic instruments.

Acrilan® acrylic 2000+ is virtually static-free under normal conditions. In fact, no other carpet fiber claims lower static discharge than Acrilan 2000+.

Carpets of this rich, glowing fiber are uniquely suited to hospital use for another major reason: their resistance to stains. Acrilan 2000+ has been tested with more than one hundred hospital stains *and* their solvents.

Because the color is locked in the fiber, not applied after it's made, carpets of Acrilan 2000+ came through in great shape.

As a result, South County Hospital was able to use this handsome carpet throughout the corridor, in patient rooms, and even up the walls in places.

Expensive? Not at all.

According to the Hospital's Administrator, there is a 50% savings in maintenance costs over tile.

For more information to help you specify carpeting of Acrilan 2000+ fibers, turn the page.

There's nothing there but facts.

For Acrilan 2000+, that's enough.

ACRILAN® 2000+
ACRYLIC

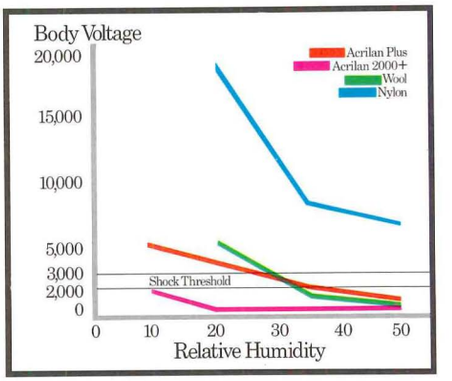
FACTS TO HELP YOU SPECIFY ACRILAN®PLUS AND ACRILAN®2000+

ACRYLIC

ACRYLIC

DURABILITY

In the many tests that measure durability, including abrasion and stair wear, Acrilan Plus and Acrilan 2000+ outperform wool by at least 30%. But durability means more than abrasion resistance. It means the ability to keep a rich, new look despite a long period of hard traffic and difficult soiling and fading conditions. Acrilan was first introduced in carpeting fifteen years ago. Many of the original installations are still in place, still look young and beautiful. And that's the best proof of durability.



STATIC RESISTANCE

Acrilan Plus offers exceptionally low static build-up and discharge rate. But where this factor is of great importance, specify Acrilan 2000+. Under normal conditions, carpets of Acrilan 2000+ are virtually static-free. This eliminates discomfort from touching metal objects and cuts down on interference with delicate electronic equipment. It also makes for a carpet that stays cleaner, because there is no static build-up to attract air-borne dust and soil.

STYLING

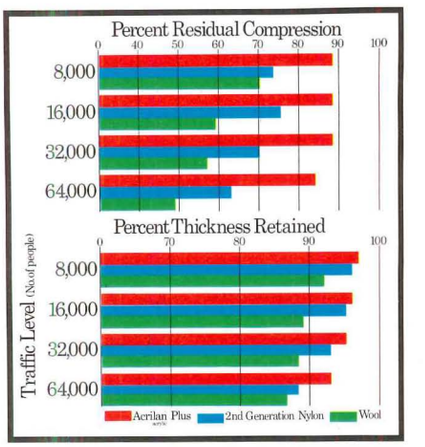
Did you ever notice how similar in appearance continuous filament nylon contract grade carpets are? Carpets of Acrilan Plus and Acrilan 2000+ on the other hand have decorating versatility unsurpassed by any other fiber. Carpets made with Acrilan® acrylic fiber, in fact can be tufted, woven, knitted or fusion bonded in an endless variety of designs, textures and colors that make possible a kaleidoscope of stylings. All this with the added benefit of being non allergenic, moth proof and mildew proof that comes from being a clean synthetic fiber.

EASE OF MAINTENANCE

Acrilan Plus has a smooth, hard surface that gives dirt particles no place to cling to. It vacuums easily and beautifully. It is non-porous and hydrophobic (resists moisture absorbtion). Many spills wipe up without a trace. Acrilan 2000+ has the added advantage of color locked in the fiber. Because each fiber is colored all the way through, even the harshest detergents can be used without any bleaching effect.

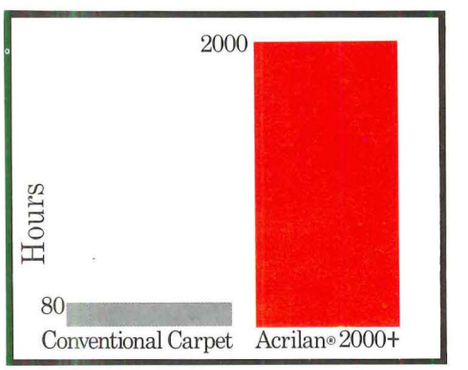
FLAME RESISTANCE

Government standards for flame resistance are currently being re-evaluated. But for now, stringent requirements are still in effect. Hospitals that receive any kind of federal assistance must comply. Jet aircraft carpeting must meet stiff F.A.A. regulations. Many states and localities have their own requirements for schools, nursing homes and college dormitories. Acrilan Plus and Acrilan 2000+ now have built-in fire retarders that give carpet manufacturers the capability of meeting all government requirements.



RESILIENCE

If a carpet fiber is not resilient, does not "bounce back" after compression, the carpet will tend to look worn long before real wear occurs. Acrilan Plus and Acrilan 2000+ have the ability to recover after long periods of compression under heavy furniture, as well as the ability to come back after side compression, such as that caused by heavy traffic.



COLOR FASTNESS

Contract carpeting should have colors that stay bright, don't fade under tough conditions. Acrilan Plus performs well, even where food, drug or chemical spills are a problem. It has good resistance to both acids and alkalis, and can be safely cleaned with any ordinary cleaning agent. For tougher jobs, consider Acrilan 2000+. We tested it with nearly one hundred hospital stains and their solvents without affecting fiber tenacity or color. In sunny locations with large glass areas, there is nothing to beat this fiber. 2000+ is a Weatherometer rating, showing no fading after 2,000 hours of burning noon-day sun. For comparison, the industry standard for normal carpets is 40 hours. The plus in Acrilan 2000+ indicates that some of our colors rate up to 6,000 hours on this standard industry test. So you can see that we are being modest in naming this fiber.

ACRILAN® acrylic PLUS
THE NEW EXCELLENCE IN CARPET FIBER BY
Monsanto

ACRILAN® acrylic
THE NEW EXCELLENCE IN CARPET FIBER BY
Monsanto
2000+

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Stacks vertically

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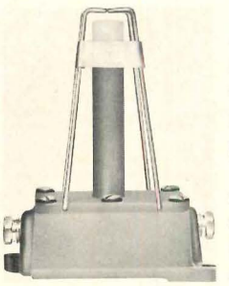
For more data, circle 68 on inquiry card

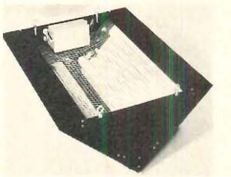
continued from page 150

FIRE DETECTOR / Device calls for an extinguishing agent when required, and automatically shuts sprinkler systems off when temperatures drop below the predetermined set point. The unit will withstand ambient temperatures up to 1500 F for short periods of time without damage. System is designed especially for "dry" sprinkler systems where water pipes remain empty when not in use. ■ Fenwal Inc., Ashland, Mass.

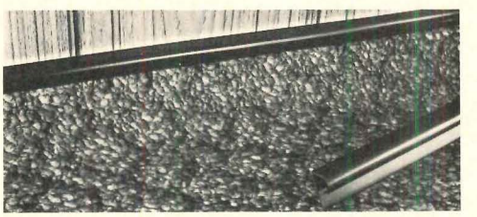


Circle 317 on inquiry card

ELECTRIC INSECT KILLERS / This unit, designed exclusively for interior use, is capable of positive fly control in areas occupying up to 30,000 cu ft. Panels emit a white light which lures flies to the wire grid where they are electrocuted. Dead flies fall into a sanitary collection tray. The unit has a one-year guarantee. ■ Rid-o-Ray, Milford, N.H.



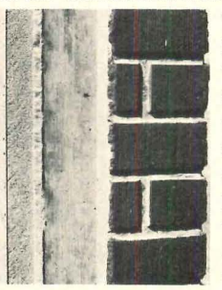
Circle 318 on inquiry card



VINYL CARPET COVE CAP / Product is available in four colors and in 12 foot lengths. Flange of the cap is designed to grip carpet tightly and hold it in place. ■ Johnson Rubber Co., Middlefield, Ohio.

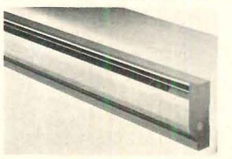
Circle 319 on inquiry card

WALL CONSTRUCTION SYSTEM / Aluminum wall forms are held in place without ties while the wall is being poured, allowing for placement of interior wall panels, styrofoam insulation, and disposable textured pressboard molds in the forms before the concrete is poured. Textured exteriors can be painted to resemble brick, wood and other materials. ■ Kaiser Aluminum & Chemical Corp., Oakland, Calif.



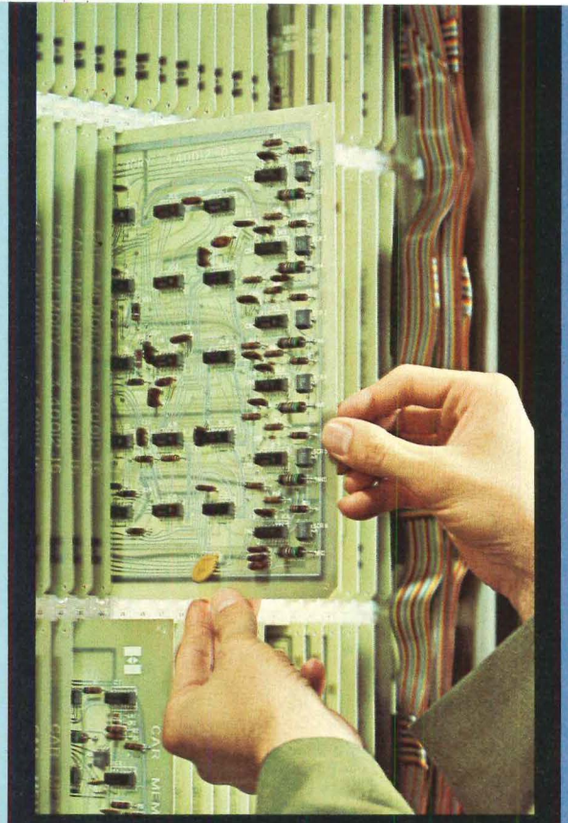
Circle 320 on inquiry card

ELECTRIC BASEBOARD HEATER / Features include junction boxes at both ends, a baffle strip that splits the rising air flow to keep the top of the unit cooler, cool-air slots below the thermostat to assure that the coolest air controls the stat, and new floating-suspension clips for quieter operation. Heaters are available in 42 models. ■ Hunter, Div. of Robbins & Myers, Inc., Memphis, Tenn.



Circle 321 on inquiry card

more products on page 160



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AND ESCALATORS
Toledo, Ohio 43601

DIVISION OF **RELIANCE** ELECTRIC COMPANY

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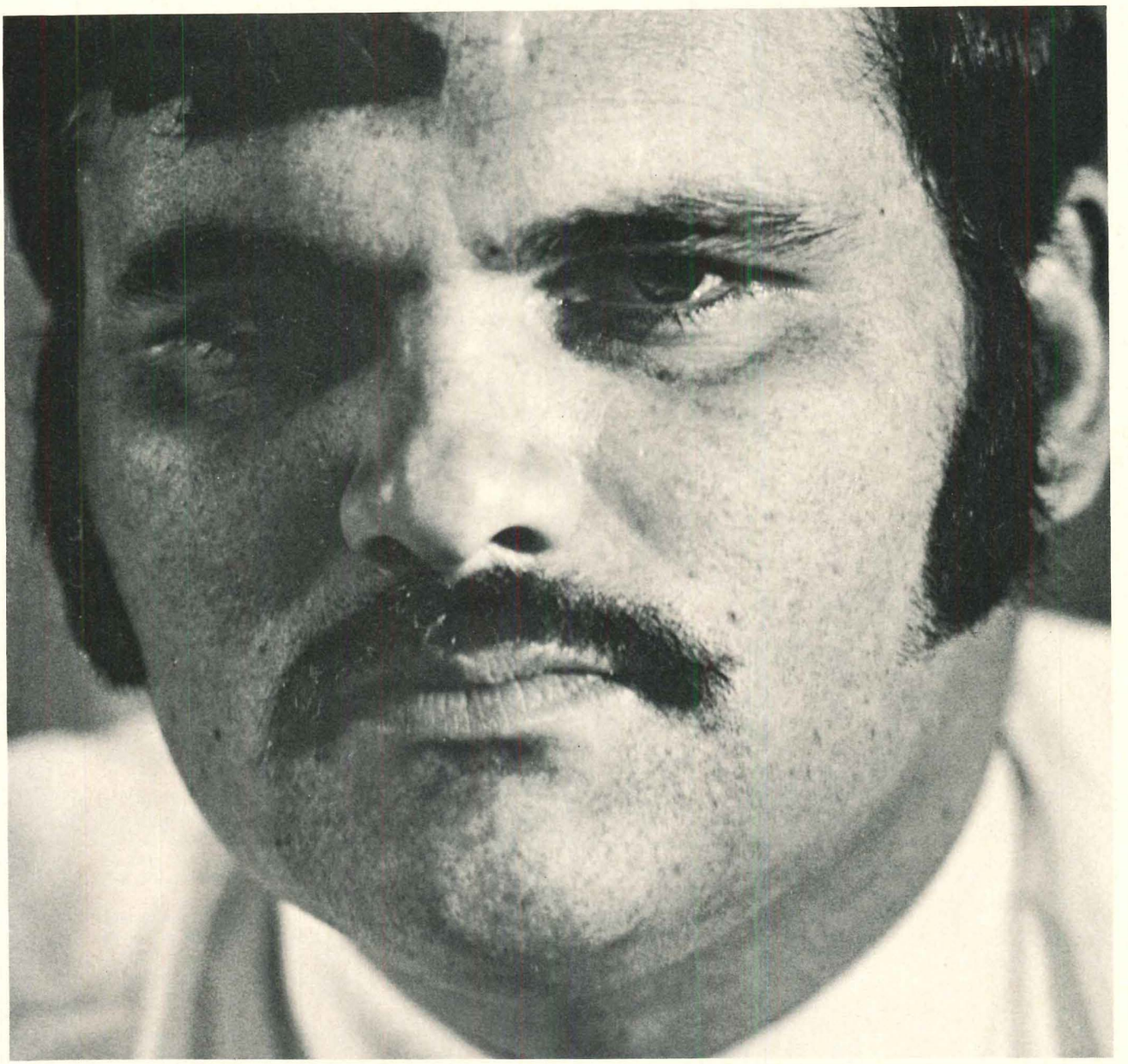

Ask general manager Stew Barber

Our Pitt-Glaze® Coating System sheds fats and fatty acids fast—keeps maintenance costs down

PPG INDUSTRIES

Ex-Buffalo Bills' offensive tackle Stew Barber knows how unneeded fat slows down an athlete. As general manager of Darling & Company's Buffalo, N. Y. rendering plant, he also knows how fat deposits can slow down cleaning and maintenance of machinery and plant surfaces, increasing maintenance costs.

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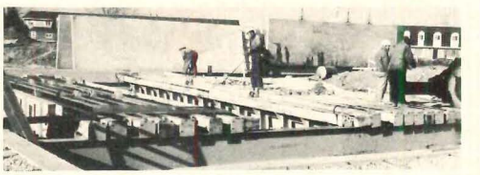
For more data, circle 73 on inquiry card

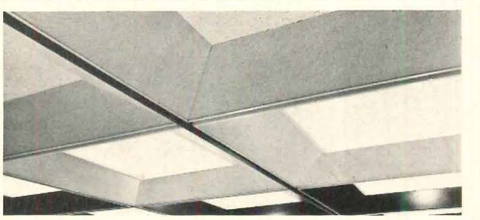
55-448

continued from page 156

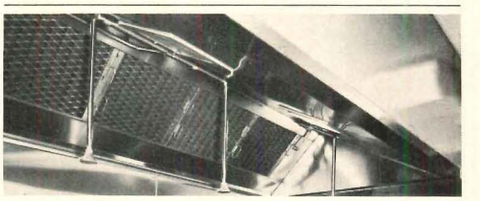
MOBILE STORAGE SYSTEM / Compact shelves glide laterally, providing one access aisle to the desired shelves. ■ Estey Corp., Red Bank, N.J.
Circle 322 on inquiry card



CONCRETE BATTERY MOLD / On-site casting of vertical load-bearing walls requires less construction time, according to the manufacturer, and costs less due to savings on shipping costs. ■ IE Industries, Minster, Ohio.
Circle 323 on inquiry card

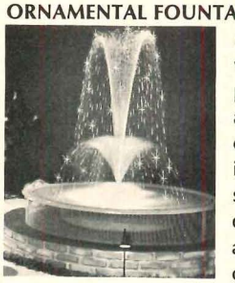


CEILING SYSTEM / Components include a contrasting pattern of 60 by 60 in. modules with acoustical panels and lighting, and an air bar providing ventilation through the grid. ■ Conwed Corp., St. Paul, Minn.
Circle 324 on inquiry card



GREASE FILTERS / A self-draining baffle assembly removes grease from cooking fumes before they enter the ductwork, thereby reducing risk of fire and cleaning maintenance. ■ Flame Gard, Inc., Los Angeles.
Circle 325 on inquiry card

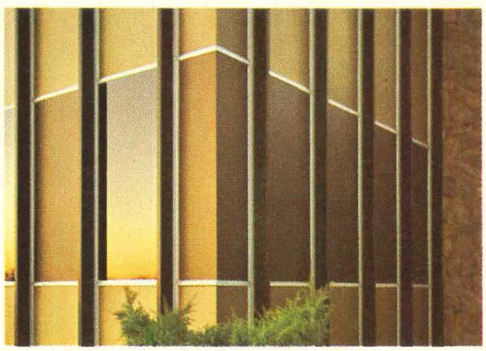
ORNAMENTAL FOUNTAINS / Jewel-like patterns



are created with rotating water droplets. A complete line of fountain and bowl assemblies includes underwater lighting equipment, splash screen and water recirculator, fountain head and fiberglass bowl. The choice of fountain models is extensive. There are three types of fountain patterns. ■ Rain Jet Corp., Burbank, Calif.
Circle 326 on inquiry card

more products on page 164

Basking bronzes.
Introducing sun-loving Kalcolor® in handy Mirawal® building panels.



Dark statuary bronze and medium amber hues of Kalcolor aluminum are now available in light, rigid, easy-to-use building panels from Kaiser Mirawal.

Mirawal Kalcolor Building Panels.

You can order them as veneer or insulated panels in the sizes you need.

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For samples—and to see other ideas in today's widest range of building panel types, colors and facings—write Kaiser Mirawal, P.O. Box 38A, Port Carbon, PA. 17965.

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Owner: Phipps Land Co.
Architect: Toombs, Amisano & Wells
Stopray #2016 glazed by PPG, Atlanta

PRODUCT REPORTS

continued from page 160

ROOF SYSTEM / Insulation, felt, roofing joint tape and bitumen are supplied as a package for use on metal, wood or concrete decks. The system gives one-source responsibility for the entire roof and, when applied in accordance with company specifications, is guaranteed against failure for 10 years from date of installation. Standard roofing techniques are used to apply the materials. ■ Koppers Co. Inc., Pittsburgh.

Circle 327 on inquiry card

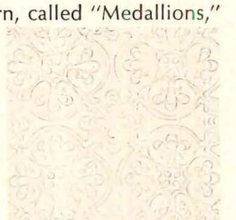
ICE MACHINE / Unit produces three-dimensional mini-cubes with 11 sides which are said to chill beverages very quickly and permit longer lasting cooling action. Unit has a capacity to produce 300 lbs, or 17,000 cubes, over a 24-hour period. Features include a water purification system and automatic operation. ■ Liquid Carbonic Corp., Chicago.

Circle 328 on inquiry card

FILING SYSTEM FOR DRAWINGS / One standard size file will accommodate drawings from A through E sizes. Other features include a coding system which eliminates misfiling of drawings, and time savings of up to 75 per cent in filing and retrieving. Files are of all metal construction. ■ Valagraph Co., Buena Park, Cal.

Circle 329 on inquiry card

FLOOR TILE / This pattern, called "Medallions," is one of four new designs available in brown, white, olive and amber. Special textures are available for added resistance to wear in commercial areas with a heavier traffic pattern and for slip resistance on inclined ramps and wet areas. ■ Interpace, Glendale, Calif.



Circle 330 on inquiry card

SLANT OFFICE / Unit was designed to provide maximum convenience in a minimum amount of space and is particularly useful for parking lot and plant security applications. Steel booth arrives ready for on site installation, and comes complete with sliding doors, solid or sliding windows, safety plate steel floor, canopy, fiberglass insulated walls, insulated roof and a color choice of enamel finish. ■ Par-Kut International, Inc., Mt. Clemens, Mich.

Circle 331 on inquiry card

more products on page 168

For more data, circle 78 on inquiry card

Today's Touch

Berlin design Ten-Strike™ lockset.
Comfort-curved to the clasp.
Smoothly responsive to the gentlest turn.
Reassuringly solid. Enduring design
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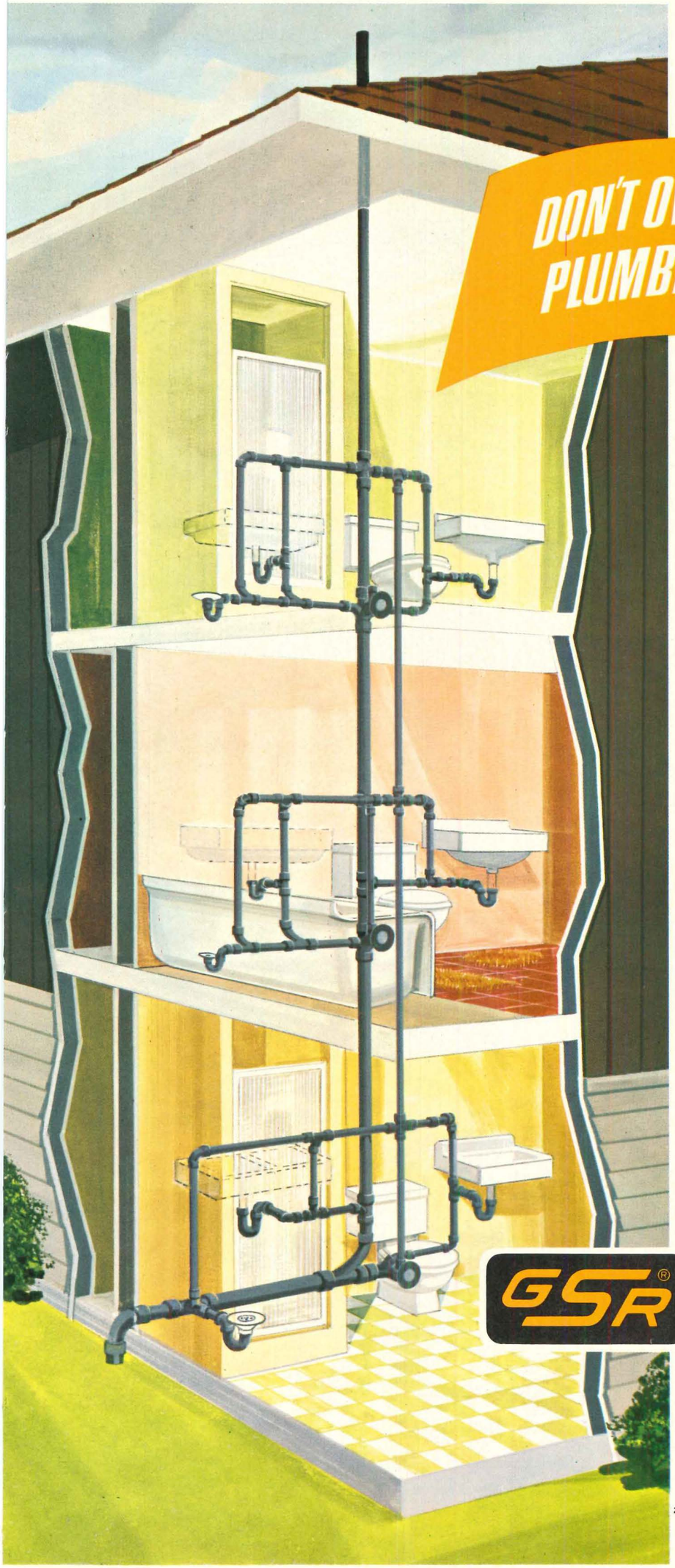

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use all-new GSR® Above/Floor Plastic Fittings

For maximum profits, install modern above/floor plumbing with GSR® Above/Floor fittings. It means extra profits – extra convenience – for builders of conventional residences, high-rise apartments, and modular, prefabricated units. Available in ABS and PVC, these fittings accommodate floor-mounted, wall-discharge water closets and raised bottom tubs and showers.

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- Fewer fittings are required.
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UPC APPROVED

2154

PRODUCT REPORTS

continued from page 164

WASH CENTER / Designed specifically to provide clearance for wheelchair users, unit is equipped with wrist-blade operated valves mounted on the horizontal surface of the bowl deck. Rectangular bowl has coved corners and underside is coated to absorb sound. UL-approved, factory-wired unit combines a light fixture and grounded electrical outlet, storage cabinet with glass-mirrored door, towel and cup dispenser. ■ Bradley Washfountain Co., Menomonee Falls, Wis.

Circle 332 on inquiry card

STEEL SIDING / Rough-sawn pattern is embossed in the galvanized steel during roll forming. Siding is a combination of vinyl and steel. Baked vinyl finish is bonded to the steel panels, forming a protective coating providing corrosion- and rust-resistance. Panels come in seven colors and are ideal for apartments and single-family homes. ■ Alside, Inc., Akron, Ohio.

Circle 333 on inquiry card

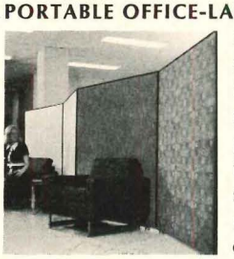
COMPACTOR / This model meets the needs of cafeteria situations where continuous compaction of food and service wastes must be automatically handled. Features include a buzzer and light signal which indicate a completely filled garbage container that needs replacement. ■ The Tony Team Inc., Minneapolis.

Circle 334 on inquiry card

DUAL-CODE LOCKING SYSTEM / Product provides effective access and parking fee controls for different groups using parking facilities in varying shifts. Shift control is managed by a simple changeover from day to nighttime coding at the locks. Lock codes can be reprogrammed in seconds. ■ Cardkey Systems, Chatsworth, Calif.

Circle 335 on inquiry card

PORTABLE OFFICE-LANDSCAPE PARTITION UNITS / Four standard sizes are available in three vinyl woodgrains, three hardboard woodgrains, or 10 vinyl color finishes. Units are self-standing and may be used singly or in groups of two or more interconnected units. When interconnected, panels pivot from 0-180 degrees on built-in levelers. Partitions are especially designed for offices. ■ Masonite Corp., Chicago.



Circle 336 on inquiry card

more products on page 175

Westinghouse Electric Corporation Homewood Plant, Pittsburgh, Pa. Architect: Walter Roberts Associates, Pittsburgh, Pa. C-Panel System, 4″ and 8″ Ribbed Exterior Profile.

Smith Walls create an environment for... industry

A plant doesn't have to look like a plant.

A really attractive industrial building is the starting point for a pleasant working environment. Smith Walls offer design possibilities limited only by the architect's imagination. An architect's idea, brought to life in the bright colors and interesting panel configurations of Smith metal walls, can make an industrial building a happier place to work. And Smith's Single Responsibility concept makes sure the walls *are* right. Single Responsibility is the Systems Approach to solving your metal wall problems. It's a complete system . . . from the earliest Architectural/Engineering contact through engineering, color coating, manufacturing to placement of the final product fastener on the job site. This Single Responsibility concept is the most important factor in Design Construction.

Specify Smith Walls, and Smith Single Responsibility, for your next building project. For full details and specifications, consult Sweets Architectural File or write.

The Dow Chemical Company, Newark Ohio Industrial Park, Newark, Ohio. Architect: Curtis N. Lindberg, Columbus, Ohio. C-Panel System, Shadowall Exterior Profile.

EGS-103

cyclops CORPORATION

ELWIN G. SMITH DIVISION

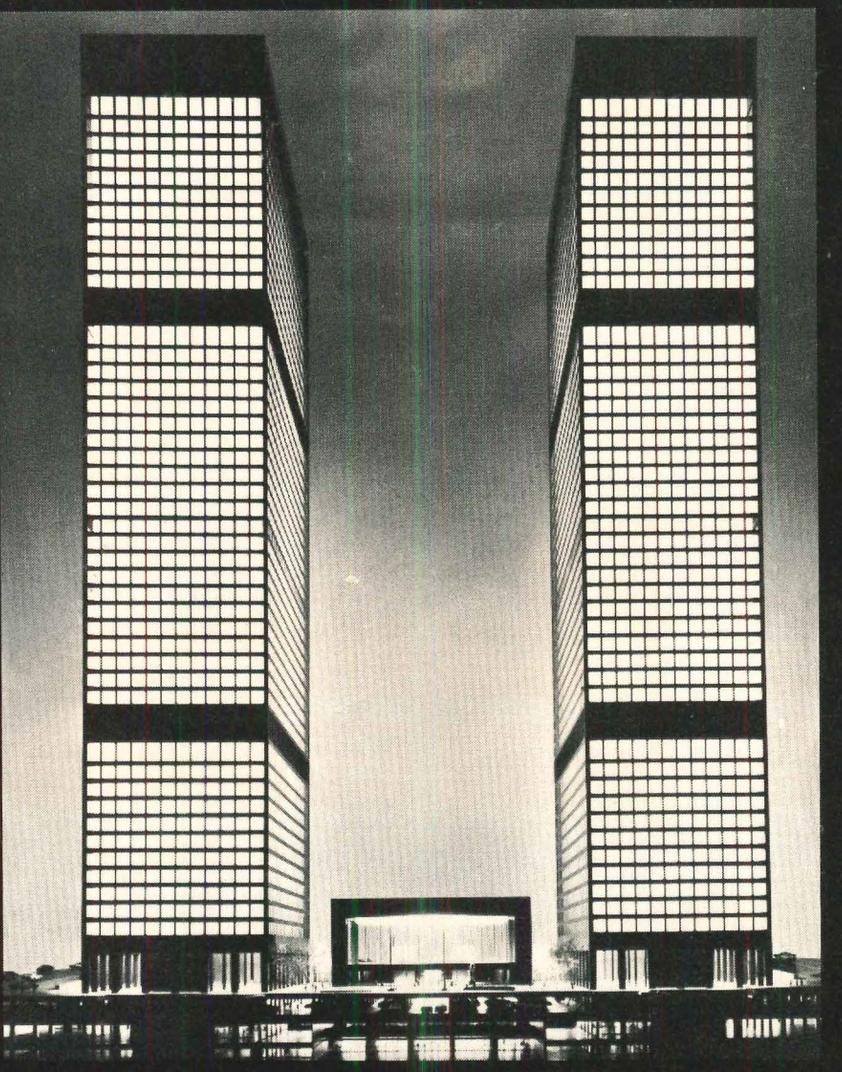
100 WALLS STREET, PITTSBURGH, PENNSYLVANIA 15202

For more data, circle 85 on inquiry card

International Paper Company, Lewisburg, Pa.
Architect: Cassis Associates, Inc., St. Louis, Mo.
B-Panel System, Contourwall and Hilinewall
Exterior Profiles.

In 1958 they sealed the old Atlantic Richfield headquarters with LP® polysulfide polymer.

In 1971 they demanded that the new Atlantic Richfield headquarters be sealed with LP® polysulfide polymer.



It always makes sense to ride a winner.

Case in point: the spanking new Atlantic Richfield Plaza whose designers and builders specified that it be waterproofed with a sealant based on Thiokol's LP® polysulfide polymer.

The reason for their decision? A polysulfide-based sealant has proven to be a winner. In fact, it has been doing just that for the past 14 years at Atlantic Richfield's former headquarters building nearby in downtown Los Angeles.

The choice, then, was both obvious and logical. Why not go with a sealant that had successfully withstood years of punishment in an environment that often contains more than its share of corrosive pollutants?

But, at Thiokol we don't rest on past accomplishments alone. Granted, sealants based on our polymer have performed flawlessly for more than 20 years. Yet that doesn't stop us from continuing a Seal of Security Program which aims to see that they'll last even longer in the future.

So ride with a winner. Specify a sealant based on Thiokol's polysulfide polymer. It won't let you down over the long haul.

For more information, including detailed comparisons between sealants based on Thiokol's LP® polysulfide and eight other kinds of sealants, write: Dan Petrino, Thiokol Chemical Corporation, P.O. Box 1296, Trenton, N.J. 08607.

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Thiokol

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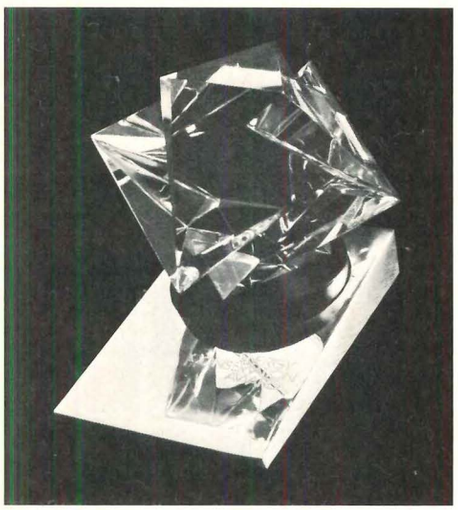
For more data, circle 87 on inquiry card

Owens-Corning announces a special reason to design buildings that conserve energy.

Show our Awards Jury a building that doesn't waste energy—and you could win one of the Energy Conservation Awards Owens-Corning will present this year.

The Awards Jury will be looking for three things: Creativity. Originality. And most important—*designs that save energy.*

We're launching this Award program because of the urgent need to conserve energy. Too many buildings waste fuel and contribute to environmental pollution.



The Owens-Corning Energy Conservation Award. "Triangles," a Steuben crystal sculpture that captures and reflects light from multiple triangular planes.

By offering Energy Conservation Awards, we hope to stimulate new ways to conserve energy. It also lets us honor the architects and engineers who do the best job of designing buildings and mechanical systems that conserve energy.

Who can enter. All registered architects and professional engineers practicing in the U.S. are eligible. As individuals or in teams. But to qualify, your entry must be a commissioned building project—in the design process, under construction, or a completed structure.

Entry categories. A winner will be selected in each of these three categories:

Institutional—schools, hospitals, and government buildings, for example.

Commercial—office buildings, shopping centers, retail stores and similar structures.

Industrial—including manufacturing plants, research centers, warehouses.

Equal emphasis will be given to all entries regardless of project size.

The use of Fiberglas* products is not required.

The Awards. Winning architects and engineers will receive the Steuben crystal sculpture shown at left. Firms and building owners associated with winning entries will receive Steuben plaques.

The Awards Jury. Winners will be selected by: MacDonald Becket A.I.A.—Welton Becket and Associates. Leander Economides—Economides and Goldberg. Harold S. Lewis—Jaros, Baum and Bolles. Professor Charles F. Sepsy—Dept. of Mechanical Engineering, Ohio State University. Herbert H. Swinburne F.A.I.A.—The Nolan and Swinburne Partnership.

Send for entry details now. Completed entries must be submitted by August 31, 1972. Winners will be notified in September. We'll make the Awards in October.

For a brochure giving complete details, contact your local Owens-Corning representative. Or write: Owens-Corning Fiberglas Corporation, Energy Conservation Award Program, Architectural Products Division, Fiberglas Tower, Toledo, Ohio 43659.

*T.M. Reg. O.-C.F.

Owens-Corning is Fiberglas

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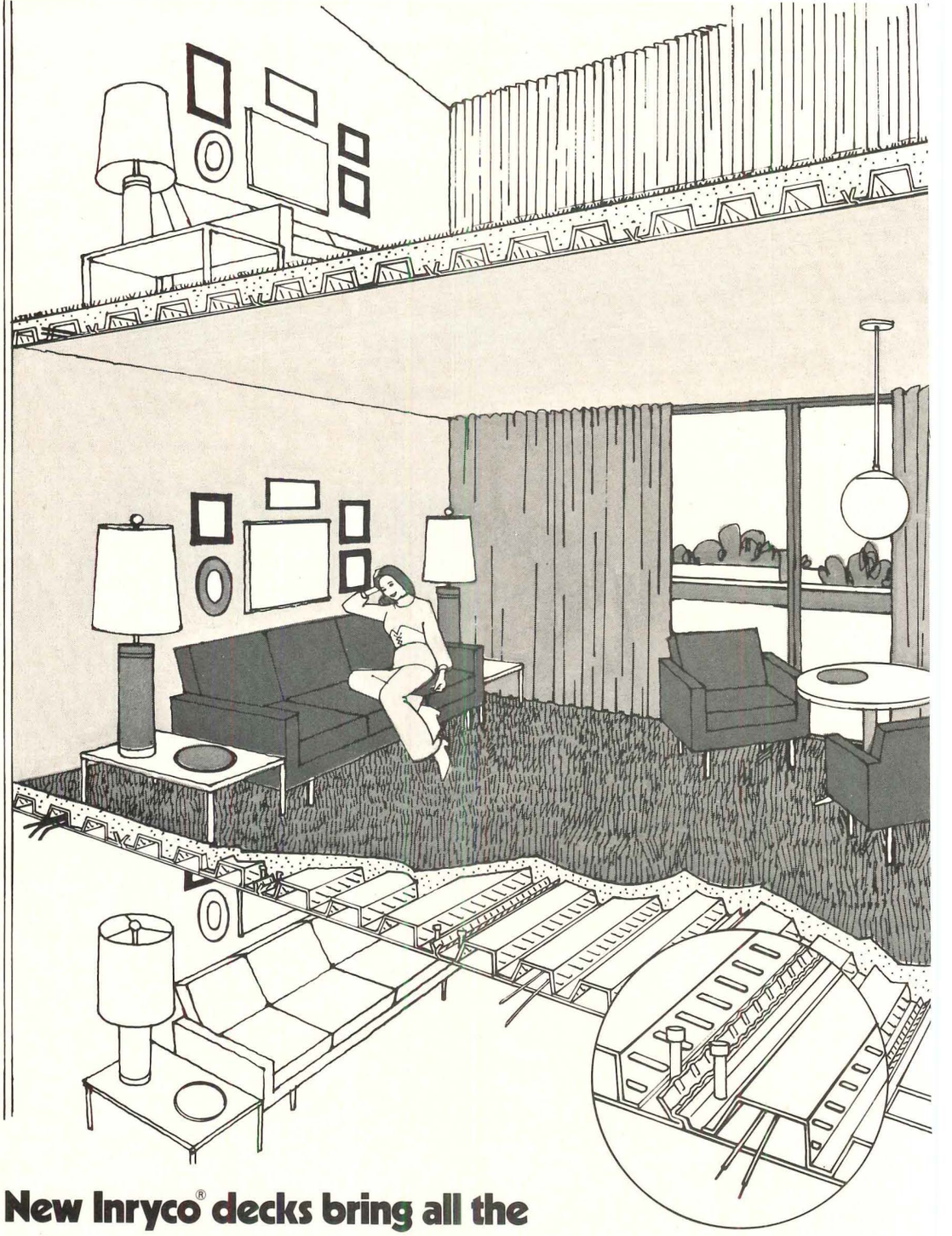
it's an exposed ceiling.

it's a structural floor.



New Inryco® decks bring all the advantages of composite design to hotel and motel construction.

Inryco Types V, NFv and HFv Floor/Ceiling systems make possible long span composite slabs that create spacious uninterrupted areas. The smooth underside of the deck is treated to accept a sprayed-on finish that looks like plaster, and eliminates the need for suspended ceilings and the extra building height they require. In addition, floor cells can carry electrification for rooms above and below. And recent UL Ratings often make it possible to eliminate costly fireproofing.

Exclusive V lock joints on each panel increase composite action with concrete. So you get long span slab strength at costs comparable to ordinary construction. Deck is lightweight. Goes up quickly, with on-site equipment. Becomes a safe work platform at once . . . no need to wait for concrete to cure. Eliminates costly forms.

Ask for the booklet "Inryco Floor/Ceiling Systems" and Catalog 21-1. Write Inland-Ryerson Construction Products Co., 4133 W. Burnham Street, Milwaukee, Wisconsin 53201. You'll also find us in Sweet's Architectural File, Section 5.

A2-21-2

INLAND RYERSON

General Offices: Chicago, Illinois

A member of the INLAND steel family

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continued from page 168

FREE-STANDING PARTITIONS / Steel panels are self-supporting, movable and interchangeable. Four different heights and 13 widths are available. Walls can be made entirely of steel or glass, or a combination of both. ■ Rockaway Metal Products Corp., Inwood, N.Y.

Circle 337 on inquiry card

FENCING SYSTEM / Extruded from a specially formulated polyvinyl chloride, fence is said to have excellent strength and weather-resistant properties and will not splinter or shatter at normal temperatures. Product is suited for commercial and residential applications. ■ Harvel Plastics, Inc., Easton, Pa.

Circle 338 on inquiry card

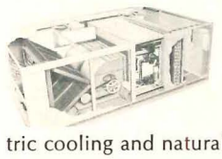
LIBRARY FURNITURE / Collection is crafted in all-hardwood solids and veneers. A method of leg attachment using concealed bars bolted together provides a metal-to-metal attachment that is said to add strength and stability. All pieces are accented by a carved quarter-round relief which appears under the edges of table tops, at the juncture of tops and cases, and along the exposed edges of legs. ■ Myrtle Desk Co., High Point, N.C.

Circle 339 on inquiry card

GLASS FURNITURE / All units are made of glass exclusively. Solid, transparent blocks are joined with clear cement to form pedestals for glass-topped tables, hollow containers, stands and slab-style cocktail tables. ■ Bahat Associates Inc., New York City.

Circle 340 on inquiry card

HEATING-COOLING UNITS / Six rooftop package models ranging in size from 15 through 20 tons cooling and 250 through 450 MBTU heating are available. Electric cooling and natural gas heating combination is a major feature, with several heating capacities for each cooling unit. ■ Hastings Industries, Inc., Omaha, Neb.



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PIPE INSULATION SYSTEM / Designed to meet the stringent fire code requirements for commercial, institutional and industrial indoor piping, especially where sanitation and appearances are important, system is said to combine all the outstanding physical properties of cellular glass with a UL-rated vinyl jacket. The system is moisture- and vapor-resistant, has high compressive strength and is said to maintain constant insulating efficiency. ■ Pittsburgh Corning Corp., Pittsburgh.

Circle 342 on inquiry card

more products on page 180

SINGER announces a great new name in commercial air conditioning...

CARTERET

with a full line of products and a full staff of people you already know as "THE PROBLEM SOLVERS."

Carteret. Our name may be new in commercial air conditioning. But our reputation is solidly established!

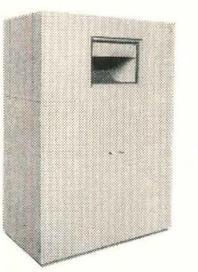
Our products aren't called "The Problem Solvers" for nothing. Every one is built to save you installation costs, operating costs and maintenance costs. And it's no accident that our people are called "Problem Solvers" too. Every designer, engineer and field representative really knows the business, knows the product and knows how to help you save a buck without sacrificing quality.

Now we're part of the Singer Company. An important part of their Climate Control Division. We've got a new name... Carteret. And some big new opportunities for the future.

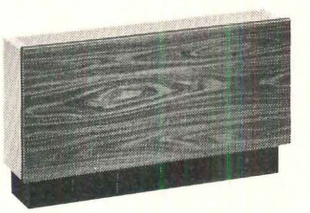
But what have we got for you today? Just one of the most complete product lines in the business, that's what. Carteret has products for all kinds of jobs. Big. Small. High rise. Low rise. New construction or modernization.

For instance, Carteret makes a total of 40 different models of Rooftop Air Conditioners alone. These include combination units, cooling-only units and split system units from 8 to 40 tons.

The Carteret line also includes air cooled Self Contained Packaged Units in 8, 10 and 16 ton sizes. Plus water cooled units from 3 to 30 tons. And Packaged Chillers that range from 20 to 60 tons, water cooled, and from 20 to 50 tons air cooled.



Also available under the Carteret name is a complete line of Thru-The-Wall year 'round units in a variety of sizes and types. There are combination models with electric heat and cooling... or models that tie-in with existing steam or hot water systems. Take your choice. Carteret also manufactures highly advanced Electro-Hydronic total environment systems for jobs where you need low cost operation and multi-zone control, too.



For more information on Carteret "Problem Solver" commercial air conditioning products, write us. Our address is still 1300 Federal Blvd., Carteret, New Jersey 07008.

CARTERET
AIR CONDITIONING DIVISION

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AE / UPDATE

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

HARSHAW CHROMONYX BLACK CHROMIUM opens a new world of decorative design in plated finishes. Already being used on appliances, furniture, builder's hardware, lighting and plumbing fixtures, and architectectural trim, ChromOnyx offers exciting possibilities for products requiring a decorative and corrosion resistant finish. A chromium desposit with molecular structure altered to give a rich, warm black with a deep, soft reflectivity. Electroplated by traditional methods. Durable, permanent and corrosion resistant. Six-page folder on request. The Harshaw Chemical Co., 1945 97th St., Cleveland, Ohio 44106

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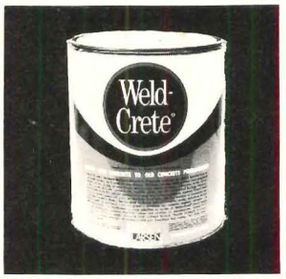

1972 MARKS LARSEN'S 20th YEAR of manufacturing Weld-Crete® and Plaster-Weld®, the performance-proved and patented chemical bonding agents for concrete and plaster. Easy application and non-critical open time make both ideal for any bonding application. Not epoxies, Weld-Crete® and Plaster-Weld® are safe, especially for confined areas—non-toxic, non-flammable and non-volatile. Complete specifications, test data and descriptions for use in new work, renovation and repair are contained in catalogs available from Larsen Products Corp. 5420-C Randolph Rd., Rockville, Md. 20852.

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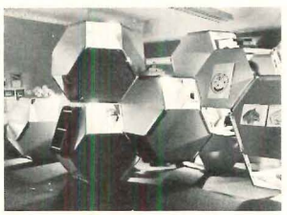

A NEW EDUCATIONAL ENVIRONMENT is created with these units which may be placed in a conventional classroom or in open-space schools. Units are truncated octahedrons which may be attached in a number of configurations to form a three-dimensional stack of individual learning spaces. Design satisfies students' privacy needs while providing visual access for the teacher.

Each learning space has individual lighting controlled by the student. Write St. Charles Manufacturing Co., School Division, St. Charles, Illinois 60174.

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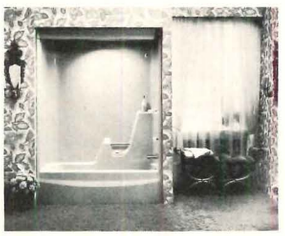

"Fiberglass bathroom fixtures will be standard in ten years . . .," according to a national trade magazine. Universal-Rundle—the pioneer in introducing fiberglass fixtures to home builders—is now the leading manufacturer of fiberglass tub/shower units. Consult SWEET's Architectural and Light Construction Files for U/R's complete catalog of bathroom fixtures. For a full-color brochure on U/R fiberglass fixtures, write Universal-Rundle Corporation, 217 North Mill Street, New Castle, Pa. 16103.

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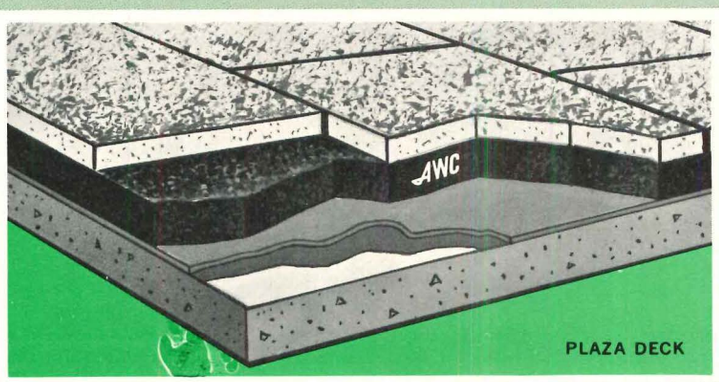
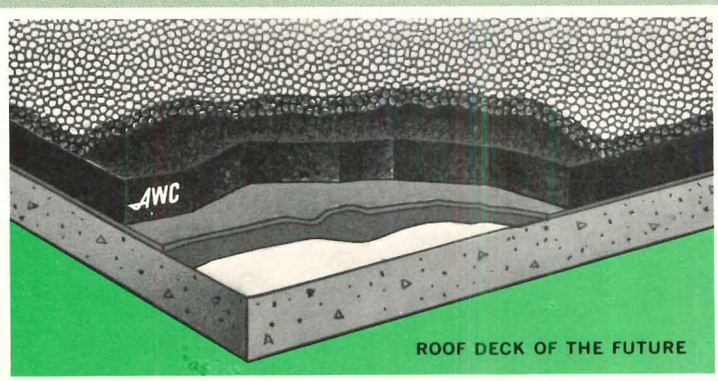
the leakproof plaza... and roof deck





PLAZA DECK: To achieve a truly "leakproof" construction, the waterproof membrane should be protected from the cycling of wide temperature ranges, ultra violet rays and puncture by construction workers. All-weather Crete monolithic insulation provides this protection keeping the waterproof membrane ductile and active for the life of the system. There are eight widely used All-weather Crete plaza designs.

ROOF DECK OF THE FUTURE: Over a decade of designing, testing and practical application have produced this new Silbrico system. All-weather Crete is placed over the waterproofing membrane protecting it from severe thermal change and climatic elements which are major causes of roof failure. All-weather Crete insulation has the properties of being unaffected by these severe conditions.

For complete information, specifications and detail diagrams regarding these and many other successful All-weather Crete systems, write Silbrico Corporation, 6300 River Road, Hodgkins, Illinois 60525. References: Sweets catalog and Spec Data.

All-weather Crete®
SILBRICO CORPORATION

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Happy marriage.

Republic stainless steel and Plexiglas joined in construction of space-age ski lodge.

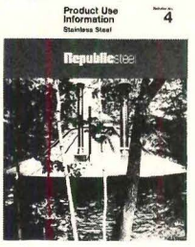
Republic's DUROFLASH® stainless steel roofing was chosen as the ideal material for this most unusual weekend retreat... built in the foothills of Vermont's Green Mountains by architect Aaron Cohen, A.I.A., of New York City, for investment counselor Henry Schneider. The dodecahedron roof features DUROFLASH stainless steel in 24 planes, married to 12 trapezoidal Plexiglas* windows.

Though DUROFLASH is stronger and tougher than copper and aluminum, it can easily be joined by soldering or welding. Rated as "dead soft," DUROFLASH shows little or no springback when bent for forming. It offers important advantages, too, in stability—both in appearance and price. DUROFLASH will not change color and never needs cleaning or maintenance. Nor is its cost affected by fluctuating availability. In fact, dollar for dollar, DUROFLASH covers more roof for less money.

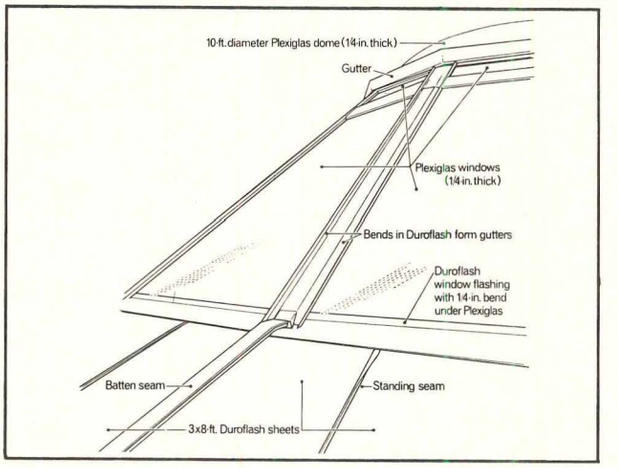
More than 1200 pounds of DUROFLASH in three-foot by eight-foot sheets were used on the job. The stainless portion of the roof was formed by nailing the DUROFLASH to two-inch by six-inch sheathing. The sheets were precut to size and joined by standing seams.

The area under each large window was flashed with four trapezoidal pieces of DUROFLASH, interlocked with standing seams. Flashing over each beam has longitudinal bends, both for rigidity and to form a gutter.

DUROFLASH is a "creative" material—easily adaptable to enhance your best ideas and readily available from your Steel Service Center. We'll be glad to send useful reference literature describing this application and perhaps suggesting some for you. Write Republic Steel Corporation, Cleveland OH 44101.



*Plexiglas is a trademark of Rohm and Haas Company.



Republicsteel

Member Steel Service Center Institute

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Efficient building idea: A new built-up roofing system with a completely inorganic reinforcement.

New Perma Ply*-R felts are reinforced with *inorganic* Fiberglas.*

This means they won't rot or char.

Won't wick volatile oils from the asphalt and cause brittleness.

And won't absorb moisture. (The asphalt is embedded into the porous felts to form a monolithic system. This helps prevent wrinkles, buckles, curling, blisters and fishmouths.)

Perma Ply-R felts can be installed and left exposed without the final surface treatment for up to 6 months (while other trades are completing construction).

Since 1963, Perma Ply-R test roofs and roof sections have been applied in all climate zones in the United States.

Results: not one known failure due to Fiberglas Perma Ply-R.

These Fiberglas felts are now available in all states east of the Rockies.

For more information, write to Mr. A. E. Meeks, Architectural Products Division, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

Energy Conservation Award

Owens-Corning is offering awards to stimulate new designs and ideas for conserving energy.

Special Steuben sculptures will go to the three architects or engineers who—according to a panel of independent judges—do the best job of designing buildings that don't waste fuel.

See our announcement in this magazine for details.

*T.M. Reg. O.-C.F.

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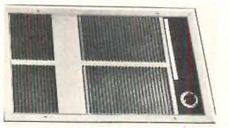
continued from page 175

FORCED AIR WALL HEATERS / Units are designed for warming large areas and also for part-time occupancy areas where fast warmth recovery is desired. Features include automatic temperature control, long-life heating element, and easy installation. ■ Ward Leonard Electric Co., Mount Vernon, N.Y.



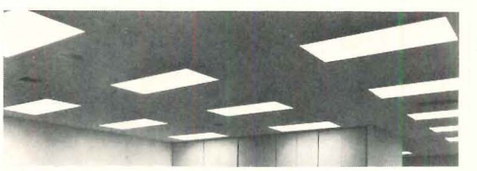
Circle 343 on inquiry card

EXPANSION JOINT SEAL / Polyurethane elastomer, factory-bonded and mechanically-secured to pre-treated continuous aluminum retainers, is said to provide a monolithic sealed joint that moves in all directions without loss of effectiveness, and is waterproof and dustproof. Seals are supplied with elastomer in three standard integral colors. ■ Construction Specialties, Inc., Cranford, N.J.

Circle 344 on inquiry card

COMPUTER-BASED CONTROLLED ACCESS SYSTEM / Twenty-four hour protection of people, property and documents in buildings is offered by this system, which connects new card readers located at entrance doors to a computer which limits entry according to individual ID card number, door location, or time of day. Any or all controls can be changed or new cards validated by keying new instructions into the computer. ■ IBM, White Plains, N.Y.

Circle 345 on inquiry card

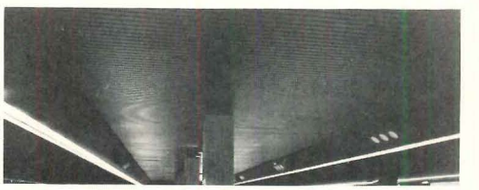


GLASS LIGHTING PANELS / Lamp-hiding characteristics of this heat-resistant, prismatic panel are the result of an arrangement of small, square-based, raised conical prisms. ■ Corning Glass Works, Corning, N.Y.

Circle 346 on inquiry card

FLOOR RESURFACER / Designed for cooler room floors that must be repaired or replaced, epoxy-based product cures at 38 to 50 degrees and hardens in 36 hours, and is said to provide outstanding resistance to abrasion and excellent impact resistance. ■ Stonhard Co., Maple Shade, N.J.

Circle 347 on inquiry card



ALUMINUM PANEL CEILING / Panels are individually snapped into metal stringers. Length and width are unlimited, though the increment standard is four inches. Panels are available in a choice of enamel finishes. ■ Alcan Aluminum Corp., Warren, Ohio.

Circle 348 on inquiry card

more products on page 184

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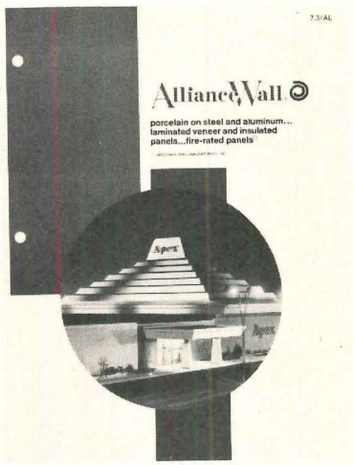

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VENEER PORCELAIN PANELS. Special section describes interesting applications for interior and exterior use in schools, hospitals, food processing plants, store and building fronts, apartments, motels, cleanrooms and industrial structures.

AllianceWall Corporation, P.O. Box 247, Alliance, Ohio 44601

European Plant:
Alliance Europe N.V., P.O. Box 19, 3600 Genk, Belgium

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For more information, write or call The Bendix Corporation, Transportation Systems Marketing, 3300 Plymouth Road, Ann Arbor, Mich. 48107. Phone 313/665-9711. TWX 810-223-6041.

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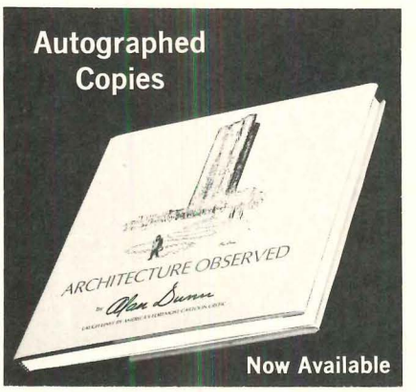

Alan Dunn's

ARCHITECTURE OBSERVED

Earlier this year, Architectural Record published—in hardcover book form—a collection of 139 of Alan Dunn's best cartoons which appeared in the RECORD over the years. The warm reception of this book by architects and others has prompted us to plan a second printing.

In the meantime, Alan Dunn has graciously consented to autograph a limited number of available copies which are being offered at this time on a first-come, first-served basis. The price of these personally autographed copies is $10 each.

In addition to the autographed copies, unsigned copies are also available at $6.95 each. These also make excellent gifts for your business associates and friends—particularly as Christmas gifts. **To order your copies, use the coupon below.**

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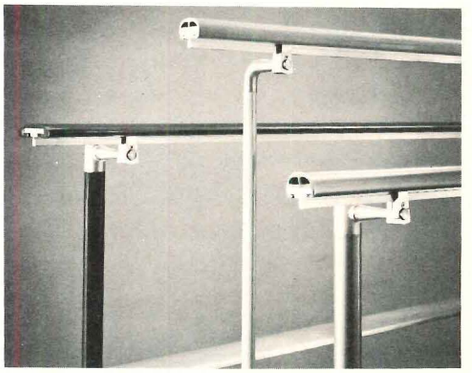


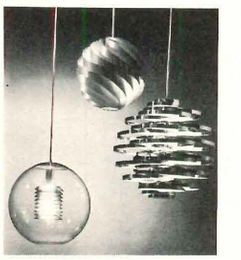
VINYL PLASTIC HANDRAILS / Several handrail shapes and plastic-clad aluminum posts are available. ■ Julius Blum & Co., Inc., Carlstadt, N.J.

Circle 349 on inquiry card

ARTIFICIAL CACTI / Polyurethane plants are 65 in. tall with a 24-in. perimeter. ■ Stendig Inc., New York City.

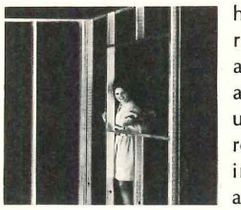
Circle 350 on inquiry card

HANGING LAMPS / All are designed for commercial interiors. One employs a satin gold louver encased in a clear glass sphere. Another employs swirling louvers around a central light source. The third luminaire consists of various sized polished chrome rings stacked one upon the other, surrounding a white acrylic diffuser. ■ Lightolier, Jersey City, N.J.



Circle 351 on inquiry card

STEEL THERMAL STUDS / Substantially reduced heat flow through exterior load-bearing walls at stud locations is achieved with this product, the manufacturer reports, thereby improving thermal performance, allowing inside and outside wall surfaces to stay free of "ghost-marking," which results from the tendency of dust particles to migrate to cool surfaces more readily than to warm surfaces. Open channel, steel runner track is available to accommodate the studs. ■ United States Steel, Pittsburgh.

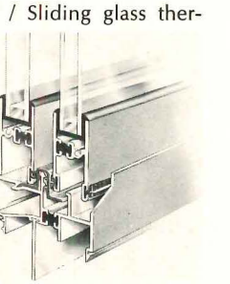


Circle 352 on inquiry card

WATER COOLING SYSTEM / The cooling capacity of the manufacturer's water coolers more than doubles through the use of a pre-cooler which uses the chill factor of water waste to lower the temperature of incoming water. At least 50 per cent of the cooling has taken place before the incoming water even reaches the cooling system. Incoming and outgoing water are separated by tubing. ■ Ebco Mfg. Co., Columbus, Ohio.

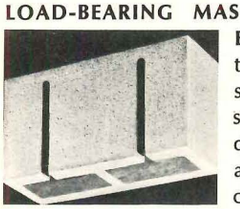
Circle 353 on inquiry card

THERMAL BREAK SYSTEM / Sliding glass thermal doors, sliding glass windows, and a steel entranceway comprise this aluminum door and window system, which reportedly ends frost and condensation on metal and prevents minus 110 degrees cold of dry ice from jumping the thermal barrier. System is said to protect an entire building against cold, moisture, drafts and noise. ■ Acorn Products Co., Detroit.



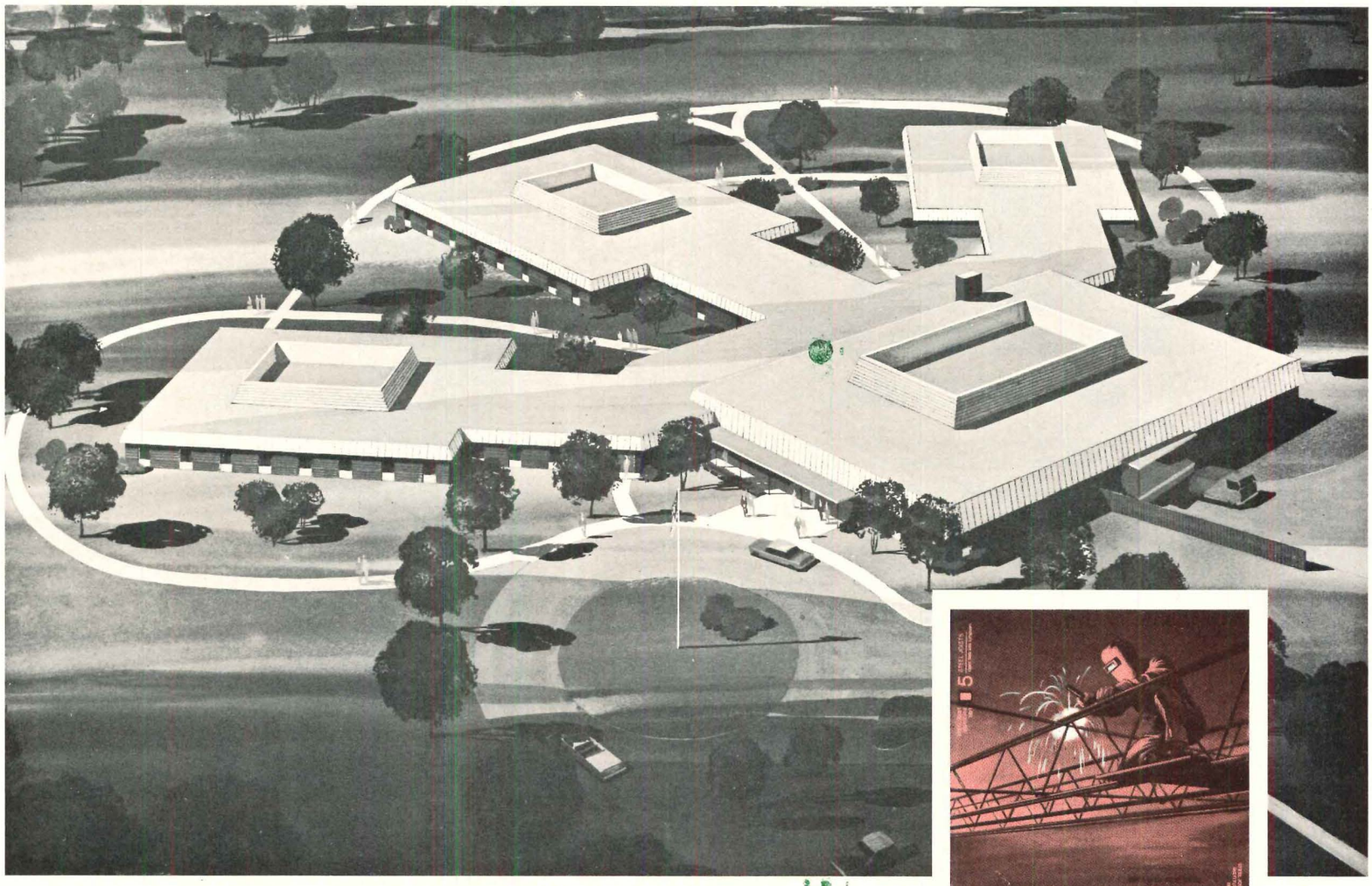
Circle 354 on inquiry card

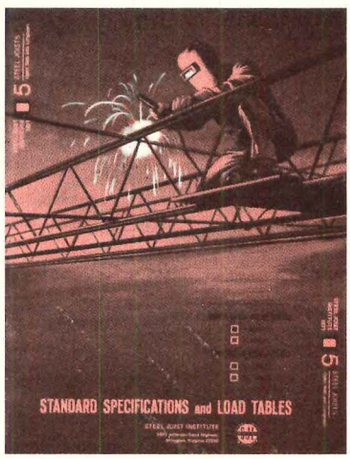
LOAD-BEARING MASONRY STRUCTURAL BLOCKS / Units are said to combine structural strength with high sound-absorption and decorative beauty. They are of a filled or unfilled cavity-slot construction with slotted faces and closed tops that comprise damped resonators. Blocks are for interior and exterior use. ■ The Proudfoot Co., Inc., Greenwich, Conn.



Circle 355 on inquiry card

more products on page 189





Why steel joists were the right answer to this building need

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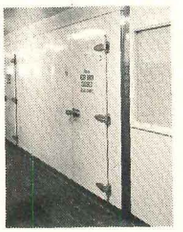

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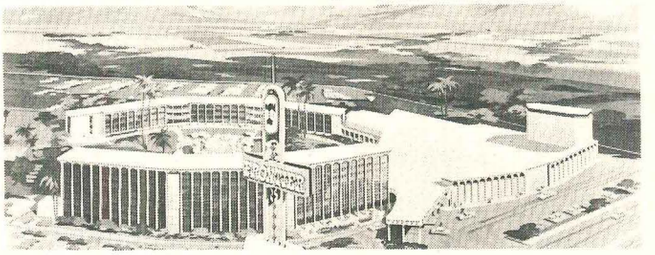

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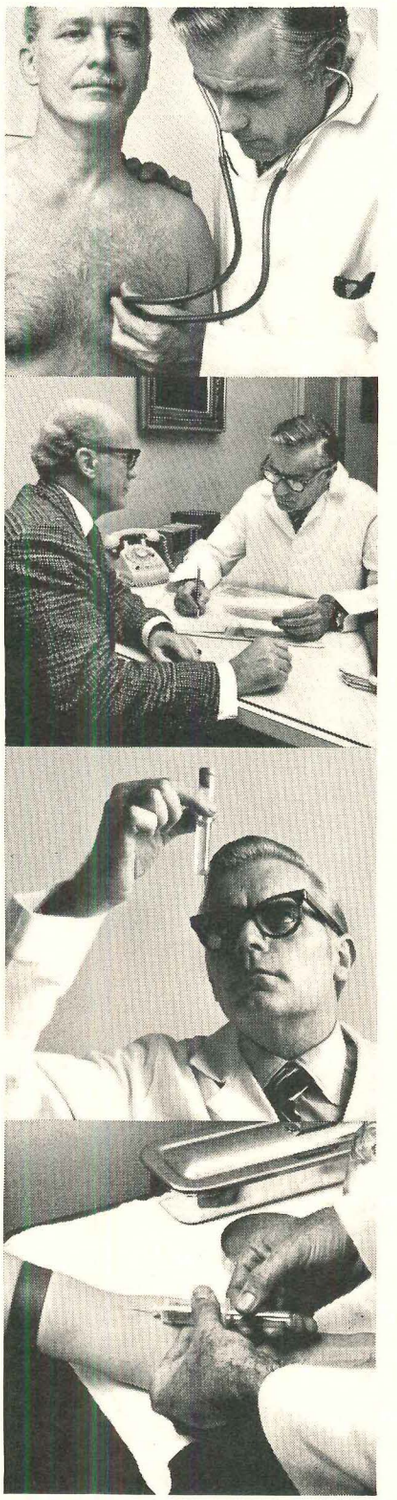

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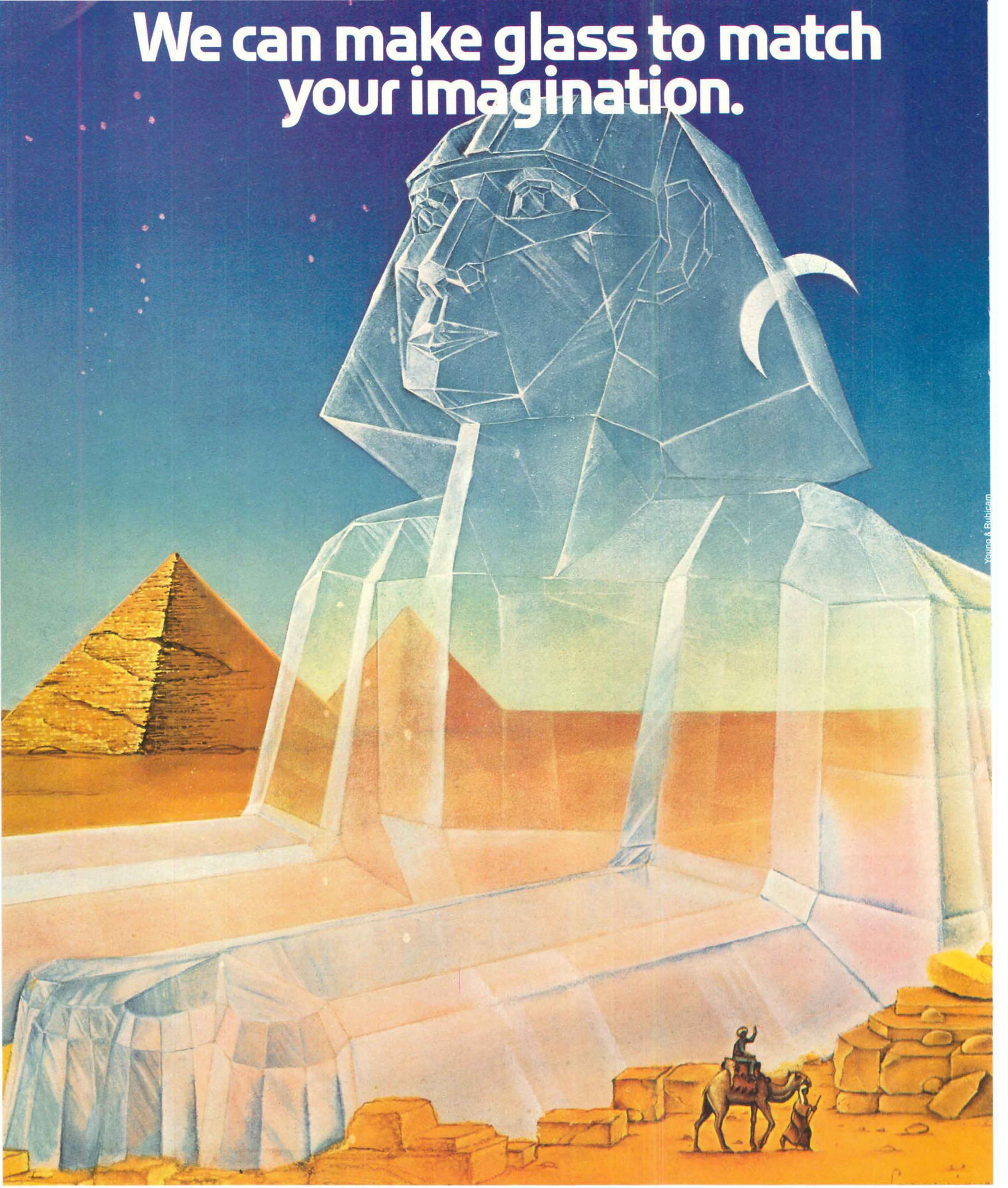

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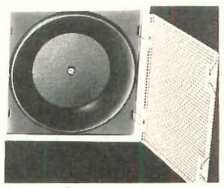
continued from page 184

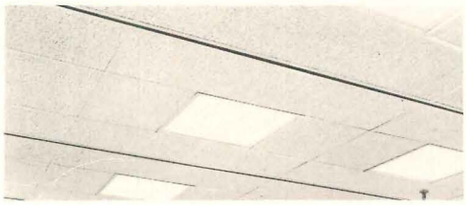
PERFORATED AIR DIFFUSERS / Adjustable damper and pattern control is built in. A pair of overlapping damper discs within the diffuser are easily adjusted to deliver a variety of distribution patterns. Perforated face plate swings open on either of two sides and is removable for access to the damper, pattern control discs or duct. ■ Connor Engineering Corp., Danbury, Conn.



Circle 356 on inquiry card

RADIOISOTOPE WORK STATIONS / Six different modules are available for safe, convenient storage and handling of radioisotopes in laboratories. Lead-shielded stainless steel storage walls with shielded covers can be supplied in the work tops. ■ Kewaunee Scientific Engineering, Adrian, Mich.

Circle 357 on inquiry card



FLEXIBLE CEILING SYSTEM / Component flexibility in schools is simplified through use of grid suspension members from which movable partitions can be easily detached and relocated. Air distribution pattern can be controlled from below the ceiling. ■ Conwed Corp., St. St. Paul, Minn.

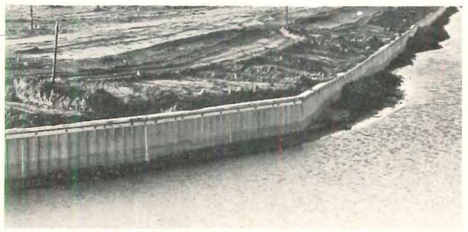
Circle 358 on inquiry card

PORTABLE TELEPHONE / Unit is said to offer automatic dial capabilities without operator assistance. User can dial any call directly if he is within range of the telephone company's terminal equipment. The telephone is fully compatible with the mobile services offered by the telephone companies. Features include an enclosed speaker, built-in antenna, and a case lock. ■ Integrated Systems Technology, Inc., Garland, Tex.

Circle 359 on inquiry card

SLIDING GLASS DOOR / Unit can be used as a slab-to-slab sliding glass wall system for high-rise commercial or residential applications. Test unit withstood an air pressure difference greater than 6.24 lbs per sq ft without leakage as a heavy water spray was directed simultaneously at the outside glass. This test is equivalent to 8 in. of rainfall per hour with a 50 mph wind. ■ Kawneer Co., Niles, Mich.

Circle 360 on inquiry card

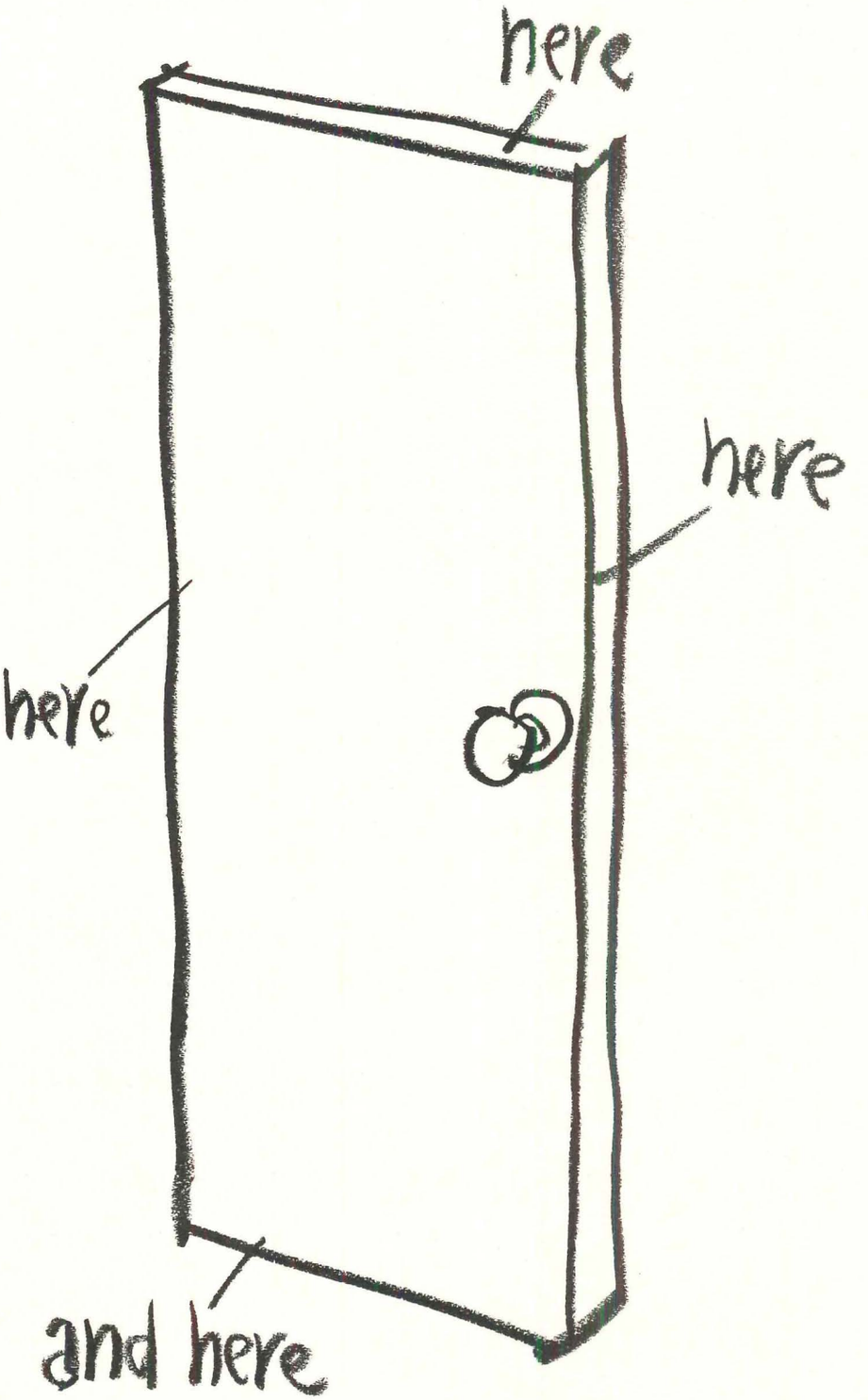


MARINE WALL SYSTEM / Patented retaining wall's basic element is a corrugated aluminum bulkhead sheet capped by an aluminum extrusion. Deadman anchors on 10-ft centers are connected to pre-drilled holes in the bulkhead sheet. The wall features a joint through which even "sugar sand" cannot pass. ■ Kaiser Aluminum & Chemical Corp., Oakland, Calif.

Circle 361 on inquiry card

COMPUTER-CONTROLLED BUILDING AUTOMATION SYSTEM / An integral mini-computer designed to building market criteria is featured. Standardizing the mini-computer and all associated hardware and software modules has substantially lowered costs, making genuine, real-time computerized automation realistic for even the smaller building budget, the company reports. System is available in both simple and expanded configurations. Simplest is the stand-alone system shown here, consisting of a single loop system. ■ Johnson Service Co., Milwaukee.

Circle 362 on inquiry card



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Weyerhaeuser

For more data, circle 117 on inquiry card

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry card, pages 205-206.

METAL DOORS / A recently published catalog presents comprehensive information on a line of rolling metal doors and fire doors, rolling grilles, and sliding grilles. Doors are available in galvanized steel, aluminum and stainless steel. ■ Cornell Iron Works, Inc., Wilkes-Barre, Pa.*

Circle 400 on inquiry card

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Circle 401 on inquiry card

EMERGENCY LIGHTING / UL-approved system provides emergency lighting guaranteed unconditionally for five years. Lighting is an integral part of the building's normal fluorescent system. A 10-minute movie and applications manual are available. ■ Lithonia Lighting, Conyers, Ga.

Circle 402 on inquiry card

INDOOR/OUTDOOR SEATING / Fiberglass contour seats come in a wide range of colors. All units have aluminum legs. Seating units are also available for commercial use. Installation photos are included in a 4-page brochure. ■ Wise Seating, Inc., Muncie, Ind.

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GLASS FOR CONSTRUCTION / Technical catalog includes information on the company's reflective glass, transparent mirrors and clear, heat-absorbing, insulating, safety, protective, decorative and spandrel glass. ■ Libbey-Owens-Ford Co., Toledo, Ohio.*

Circle 404 on inquiry card

WALL INSULATION SYSTEM / Rigid foam insulation and metal furring channels comprise the system. No adhesives are used. Physical properties, installation data and specifications are included in an 8-page brochure. ■ W. R. Grace & Co., Cambridge, Mass.*

Circle 405 on inquiry card

HEAT RESISTING FLAT GLASS / *Pyrex* brand products for science and industry are described in a 24-page catalog, including infrared-reflecting glass, furnace glasses, and heat shields. ■ Kaufman Glass Co., Wilmington, Del.

Circle 406 on inquiry card

COMMUNICATIONS SYSTEMS / A 4-page catalog describes a line of audio-visual and television systems in current use. ■ TeleVisual Systems, Inc., Fairfield, N.J.

Circle 407 on inquiry card

STRUCTURAL CLAY TILE STANDARDS / The latest standards for facing tile, both ceramic glazed and natural finish, reflect ASTM changes. Copies of the 17-page guide are now available. ■ Facing Tile Institute, Chicago.*

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SOAP SPRAY SYSTEM / This addition to the company's complete line of institutional shower systems and components is designed to reduce time, maintenance and possible hazard in the shower room by instantly delivering lather directly on the bather. One unit can service several rooms and many shower stalls. ■ Metcliff Mfg. Co., Inc., Burlingame, Calif.

Circle 409 on inquiry card

BUILDING SYSTEMS / A 42-page catalog describes and illustrates the company's standard building lines in addition to insulated wall systems for controlled environment structures. ■ Stran-Steel Corp., Houston.*

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ROOF DECK SYSTEMS / A 12-page brochure describes lightweight insulating concrete over galvanized metal centering, structural concrete, polystyrene-vermiculite systems, and thermal-setting perlite-asphalt roof insulation. ■ W. R. Grace & Co., Cambridge, Mass.*

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**Additional product information in Sweet's Architectural File*

more literature on page 197

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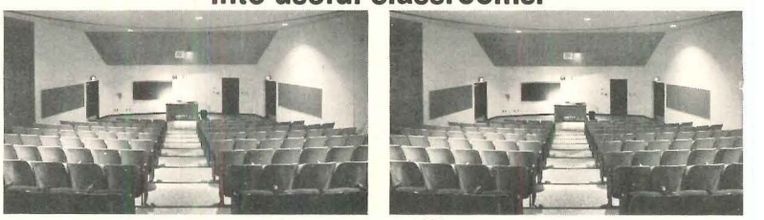

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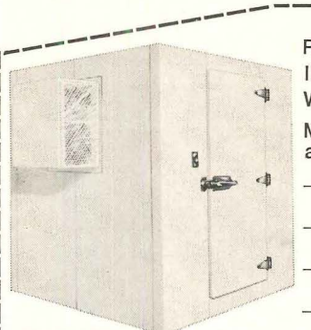

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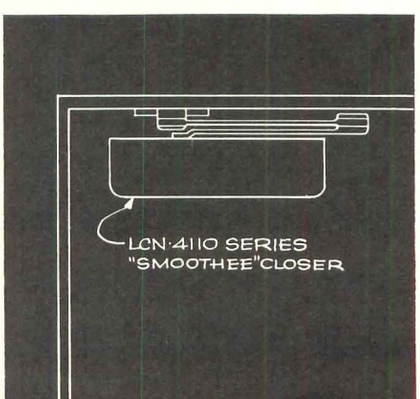

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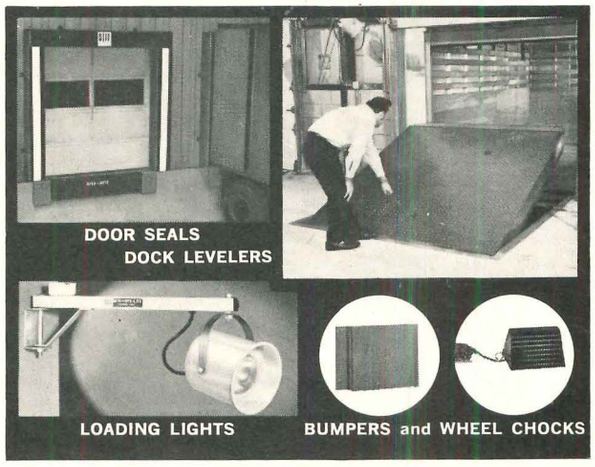

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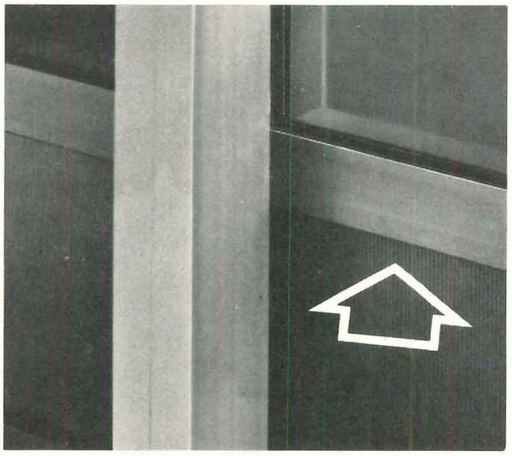

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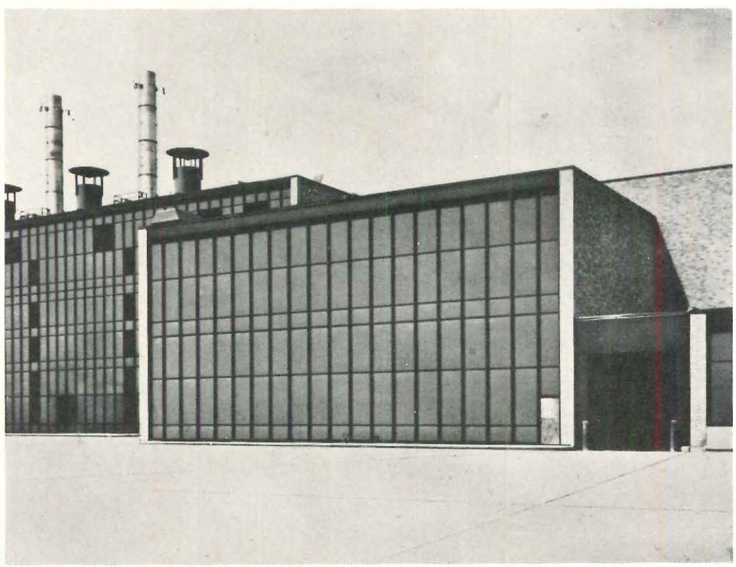

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Onex-Seal II is a buffing seal—finish of the type recommended by the National Terrazzo Mosaic Association for Portland and Oxychloride Terrazzo in all colors (even white).

It insures that Portland and thin set terrazzo floors are properly sealed for protection and finished for beauty. Sealing guards against penetration of dirt and stains while enhancing the natural beauty of all colors, even white. It prevents efflorescence, produces a hard non-flaking, slip resistant mirror finish.

To insure that any floor will continue to live up to the standards you specify, call on a trained Hillyard Architectural Consultant to recommend correct finish and maintenance programs.

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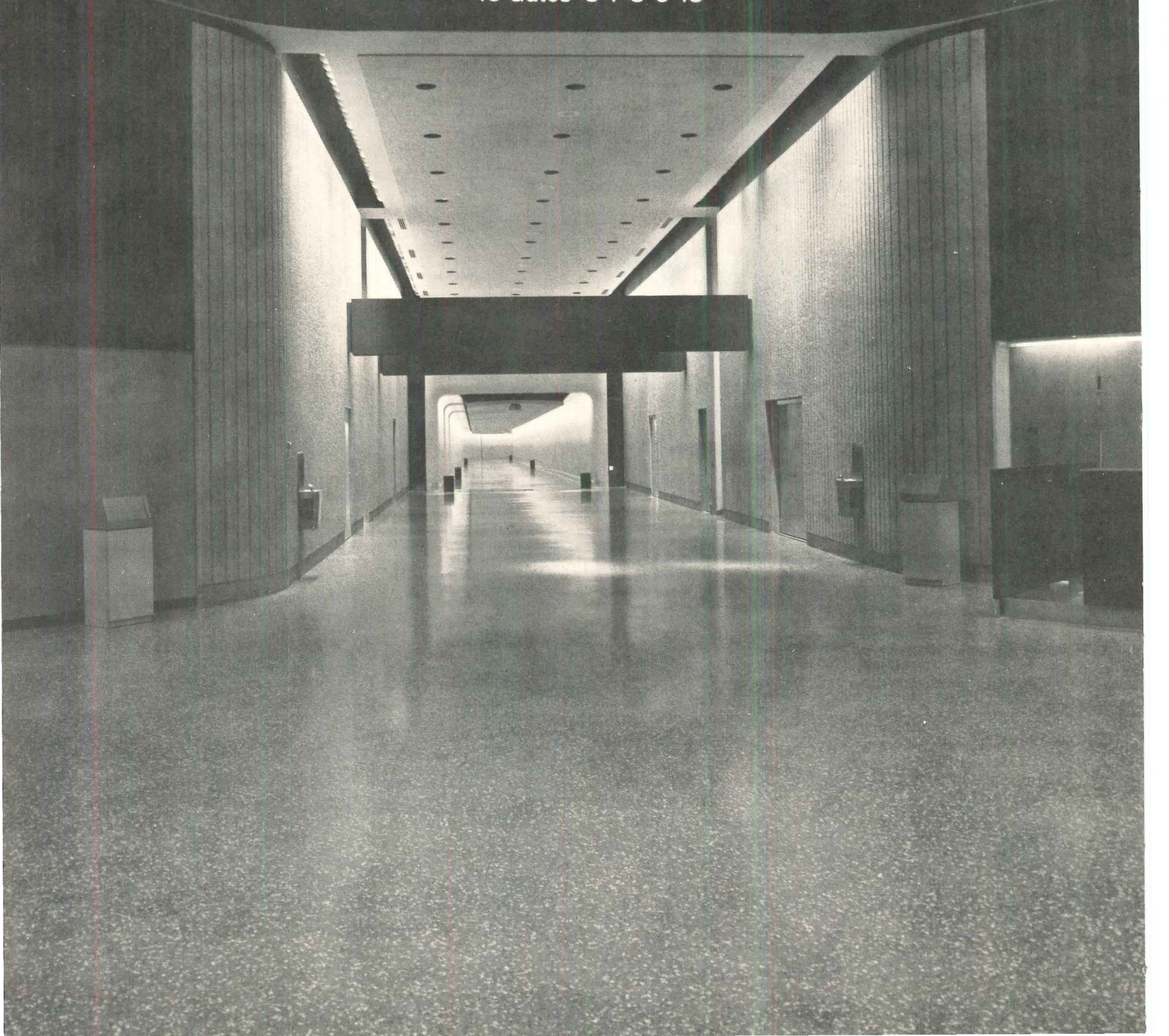

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OFFICE LITERATURE

continued from page 191

GABIONS / A 58-page booklet describes the manufacturer's line of compartmentalized rectangular containers made or galvanized steel hexagonal wire mesh filled with stone. Applications include revetments, line embankments and channels, and retaining walls. ■ Terra Aqua Conservation, Reno, Nev.

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SURFACE BONDING CEMENT / A material which bonds concrete block without mortar is described in literature. Concrete block is stacked, material is applied to both sides of the block, and surface cures in the manner of conventional cement mixes. Advantages include less labor output and block construction which is reportedly two to three times stronger than construction using conventional mortar. ■ W.R. Bonsal Co., Lilesville, N.C.

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NOISE ISOLATION SYSTEMS / A 12-page design guide on the control of impact and airborne noise in buildings is available. Applications include gymnasiums, bowling alleys and mechanical-equipment areas. The company's line of composite kinetic systems is featured. ■ Consolidated Kinetics Corp., Columbus, Ohio.*

Circle 414 on inquiry card

ALL-WEATHER CONSTRUCTION / Two technical publications, "Recommended Practices for Cold Weather Masonry Construction," and "Guide Specifications," describe proven techniques which allow construction to continue in bad weather. Price is $.50, including postage. ■ International Masonry Industry All-Weather Council, 208 So. LaSalle Street, Suite 480, Chicago, Ill., 60604.

BATTEN ROOF SYSTEM / Five types of spires and steeples are described in an 8-page brochure. Applications of mansard and batten roofing for a variety of structures in a range of metals are illustrated. Specifications are included. ■ Overly Mfg. Co., Greensburg, Pa.*

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CONCRETE SLABS AS ELECTRICAL RACEWAYS / A variety of wiring methods through smooth, hollow cells in the manufacturer's precast concrete slab is discussed in a 16-page booklet. The use of concrete slabs with suitable electrical fittings is approved by the National Electrical Code. Wiring methods are illustrated. ■ The Flexicore Co., Inc., Dayton, Ohio.*

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ADHESIVES/COATINGS/SEALANTS / A complete line is identified in a 16-page selection guide. Product description, performance, properties and applications are included. ■ 3M Co., St. Paul, Minn.*

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* Additional product information in Sweet's Architectural File.

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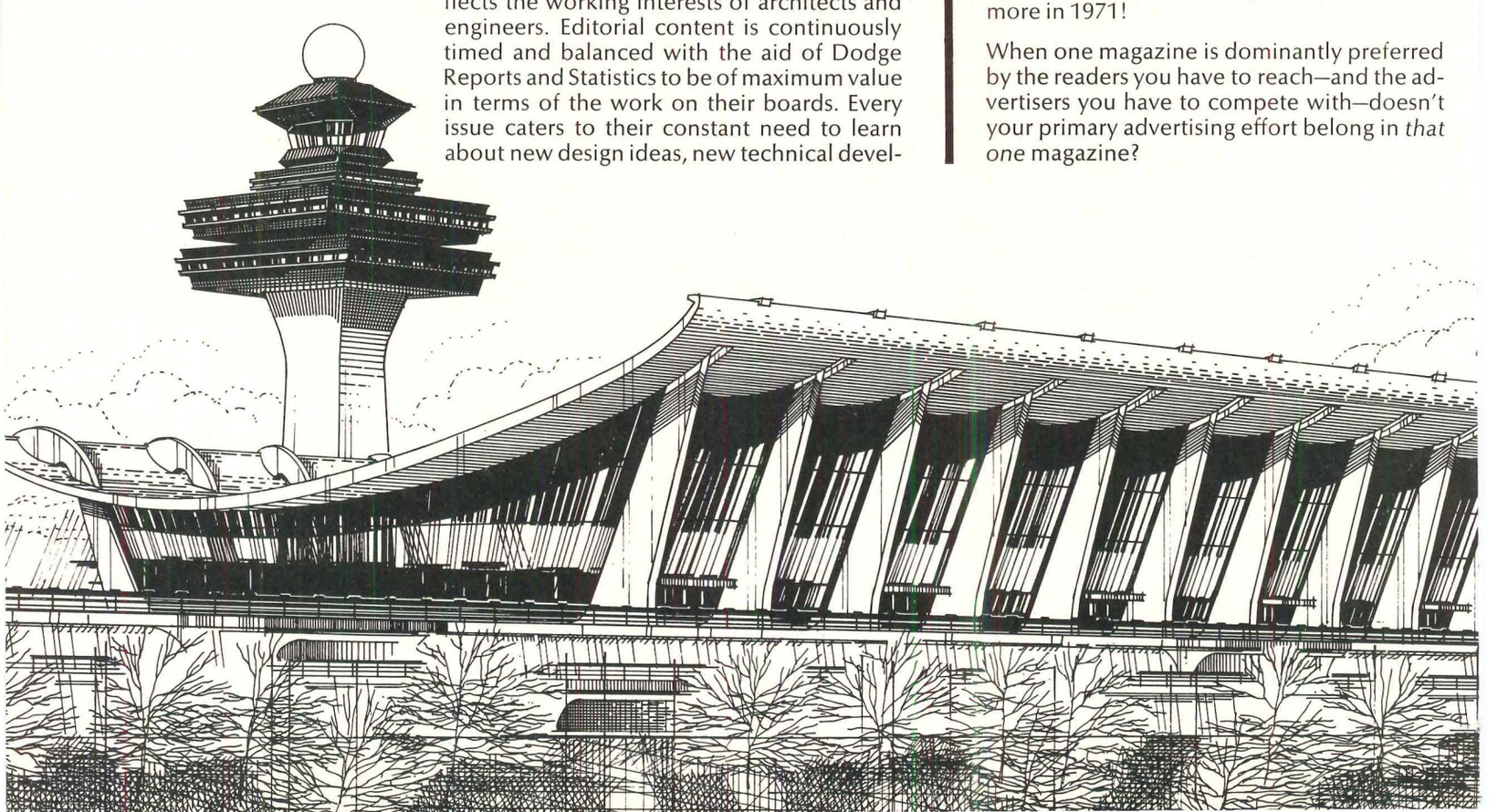

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1. *Continuity increases impact.*

2. *Larger space tends to command greater attention.*

3. *Functional 4-color lends dominance and aids understanding.*

4. *Continuity, larger space size and functional color together help get attention, create interest, build reputation, impress the reader.*

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3 Circulation leadership. *More architect and engineer subscribers. Highest subscription price. Highest renewal percentage.*

4 Top market coverage. *Over 90 per cent of the total dollar volume of all architect-engineer planned building is in the hands of Architectural Record's paid subscribers—a fact documented by Dodge Reports.*

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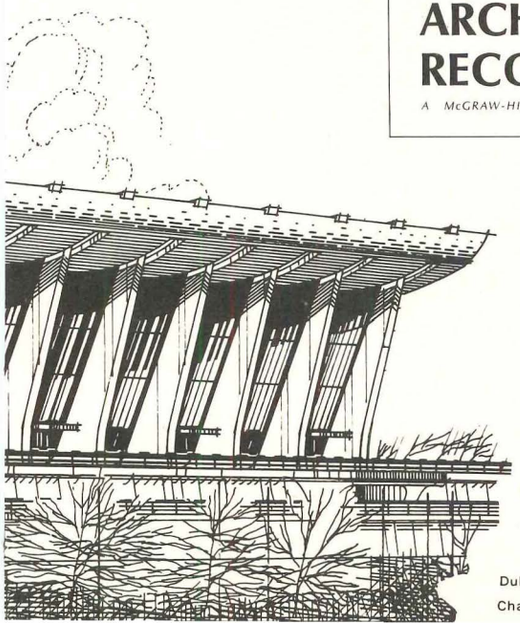

Dulles International Airport Terminal Building, Chantilly, Va. Architects: Eero Saarinen & Associates

Promises to keep

**"But I have promises to keep,
And miles to go before I sleep."— Robert Frost**

In 1976, a few short years from now, America will celebrate the 200th anniversary of a unique promise. The promise, and the enduring dream, of "Life, liberty and the pursuit of happiness."

It is good to pause and look back. To reflect on and renew that historic promise.

But it is also necessary to look ahead.

Because America has new promises to keep. And a long, long way to go.

We have promised not merely to maintain, but to enhance the American way of life. To improve the standard of living *and* to improve the quality of life in tomorrow's America.

We have promised to produce the things—the goods and services—that make life possible and pleasant. And we have also promised to pay more heed to the intangibles that make life meaningful.

We have promised to conserve and protect our natural resources. To restore the vitality and preserve the beauty of our environment. To clean up our air and cleanse and refreshen our rivers, lakes and streams. To rebuild and reshape our cities, and to rationalize and reorder the chaos of a transportation system gone awry.

We have promised to care for the sick and safeguard the public health. To give new dignity and new hope to the poor, and to assist the disadvantaged. To do a better job of educating the young, and a much better job of cherishing and enriching the lives of the old.

All of these things, and more, we have promised to ourselves. And there is little argument about our promises. Most Americans agree that these are, and should be, our national goals.

But how do we deliver on our pledges? How do we match promise with per-

formance? How do we reach our goals? These are the hard, practical questions that perplex and divide us.

There are no simple answers to complex questions. But as we stand hesitant at a crossroads, debating which path to take, a few things do seem obvious. And perhaps it is time for a little plain talk.

Time to say flatly that there is no easy, primrose path that will take us where we want to go. The easy paths lead backward, or nowhere. The road that leads ahead is a hard road.

Because there is no way to produce less and have more.

No way to do less and accomplish more.

No way to give less and get more.

No way to sit on our aspirations and expect things to take care of themselves. Somebody, somehow, has got to *do* the conserving, protecting, restoring, preserving, cleaning, rebuilding, reshaping, rationalizing, reordering, caring for, safeguarding, helping, educating and cherishing.

And the only way to do a better job in all of these areas is to work at the job. Work harder or smarter, or both.

And, most importantly, work together. The job is too big for any of us working alone. And too big for all of us, working at cross purposes.

There is no easy way, and there is no one, patented, exclusive way. No Liberal way and no Conservative way. No Democrat way and no Republican way. No business way and no labor way. No strictly government or wholly private way.

There is only a productive way or a nonproductive way.

And the productive way calls for all of us to join together. Not in perfect harmony. Not in ultimate brotherhood. And not in some high-flown crusade.

But in the simple recognition that we all—business, labor, government and private citizens—have a job to do.

That we all have contributions to make.

And that each is vital, necessary, indispensable. Not to be done without.

The original promise of America was set forth in the Declaration of Independence.

The new promises of America call for a new Declaration of *Inter*dependence.

For a new awareness and acknowledgment of our mutual dependence. Each upon each. All upon all.

This awareness, this new Spirit of '76, will not spring full-blown from this, or any other, proclamation. It cannot be legislated. It cannot be imposed. It cannot be synthetically drummed up.

It will begin, if at all, when the American people begin to tire of the politics, the policy, the endless futility of "confrontation." It will begin when they look at our goals on the one hand, and our petty squabbles on the other, and conclude quite simply, "You can't hardly get there from here." And that's a fact.

There are, at this crossroads in time, many paths to take. But there is only one useful way to go. Forward. Together.

It is time to face facts.

For we have promises to keep, and miles to go before we sleep.

We at McGraw-Hill believe in the interdependence of American society. We believe that, particularly among the major groups—business, labor and government—there is too little recognition of our mutual dependence, and of our respective contributions. And we believe that it is the responsibility of the media to improve this recognition.

This is the first of a series of editorial messages on a variety of significant subjects that we hope will contribute to a broader understanding.

Permission is freely granted to individuals and organizations to reprint or republish these messages.

John R. Emery

John R. Emery, President
McGraw-Hill Publications Co.

ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1972 Sweet's Catalog File as follows.

A Architectural File (green)
I Industrial Construction File (blue)
L Light Construction File (yellow)
D Interior Design File (black)

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2-5, 3-chome, Kasumigaseki, Chiyoda-ku, Tokyo, Japan

continued from page 60

implications of both the firm's operating profits and major decisions such as acquiring another firm, adding a partner, establishing a pension, buying out a principal, or incorporating.

A complete discussion of these matters is far beyond the scope of this article, and should be done with an experienced tax attorney or accountant. Tax law is so complicated that seemingly logical or innocent decisions can have severe tax consequences. Even the old rule of thumb that incorporation will save taxes is not necessarily true anymore because of recent changes in the laws. Expert counsel should be able to provide an ethical plan to guide this and all other actions with potential tax implications.

The basic elements of cash management

Ultimately, the goal of all of the planning, control, tax analyses and related effort is to end up with enough cash to operate the firm, pay good salaries, etc. To achieve the desired level of solvency requires still one more planning and control effort. The basic elements of this effort are the following:

1. *Cash flow projection*

AIA publications provide guidelines for this and the other controls noted below. This particular projection is most important when there is any question about the adequacy of the firm's cash resources over the next six- to twelve-month period. It also is a good basis for making application for a back-up line of credit, long-term loan, or a short-term investment plan for excess cash. This last point is important for many firms have short-term cash peaks, but do not realize that their banks can arrange for a no-risk thirty day investment so that the money does not sit idle in a checking account.

2. *Accounts receivable and accounts payable; aging schedules*

Each month the financial manager of the firm should have a list of accounts receivable and accounts payable spread by age to use as a basis for follow-up calls and short-term cash planning.

More important than any of the above mundane benefits of profitability, positive cash flow, tight control, etc. is that it is a great deal more fun to run a profitable firm. Morale is better, it is easier to concentrate on the important aspects of the firm's practice, the client's design problems, and everyone eats better. Profits have a very definite place in the practice of architecture today.

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Architect, NCARB certificate, seeks responsible design position with larger firm, would consider position that offered combined teaching opportunity. Portfolio reflecting 14 years of experience with established design firms. PW-7859, Architectural Record.

Professional Engineer, 38, proficient in heating, ventilating, air conditioning, plumbing and drainage systems. Will affiliate or represent contractor, engineer or architect. Geographical area no barrier. PW-5865, Architectural Record.

Architect: California registration, AIA. Age 38. Sixteen years experience. Exceptional record of achievement in planning and design of major, high quality projects. I am seeking discussions with principals of a progressive architectural firm, leading to the position of partner or associate in charge of design activities. Accustomed to taking the initiative and assuming maximum responsibility in managing and directing group effort. Experienced in effective promotional and design presentations to top echelon executives of national firms. Excellent personal design commendations. Extensive background in prestige, high rise office buildings. Commercial, educational, industrial, residential and recreational experience. Travel acceptable. PW-7753, Architectural Record.

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Sales Representatives: — Established manufacturer of library furniture looking for aggressive, knowledgeable sales representatives to handle several open territories throughout U.S. Must have experience in calling on architects, interior designers, librarians and school officials. Most territories have a volume or potential volume in excess of $1 Million. In reply, please state background and experience in area in which you are interested. All replies treated confidentially. RW-7987, Architectural Record.

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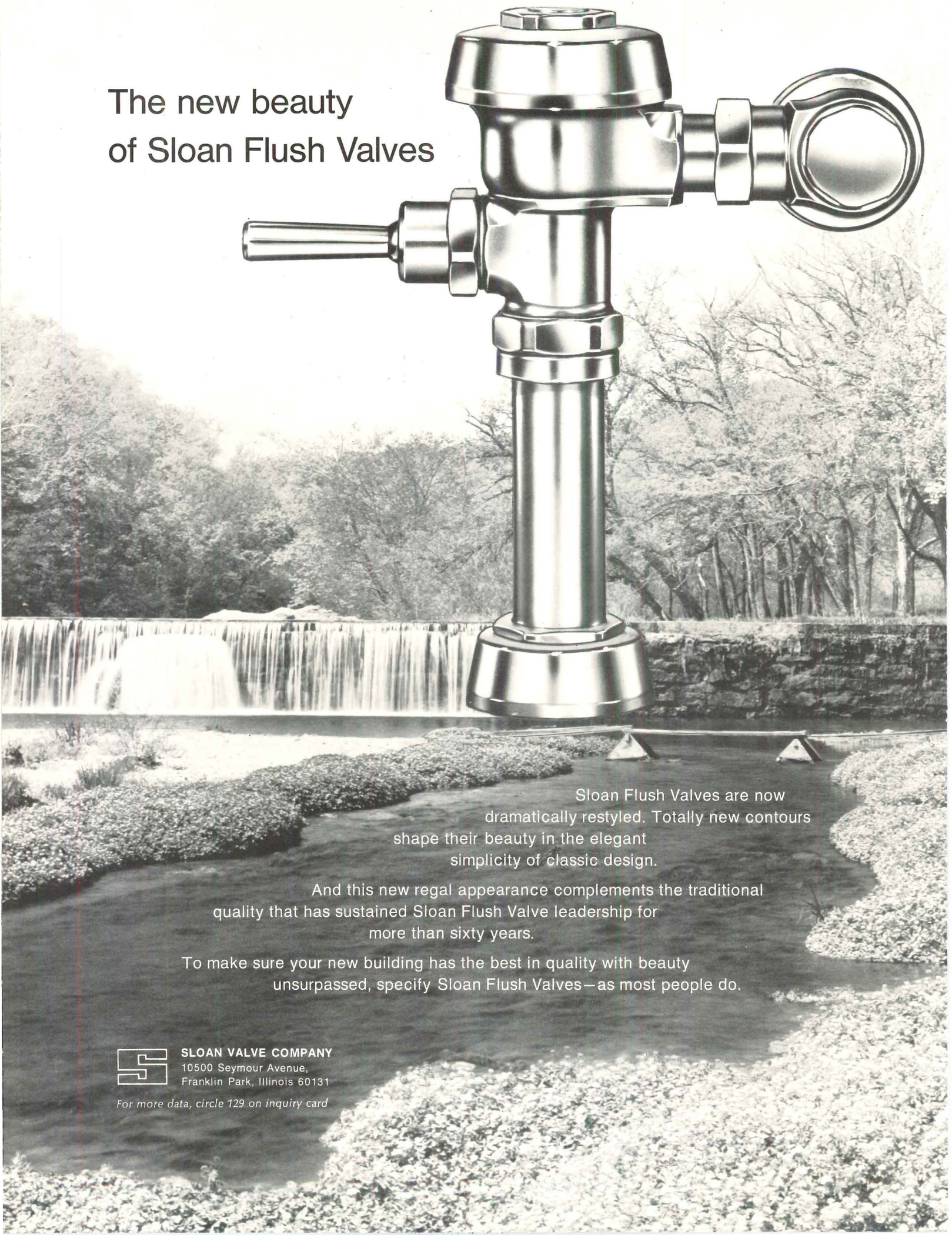

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