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RECORD INTERIORS OF 1972

BUILDING TYPES STUDY: DESIGN FOR A VARIETY OF CAMPUS LIFE STYLES

ROUND TABLE: ENERGY CONSERVATION THROUGH HIGHER QUALITY BUILDING

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

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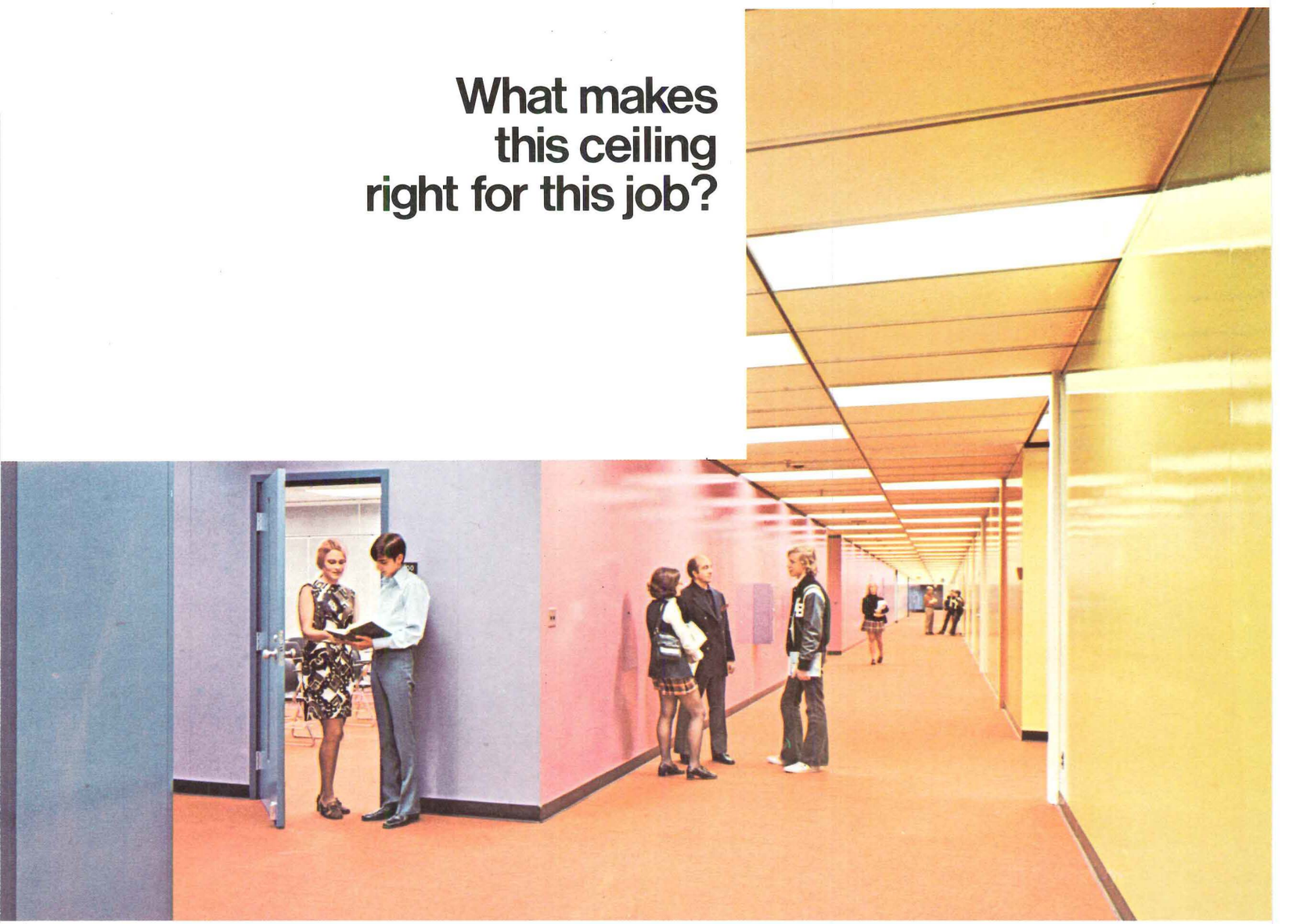

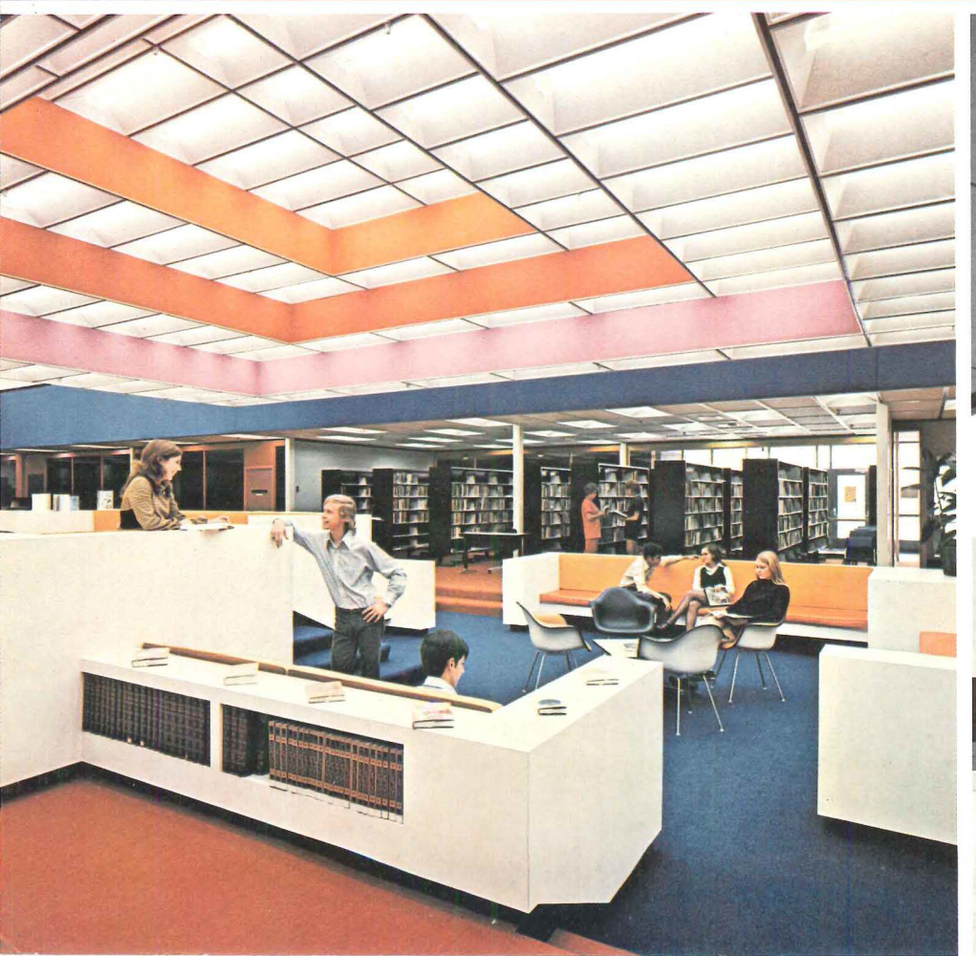

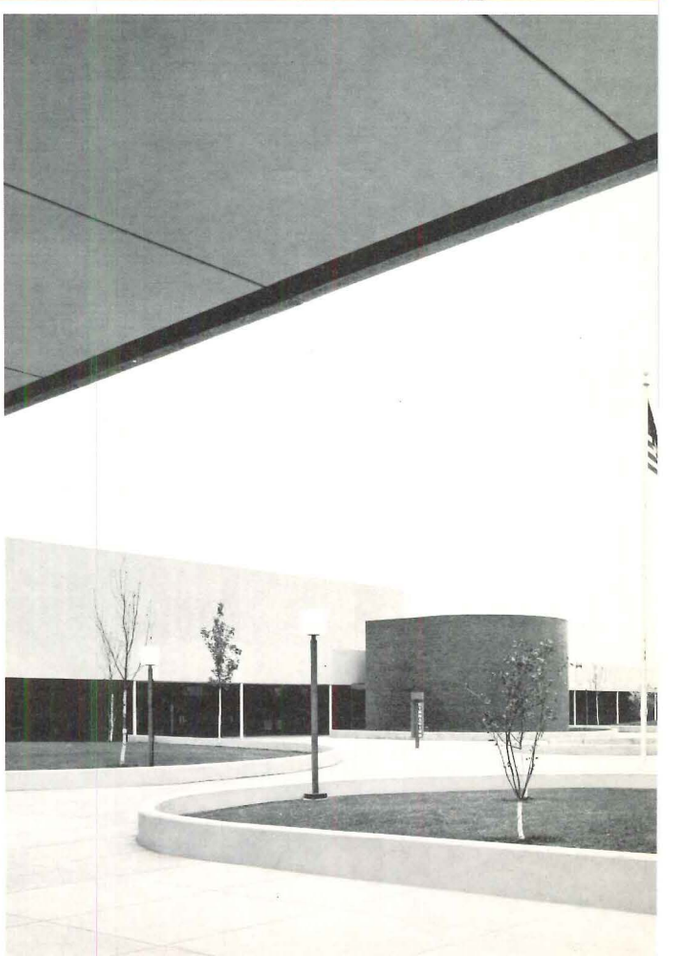

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MECHANICAL/ELECTRICAL ENGINEERS: Hoyem Associates, Inc., Bloomfield Hills, Michigan
CEILING SYSTEMS CONTRACTOR: R. E. Leggette Company, Dearborn, Michigan

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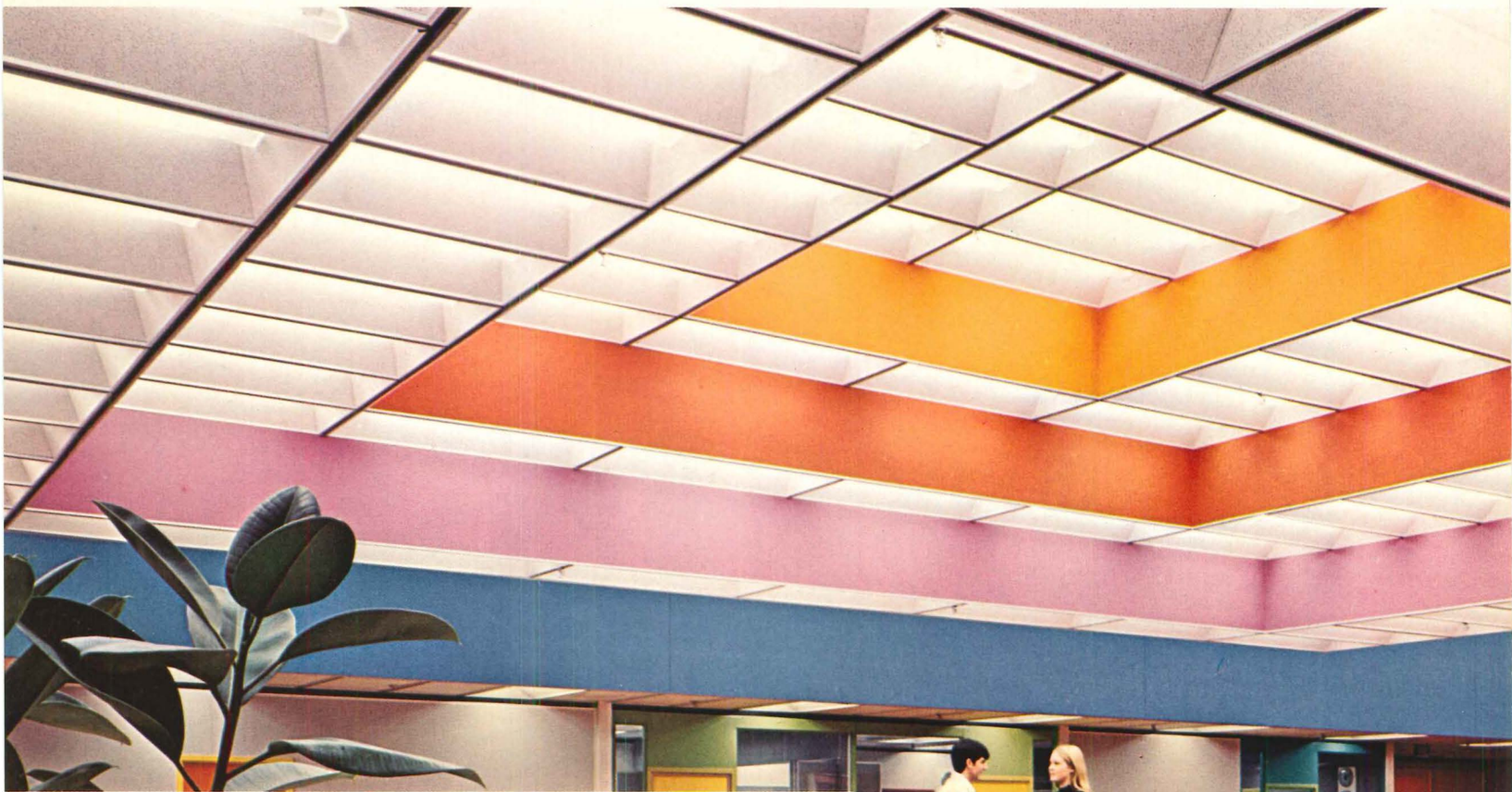
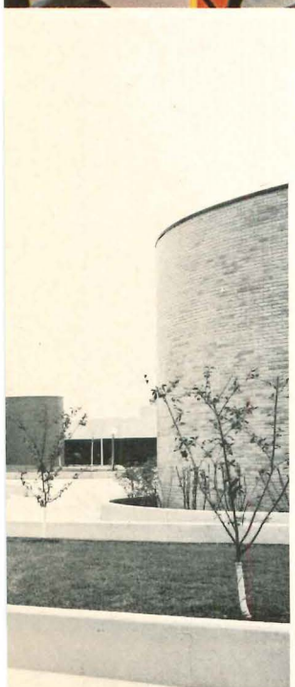
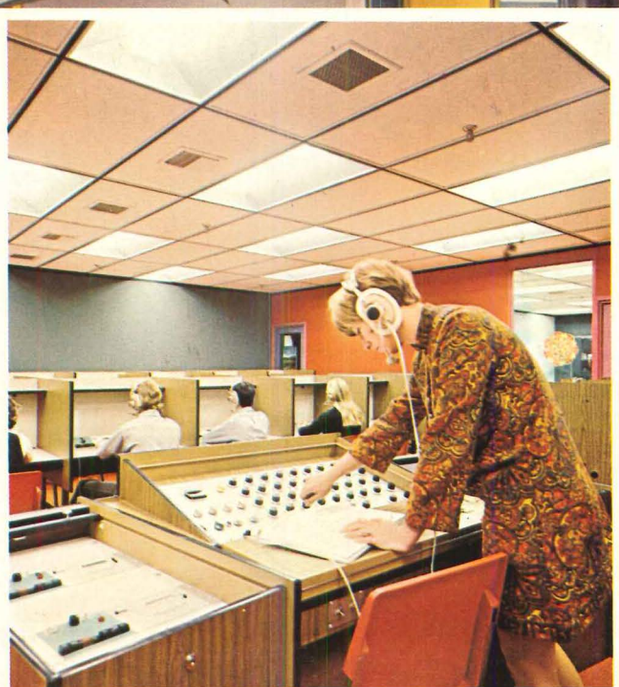
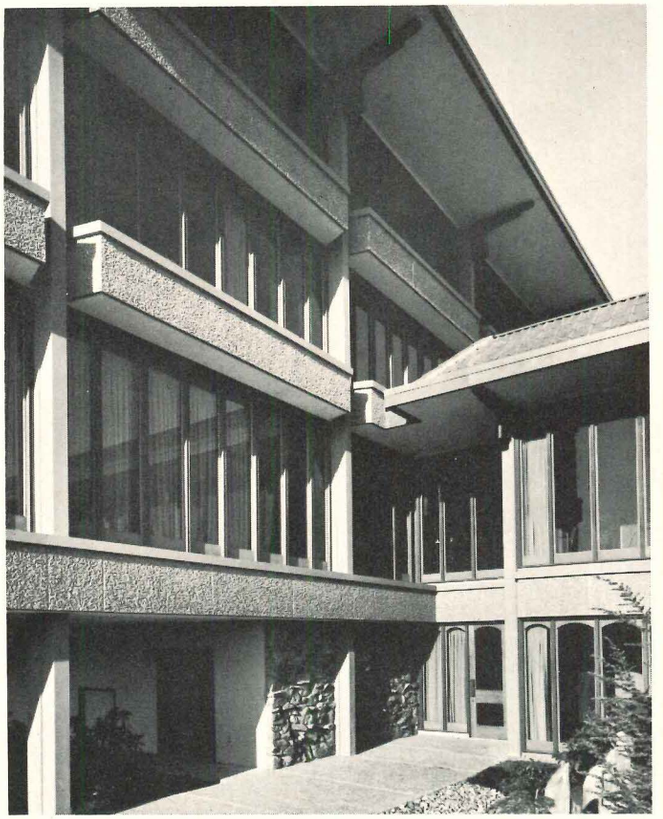




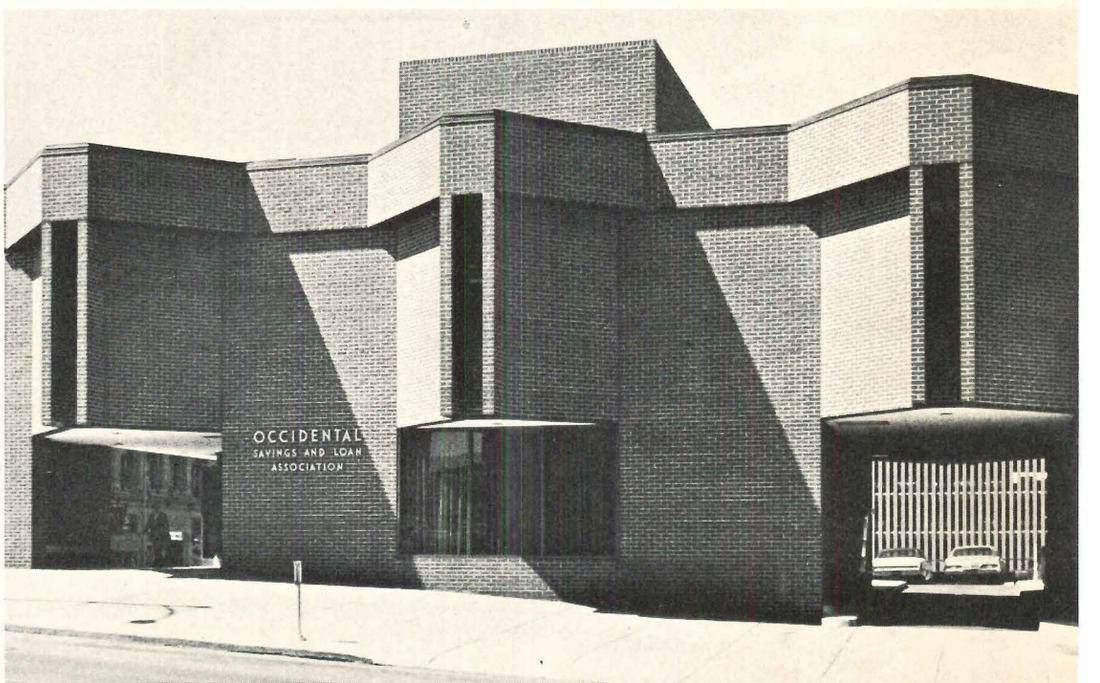


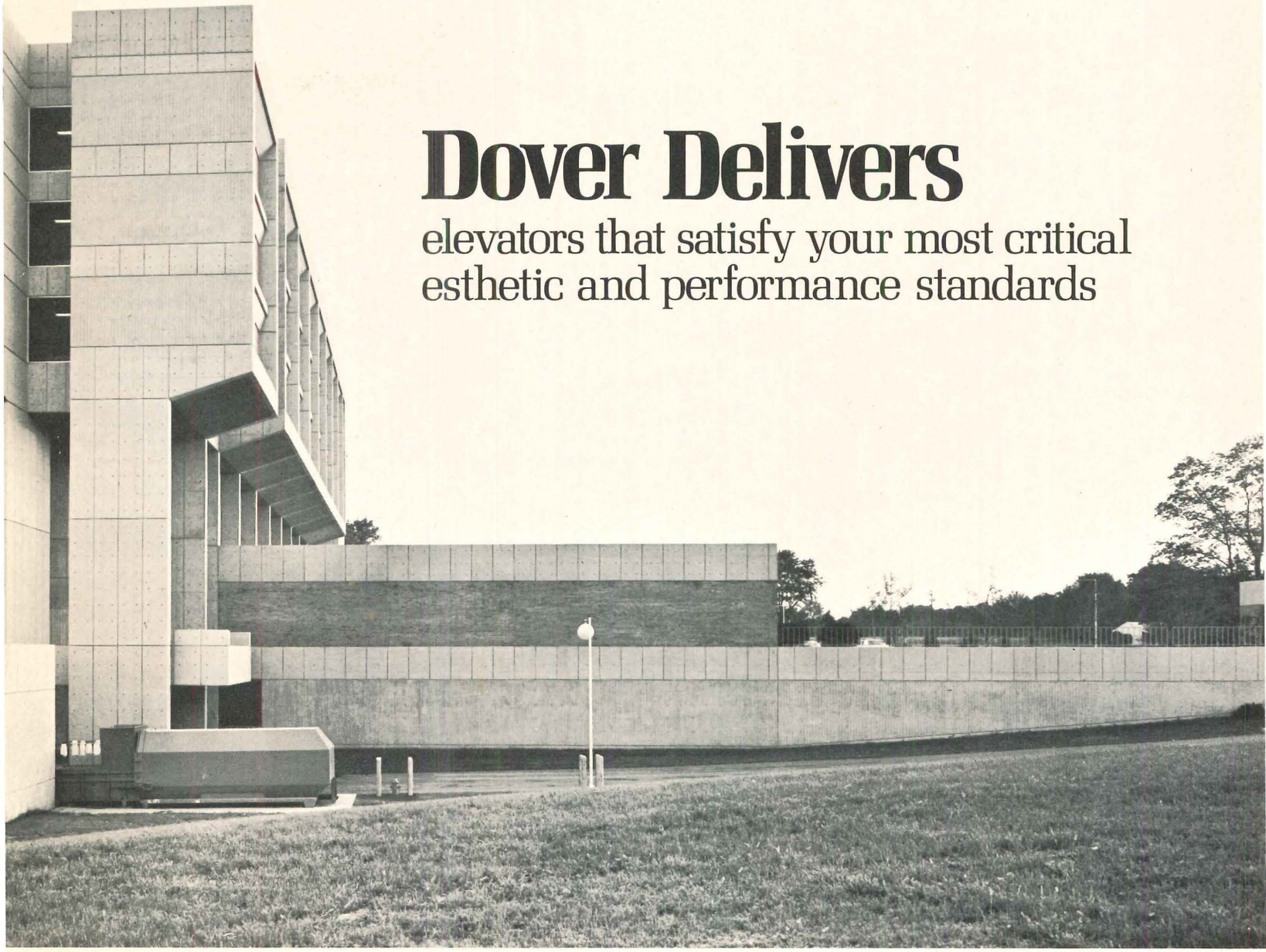
BETHESDA HOSPITAL NORTH, Montgomery, Ohio. ARCHITECTS: Adolf H. Roessling, AIA, of Smith, Hinchman & Grylls Associates, Inc., Detroit, Mich. John V. Sheoris, Project Designer. Sullivan, Isaacs & Sullivan, AIA, Architects and Associated Engineers, Cincinnati, Ohio. GENERAL CONTRACTOR: Dugan & Meyers Construction Co., Inc., Cincinnati. Dover traction elevators installed by Dover Elevator Co., Cincinnati.



Above: NORTHWEST BUILDING, Bellevue, Washington. ARCHITECTS: Jack Woodman and Associates, Bellevue. GENERAL CONTRACTOR: Swanson-Dean Corporation, Bellevue. Dover Oildraulic Elevator with speed of 200 f.p.m. installed by Sound Elevator Company, Seattle.

Right: OCCIDENTAL SAVINGS & LOAN ASSOCIATION, Omaha, Neb. ARCHITECTS: Leo A. Daly Co. GENERAL CONTRACTOR: Lueder Construction Company, Omaha. Dover pre-engineered Oildraulic Elevator installed by O'Keefe Elevator Company, Inc., Omaha.





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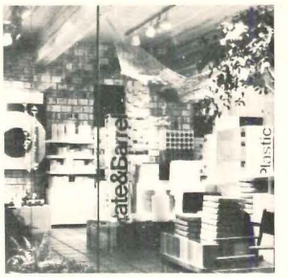

Cover: Crate & Barrel store, Oakbrook, Illinois
Architects: Richard Acott & Associates
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THE RECORD REPORTS

Franco Cisterna

ARCHITECTURAL BUSINESS

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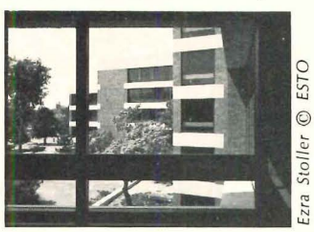

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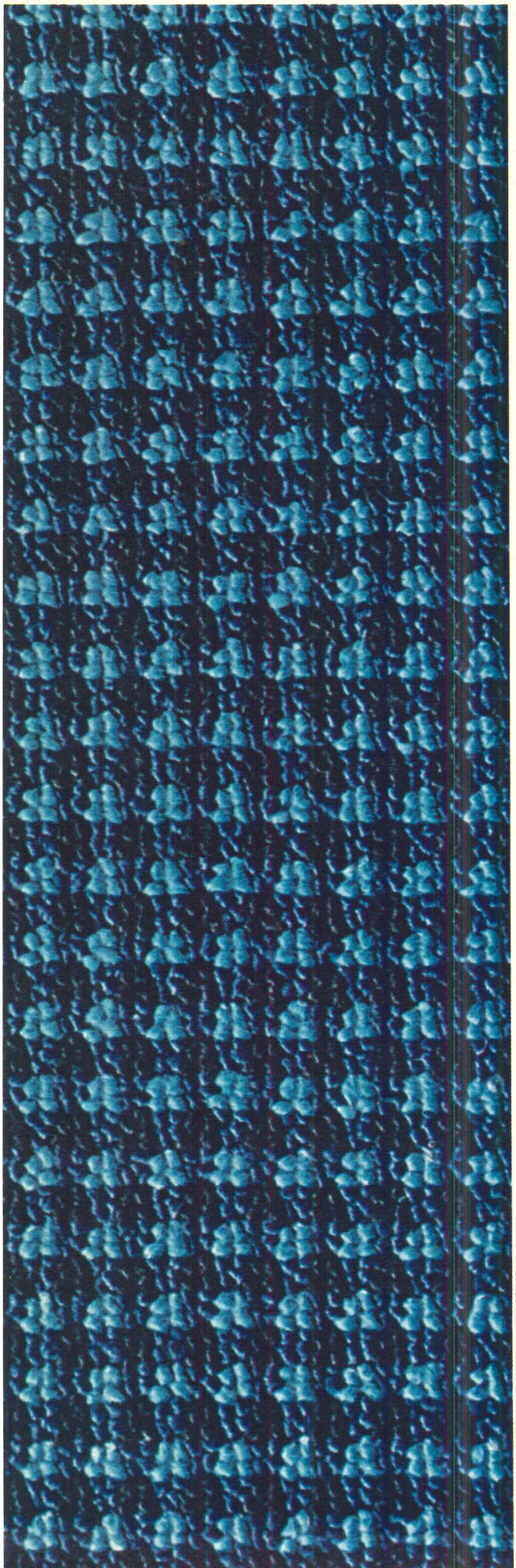

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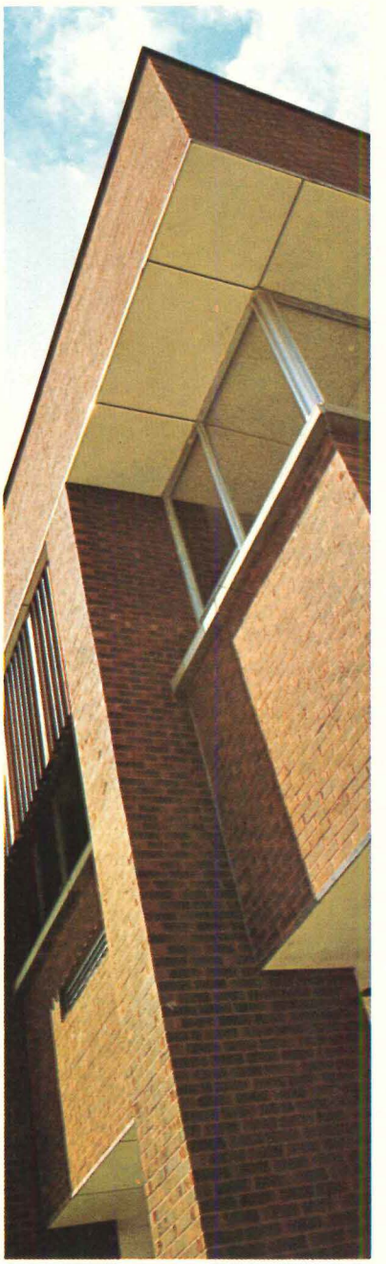

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Some old fashioned talk to open the new year

The inauguration of the new president of the American Institute of Architects on December 3rd in Washington was sort of a square affair: black tuxedos, mostly long dresses, two kinds of wine, a-one, a-two, a-three music. There was no talk of industrialized building or construction management or computerized specifications but there was old-fashioned talk like this:

"I believe in architecture . . . I believe in the obligation of architects to improve the human condition . . . in the responsibility of the architect to his client . . . in the power of architecture to uplift the human spirit as it provides for the ordinary activities of daily life.

"I believe in architecture, and I do not believe that the profession will or should change its name, abandon its principles, or forget its historic responsibilities."

If it makes me a square to think that such sentiments are well said every once in awhile, then plane the corners sharp, carpenter.

Because I think Max Urbahn was just right in using those "old-fashioned" sentiments as a cornerstone of his year as president of the AIA.

I think he was just right because from time to time (the beginning of a year and/or the beginning of a new AIA presidency seems as good a time as any) we need to be reminded that as important as change is, not everything need or should change. For as Max said: "The human needs and values which are the central concern of architecture have not really changed in two thousand years."

I sometimes think that some of us are confusing what is newest for what is happening. For example, if you were to go to some trade shows these days, you could get the impression that the industrialization of building was all but an accomplished fact, instead of an on-going experimental and evolutionary process that has taken us a long way from hand-carved moldings but still has a long way to go to any Breakthrough in costs, any Breakthrough in quality, or any Breakthrough in the condition of man.

If you were to go to a lot of conferences these days, you could get the impression that the only things happening these days were construction management, fast-track, computerized specifications, and life-cycle cost-benefit analyses; instead of realizing that when you've heard Phil Meathe and Joe Newman and Chuck Thomsen and George Heery and Gerry McKee and Walter Meisen and Bob Hastings you've heard not all of it—but most of it.

In short, unless you're pretty careful, you begin to think about the new tools of building as some kind of basic truth—and that's a dangerous kind of thinking. Because the basic truth is architecture; and everything else we've been talking about is a tool of architecture.

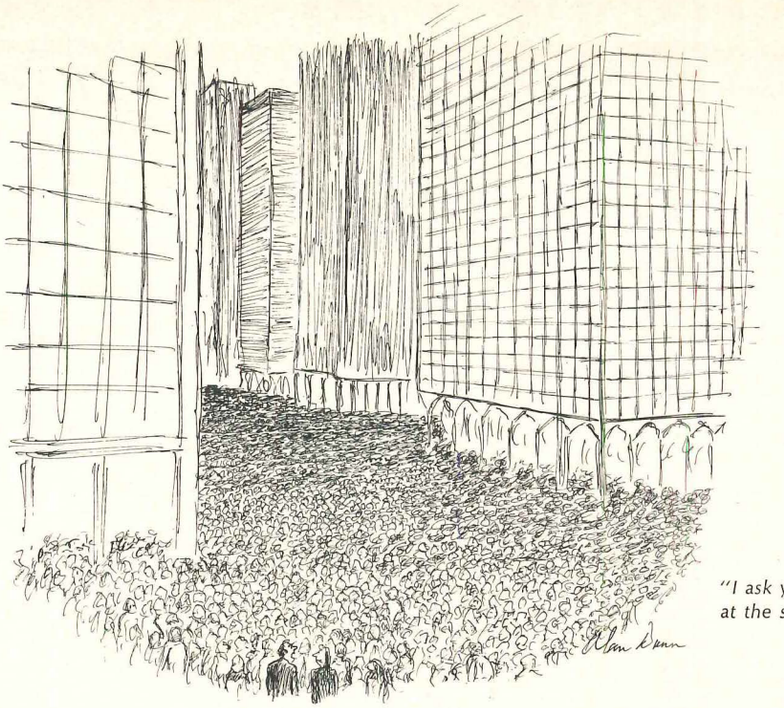
Industrialization, construction management, phased construction and computers are tools. The growing (thank goodness) efforts of the AIA to develop as much clout as the highway lobby has in Congress is a tool of architecture. We're told (once the AIA's National Task Force on Policy sets out a series of national priorities some time next month) that each candidate for major public office will be asked where he stands on those priorities. Good! For politics can be a tool of architecture. We might even see some renewal of "Guiding Principles for Federal Architecture" and less of the emerging "Guiding Principles for Low-Bid Turnkey Construction."

Max, in his inaugural speech, put it this way: "I know that problems are changing, and clients are changing, and techniques are changing, and the tools are changing, and ways of organizing for architectural practice are changing.

"But I also know that architects are reacting to these circumstances as opportunities for expanding their services and extending their influence. They are also responding to the demands of the times for higher and higher levels of performance. But I do not hesitate to say that all over this country, more architects are designing better buildings than ever before. And I remain convinced that the function of architecture is the provision of well-designed spaces for human use."

The tools are changing, architects are changing, but the goals and principles of architecture are not. If there are real problems in the building industry today, I don't think what we do is change architecture. I don't think we give up professionalism. I don't think we decide to spew out buildings with an exquisite process that turns out a mediocre product. We don't change architecture—we change public policy, we change priorities. We use new tools but we remember they are means to an end, not an end in themselves. We strive for efficiency, but do not mistake lowest first cost for efficiency. And we remember that any architect worth his license believes something that few entrepreneurs even pretend to believe—that he has "moral obligations to society beyond the requirements of law or business practice."

—Walter F. Wagner, Jr.



—Drawn for the RECORD by Alan Dunn

"I ask you, do we all have to have our fire drills at the same time?!"

The Big Client spells out a broad market

The wide range of Federal-agency commissions for architects and engineers, outlined to them by Federal contracting officials at a January conference in New Orleans (RECORD, February 1971) were reviewed and updated at the second such meeting held in St. Louis recently. 500 architects and engineers attended.

So spirited have been these two meetings focused on government work that plans for a third, probably to be held on the West Coast, already are underway. Joint sponsors are the American Institute of Architects, Consulting Engineers Council, and National Society of Professional Engineers.

The St. Louis program enabled agency spokesmen to give architects and engineers feedback on their efforts over the past 11 months. Example: The General Services Administration has moved forward on two construction manager projects, the latter involving complete performance guides on work estimated at $97 million. The agency's Assistant Commissioner for construction management, W. A. Meisen, told delegates: "If last January was a time for concern, I now see 1972 as a year of hope. Architects and engineers have been rising to the challenge; and the age of government-professional partnership has begun."

Not all in attendance agreed with this lofty assessment, but they listened carefully as Meisen and A. F. Sampson, Public Buildings Commissioner, detailed the status of GSA programs in construction management, value engineering and the Turnkey experiment. This last involves a "toe in the water" effort on five smaller projects (around $200,000 each) in Chicago's area.

In a less formal question-and-answer session, Meisen explained there are not now enough experienced construction managers "to fill our needs"; so GSA aims to develop a pool of such talent. Sampson added: "Now we must get good discipline in construction to 'systematize' building and get more discipline on the whole building team." He added that the architect can be the construction manager in his own right if he has the capability, urging them to "come into this by combining with other firms."

The conference talked about Federal grant opportunities, with representatives from Office of Management and Budget, HUD's College Housing Branch, HEW's Facilities Engineering and Construction Agency, Farmers Home and Economic Development Administrations. Speakers outlined the scope of these programs: college dormitories construction, rural housing, water supply and sewer systems.

The current $3.1 billion transportation grant program was detailed by officials from Department of Transportation's engineering and operating branches. There's a $25-million kitty for technical studies planning right now, and one DOT speaker, having said that three consulting firms now have 60 per cent of the business, commented, "We don't know where you others are; come on in, the water's fine."

The recent conference bore heavily on defense construction activity whereas the New Orleans meeting had touched only lightly on this important subject.

Architects were particularly attentive to explanations of DOD's massive housing (new and improvement) efforts. Defense operates 307,000 family units now but needs shelter for over one million additional families. It sets the improvement backlog at $450 million with $33 million being spent in the current program and a pace of $40 million per year set for the future. Defense is studying the Turnkey concept and looking at "aggregating advantages" in industrialized housing. Air Force is heavily into use of large components or modules and factory assembly-line techniques for certain of its facilities, experiencing better control for quality assurance. Easy relocatability is a factor, and the Air Force has earmarked $100 million in this fiscal year for industrialized construction.

The Navy's program relies heavily on one-step Turnkey approach to housing. This method, said a speaker, requires any proposer to have or acquire architectural and engineering expertise.

Much discussion centered on Army Corps of Engineers' new responsibility in handling postal facility construction for the U. S. Postal Service. Planned for early expenditure is $561 million for mail processing buildings and $52.7 million for smaller post office structures. The new service has decided to go out of the leasing business since it now has authority to finance its own building program through bond issues up to $10 billion maximum at a $2 billion per year rate. It occupies 41,000 facilities now with 27,000 of these rented or leased; and as its building program expands it will be going more and more to architectural firms for help.

As in New Orleans, delegates were anxious to learn how they could participate more fully in Federal agency programs. Speaker after speaker urged filing Form 251—identifying the firm and putting it in the record. And architects were urged to keep in touch regularly with field and district offices where, mainly, the action is.

A great advantage of these conferences, those attending say, is the opportunity for face-to-face confrontation with Federal officials who guide policy and operation. Shirtsleeve sessions in addition to the more formal program elements allow the architects and engineers to get direct answers to their personal questions.

—Ernest P. Mickel

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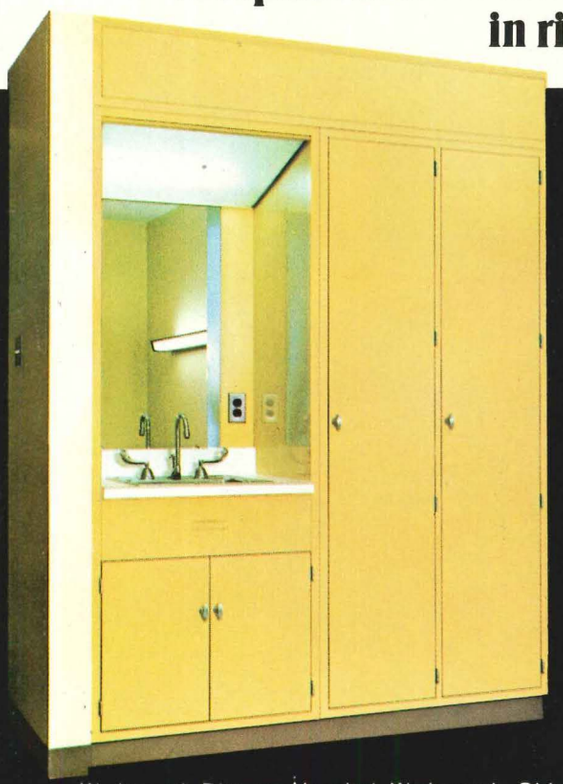

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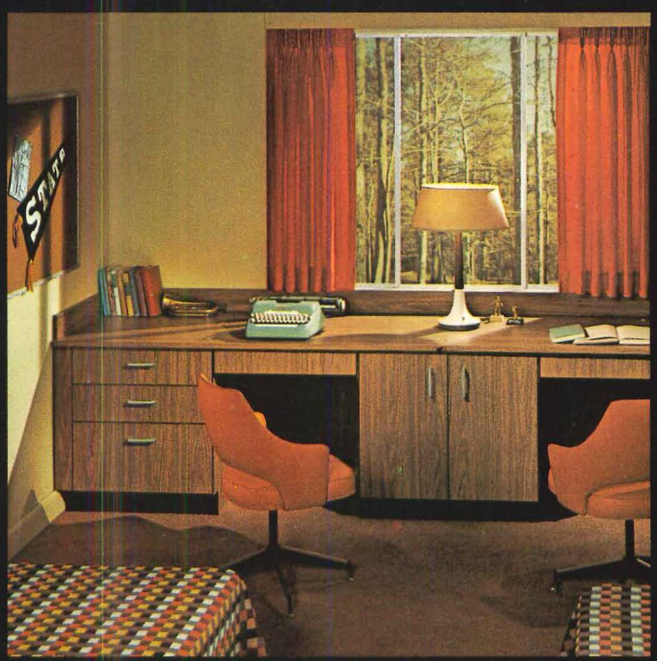

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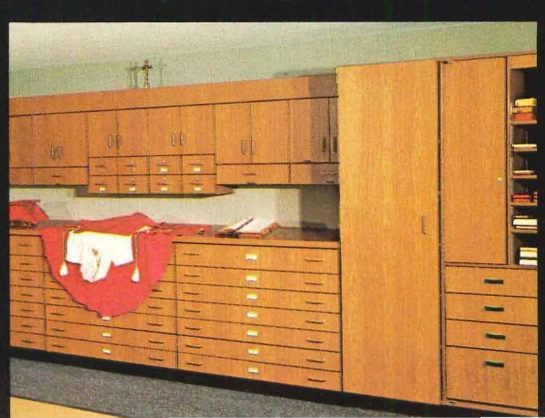

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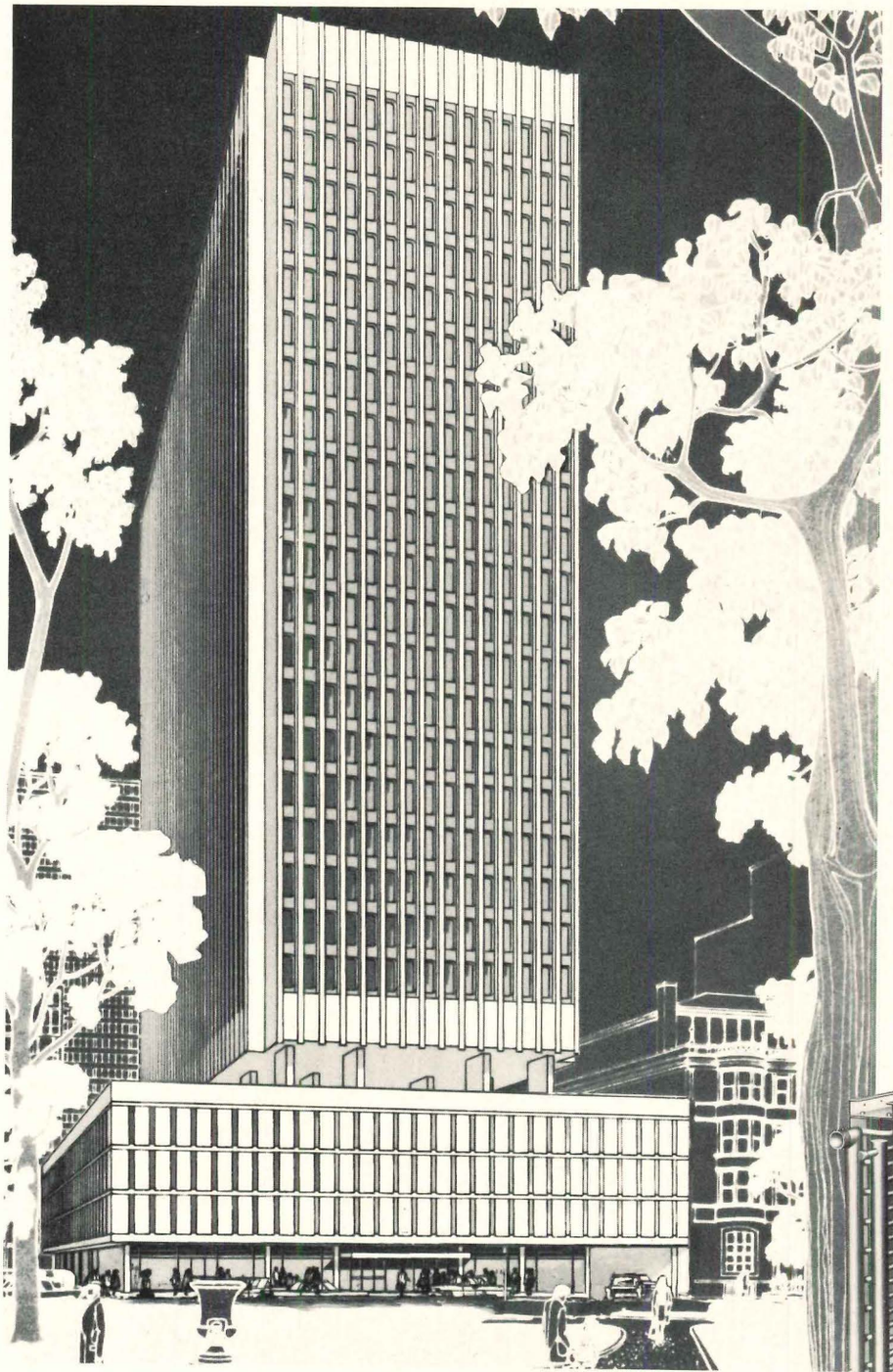

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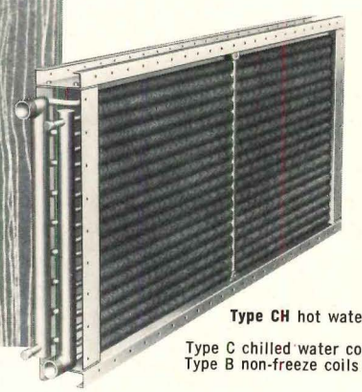

Type CH hot water heating coil

Type C chilled water cooling coil and Type B non-freeze coils also used.

Aerofin Coils make the new "Squire of Rittenhouse Square" a nice place to work

PROFESSIONALS AT WORK: *Architects:* Nowicki & Polillo, Phila. • Eggers & Higgins, New York City • *Mechanical Engineer:* Michael Garber, Phila. • *Mechanical Contractor:* Daniel J. Keating Company, Phila. • *General Contractor:* E. J. Frankel Enterprises, Inc., Phila.

AEROFIN

CORPORATION • LYNCHBURG, VIRGINIA 24505

Aerofin is sold only by manufacturers of fan system apparatus. List on request.

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Columbus Carpet of Herculon® got dressed up with Roka by Kraft...

...then got all undressed.

Columbus Mills "Graduate" made with pile of HERCULON* olefin fiber took quite a dressing down. With a load of wet lettuce, juicy tomatoes and good, rich, Roka Blue Cheese Dressing. Result? The "Graduate" passed with flying colors . . . cleaned up quickly and easily.

The stain resistance of HERCULON coupled with uncommon resistance to abrasion and fading, gives you the perfect carpet for any commercial installation.

Roka dressing by Kraft couldn't make a lasting impression on Columbus Carpet Mills 5/64th gauge carpet of HERCULON. But "Graduate" will make a wonderful impression on your clients.

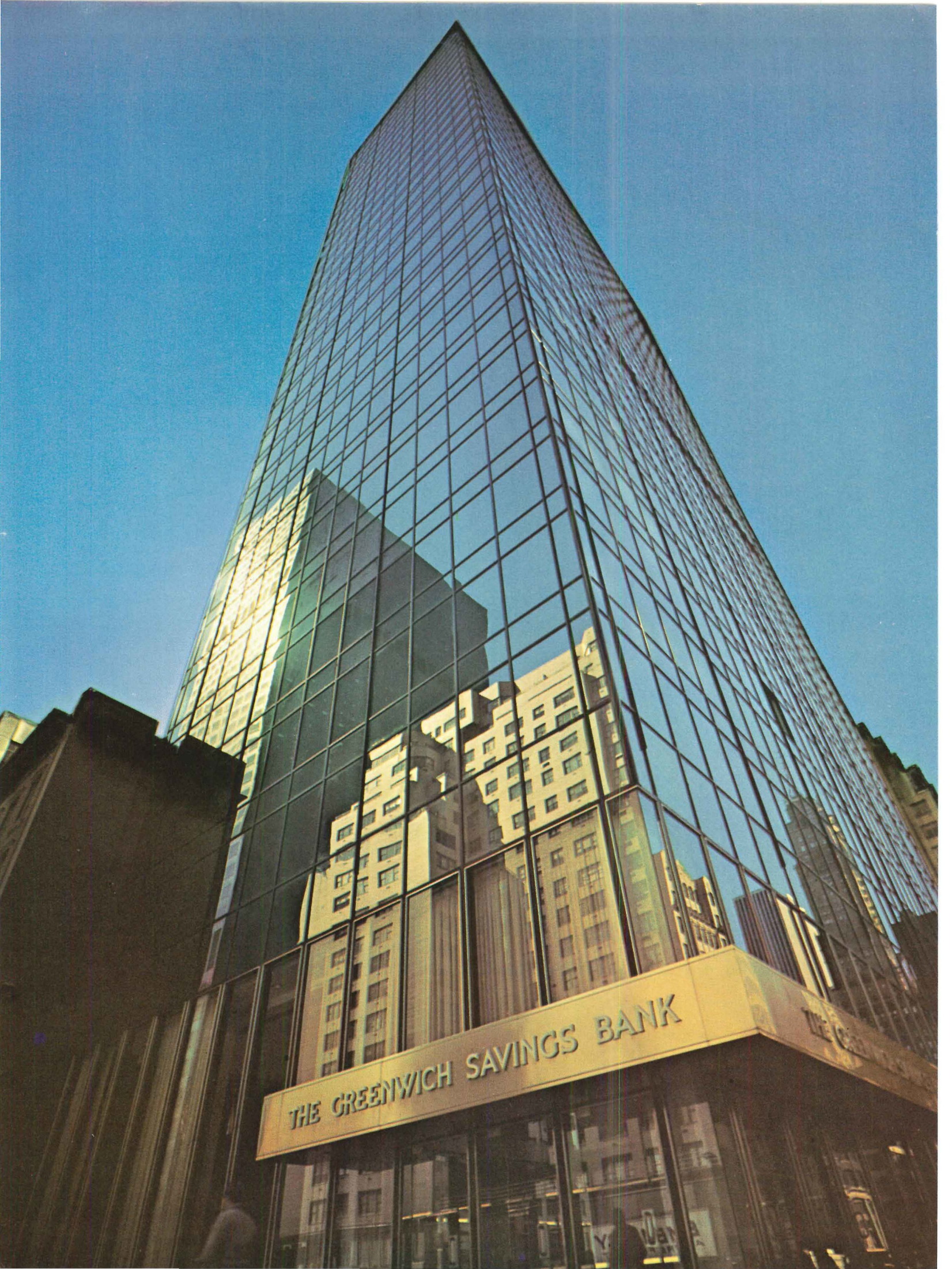
For detailed information on HERCULON olefin fiber see Sweets (S) Light Construction, Architectural, Interior Design files. Or, write Fibers Merchandising Dept. 203, Hercules Incorporated, Wilmington, Delaware 19899 for free 24 page booklet.

Specify carpet of Herculon® by Columbus Carpet Mills

HERCULES

*Hercules registered trademark.

For more data, circle 7 on inquiry card


THE GREENWICH SAVINGS BANK

How Vari-Tran® is helping The Greenwich Savings Bank save on cooling.

When The Greenwich Savings Bank people built their new midtown Manhattan office building, naturally they had efficient operation in mind. The building architects, Kahn & Jacobs, were also concerned with aesthetics.

By using Thermopane® insulating glass made with Vari-Tran® reflective glass in vision areas and tempered coated Vari-Tran in spandrels, the owners and architects achieved both their goals.

Vari-Tran provides more year-round comfort because it reflects most of the sun's light and heat. This greatly reduces cooling needs. Not only is less capacity required, but also fewer ducts, fans and other equipment. This cuts down substantially on operating costs. For The Greenwich Savings Bank, it is estimated that some $10,000-$15,000 a year will be saved.

Kahn & Jacobs is particularly pleased with the building's appearance. It's the first building in New York to be completely sheathed in a curtain wall of reflective glass. Its mirrored surfaces produce fantastically interesting effects as they continually reflect the ever-changing sky and surroundings.

The reflective Vari-Tran coating is on the airspace surface of the Thermopane units and inner side of spandrels.

If you're planning a new building, Vari-Tran can help you look good while saving money, too. Get a computerized cost analysis of glazing alternatives today. Contact your L-O-F Architectural Representative or Architectural Dept., Libbey-Owens-Ford Company, Toledo, Ohio 43624.

L-O-F GLASS **Hi-Performance Glass**
The glass that cuts building costs

Owner: The Greenwich Savings Bank. Architect: Kahn & Jacobs, New York City. General Contractor: George A. Fuller Co., New York City. Glazing Contractor: David Shuldiner, Inc., New York City.

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For convenience, we win by a "nose."

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.

Our PD-80, like some other conventional copiers, is mobile enough to go just about anywhere in the office. So it saves a lot of steps.

Unlike all other conventional copiers, the PD-80 doesn't use ammonia. So it eliminates fumes and odors. And your nose never knows there's an engineering copier nearby.

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Finally, our PD-80 convenience copier can be rented for under a dollar a day.

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For more information or a demonstration in your office, call your Bruning Representative. Or write to Bruning Division, Addressograph Multigraph Corporation, 1555 Times Drive, Des Plaines, Illinois 60018.

Whichever is most convenient.

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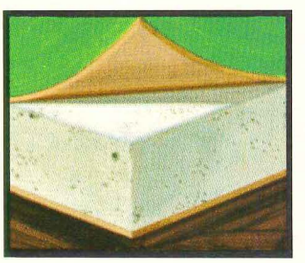
SHEETROCK* W/R Gypsum Panels

(WATER-RESISTANT)

say so much about the hidden quality of a home.

Now, you can enjoy the results of extra quality that's built *behind* wall surfaces. Your glamor bath will not be damaged by moisture. And knowing home buyers will note that tile stays put because walls stay dry. SHEETROCK W/R Gypsum Panels are *water-resistant all the way through*—face paper, core and back paper. They build a solid base for tile, paint, wallpaper, any other modern wall finish, in baths, kitchens and laundry rooms.

*Reg. U.S. Pat. Off.



MAIL COUPON FOR MORE INFORMATION

United States Gypsum, 101 So. Wacker Dr., Chicago, Ill. 60606. Dept. AR-12. Please send me material as checked below:

- ☐ Easeled reprint of this ad (SHEETROCK W/R sample attached) for model home display.
- ☐ Technical literature and large 4''x5'' sample of SHEETROCK W/R.

Name_____

Company Address_____

City_____ State_____ Zip_____

UNITED STATES GYPSUM

BUILDING AMERICA

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Thonet Club Tub characteristically Bauhaus in its simplicity and implicit integrity. With a polished chrome-plated steel frame, the Club Tub is available in a wide selection of vinyls and soft fabrics. Compact. Comfortable. Luxurious. And like all Thonet furniture...built to endure. See all the new excitement in contract furniture at a Thonet Center of Design. New York. Chicago. Los Angeles. San Francisco. Dallas. Miami. Or write Thonet Industries, Inc., One Park Avenue, New York, 10016.

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CENTER OF DESIGN

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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

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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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Now there's a tough, new PVF coating on a great industrial sidewall.

Alcoa® Super Alumalure® coating. That's the name of our new coating. It's a special fluorocarbon formulation by PPG Industries. Available on all Alcoa industrial building products. Has a Kynar* resin base, so it offers excellent film integrity and resistance to chalking, fading and chemical attack by airborne acids and alkalis. Has a rated service life of at least 20 years.

The substrate, of course, is aluminum, the metal with excellent surface stability. When attacked, an aluminum substrate forms a natural, protective layer of aluminum oxide on its surface. Aluminum's high resistance to corrosion also discourages flaking or adhesion loss.

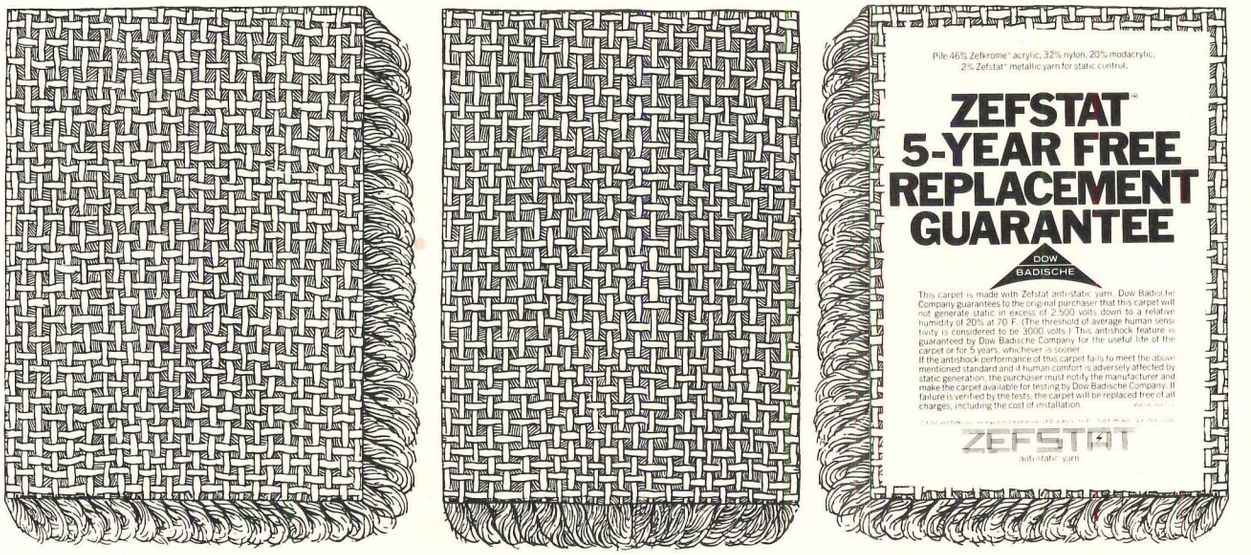
And here's the icing on the cake: Alcoa Super Alumalure coating gives you the advantages of a super-tough fluorocarbon coating, at a price you can live with.

Specify Alcoa Super Alumalure coating on the sidewalls of your next building. It's available in 10 superb, trend-setting colors. For complete details, write Aluminum Company of America, 1055-A Alcoa Building, Pittsburgh, Pa. 15219.

*Registered Trademark of Pennwalt Corporation.

Change for the better with Alcoa Aluminum

Only one anti-static carpet yarn is backed by a guarantee.



We guarantee that a carpet made with Zefstat® will reduce static below the level of human sensitivity for the useful life of the carpet or five years. Or else: we replace the entire carpet, free of all charges, including the cost of installation.

Dow Badische is the only carpet fiber producer to guarantee its product in end use. If anyone else could solve the problem of static as effectively as Dow Badische, how come they're not willing to put it into a written guarantee?

Maybe they're not as confident about theirs as we are of ours. And for good reason.

We originated and developed the concept of turning metal into soft textile yarns more than twenty years ago. And when the need for some form of anti-static control device for carpeting became evident, we applied our knowledge into making an anti-static fiber for carpets.

The result was Zefstat, a specially treated strip of aluminum we turned into a fine, soft textile yarn with the strength and other physical properties necessary for processing, wearability and cleaning.

It seems almost a shame that after we spent so much time and effort developing Zefstat, it should remain hidden. Because you can't see Zefstat in the finished product. Acrylic with modacrylic or nylon is blended with Zefstat anti-static metallic yarn during yarn production. Blended either by us or by you with our assistance. As little as two-percent of Zefstat, properly blended, can dissipate static electricity, almost as fast as it is generated, over an entire carpet.

Can we guarantee Zefstat for you?

Dow Badische Company, 350 Fifth Avenue, N.Y., N.Y. 10001.

DOW
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Zefstat is a registered trademark of Dow Badische Company.

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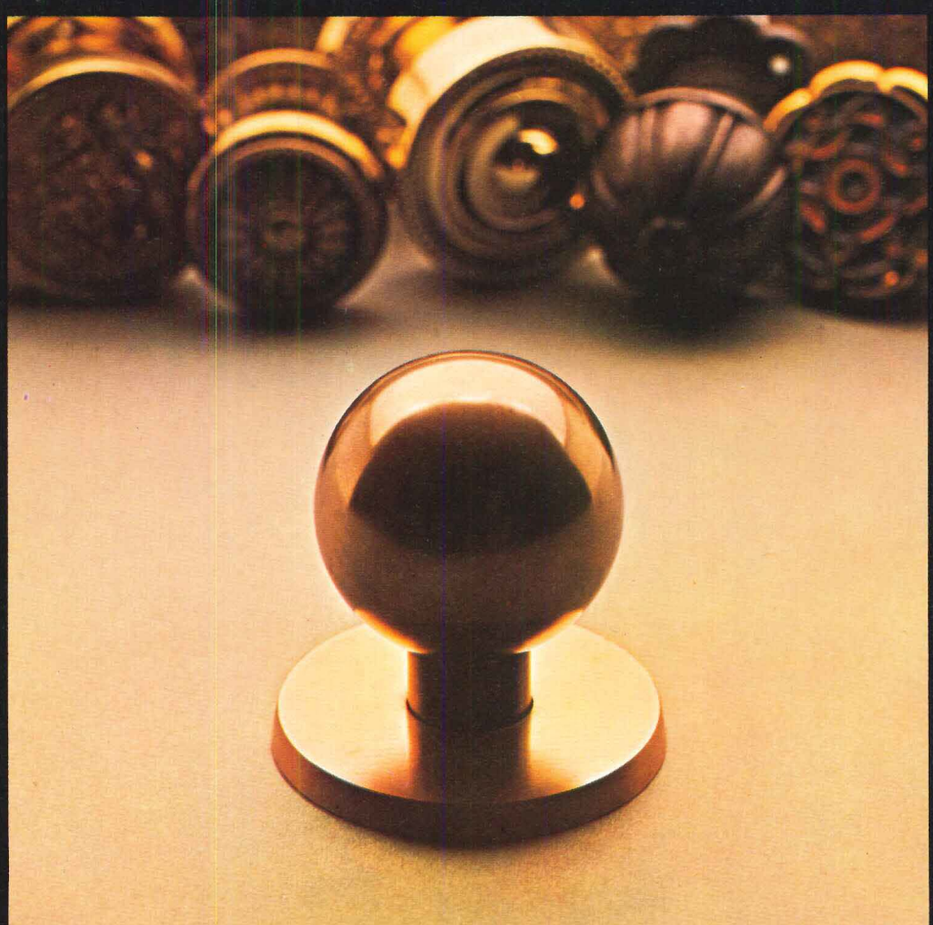
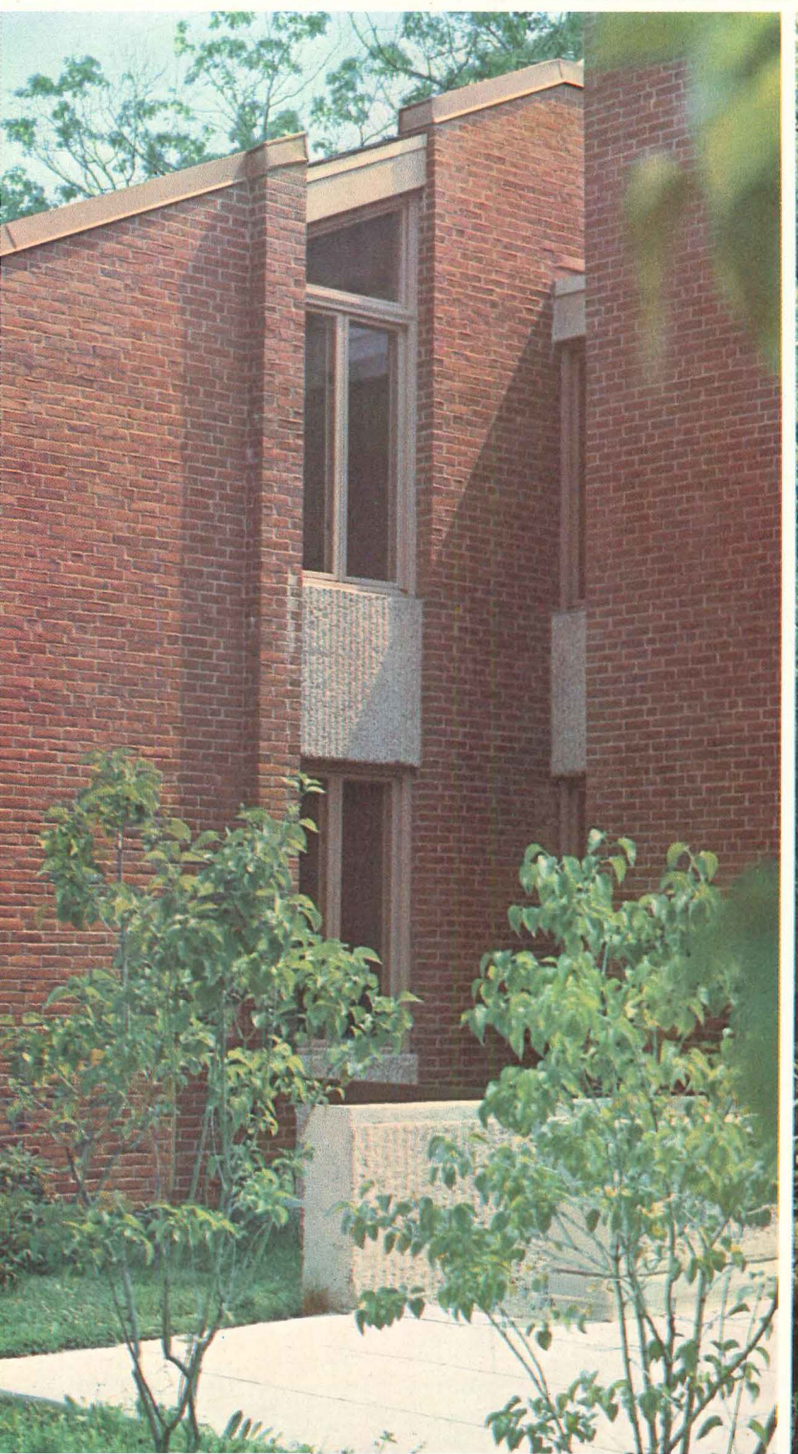
Collector's Item

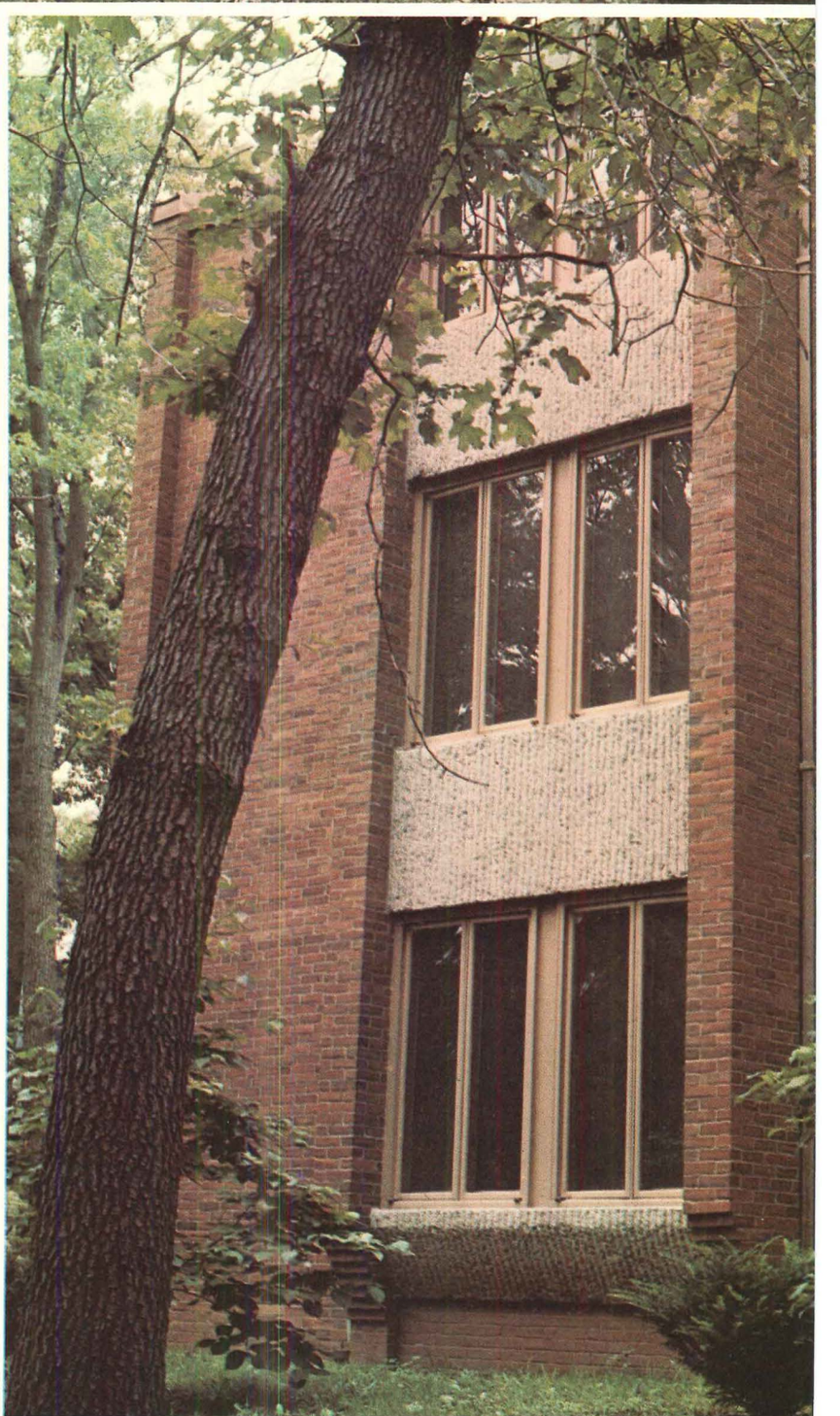


Ronde. A boldly beautiful mood for today. A treasure for tomorrow. Enduring design in the Russwin tradition. Russwin, Division of Emhart Corporation, Berlin, Connecticut 06037. In Canada — Russwin, Division of International Hardware.

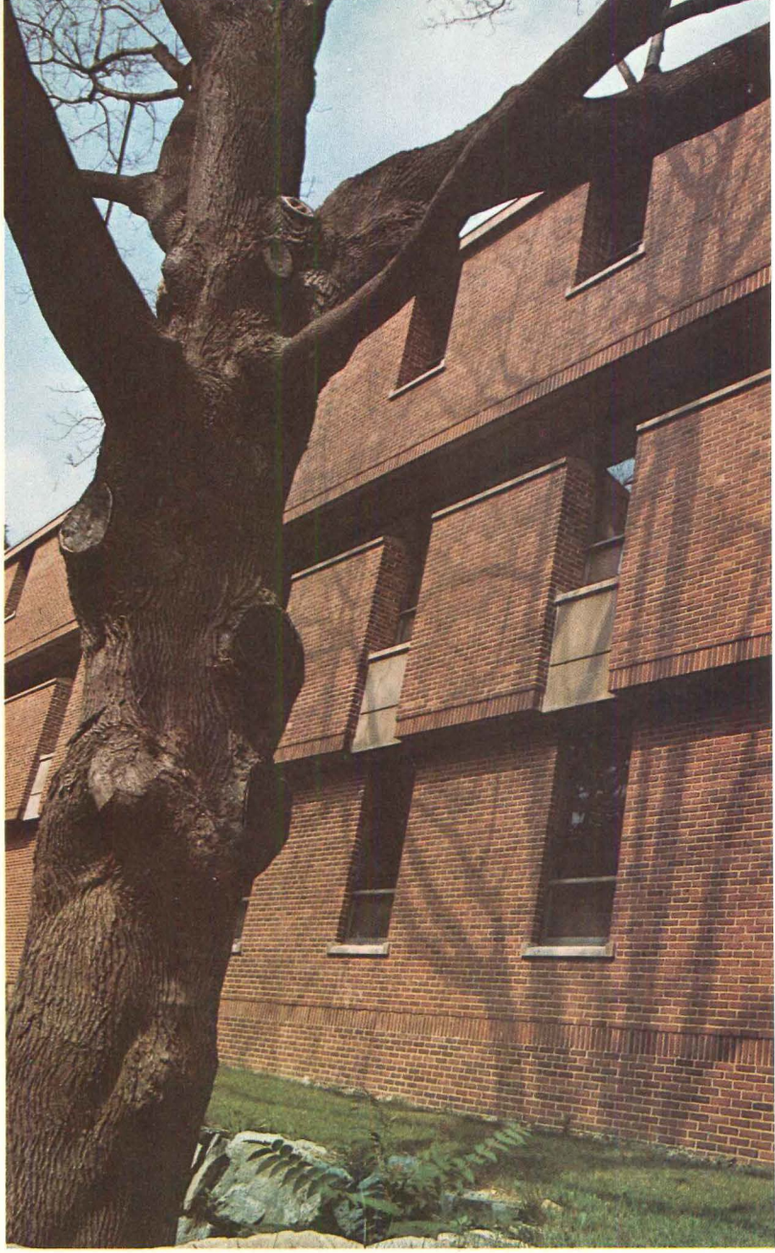
RUSSWIN

The Collector's Series by Russwin





How Andersen Windows helped Lasell Jr. College keep its Boston accent.



Lasell Jr. College for girls nestles quietly in the rolling west-Boston suburb of Auburndale—a heavily-wooded community filled with sturdy old New England "sheds" and genteel Georgian Colonials.

It was for this setting that a Boston architect designed a strikingly simple new dormitory and library.

It was for this setting that he chose Andersen Windows.

The natural beauty of our wood casements and awning-style windows worked in perfect harmony with traditional Boston brick.

In a quiet, stately way, Andersen Windows also helped the architect relate his new contemporary designs to the older campus buildings and surrounding private homes.

And finally, Andersen Windows appealed to the architect's plain old Yankee common sense. (Any windows that are built to such close tolerances that you get as much as a 15% fuel saving just *have* to make sense for Boston!)

Fact is, Andersen Windows make sense anywhere. For all the details, see your nearest Andersen distributor or dealer. Or check your Sweet's Catalog.

Architects: Steffian, Steffian and Bradley, Inc., Boston, Massachusetts

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AW®

Andersen Windowalls™

Window Beauty is Andersen

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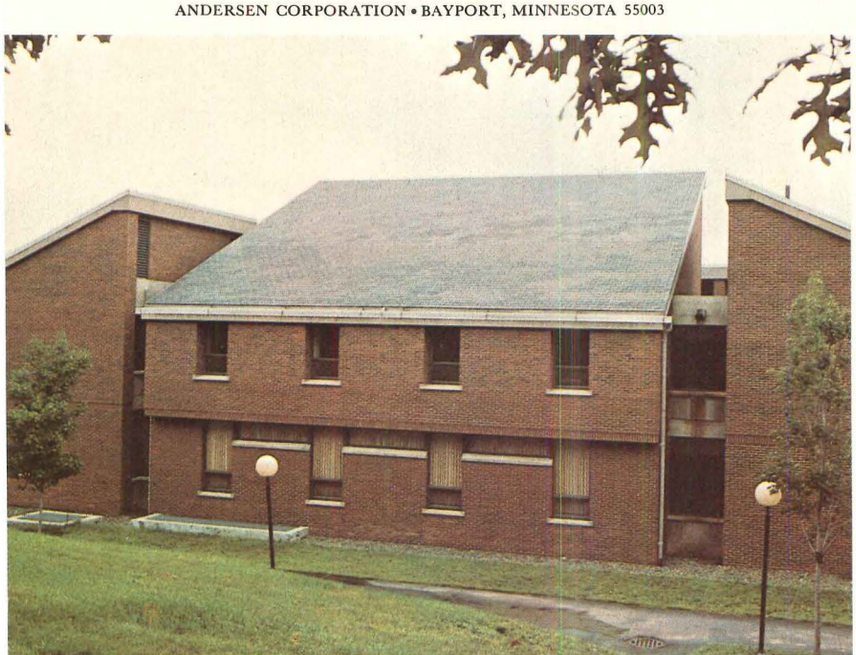
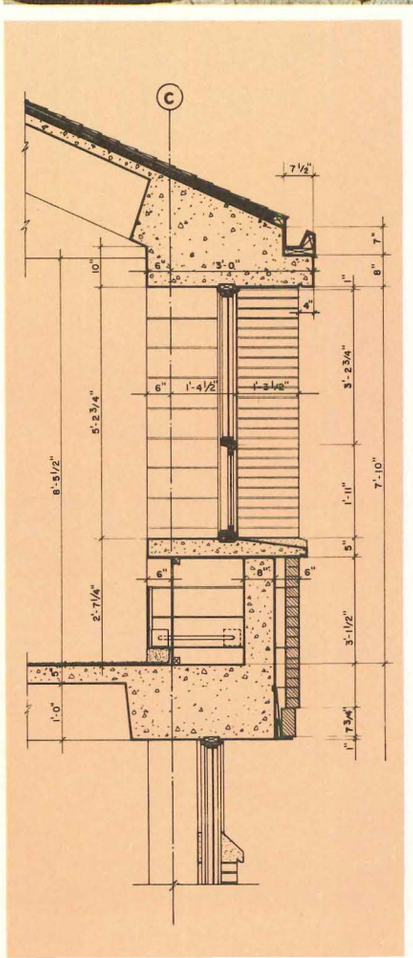
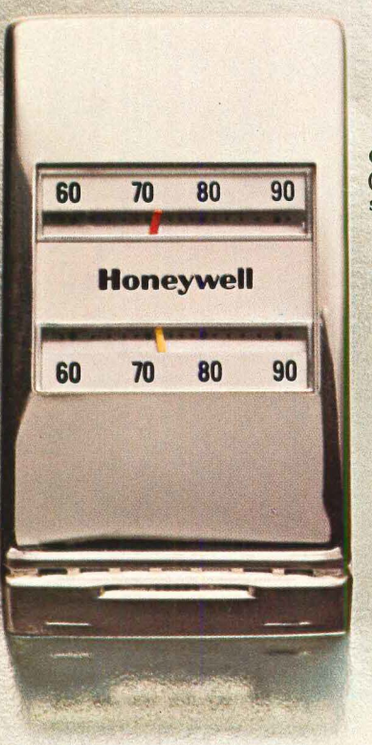




New... and blends in beautifully.



Our new thermostat (shown actual size)— smaller than a calling card!

Meet the architect's thermostat by Honeywell. Clean, simple lines. Harmonious finishes. And so small, so subtle, it nearly fades out of sight.

One glance tells you Honeywell created this pneumatic thermostat with your building designs in mind.

Deliberately unobtrusive. With sleek, contemporary lines. Horizontal, vertical shapes.

A choice of durable metal covers... setpoint indicator and thermometer; thermometer only; or starkly plain.

A choice of finishes. Aluminum or brass, in brushed or mirror finish to match architectural hardware. Or primed and paintable to harmonize with any color scheme.

And it's designed to be where a thermostat should be... on the wall or moveable mullions, for accurate responsive temperature control.

The perfect blend of aesthetics and function, in a new 'stat from an old friend. Honeywell.

Talk it over with your consulting engineer, or write us.
Honeywell, Commercial Div., G2118, Minneapolis, Minn. 55408

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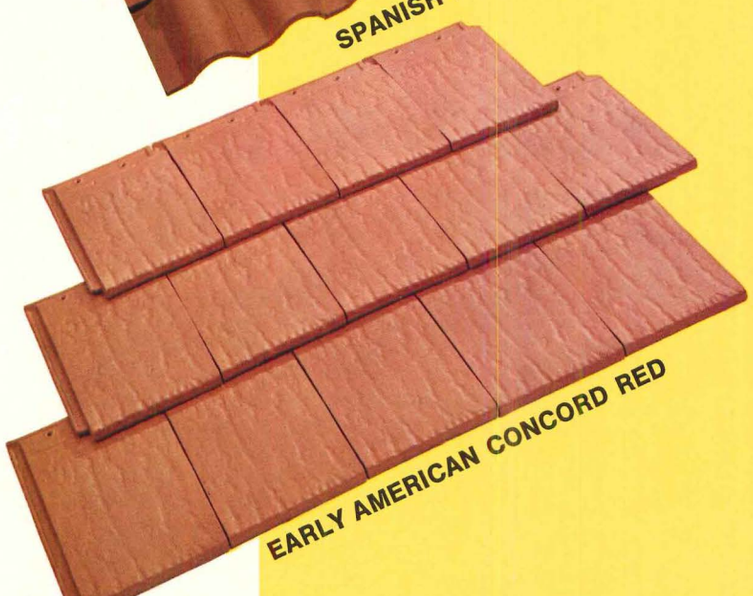
Permanent beauty and protection to compliment your esthetic concepts.

LANAI · SPANISH EARLY AMERICAN

LANAI HAWAIIAN GOLD

SPANISH NATURAL RED



EARLY AMERICAN CONCORD RED

FIELD TILES AND ALL FITTINGS IMMEDIATELY AVAILABLE . . . AT NEW, LOW PRICES!

For the *first time* these three Ludowici roofing tiles are being carried in stock rather than manufactured to order. No longer must you wait for weeks (or months) for special fittings or trim pieces.

NOW, your local distributor has everything you need *in stock*. Here is genuine clay roofing tile when you want it—where you want it.

And, dramatically reduced prices make the cost of a superb Ludowici tile roof comparable to slate, cedar shakes and asbestos shingles.

All Ludowici roofing tiles are fire-proof, decay-proof, color-fast, easy to install and usually outlast the buildings they beautify.

LANAI The weathered texture and bold square butt provide enduring beauty. Available in Hawaiian Gold, Sunset Red, Beach Brown and Lava Black.

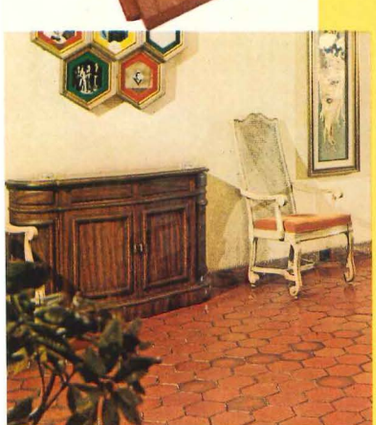
SPANISH An authentic pattern from old-world Spain. The handsome color is Natural Red.

EARLY AMERICAN The rough-textured surface captures the constant inter-play of sunlight and shadow, creating an ever-changing appearance. The colors: Concord Red, Lexington Green and Cape Cod Gray.

Other patterns and colors available on special order. Custom tiles, made to your specifications, can also be ordered. Consult your local distributor for information, or write to address below.

For more data, circle 17 on inquiry card

See the 1972 Sweet's Catalog #7.6/Lu



LUDOWICI QUARRY TILE provides permanent beauty. Natural red or fireflashed red, smooth-textured or brushed surface. Squares, rectangles and special shapes are available. A beautiful eye-stopper for floors, patios or wall accent areas—indoors or out.

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Sechrist's Celebrity Wall fixture: it's more than dramatic new styling. It's a whole new way to cast light.

You can see at a glance some of the reasons why Celebrity Wall is a fresh, original answer for lighting almost any contemporary setting. There's the classic simplicity of its cantilevered styling...the trim profile of a fixture that's only three inches deep...the quality accented by a fine baked enamel finish.

But the most important advance is the unique way Celebrity Wall functions, distributing light uniformly down and across the entire illuminated area. The secret is our new lens, a one-piece injection-molded acrylic that's an achievement in precision engineering and molding technique. Rows of identical prisms on the bottom, side and end reflect and refract, mirroring out brightness at critical viewing angles. There are no distracting shadows, no lamp image. Instead, Celebrity Wall diffuses a warm, equal glow...a new look in modern interior lighting!

Maintenance is more convenient than ever, too, because Celebrity Wall's one-piece lens is easy to remove and replace, and the entire electrical assembly is hinged for hands-free servicing. One- and two-lamp models are available, with matte black or white housings. To see Celebrity Wall in action, contact your Keene Sechrist agent. Or write for details to Keene Corporation, Sechrist Lighting, 4990 Acoma St., Denver, Colo. 80216. Phone (303) 534-0141.

KEENE
CORPORATION

SECHRIST LIGHTING

For more data, circle 18 on inquiry card

We've just begun to grow.

News in brief

Caudill Rowlett Scott, architects, planners, and engineers, of Houston, Tex., has been selected to receive the 1972 Architectural Firm Award—highest award bestowed on a firm by The American Institute of Architects. The award, to be given in May at the national convention in Houston, was granted for "continuing collaboration among individuals of the firm" as the "principal force in consistently producing distinguished architecture."

Lewis Mumford has been elected by the University of Virginia's Board of Visitors as Thomas Jefferson Memorial Foundation Visiting Scholar in Architecture at the University for the semester beginning February 1, 1972.

California Governor Reagan has signed a Statute of Limitations Bill for the construction industry that puts a ten-year-limit on suits against contractors, builders, architects, and engineers for latent defects in building projects. California thus becomes the 27th state to adopt such a statute.

Geoffrey Platt, FAIA, is the seventh recipient of The Medal of Honor for City Planning, awarded by the New York and Brooklyn chapters of AIA, for his "distinguished contribution to the plan of The City of New York and for his dedicated and continuing efforts in the preservation of the City's architectural and historic heritage." A practicing architect since 1930, Platt helped form the Landmarks Preservation Commission of the City of New York and became its first chairman in 1965.

American Plywood Association announces its 1972 Plywood Design Awards program. Completed projects with significant use of softwood plywood will be eligible for awards in any of four design categories. Deadline for entry is January 31, 1972. For entry form and/or further information, contact: American Plywood Association, Design Awards, Dept. AR 101, Tacoma, Washington 98401.

Irvan F. Mendenhall, president of Daniel, Mann, Johnson & Mendenhall, Los Angeles, has been named by President Nixon to serve on the President's Water Pollution Control Advisory Board. The Board consults with and advises the Environmental Protection Agency on matters affecting national water purity standards.

Montana State University is now accepting applications for the post of Director, School of Architecture. Address inquiries to: Professor John DeHaas, School of Architecture, Montana State University, Bozeman, Montana, 59715.

A team of Japanese architects headed by Tsuto Kimura of Tokyo are the winners in an international competition to plan a new business district for the old university town of Perugia in central Italy. An American team, headed by Warren Schwartz of Cambridge, Massachusetts are runners-up. The contest was sponsored jointly by the city of Perugia and Industrie Buitoni Perugina, international makers of processed foods and confectionery.

Calendar events for '72: Environmental Design Research Conference, School of Architecture and Urban Planning, University of California at Los Angeles, January 24-27, 1972. **First Annual Convention of the American Subcontractors Association,** Pembroke, Bermuda, February 12-16, 1972. **Harvard University Continuing Professional Education Seminars,** Cambridge, Mass. Dates between February 24 and April 13, 1972. **Second National Conference for the Building Team,** Houston, Texas, May 10-12, 1972. **International symposium on Pneumatic Structures,** Delft, The Netherlands, September 20-22, 1972. **First International Congress on Construction Communications,** Rotterdam, The Netherlands, September 24-28, 1972.

When You Specify Terrazzo, Specify Hillyard Onex-Seal II®

More than half a million square feet of this lustrous terrazzo was sealed and finished with Onex-Seal II in accordance with specifications in the Hillyard Uniform Numbered File—Division 9.

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.

See our specifications manual in Sweet's and write for Uniform Numbered Files for every type of floor.

HILLYARD
FLOOR TREATMENTS

ST. JOSEPH, MISSOURI U.S.A.
Totowa, N.J. San Jose, Calif.
Minneapolis, Minn. Dallas, Tex.
Boston, Mass.
IN CANADA: Calgary, Alberta
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The most widely recommended and approved treatments for every surface

Houston International Airport Houston, Texas

Architects: Golemon & Rolfe, Houston; Pierce & Pierce, Houston

For more data, circle 21 on inquiry card

FOR SCHOOL WASHROOMS...BOBRICK HAS ALL THE EQUIPMENT

To simplify planning and unify design Bobrick offers everything from soap dispensers to toilet compartments. More than 500 recessed and surface mounted stainless steel washroom accessories designed with schools in mind... for hard usage, easy servicing and vandal-proof installation.

Laminated Plastic Toilet Compartments, entrance screens and urinal screens that defy graffiti and corrosion. Compartments have concealed stainless steel hardware with attractive flush front appearance and steel reinforced pilasters for extra strength. Overhead-braced toilet compartments are designed with anti-grip headrails.

An extra dimension of quality, unified design and simplified planning are readily achieved from one source... Bobrick.

Yours for the Asking... New School Washroom Equipment Planning Guide. This helpful guide provides a comprehensive check list for all equipment needed in school washrooms, first aid rooms, faculty lounges and college dormitories. Write to: BOBRICK, Architectural Service Dept., 101 Park Ave., New York, New York 10017.

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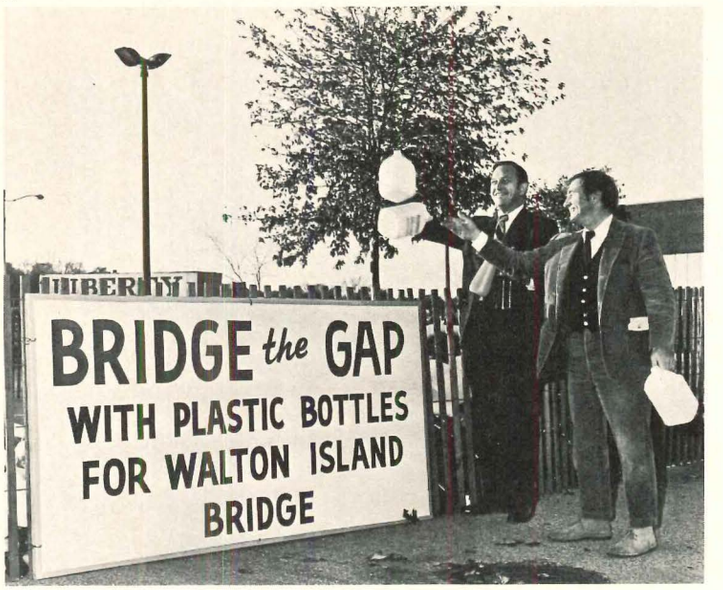

1

AIA installs new officers

New York City architect Max O. Urbahn, FAIA, was installed as the 1972 president of The American Institute of Architects in ceremonies held last month in Washington, D. C. He succeeds Robert F. Hastings, FAIA, Detroit, as leader of the 24,000-member professional society.

In addition to Mr. Urbahn, five other officers were installed:

- S. Scott Ferebee Jr., FAIA, of Charlotte, N.C.; first vice president and president-elect;
- Louis de Moll, FAIA, of Philadelphia; vice president;
- Robert J. Nash of Washington, D.C.; vice president;
- Archibald C. Rogers, FAIA, of Baltimore; vice president;
- Elmer E. Botsai of San Francisco; treasurer.

Six new members elected to the Institute's board of directors by members of their individual regions also were installed. They are:

- William A. Carlisle, Columbia, S. C. (South Atlantic Region);
- Alexander S. Cochran, FAIA, Baltimore, Md. (Middle Atlantic Region);
- Robert E. Fehlberg, Billings, Mont. (Northwest Region);
- Arthur E. Rigolo, FAIA, Clifton, N.J. (New Jersey Region);
- Clarence Rose, FAIA, Lansing, Mich. (Michigan Region);
- Matt L. Virden III, Greenville, Miss. (Gulf States Region).

Justice Department presses AIA for competitive fee bidding

New pressures from the Justice Department for the American Institute of Architects to revise its practice standards regarding compensation arrangements developed last month as the Antitrust Division prepared a suit against the organization and discussed the matter with AIA attorneys.

Along with the American Society of Civil Engineers, which eliminated restrictions against competitive bidding from its own code of ethics under similar government demands in October, and some other professional groups, AIA had received a civil investigative demand from the Division calling for submission of its documents pertaining to this subject. These were turned over to the Justice Department and the architects' standards of ethical practice have been revised since that time, but not, apparently, to the satisfaction of the Justice Department.

No suit had been filed at press-time, but there was talk of a "consent decree" agreement on the part of AIA if such an action were to be taken in the Federal District Court.

The ASCE handled a similar situation by deleting from its ethical code a provision which had made it unethical for members "to invite or submit price proposals under conditions that constitute price competition for professional services." That vote by the society's directors came on advice of their legal counsel.

At its Boston Convention in June 1970, the AIA revised the "obligations to client" portion of its standards to read: "An architect shall represent truthfully and clearly to his prospective client or employer his qualifications and capabilities to perform services. Before establishing compensation for his services, an architect shall reach an agreement with his client or employer as to the nature and extent of the services he will provide."

Less than six months later, the AIA Board of Directors had altered this second sentence slightly. It now reads: "After being selected for his professional qualifications, an architect shall reach an agreement with his client or employer as to the nature and extent of the services he will provide and his compensation."

A task force report submitted to the Board in March of 1970 by Jack D. Train, discussed this point. He noted the change from establishing compensation with a prospective client or employer to "his client or employer," and commented that, in his view, if the compensation is not established until the architect has been hired, competitive bidding on the basis of compensation is, in fact, prohibited. "We feel that the proposed wording will be less subject to charges of price fixing by the Justice Department than Section 3.5 of the existing standards; otherwise, the proposed standard should be interpreted the same as the existing standard by architects," the Train document stated.

If a consent decree is signed, the whole matter would not go to trial. If it should be taken to the trial stage, other design professions such as consulting engineers and national society or professional engineers, could be expected to offer "communal support" under a friend of the court procedure if AIA so requested.

Asked for comment on the December developments, William L. Slayton, executive vice president of the Institute, said: "We do not intend to carry on our negotiations with the Justice Department in the press." —*Ernest Mickel*

2

Recycled footings

A new bridge connecting Elgin, Illinois' Civic Center grounds with Walton Island in the Fox River will include a unique component in its concrete footings and span: 25,000 scrap plastic bottles, ground into small chips to replace 30 per cent of concrete's normal sand aggregate. The project will make the first such commercial use of recycled plastics, according to architect Robert Layer (Schmidtke & Layer, A.I.A.), who designed the bridge.

Although plastics account for only three per cent of the 3.5 billion tons of solid wastes the U.S. generates each year, they still are a problem to be reckoned with, largely because of the shortage of land for sanitary landfills and inadequate incinerator design and management. . . Layer said potential uses of recycled plastics in concrete for structural and architectural purposes are vast.

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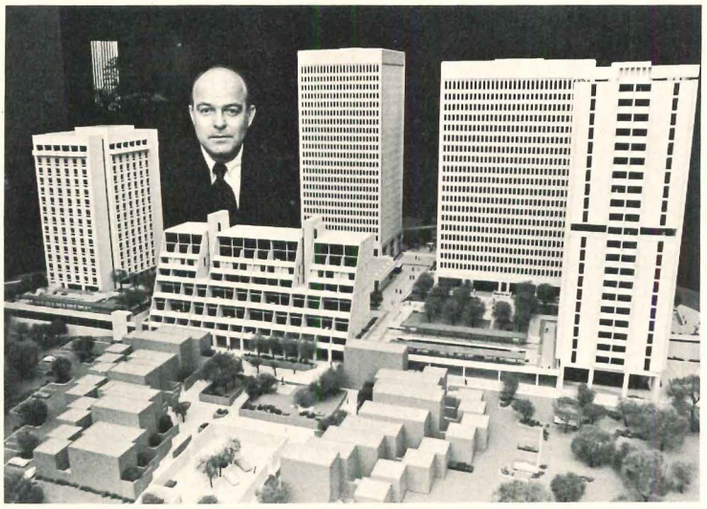


3

TV plea for preservation

"Your Heritage," a 60-second television commercial created for The National Trust for Historic Preservation by *Cinemakers* of New York City, has been judged best commercial of the year in a competition conducted by the 7th Annual Chicago International Film Festival. Approximately 80 qualifying commercials, selected by a professional committee, were beamed to 30 cities in a 12-state area. Viewers were asked to vote by postcard for the top three commercials judging solely on the ability of each to motivate interest in the product, service, or idea promoted. The National Trust Commercial, a dramatic plea for preservation of historically significant American architecture, topped some of the best known, lavishly produced product commercials now being run nationally. The National Trust is now planning extended distribution.

Where to ship the corpse

Acting to preserve a few significant scraps of Adler and Sullivan's Chicago Stock Exchange, Richard Miller, president of the city's Landmarks Preservation Council, has initiated efforts to have the building's entrance arch donated to New York's Metropolitan Museum of Art. The Metropolitan, while deploring the building's destruction, expressed an interest in the arch and presented proposals for its immediate and permanent display. Some influential Chicagoans, however, do not want the arch to leave the city. The Chicago City Architect's office has prepared proposals to have the arch re-erected, free standing, in Grant Park. Mr. Miller's reaction? "Erection of the Stock Exchange entrance as a free standing arch in a park would be just about the most inappropriate disposition that could be arranged."

Miller reports a generally favorable response to the Met's proposal from the building's owners, but there are indications that the owners are under pressure from the city to reject the proposal.

Here the matter now stands. A final decision must come soon.

New OAE vote

The Organization of Architectural Employees won five votes to three recently in elections held in the offices of Gwathmey, Sellier, Crosby. This is the third win for the union as against six defeats. Earlier, OAE lost in the offices of Van Bourg-Nakamura & Associates and Confer, Crossen & Nance. Still pending is a petition to hold elections at Stone, Marraccini & Patterson. Spokesmen for OAE say that elections will be held in other Bay Area offices in the future.

4

Final funding for Atlanta's Colony Square

The largest loan commitment of its kind ever made in the South was announced recently for the final construction phase of Colony Square (photo above), a multi-use development in downtown Atlanta. The huge ($43.5 million) loan was announced jointly by spokesmen for Cushman Corporation, developer of Colony Square and Chase Manhattan Mortgage and Realty Trust. James E. Cushman, president of Cushman Corporation, said his development team has moved into the final planning phases and will begin construction shortly after the first of the year. Completion is scheduled by the fall of 1973.

Colony Square will include office buildings, shops, apartments, condominiums, townhouses and underground parking, all massed on an 11-acre site on Peachtree Street between 14th and 15th Streets.

Of special interest is the fact that Colony Square will lend impetus to the incipient trend on the part of some lending institutions to make major building commitments to developers working on multi-use projects in dense, urban areas. Architects for the project are Jova-Daniels-Busby of Atlanta.

Borrowed time?

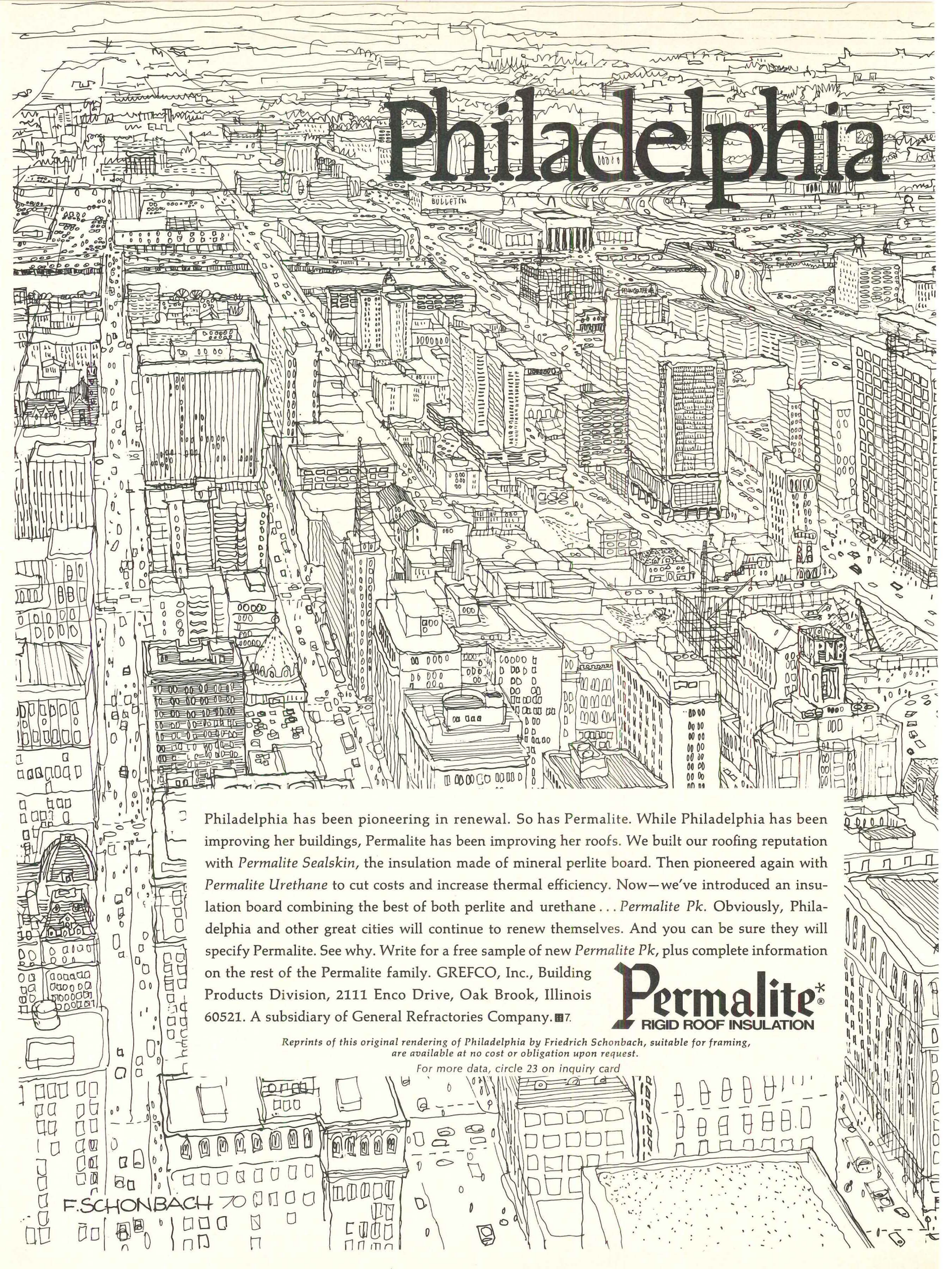
The Long-toed, Santa Cruz Salamander won a round in its fight against extinction last month when the Santa Cruz County Board of Supervisors refused to rezone the property that includes the rare salamanders' only known breeding ground. This marked the third time the Board has refused similar rezoning petitions.

Delay in BART start

BART, the San Francisco Bay Area Rapid Transit System, will not start operation in March, as previously announced. The new delay is due to a continuing strike at the plant in Chula Vista, California, where cars for the new system are being built. So far, only one car has been delivered. Sixty are needed to begin operation of the first line (from Fremont to Oakland), and 250 will eventually be needed for the entire system.

The delay is understandably disturbing to BART's directors, but they face other problems which must be resolved before operation can commence. Announced fare schedules have met strong opposition from commuters who find them high (even though the service should be a great improvement over present transportation), yet the district must operate without deficit. Much trackage and some stations are not yet completed. Feeder line agreements have yet to be worked out.

But for the public, some progress has been made. Governor Reagan has signed legislation to require outdoor advertising signs on BART property to conform to local sign control ordinances.



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Reprints of this original rendering of Philadelphia by Friedrich Schonbach, suitable for framing, are available at no cost or obligation upon request.

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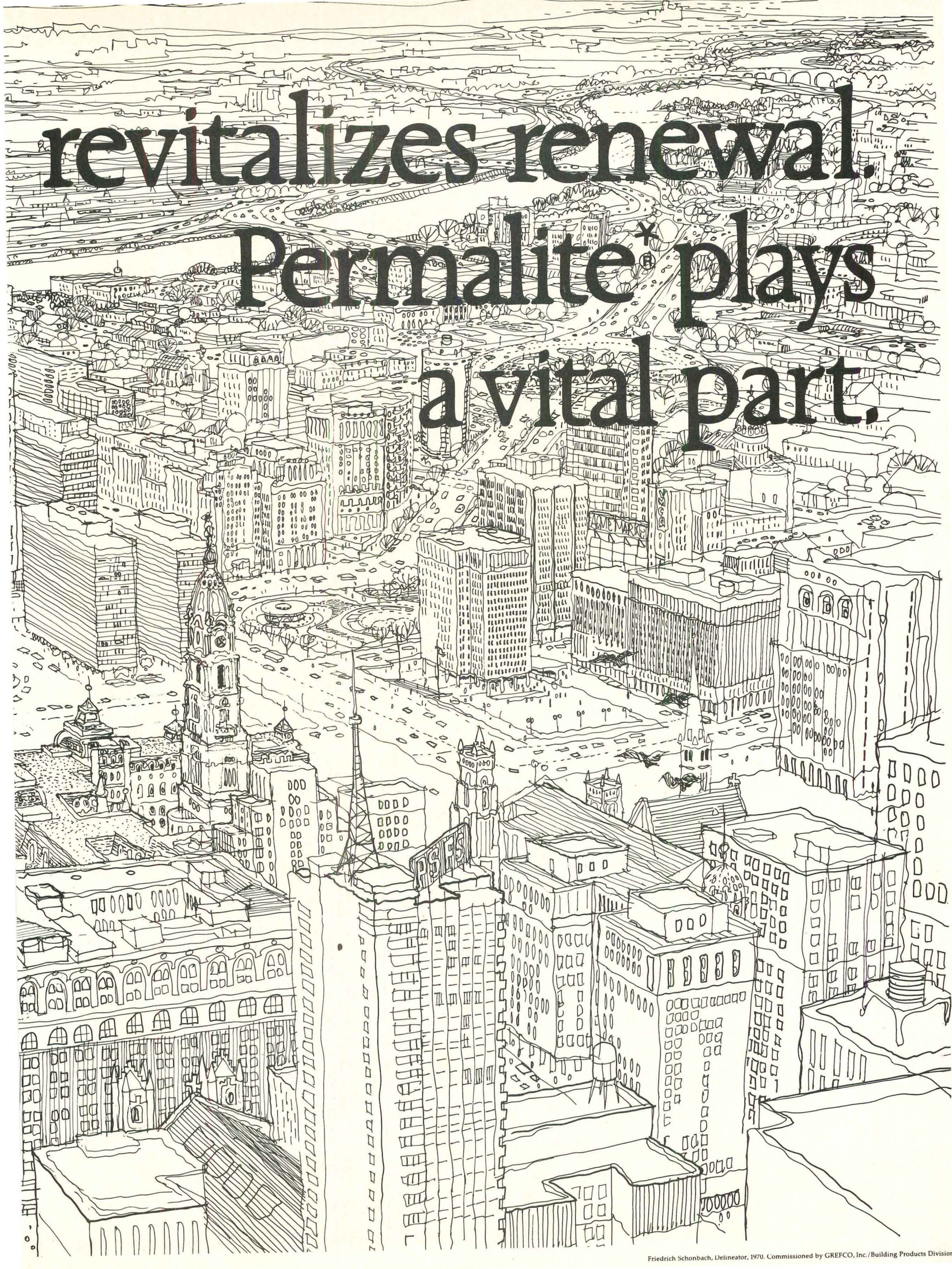

Friedrich Schonbach, Delineator, 1970. Commissioned by GREFCO, Inc./Building Products Division

Carrier cools without be

The Towers in San Jose is 18 stories of new offices. Mostly glass outside. Cooled all over inside by Carrier's Dual Moduline® all-air system.

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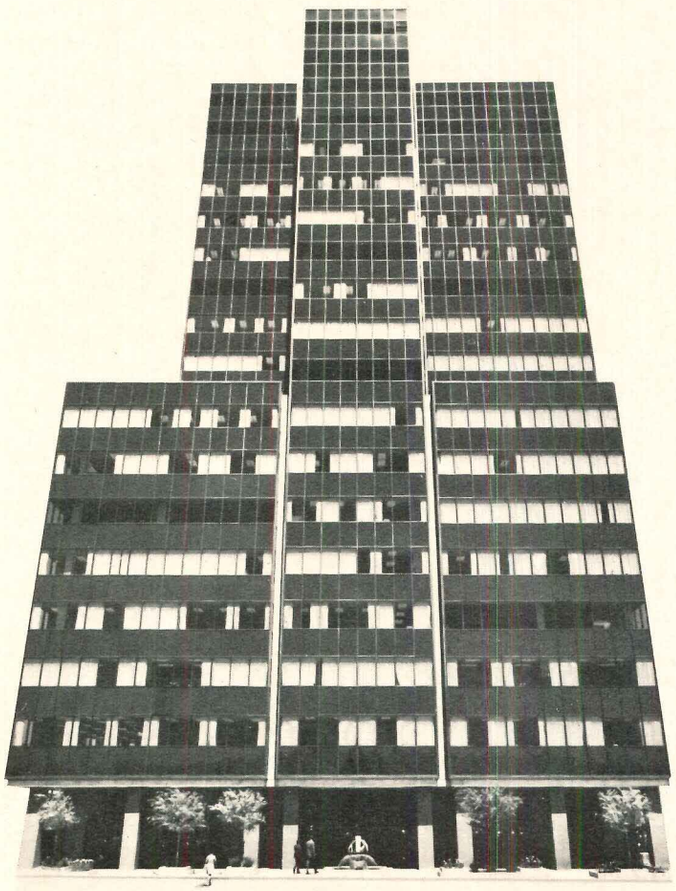
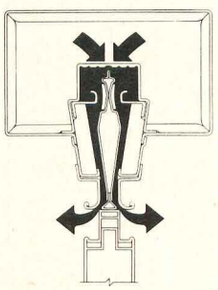
a glass tower ing obvious.



This is a one-duct system, too. Saves space. Its unique efficiency even helped add a rentable floor to The Towers by using less mechanical equipment and shaft space.



The modular make-up of these dual-cooling units also cuts moving-in costs as much as 50 cents a square foot. Allows changing office interiors with few (if any) system changes. Ideally benefits both tenant and building owner.

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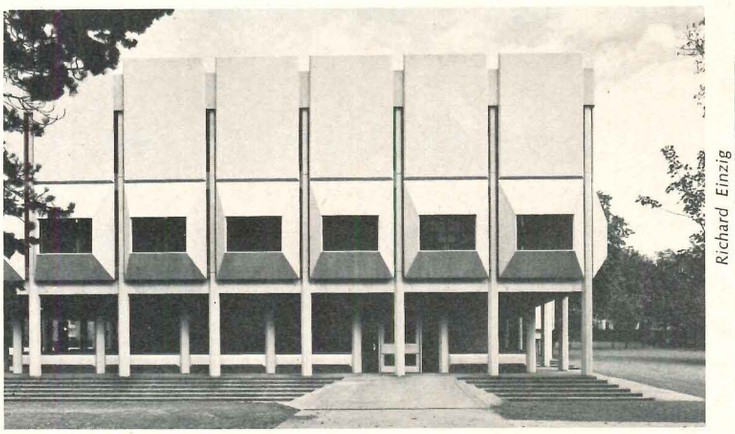
Royal Institute of British Architects Awards

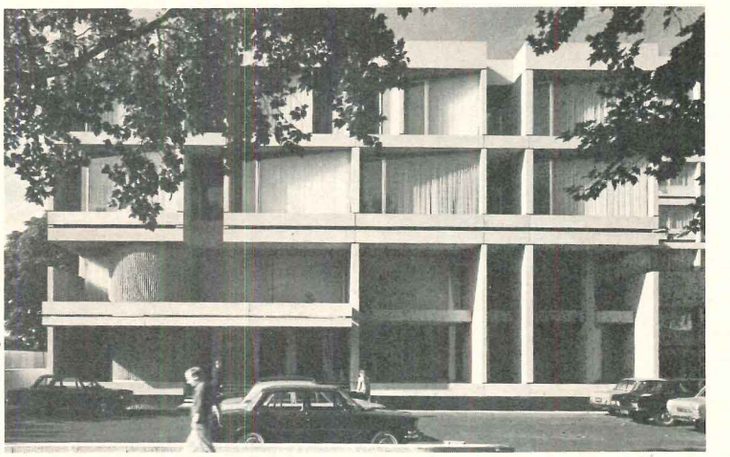
Winners of the twelve 1971 RIBA awards whose buildings are not shown below are: The John Madin Design Group; Casson, Conder and Partners; Terence Gregory; John Goff; Architects' Co-Partnership; and H. M. R. Burgess & Partners.

Bruno de Hamel



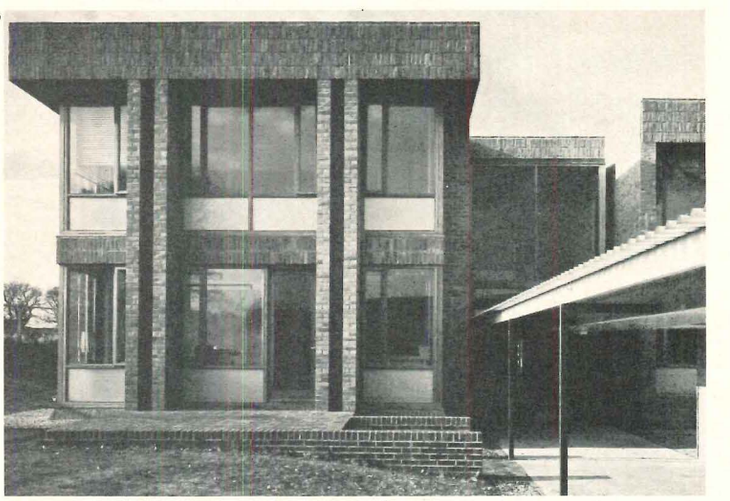
The dining hall and common rooms building at St. Antony's College, Oxford, by Howell, Killick, Partridge and Amis (who won two awards) has precast concrete structure and cladding. The two-story dining hall is overlooked by the common rooms' gallery.

Richard Einzig



The Czechoslovak Embassy in Kensington by Sramek, Bocan, Stepanski/Robert Matthew, Johnson-Marshall and Partners (the latter receiving an award for the third successive year) has two buildings, four-stories of apartments and seven-stories of apartments and offices. They are linked only below ground.

Richard Einzig

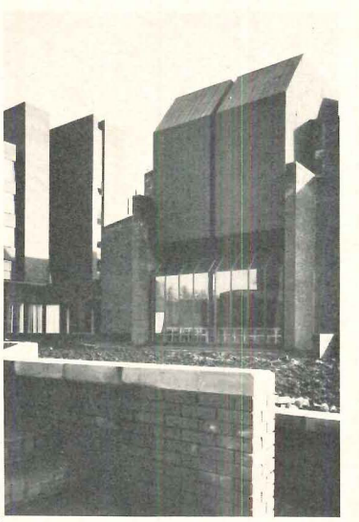


The Dorset Water Board Headquarters in Poole by Farmer and Dark houses a board room, offices, laboratories and drawing offices. It is of load-bearing, warm-red brick with stained hardwood window frames. The jury remarked on the skillful articulation of functions, pleasing scale and good siting especially in relationship to several mature trees.

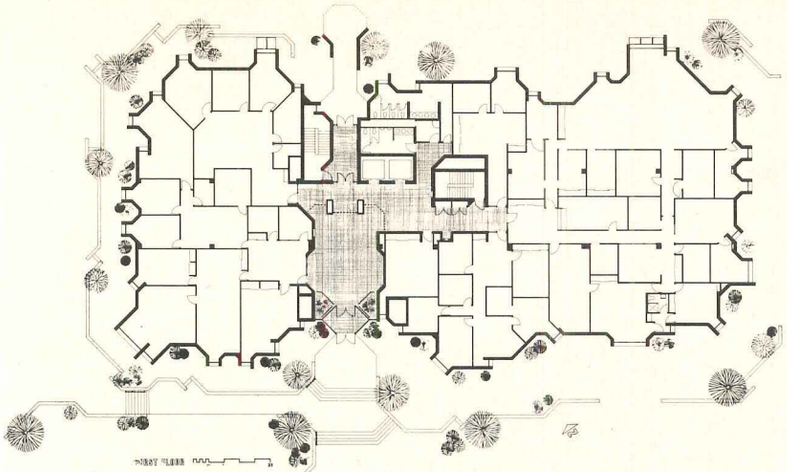
The Town Hall and Civic Centre of Sunderland by Sir Basil Spence, Bonnington & Collins has three elements, an administration center, a civic suite and council chamber and a multi-story car park. The design is based on a triangular grid and extensions of hexagonal forms which will permit expansion. The low buildings are stepped.

Henk Snoek

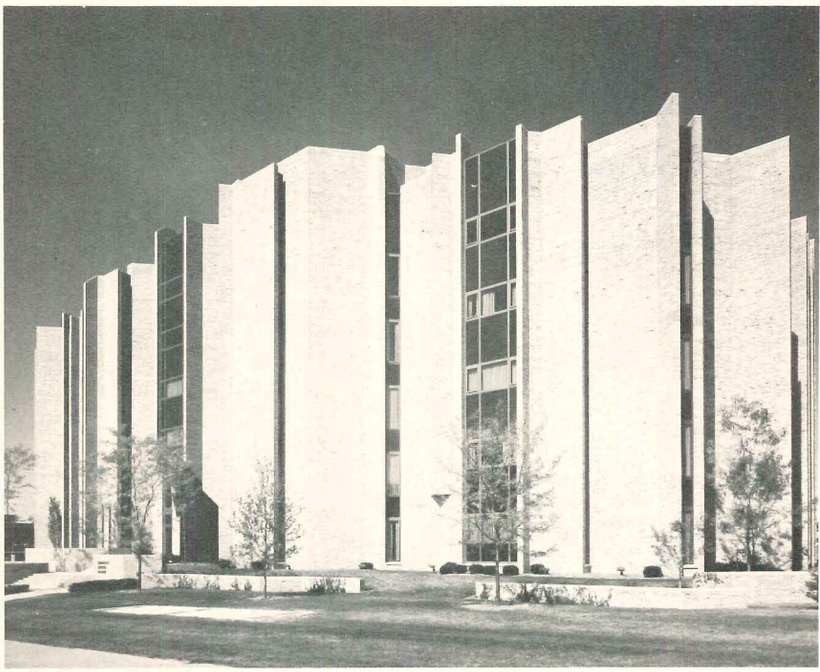
John Whybrow



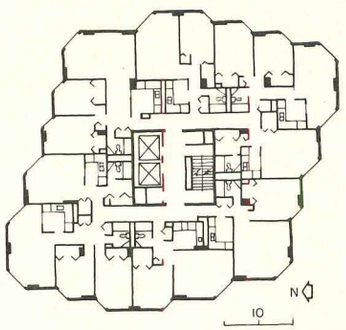
The Antrim County Hall in Ballymena by Burman and Goodall was the subject of an international competition. It consists of three buildings, a council chamber suite, an assembly hall suite seating up to 700 and a five-story administrative office block on a large parkland site.

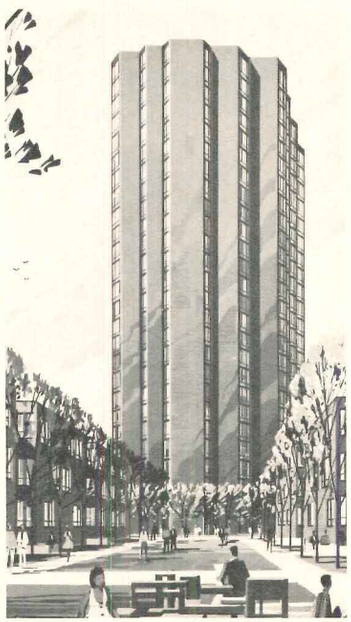


The Community Services Building in Toledo by Samborn, Steketee, Otis & Evans, Inc. houses the Community Chest and 25 of its agencies. Its angular walls provide non-rectangular offices, reduce the chilling effects of high winds to lighten the heating load in winter, and create shadows which reduce the cooling load in summer. They also eliminated much core steel work. Heat from the lighting system is recycled and combined with boiler-produced warmth, and the system adjusts to individual room temperatures.



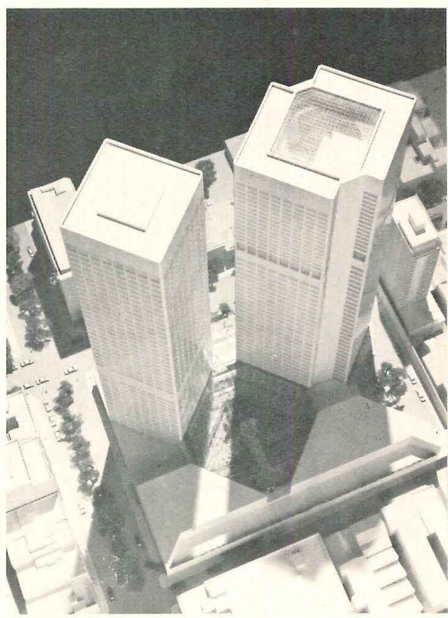
Walbridge & Bellg Productions, Inc.





Lake Village by Harry Weese & Associates is one of several buildings they are designing on an anti-module, anti-system approach. Advantages of the plan are several thousand less square feet of exterior wall, corner living rooms variety in layout, more views, cross-ventilation and a less overpowering scale.

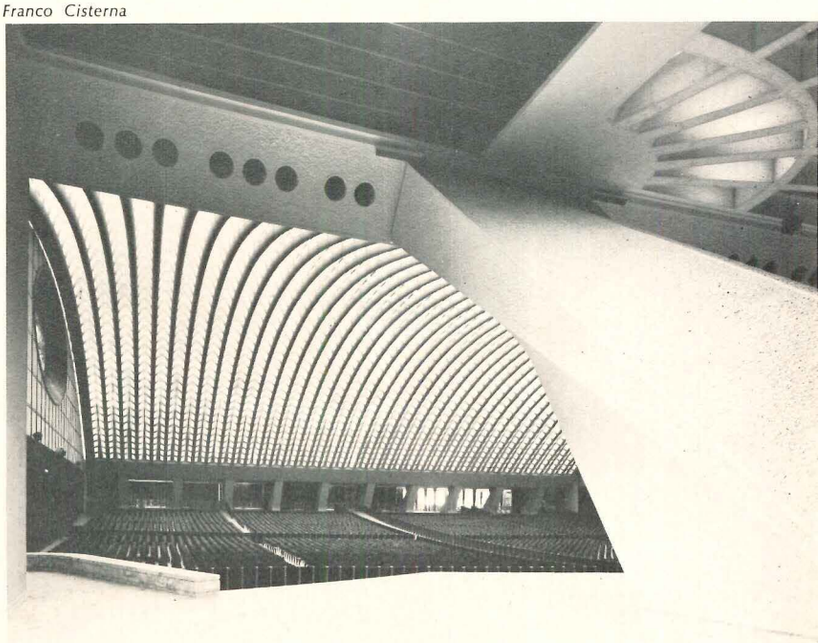
Collins Place in Melbourne, Australia is a 3⅓-acre center city development by Bates, Smart and McCutcheon, architects; I. M. Pei and Partners, design architects; and Vincent Ponte, city planner. Two 600-ft towers will house offices and a hotel. A central, one-acre, skylighted area will be surrounded by shops, restaurants and cinemas.

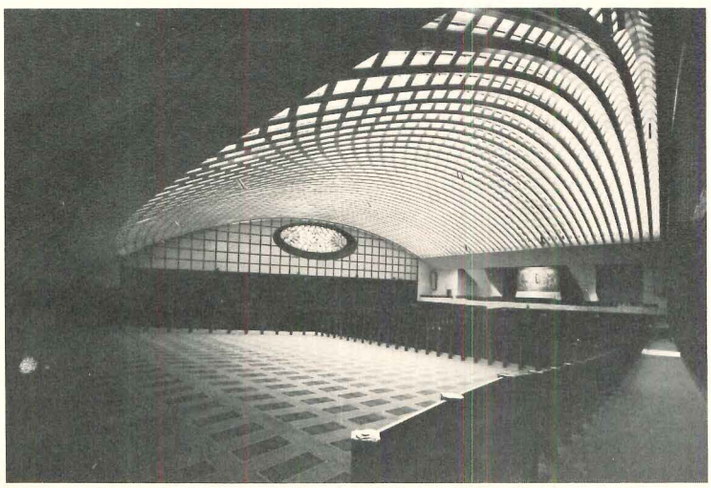


Pieter Stroethoff

The Vatican Audience Hall, Pier Luigi Nervi's most recent building, is designed to handle 16-20,000 people standing or 8,000 people seated with 2,000 standing around the Pope. The roof spanning about 330 ft with a maximum height of about 80 ft, consists of 41, prefabricated, V-section, concrete ribs, each of which tapers from a narrow, steep configuration to a wide, shallow configuration.

Franco Cisterna





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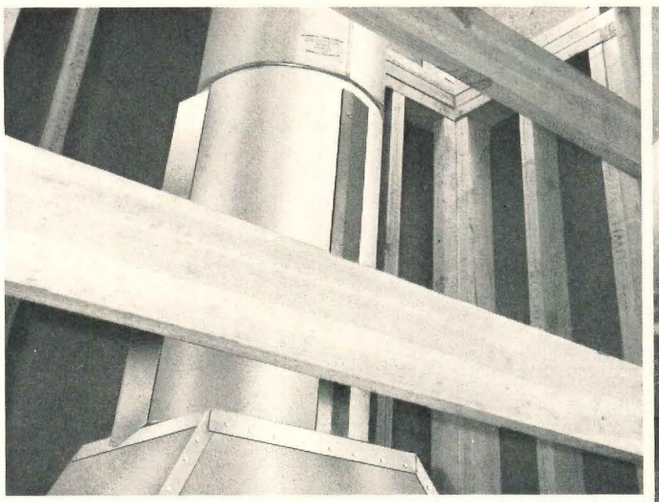

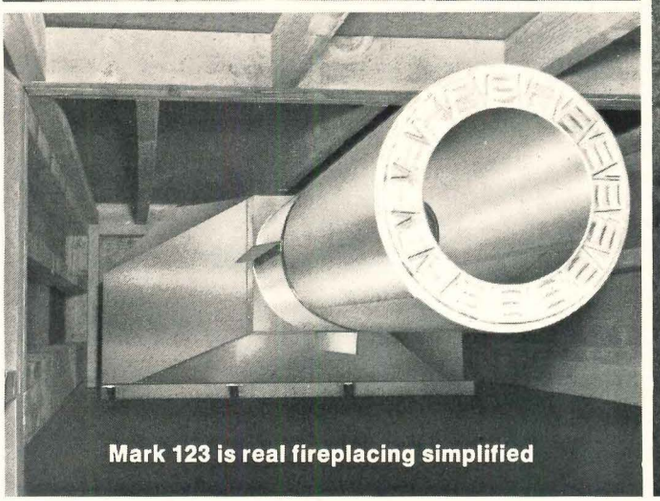

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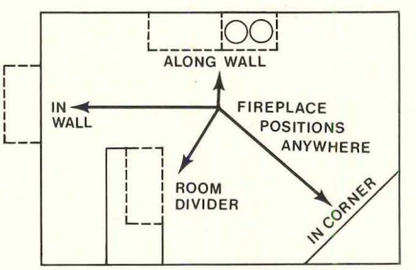

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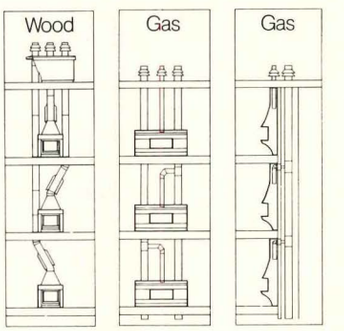

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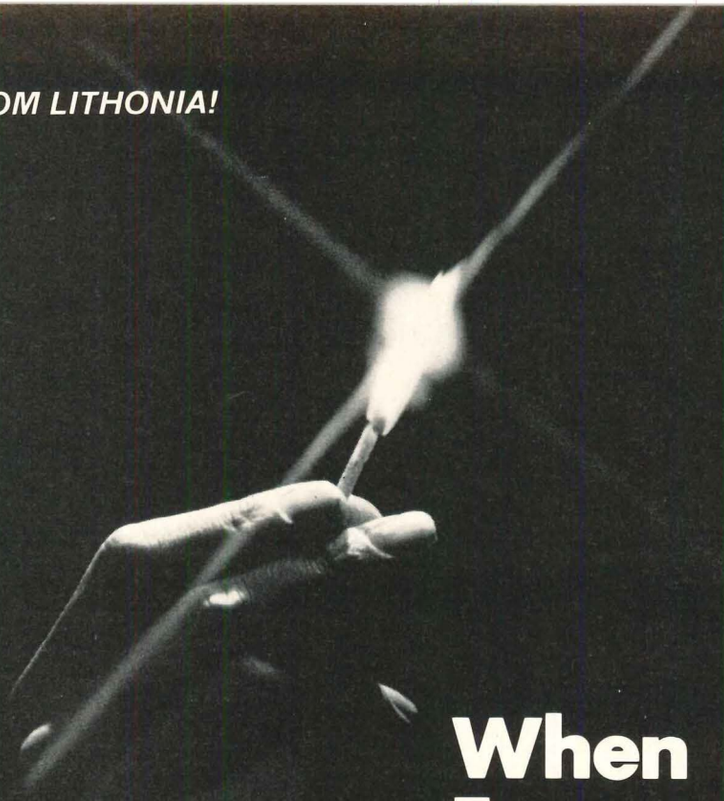

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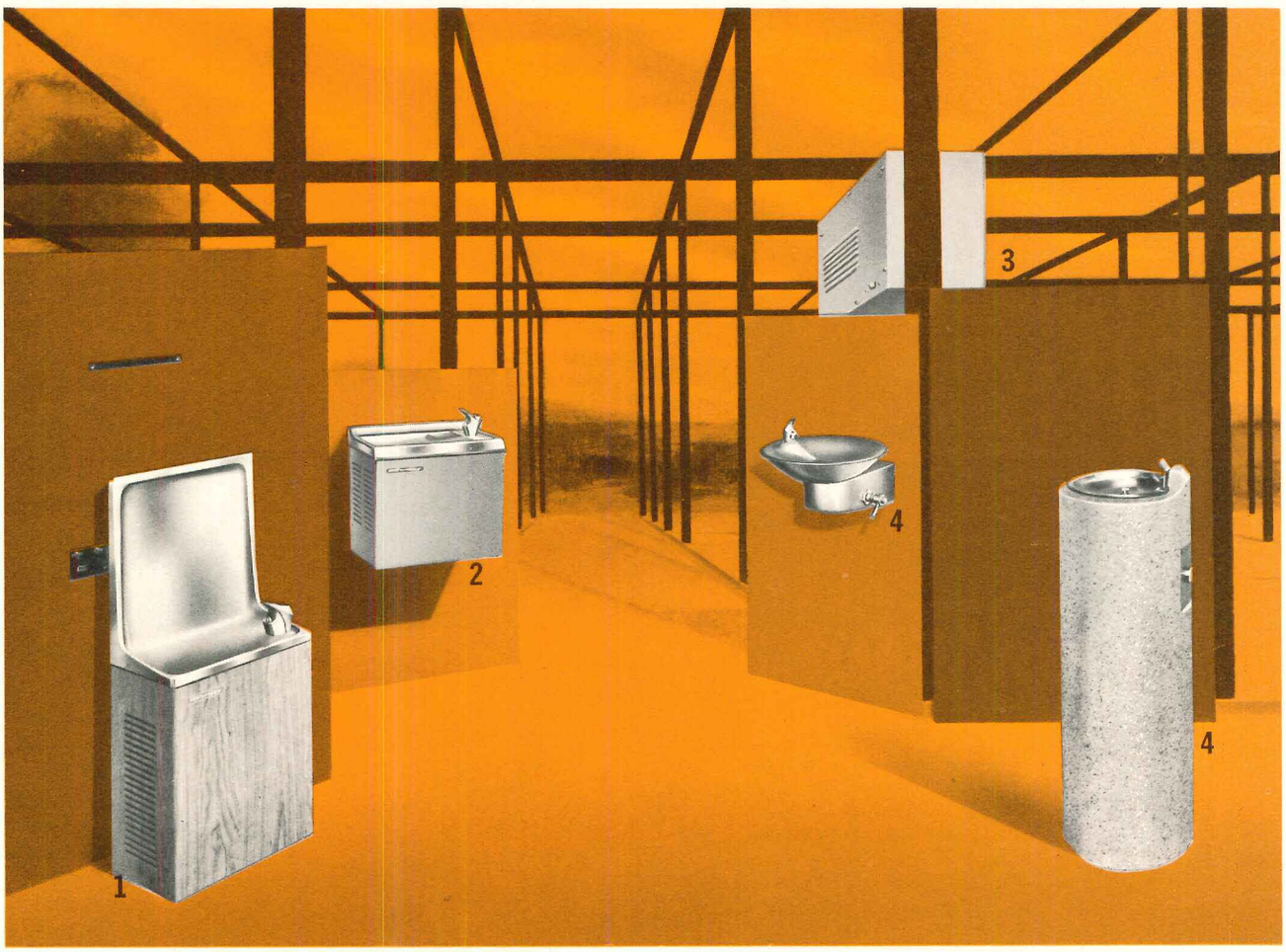

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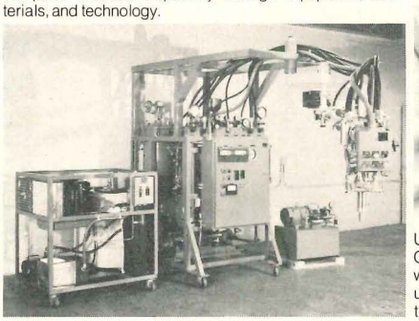

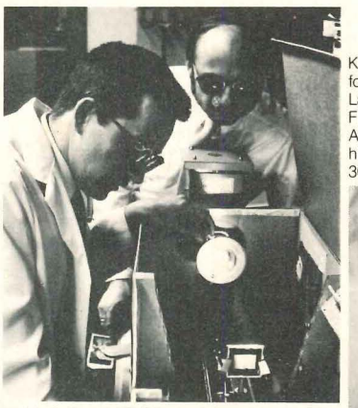

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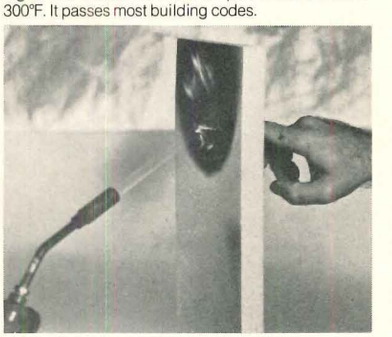

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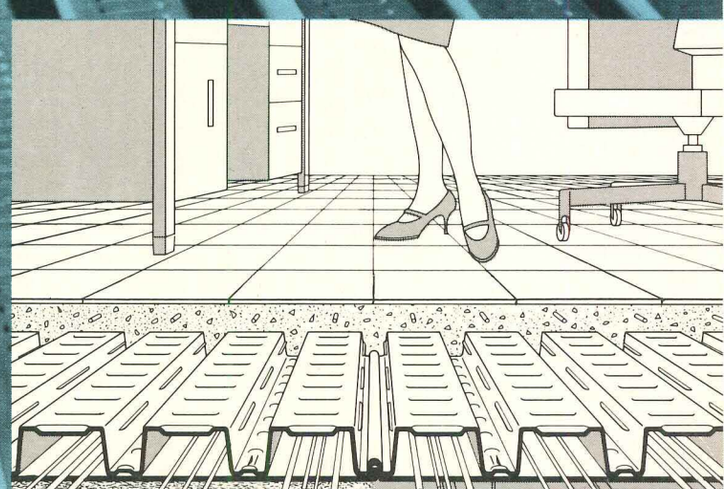

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A contractor looks at construction management

by Richard B. DeMars, president, Geupel DeMars, Inc.

I have just had the unusual opportunity to read, before its publication, a new book called "Professional Construction Management and Project Administration" which will be published this month by ARCHITECTURAL RECORD and the American Institute of Architects. The book is written by William B. Foxhall, a senior editor of the RECORD, who has asked this general contractor to give his opinion of his work and of the field in this review. Mr. Foxhall has obviously made a thorough and complete study of the subject and presents material in a way that all practitioners in the fields of design and construction will find interesting and thought-provoking. As a member of the Associated General Contractors of America, I urge my fellow general contractors to read the book with an open mind and to listen to the message which he is trying to convey to us.

Time after time in the book he refers to the general contractor and his inherent suitability to fill the role of Construction Manager. For example, at the bottom of page three, ". . . the manager . . . may be an architect, or a consultant, or a contractor." And later on page five, ". . . the very skills and knowledge that have been his stock in trade are now needed to an increasing degree in the decision and design phases of building generation. But to purvey those skills in those phases, he must assume a role of professional agency toward the client just as the other professions do in those phases. He no longer works for a contractor's profit. He works for a professional fee.

"Many contractors have found this transition difficult, but many have succeeded in it."

And again on page 25 at the beginning of Chapter 3, "There is wide acceptance of the belief that the organization and technical resources typical of general contractors provide a ready-made reservoir of firms capable of the management of large construction projects in the complete sense we now assign to the term *construction management.*"

This thread of the idea of a general contractor filling the role of Construction Manager continues throughout the book. Of course, at the very beginning on page two, he takes pains to say a word of caution to the architects (this is understandable in a book published by architects for architects) and to remind them that they must retain their traditional position of ". . . the constant and essential professional presence from start to finish of any project. . . . Then let no 'manager' believe that he is more than instrumental to the practical support of that guardianship."

But I for one am not disturbed by this because the book, taken in total, is such an open-minded and radical change from the posture that architects took just a few years ago and is such a refreshing new attitude on their part that I can't begrudge them this almost plaintive statement that they must remain as the "essential professional presence." To me the message which they are sending to the general contractor is that they are now willing to accept us as a member of a project team and to listen to what we have to say and to use the help which we can give them. They admit that they need our help and that they think we can offer it to them, and so I am willing and anxious to try to cooperate in this new relationship which they offer. To prove that he understands that the architect's traditional reluctance to accept advice from anyone—particularly a general contractor—is one of the most serious obstacles to open and friendly cooperation between architect and general contractor on the Construction Management team, he admonishes the architect to respect the general contractor's right to be a professional, thusly: "Any architect's fears, that a parallel agency of the manager interposes an onerous spoiler or wielder of a ruthless and insensitive paring knife between himself and the project, presupposes a nonprofessional (or worse) body in the manager's role. Such fears, in fact, belittle the very concept of professionalism, in which the architect's own stake is obvious."

What they are offering us is a position on the building team of what appears to me to be, if not completely equal, then almost equal status. We would be selected as a member of the team at almost the same time that they are selected by the owner and we would participate with them and the owner in the development of the plans and specifications, furnishing the kinds of assistance which our background and experience qualifies us to provide. On page 27, he presents a rather detailed list of the various kinds of services which could be furnished by the Construction Manager during the design phase of the project and then this is followed by an equally detailed list of services to be provided during the construction phase. In general, they appear to follow the descriptions of these things as originally set down by the General Services Administration in their plan for construction management.

Also what they are offering us is a professional position for which we would be compensated by payment of a professional fee instead of a contractor's profit. He explores at some lengths the kinds of fees and the amounts which are being paid for this kind of service now, but recommends that basically what should be done is to develop a fee which reflects, as closely as possible, the manhours of time spent by technical and supervisory personnel. In my opinion, the matter of fee is still one of the most serious hurdles to be crossed by the industry as a whole in establishing a set of workable rules for the operation of the Construction Manager system. GSA has gotten us off to a very bad start by "taking bids" on fees and awarding their first two projects on the basis of the low bid. They say that it was just coincidence that the firm with the best qualifications happened to be "low bidder" on the fee in both cases, but the implication of awarding on the basis of low bid is there for all to see, and it is hard to imagine how we are going to work ourselves out of this hole. I can imagine the sounds of anguish which would come from the architectural profession if they were required to bid low fee for all of their work. Surely there is a way to establish realistic fee schedules for all situations, so that construction managers can be selected on the basis of qualifications. Mr. Foxhall is well aware of our problem, and concludes his discussion of fees by advising the construction manager to ". . . make sure that his compensation will be adequate to enable him to perform all required services in a fully professional manner." To this I can only say that if we don't, construction management will be the system that is sick in a few years, and we will all be looking for another "innovative new approach" for delivery of buildings.

He has some good advice for general contractors who are engaged solely in the business of bidding on finished architect's plans and operating under a lump sum contract. He cautions that even the best and

biggest general contractors might not be ready for professional construction management without carefully analyzing what will be required of them and the staff they would need to provide it. His first point is that the ". . . much advertised cost-expertise of general contractors usually resides in the subcontractors and it is not an inherent attribute of the general contractor unless he sets up the organization and personnel to make it so." And then, secondly, ". . . the array of services implicit in Construction Management—and the professional orientation of those services in agency toward the client—are simply not part of the general contractor's inherent resources." What he is saying is that whereas everyone admits that the general contractor's ability to manage and run a project during construction is clear, the services which he must provide during the planning and design phases are much different and will be new to him. In order to provide these additional services, he must broaden his capabilities to include estimating from unfinished plans and estimating the cost of work performed by trades which he normally subcontracts, such as mechanical, electrical, etc. Also, he must provide a more highly-skilled type of supervision of *all* trades including mechanical, electrical, etc. He will be expected to schedule all functions including those provided by the architect and the owner, provide computer programming, and to furnish other skills not normally available on a general contractor's staff but which must be acquired.

Two major disagreements: guaranteed max and job-size limits

While I obviously am much impressed with Mr. Foxhall's handling of the subject, he and I have two major disagreements which I must emphasize if I am to be honest with him.

First, I think the Construction Manager can and should accept the financial responsibility for the project through a guaranteed maximum price whenever circumstances and the law permit it. When this is not possible, then one qualification for his selection should be his demonstrated financial ability to guarantee a maximum price on a project of the size under consideration, and his record of having done so successfully.

The whole thrust of this book seems to be toward Construction Management as used by governmental agencies as contrasted with private work. This probably is the result of the fact that the Construction Manager plan as developed by GSA, and the experience of the architectural firm of the AIA's president Robert Hastings—Smith, Hinchman and Grylls—are two of the main sources from which he has drawn his facts. For the general contractor who has operated on a "negotiated contract" with his compensation being a fixed fee or a percentage of actual costs, the whole subject of Construction Management, as described in this book and in many other publications, has a very familiar ring. Construction Management has been practiced by general contractors for industry and commercial developers for many, many years and, in fact, these people wrote the original "book" from which GSA and others have admittedly taken their cue. And so a book such as this which depends so heavily on the GSA approach concludes that, for the most part, it is not possible for the Construction Manager to assume any direct responsibility either for the cost of the project or for the completion schedule. And this is also the result of approaching it from an architect's viewpoint, a viewpoint which traditionally rejects the idea of a professional assuming responsibilities of this kind. Those of us who have performed in this manner successfully know that it *is* possible for a professional construction manager to assume responsibilities for a guaranteed maximum price and to be directly responsible for delivering the project on schedule.

The second basic disagreement which I have with this particular view of Construction Management is the statement that it won't work on any project under $5 million. It is said that the cost of the "extra services" which are required is too great for a project any smaller than $5 million. I know from personal experience that the advantage of having a construction company working with the architect during the design phase of the project is just as important to a man who is building a $1 million job as it is for a man who is building a job fifty times as large, and the basic advantages of the professional approach are just as real for a small job as they are for a large one. Certainly it is true that a smaller job cannot support the cost of a large supervisory and technical staff at the job site, but a firm which is organized to provide this kind of service on many smaller projects with a staff of sufficient size available to work on several projects can show benefits to the architect and the owner which are relatively as great as those realized on large projects. For example, a $10 million job could easily support one full-time field-based executive. This same field executive might be able to handle three smaller projects if they were geographically located in such a way that travel between them was not excessive, thereby making his cost per project reasonable.

The general contractor who has had his reflexes conditioned to be suspicious of anything new being proposed by an architect's organization can find plenty of things in the book that will strike him as unfair criticism. For example, the author makes the point that one of the things which is terribly wrong with the old system of low bid results from the fact that the cost of the project is made up of subcontractors' bids plus the small amount of work that the general contractor does with his own forces plus his mark-up which must pay for his profit and management of the job. He concludes that in order to get low, the general contractor can do nothing but cut his management costs and with it the amount of management that he can provide. This will strike many general contractors as a criticism of their management, but it seems to me that Mr. Foxhall is not criticizing us—he is criticizing the system.

I view this book as an expression of a new attitude on the part of architects toward general contractors and, further, as an invitation to join with them in trying to develop a new and better system of producing buildings. It is my belief that if we don't accept this invitation, they will find some other way to get the job done. If this happens, I, for one, will consider it a golden opportunity missed.

Yes, but—the author replies

I asked Richard DeMars to review early proofs of my book because his participation in a panel on construction management at the state convention of the Indiana Society of Architects in September impressed me with the breadth and judgment of his approach and his articulate championship of the common goals of all professionals in the building design and construction processes.

On the way toward comment on Mr. DeMars' two "major disagreements," let me thank him for his thoughtful appraisals (especially where they are complimentary) and gently regret 1) the limitations of space for quotation imposed upon both of us and 2) the emergence of the "they" syndrome as in "they are offering us" that seems endemic among both contractors and architects.

For example, the quoted paragraph about the "essential professional presence" appears in full on page 69 of our June 1971 issue and ends with the statement that ". . . there is no escape from the classic one-to-one relationship of client and architect; and management is the means of its survival." That's plaintive? . . . Or like it is!

Well, let's not quibble about such loaded language as "the architect's traditional reluctance to accept advice from anyone" (!), and go on to the "major disagreements" about 1) "financial responsibility" and 2) "the statement that it won't work on projects under $5 million." I'm pretty sure that latter statement was never made! I guess the reference is to page 20 where $5 million is cited as the figure above which some agencies insist on a construction manager. The statement is: ". . . there appears to be a critical project size on the order of $5 million for which some certain package of construction management services seems appropriate. Some consultants point out that the roster of services can be trimmed to lesser budgets provided that professional integrity is maintained—" And on page 19, I cite a $2.5 million example for which per-cent fees

continued on page 58

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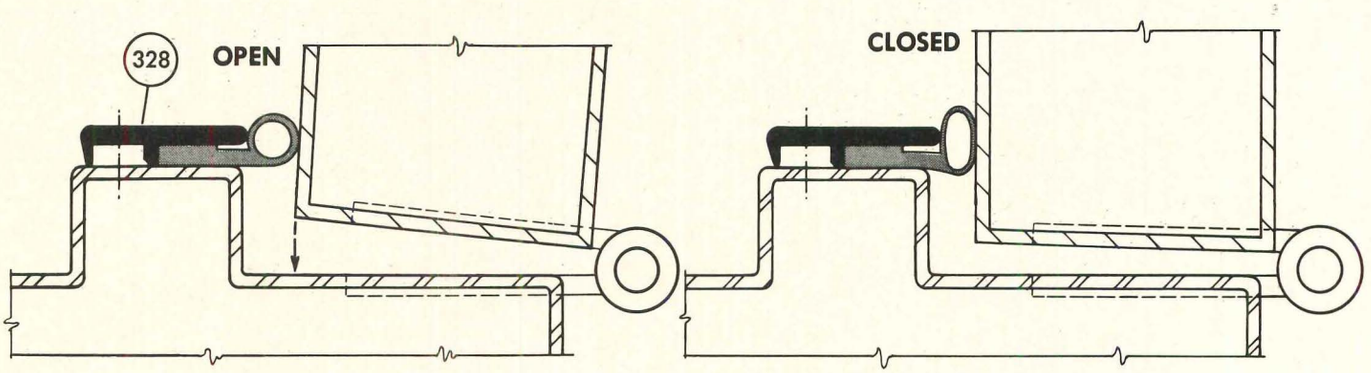

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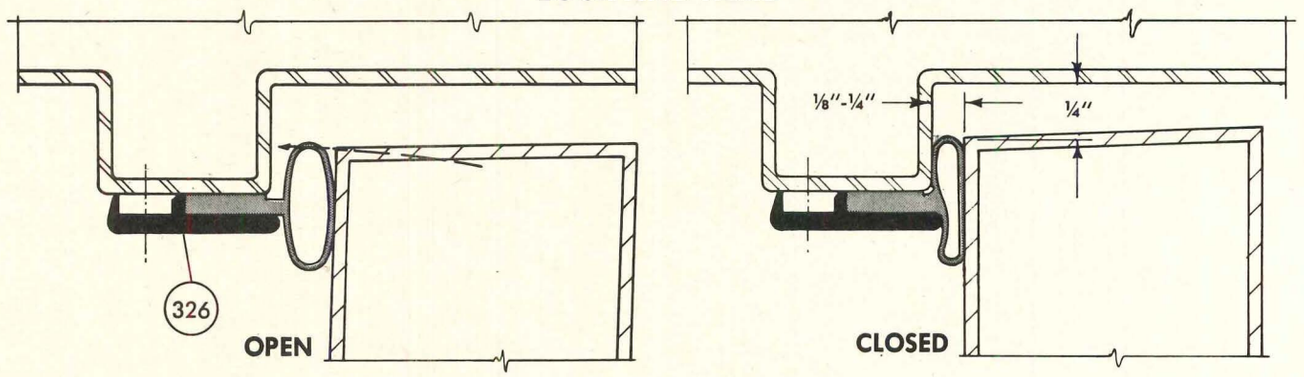

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continued from page 56

must be higher, even for curtailed services.

Now as to "financial responsibility," here's what I say in Chapter 2 under the heading "Critical Size and Critical Contractors."

"Many general contractors have voiced apprehension and opposition to the dual ideas of phased construction and construction management on the logical grounds that phased construction means multiple contracts, and that construction management, as recommended for phased projects, means an end to the conventional role (hence, presumably, the livelihood) of general contractors on such 'piecemeal' projects. As the method spreads, they see an end to the general contractor and to the cost reductions and delivery advantages they claim are inherent in the single contract method. More especially, they and others of their less apprehensive colleagues vocally mourn the loss of 'fiscal responsibility' represented by the lump-sum commitment of the general contractor's single bid.

"This impeccable logic is unhappily, albeit understandably, based on three major misapprehensions.

"First, phased construction is not new, not proposed as a magic panacea, and not a threat to contractors, general or otherwise.

"Second, construction management is not new except in expansion of its professional application, is not proposed as a magic panacea, and is, in fact, an opportunity for general contractors.

"Third, 'fiscal responsibility' comes into better perspective when one begins to search for those general contractors who can actually make a responsible lump-sum single bid that will really save the client money on a $10-million, $100-million, $300-million or $500-million project. Work on this scale is far from rare today, but the universe of available bidders shrinks so rapidly as the scale increases that competition virtually disappears early in the lower half of such a scale; and in the upper half, even the brave and the rich contractors measure their responsibility and risk in such terms of honest profit that the client's 'savings' through single-contract efficiencies are, to say the least, difficult to measure.

"When any of the current forms of negotiated construction contract (cost-plus-percentage, cost plus fixed fee, guaranteed maximum, etc.) is used, the control and management procedures of the construction phase are very similar to those applied under the 'construction management' system as now defined—with three important differences. Under a typical negotiated contract, the contractor's management controls:

1) are applied as a business for profit—not as a professional service for the client;

2) can make no contribution to design development—only to costly change orders;

3) are applied with an undefined scope and consequently tend toward an irreducible minimum.

"So there is a critical dollar size and degree of complexity above which the professional construction management of multiple-contract, phased-construction projects becomes the logical, if not the only feasible method of project design and delivery. Similarly, below that critical point, the cost of performing all the construction management services professionally exceeds the practical returns of other more conventional methods.

"That is so because the minimum investment in the tools of the (management) trade and in personnel required for the honest proffering of professional management services above the critical cost point represents a standby force that would result in extravagant over-kill if applied below that critical point. Even if the manager's fee (viewed as a per cent of construction cost) is increased inordinately on the low side of the critical point, the effectiveness of sophisticated method soon drops below that of simpler conventional methods insofar as either savings or efficiency is concerned."

Major disagreement, really? —*W.B.F.*

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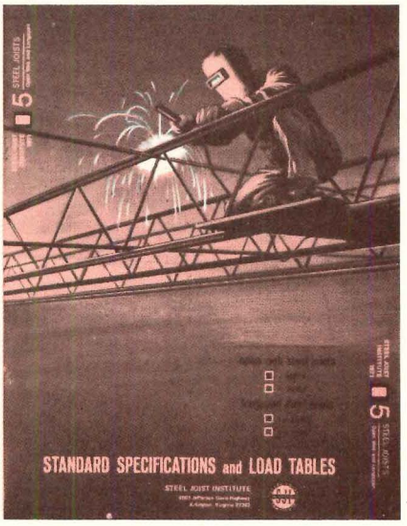

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CURRENT TRENDS IN CONSTRUCTION

James E. Carlson
Manager, Economic Research
McGraw-Hill Information Systems Company

Health facilities construction, shifting trends

Hospital and health treatment facilities, responding to the nation's need for medical services of all types, have been one of the fastest growing construction markets in recent years. The phrase, "of all types," really points up the complexities that exist on both sides of the health treatment equation. The diverse medical services required by a growing, changing population affirm the need for facilities that are just as diverse as needed services.

Reflecting these diversities, the *Hospital Survey and Construction Act,* (better known as the Hill-Burton Act), the major source of Federal money for health facilities construction, has really gone through four distinct phases since its inception in 1946. The Act was initially designed to foster the construction of general hospitals in rural areas, which were faced with critical shortages of adequate facilities. Over time, the Act has performed this function well.

Grant program shifts with changing needs

Great strides have been made in improving the quality of rural medical facilities.

In the early 1950's when the poor conditions under which many of the nation's rapidly expanding elderly population were living were becoming more fully recognized, the Act was broadened to provide specific grants for the construction of public and voluntary nonprofit nursing homes. Grants for rehabilitation facilities and chronic disease hospitals were also mandated at this time.

The early 1960's brought what has become known as The Urban Condition, the problem of decay in our central cities, into clearer focus. To the Hill-Burton program, these years brought amendments providing funds for community health services and the modernization and replacement of existing antiquated facilities, with particular emphasis on the core areas of central cities.

The early 1970's have seen still another dimension to this Federal program. Partly to reinforce the urban rehabilitation features of earlier amendments, but more importantly, to focus in on a particular manifestation of this urban decay problem, drug abuse, the most recent legislation has placed greater emphasis on neighborhood health centers and outpatient clinics.

The more than 12 billion dollars in hospital construction funds (30 per cent Federal, 70 per cent state and local) generated by the Hill-Burton aid program since its inception has dominated the trend in this building category for the past two decades. It has not been the whole story, however. In fact, since 1967, there has been a sharp divergence between contract awards and Hill-Burton appropriations. While the level of appropriations shrank by one-third between 1967 and 1971, the value of hospital and health treatment contracts gained more than 50 per cent.

One factor in this divergence has been the rapid rise in recent years of long-term-care facilities like nursing homes. These types of facilities are either entirely privately financed, or financed via Federal guarantees and subsidies of loans obtained in the private market. This enables the Federal subsidy dollar to stretch further than it would have under the direct grant route alone.

Another factor has been the resurgence of direct Federal hospital construction, particularly under the auspice of Veteran's Administration. The fiscal year 1972 budget for direct Federal hospital construction is nearly twice the fiscal year 1970 amount. This program has been revived primarily to replace aging Veteran's Administration facilities rather than to provide a net increment in the total facilities available for veterans' medical care.

Emphasis is on long-term and mental care

In addition to the growing demand for modernization and replacement, figures on hospital needs show that the nation's stock of long-term care and mental care structures are still deficient in acceptable facilities, despite recent growth. Beds conforming to minimum Federal standards account for little more than half the estimated needs. In the area of general hospitals, though, conforming beds run about 70 per cent of total needs. And, in special areas like tuberculosis hospitals, facilities are about on a par with estimated requirements for the next few years.

Long-term care, and mental hospital facilities, the two areas of greatest future need, differ considerably from those of the general hospital, as far as design requirements are concerned. Though smaller than the average general hospital, long-term care facilities need unique features to accommodate patients who are either physically disabled, or suffering from other disorders that typically accompany old age. In mental hospitals, one prime consideration is the need to minimize the possibility of self-inflicted injury.

Although the over-all need for medical facilities is still very large, recent studies show that growth in new general hospitals may soon be tapering off. Hospital utilization rates, which normally trend fairly steadily upward over time, have eased off somewhat recently. A lot of this is probably temporary in nature. Economic downturns like the most recent one trigger a decline in the demand for hospital services. Operations and other types of treatment that are postponed are generally put off until a later date when the individual is surer of his economic well-being. Also, minor ailments tend, more often, to be treated at home during these periods.

Of a more permanent nature, though, stricter Medicare, Medicaid and Blue Cross qualifications, more intensive policing of existing qualifications, and in some areas, reductions in eligible coverage has had an impact on patient utilization. Also, the growth of nursing homes and outpatient clinics has provided a measure of competition for the facilities of the general hospital in both long-term and ambulatory types of care.

The geographical pattern of hospital building in the future, as in the past, will remain responsive to social factors such as the general distribution of the population and the need for hospital services. On the basis of need, the Southern states will continue to increase their share of the total, but the gains will not be as pronounced as in recent years. The existence of a large stock of obsolete and decaying hospital facilities in the core areas of the major Northeastern and Midwestern cities has gone largely unrecognized until recently. Increasing concern for these core area problems in the years ahead will act to support health facilities construction in these regions. Economic conditions in the West, however, make it the weakest area for this type of construction over the short run in the next year or so.

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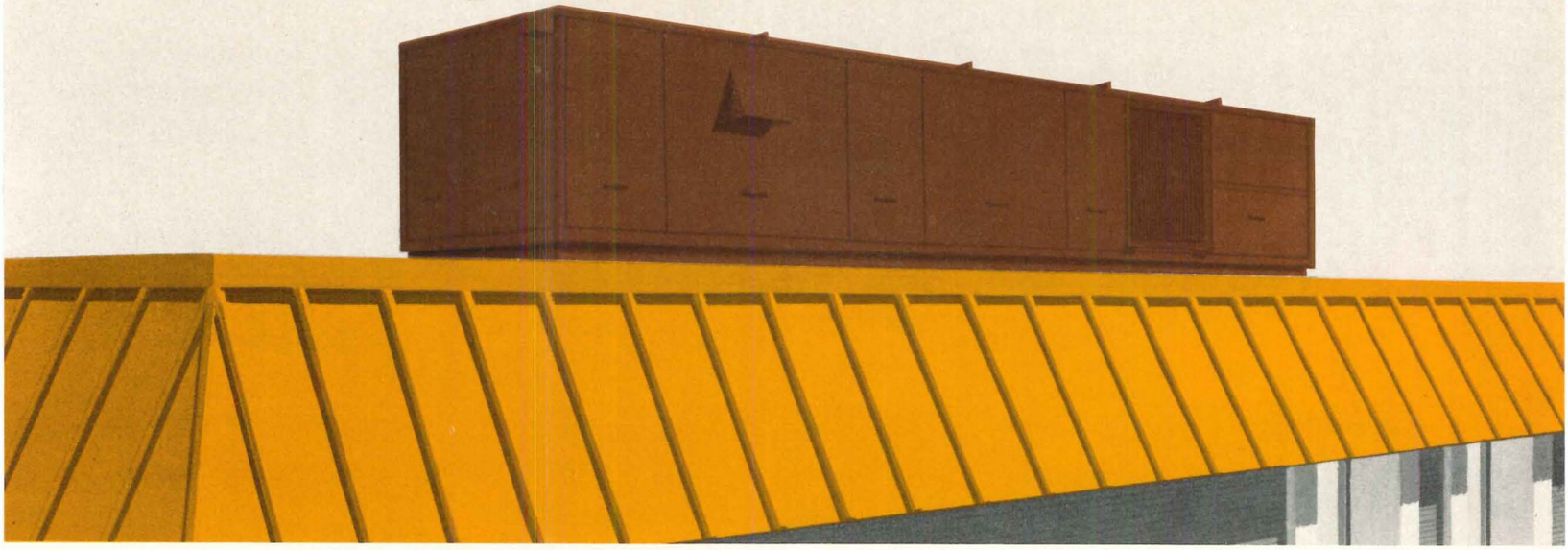
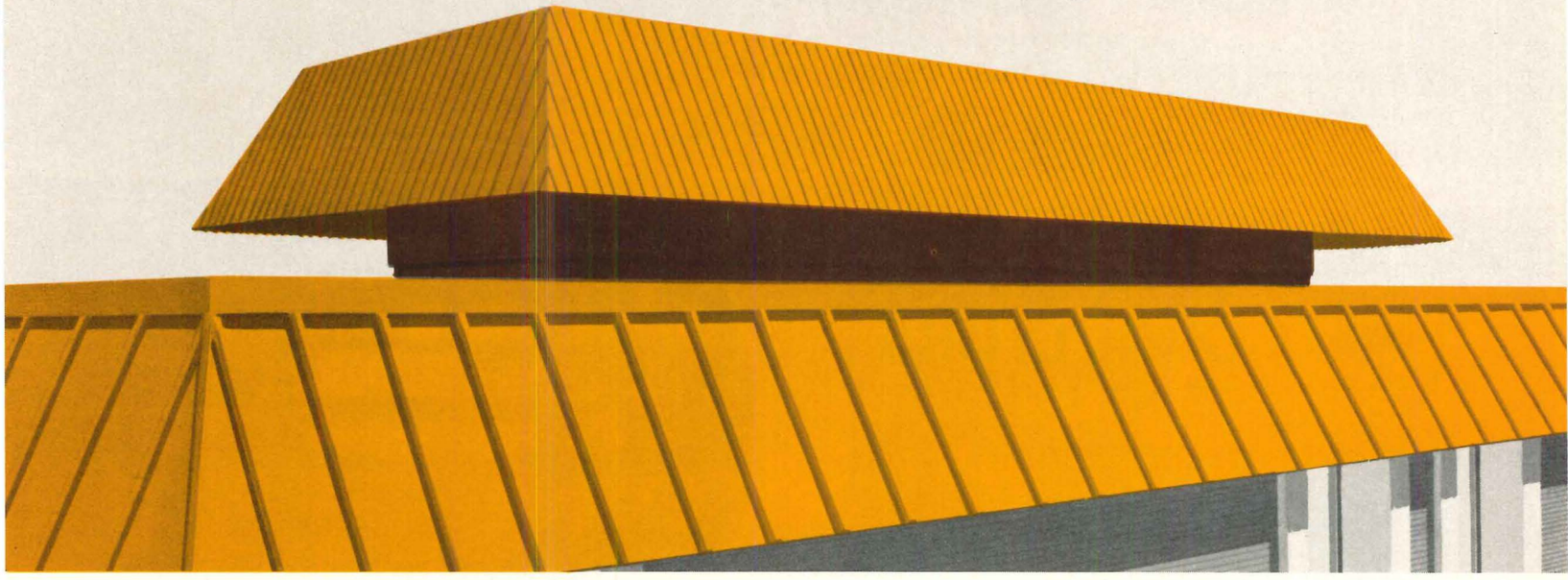


with a better look by AAF



AAF has a new roof mounted multizone with significant advantages like reheat capability, solid state controls, high efficiency gas furnace and more filter options than any other multizone offered today. That's the inside story. The outside story is our new AAF exclusive facade system to blend the unit into your design environment.

You no longer have to rely on expensive penthouses or roof-penetrating fences to hide the spartan mechanical appearance of rooftop air conditioning, heating and ventilating systems. With our new architectural facade system, multizone camouflage is simple and economical. Roof integrity is never threatened because facade supports are extensions of the rugged AAF multizone frame. There is no roof penetration with its accompanying problems.

If our standard corrugated aluminum facade, which is available in ten colors, doesn't meet your needs, you can do it yourself. Use our unique facade frame with a facia material of your own choice and design.

Choose from a mansard type slope design, or a straight-line look. And, servicing the units is no problem either. There's plenty of room for routine service without removing the facia.

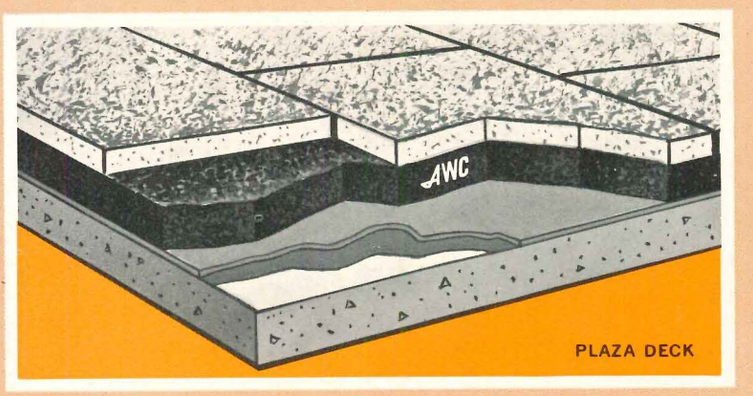
For complete details, write: Manager, Air Handling Products and Systems, AAF, Dept. 389, Box 1100, Louisville, Kentucky 40201. In Canada: 400 Stinson Blvd., Montreal 9.

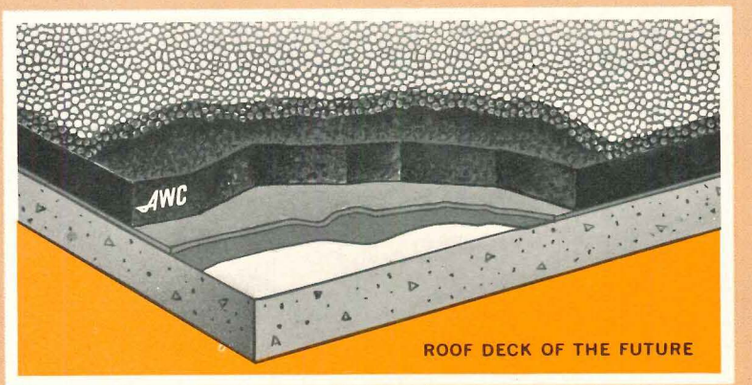
Better Air is our Business.

AAF American Air Filter

AIR HANDLING PRODUCTS AND SYSTEMS

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.

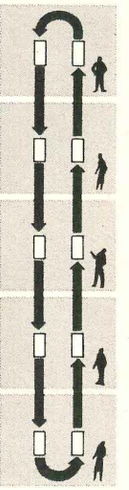
For complete information, specifications and detail diagrams regarding these and many other successful All-weather Crete systems, write Silbrico Corporation, 6300 River Road, Hodgkins, Illinois 60525. References: Sweets catalog and Spec Data.

All-weather Crete®
SILBRICO CORPORATION

For more data, circle 38 on inquiry card

Automatic, vertical, multi-story
MAIL CONVEYORS

- CONTINUOUS OPERATION
- AUTOMATIC DISPATCHING
- SERVES ALL FLOORS
- DELIVERS AND COLLECTS TRAYS
- HANDLES A TON IN 8 MINUTES



FREE BULLETIN describes Standard Conveyor *Recordlift*—ideal for multi-story buildings requiring inter-floor delivery of mail, documents, books, anything weighing up to 32 lbs. per load. Widely used in high-rise office buildings, insurance companies, banks, libraries, hospitals, etc. *Send today.*

Standard Conveyor COMPANY
312–A Second Street, North St. Paul, Minn. 55109

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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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INDEXES AND INDICATORS

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

THE BUSINESS OUTLOOK

An attitude of cautious optimism regarding prospects for the U.S. economy in 1972 is held by McGraw-Hill Publications Economics Department. It is our impression, says Douglas Greenwald, chief economist, that when the whole economy is taken into account, the 5.5 per cent and 2.5 per cent increases in 1972 wages and prices will turn out to be floors, not ceilings. Thus, the actual wage and price rise in 1972 will probably come to about 6.5 per cent and 3.25 per cent respectively. The forecasts of most business economists for next year center around a $100 billion increase in gross national product, plus or minus $5 billion.

Transport equipment prices

Moving sidewalks: Available in 36-in., 48-in., and 54-in. widths. Costs are $190 to $210/ LF, $230 to $250/ LF, and $250 to $270/ LF, respectively.

Dumbwaiters: Hand-operated (minimum 3 stops) $160 to $180/Vert. LF; add $500 to $550 for each additional stop. Electric (minimum 3 stops) $340 to $360/Vert. LF; add $700 to $800 for each additional stop.

Escalators: Both 32-in. and 48-in. width models service 11 to 12 floors. Costs are $60,000 to $63,000 and $68,000 to $70,000 respectively.

Building cost 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.

1941 average for each city = 100.00

JANUARY 1972

Metropolitan area	Cost differential	Current Indexes non-res.	residential	masonry	steel	% change last 12 months
U.S. Average	8.4	367.8	345.3	360.3	351.3	+ 8.50
Atlanta	7.8	465.2	438.6	453.5	444.0	+ 8.71
Baltimore	8.0	388.6	365.3	378.6	368.9	+ 9.43
Birmingham	7.4	336.2	312.7	325.7	319.9	+ 7.21
Boston	8.9	367.0	346.8	364.0	353.0	+ 10.16
Buffalo	9.3	416.2	390.8	410.4	397.1	+ 9.13
Chicago	8.5	425.1	404.2	410.6	404.0	+ 8.47
Cincinnati	8.7	391.5	368.4	382.4	372.9	+ 10.79
Cleveland	9.6	421.6	396.7	411.9	402.1	+ 9.34
Columbus, Ohio	8.5	395.3	371.2	384.3	376.7	+ 7.27
Dallas	7.7	361.5	350.0	355.2	347.3	+ 9.42
Denver	8.3	397.6	374.1	393.9	379.9	+ 6.74
Detroit	9.6	414.6	395.0	412.9	398.2	+ 8.56
Houston	7.7	353.3	331.8	345.0	338.7	+ 7.90
Indianapolis	8.0	343.0	322.0	335.4	328.2	+ 9.49
Kansas City	8.3	349.5	330.2	339.7	332.2	+ 9.32
Los Angeles	8.3	410.0	374.8	398.5	390.5	+ 10.78
Louisville	7.6	362.7	340.6	354.7	347.2	+ 9.33
Memphis	7.6	342.4	321.6	332.1	327.7	+ 5.04
Miami	8.1	389.7	371.3	380.7	371.9	+ 8.92
Milwaukee	8.6	423.3	397.5	418.0	404.2	+ 7.47
Minneapolis	9.0	401.5	377.7	393.7	382.8	+ 9.86
Newark	9.0	366.6	344.2	361.8	352.5	+ 7.47
New Orleans	7.3	346.6	327.1	341.8	333.9	+ 7.18
New York	10.0	405.1	376.6	391.1	382.4	+ 8.09
Philadelphia	8.5	379.4	361.4	372.7	364.3	+ 8.20
Phoenix	7.8	207.7	195.0	200.6	197.7	+ 10.95
Pittsburgh	9.0	366.4	344.7	359.4	349.3	+ 10.67
St. Louis	8.7	380.8	359.4	376.3	364.6	+ 9.03
San Antonio	7.8	144.3	135.5	141.0	137.5	+ 4.18
San Diego	8.0	145.5	136.7	142.0	139.2	+ 5.60
San Francisco	9.2	524.1	479.0	519.9	503.8	+ 10.15
Seattle	8.8	368.1	329.4	365.7	351.0	+ 4.86
Washington, D.C.	7.9	347.1	326.0	336.4	329.7	+ 10.93

Cost differentials compare current local costs, not indexes.

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 (Quarterly) 1st	2nd	3rd	4th	1971 (Quarterly) 1st	2nd	3rd	4th
Atlanta	298.2	305.7	313.7	321.5	329.8	335.7	353.1	384.0	399.9	406.2	408.1	422.4	424.0	445.1	447.2	459.2
Baltimore	271.8	275.5	280.6	285.7	280.9	295.8	308.7	322.8	323.7	330.3	332.2	348.8	350.3	360.5	362.5	381.7
Birmingham	250.0	256.3	260.9	265.6	270.7	274.7	284.3	303.4	303.5	308.6	310.2	309.3	310.6	314.6	316.4	331.6
Boston	239.8	244.1	252.1	257.8	262.0	265.7	277.1	295.0	300.5	305.6	307.3	328.6	330.0	338.9	341.0	362.0
Chicago	292.0	301.0	306.6	311.7	320.4	328.4	339.5	356.1	362.2	368.6	370.6	386.1	387.7	391.0	393.2	418.8
Cincinnati	258.8	263.9	269.5	274.0	278.3	288.2	302.6	325.8	332.8	338.4	340.1	348.5	350.0	372.3	374.3	386.1
Cleveland	268.5	275.8	283.0	292.3	300.7	303.7	331.5	358.3	359.7	366.1	368.1	380.1	381.6	391.1	393.5	415.6
Dallas	246.9	253.0	256.4	260.8	266.9	270.4	281.7	308.6	310.4	314.4	316.1	327.1	328.6	341.4	343.4	357.9
Denver	274.9	282.5	287.3	294.0	297.5	305.1	312.5	339.0	343.4	348.4	350.3	368.1	369.7	377.1	379.1	392.9
Detroit	265.9	272.2	277.7	284.7	296.9	301.2	316.4	352.9	355.2	360.5	360.6	377.4	379.0	384.6	386.8	409.7
Kansas City	240.1	247.8	250.5	256.4	261.0	264.3	278.0	295.5	301.8	306.8	308.8	315.3	316.6	329.5	331.5	344.7
Los Angeles	276.3	282.5	288.2	297.1	302.7	310.1	320.1	344.1	346.4	355.3	357.3	361.9	363.4	374.2	376.4	400.9
Miami	260.3	269.3	274.4	277.5	284.0	286.1	305.3	392.3	338.2	343.5	345.5	353.2	354.7	366.8	368.9	384.7
Minneapolis	269.0	275.3	282.4	285.0	289.4	300.2	309.4	331.2	341.6	346.6	348.5	361.1	362.7	366.0	368.0	417.1
New Orleans	245.1	284.3	240.9	256.3	259.8	267.6	274.2	297.5	305.4	310.6	312.2	318.9	320.4	327.9	329.8	341.8
New York	276.0	282.3	289.4	297.1	304.0	313.6	321.4	344.5	351.1	360.5	361.7	366.0	367.7	378.9	381.0	395.6
Philadelphia	265.2	271.2	275.2	280.8	286.6	293.7	301.7	321.0	328.9	337.7	335.7	346.5	348.0	356.4	358.4	374.9
Pittsburgh	251.8	258.2	263.8	267.0	271.1	275.0	293.8	311.0	316.9	321.6	323.3	327.2	328.7	338.1	340.1	362.1
St. Louis	255.4	263.4	272.1	280.9	288.3	293.2	304.4	324.7	335.2	340.8	342.7	344.4	345.9	360.0	361.9	375.5
San Francisco	343.3	352.4	365.4	368.6	386.0	390.8	402.9	441.1	455.4	466.9	468.6	465.1	466.8	480.7	482.6	512.3
Seattle	252.5	260.6	266.6	268.9	275.0	283.5	292.2	317.8	325.4	335.1	336.9	341.8	343.3	347.1	349.0	358.4

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.

The cool world of Glaverbel Grey.

When the outlook is sweltering sun,
the in look is Glaverbel Grey. Heat-blocking,
it lets every room keep its cool.

Glaverbel makes anywhere a great place
to live.

The difference in glass is Glaverbel—
whether you look *through* it, or *at* it!

Glaverbel

Glaverbel (USA) Inc., 75 Plandome Road, Manhasset, New York 11030
Glaverbel Canada Ltd., 1550 Maisonneuve Blvd. W., Montreal 107, P.Q.

Big-Eye

Emergency lighting that works instantly. Every time.

A major improvement in emergency lighting. BIG-EYE's 2 sealed batteries are automatically kept charged at full-rated capacity. They last about 8 years (up to 4 times life of wet cell batteries) without filling or maintenance.

Reliable solid-state switch has no moving parts to corrode or malfunction.

When power fails, BIG-EYE's 35 watt incandescent lamps highlight critical areas for 40 minutes (90 minutes with the single lamphead model).

Only 5⅛″ x 6″ x 27⅜″. Mounts horizontally, vertically or upside-down on its own brackets. (Heads can mount remotely.) Theft and vandal proof. Gasketed model for wet areas and outdoors.

Write for literature.

Holophane

Holophane Emergency Lighting Products (H.E.L.P.)

By Woodbro Corp., Sub. of Holophane Co., Inc., 13620 Saticoy St., Van Nuys, Calif. 91402.

For more data, circle 44 on inquiry card

Graber knows your hang-ups—and runs the gamut of finest, quality-made architectural window coverings for every commercial, institutional, residential need, decorative, functional and economical. Your *single-source* for Verticals as well as cloth, vinyl and woven wood shades. Versitrak® traverse rodding. High-styled drapery rods.

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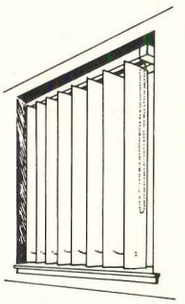
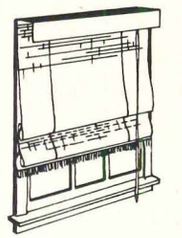
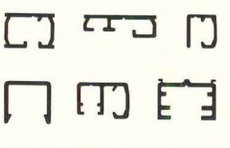
VERSITRAK®

A CONSOLIDATED FOODS COMPANY
RESPONSIVE TO CONSUMER NEEDS

Architectural verticals, shades, and drapery track that cover the windowfront!







Greater window design flexibility from Graber

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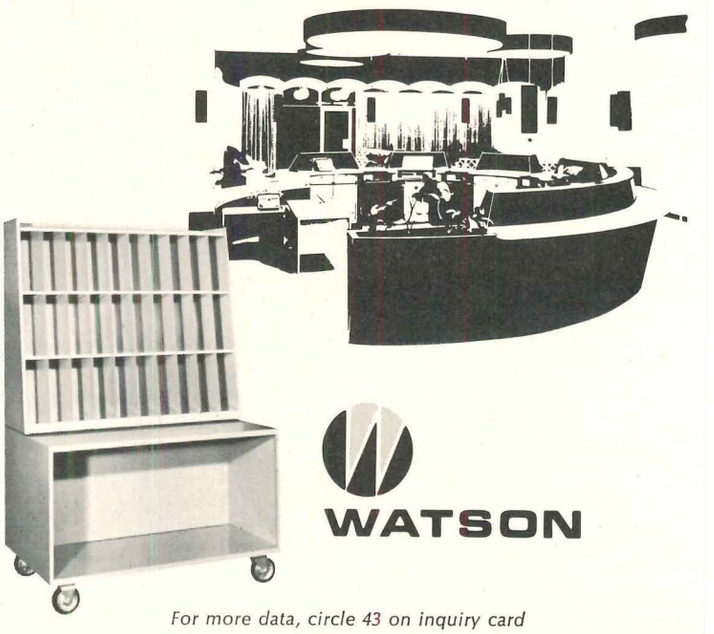
WATSON CREATES ORIGINALS

Custom casework bearing the Watson Label is known for its excellence. There are 83 years of answers behind Watson's ultra-functional design and fabricated perfection. If you need an original design or need to have one fabricated, or both... make it a better creation with Watson.

For literature and creative design service, write to:
WATSON MANUFACTURING CO. JAMESTOWN, N.Y. 14701 716/484-0171



WATSON

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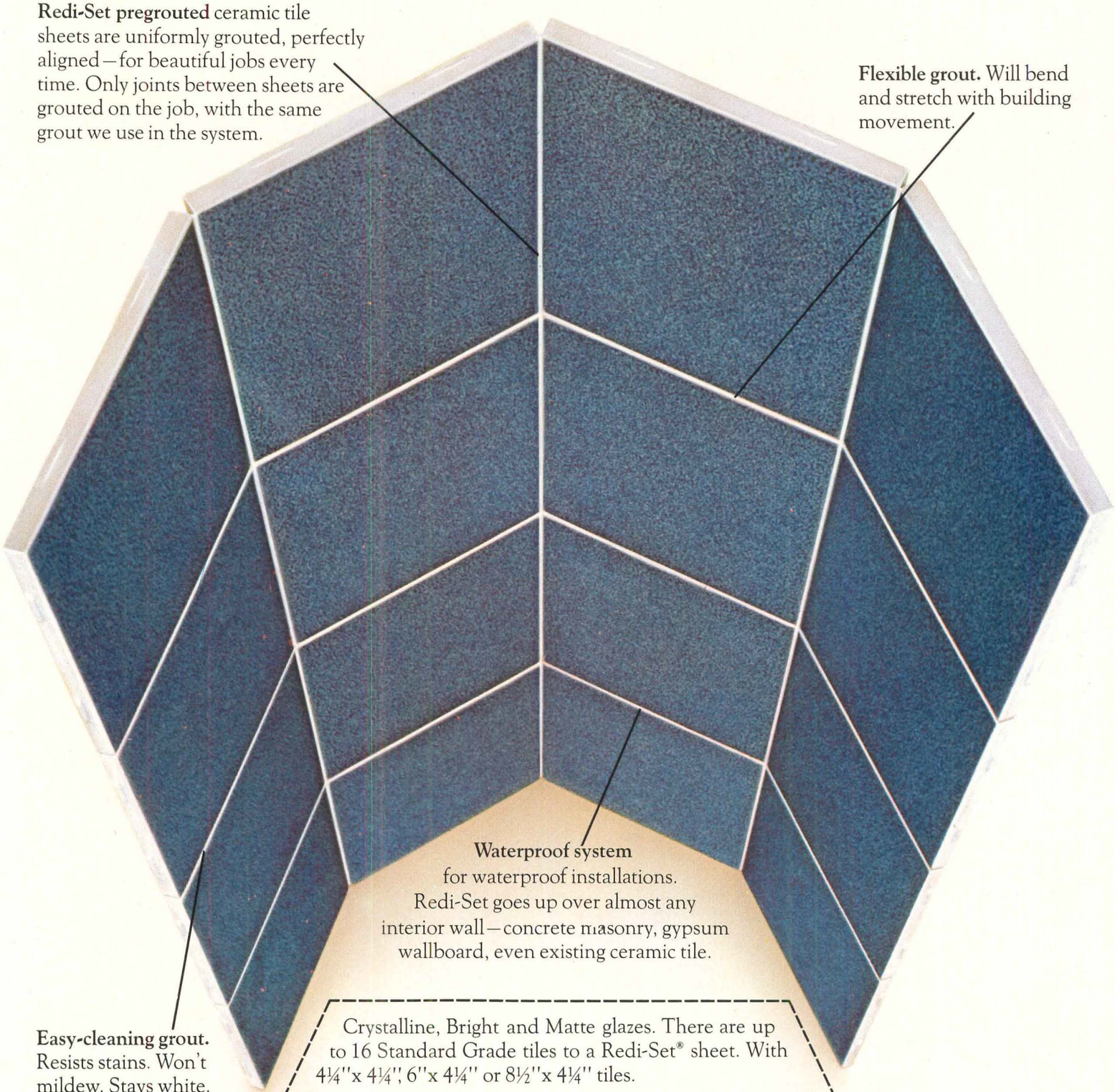
New! The American Olean ceramic tile system.

Redi-Set pregrouted ceramic tile sheets are uniformly grouted, perfectly aligned—for beautiful jobs every time. Only joints between sheets are grouted on the job, with the same grout we use in the system.

Flexible grout. Will bend and stretch with building movement.



Waterproof system for waterproof installations. Redi-Set goes up over almost any interior wall—concrete masonry, gypsum wallboard, even existing ceramic tile.

Easy-cleaning grout. Resists stains. Won't mildew. Stays white. Cleans with a damp cloth.

Crystalline, Bright and Matte glazes. There are up to 16 Standard Grade tiles to a Redi-Set® sheet. With 4¼"x 4¼", 6"x 4¼" or 8½"x 4¼" tiles.

American Olean Tile Company, 1603 Cannon Ave., Lansdale, Pa. 19446.
Send me literature.

Name _____
Firm _____
Street _____
City _____ State _____ Zip _____

American Olean
A Division of National Gypsum Company

Redi-Set pregrouted tile. It's the natural thing to use.™

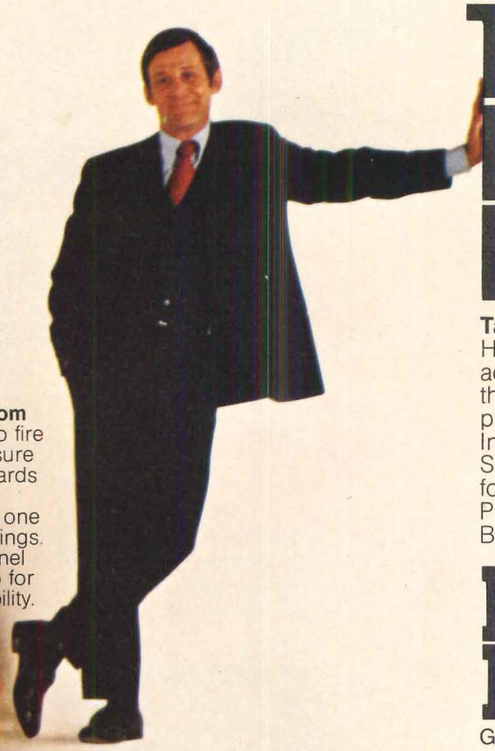
For more data, circle 46 on inquiry card

New Acoustiwall™ fights noise pollution. Help your clients solve sound control problems with new Acoustiwall liner panels and familiar Acoustideck® roof-ceilings. Added cost: less than 1% of total building cost. Important? It is now. The new Walsh-Healey Act sets 90 decibels as the upper limit for plants handling federal contracts.

Embossed panels add interest through texture. Now Inryco offers the attractiveness of a stucco embossed painted surface to help you create interest and design distinction in buildings of all kinds. Available in aluminum.

Choice of profiles for distinctive shadow patterns. Who says walls all have to look alike? Not Inryco. The IW series offers seven distinctly different profiles in 12″ widths. A common lock system lets you intermix in any combination. It's weather tight, and conceals fasteners. If the budget's tight, consider the M Series —four interesting profiles in fast-installing 30″ and 36″ widths.

INRYCO™: MORE THAN JUST ANOTHER WALL.



To keep a fire from spreading. Inryco fire wall panels measure up to rigid standards of Underwriters' Laboratories, for one and two hour ratings. No other wall panel surpasses Inryco for fire protection ability.

Talk it over with your Inryco wall panel man. He's a specialist, ready to help you with additional information. And he'll follow through on any inquiry you make with a prompt reply. For complete information on Inryco Wall Systems see our catalog in Sweet's Architectural File, Section 7 or write for Catalog 22-1. Inland-Ryerson Construction Products Company, 4127 West Burnham Street, Milwaukee, Wis. 53201.

INLAND-RYERSON

General Offices: Chicago, Illinois

A member of the INLAND steel family

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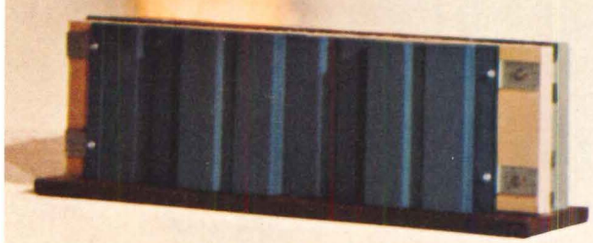
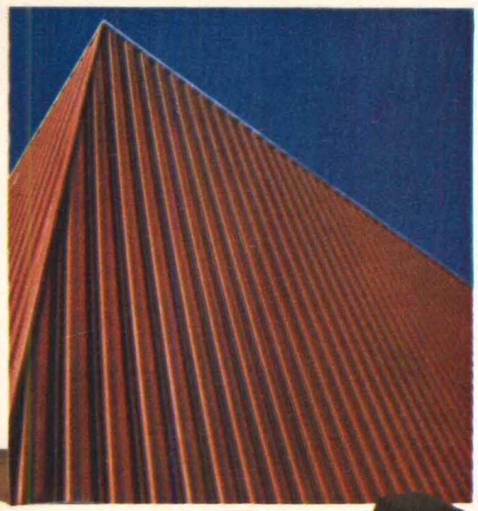


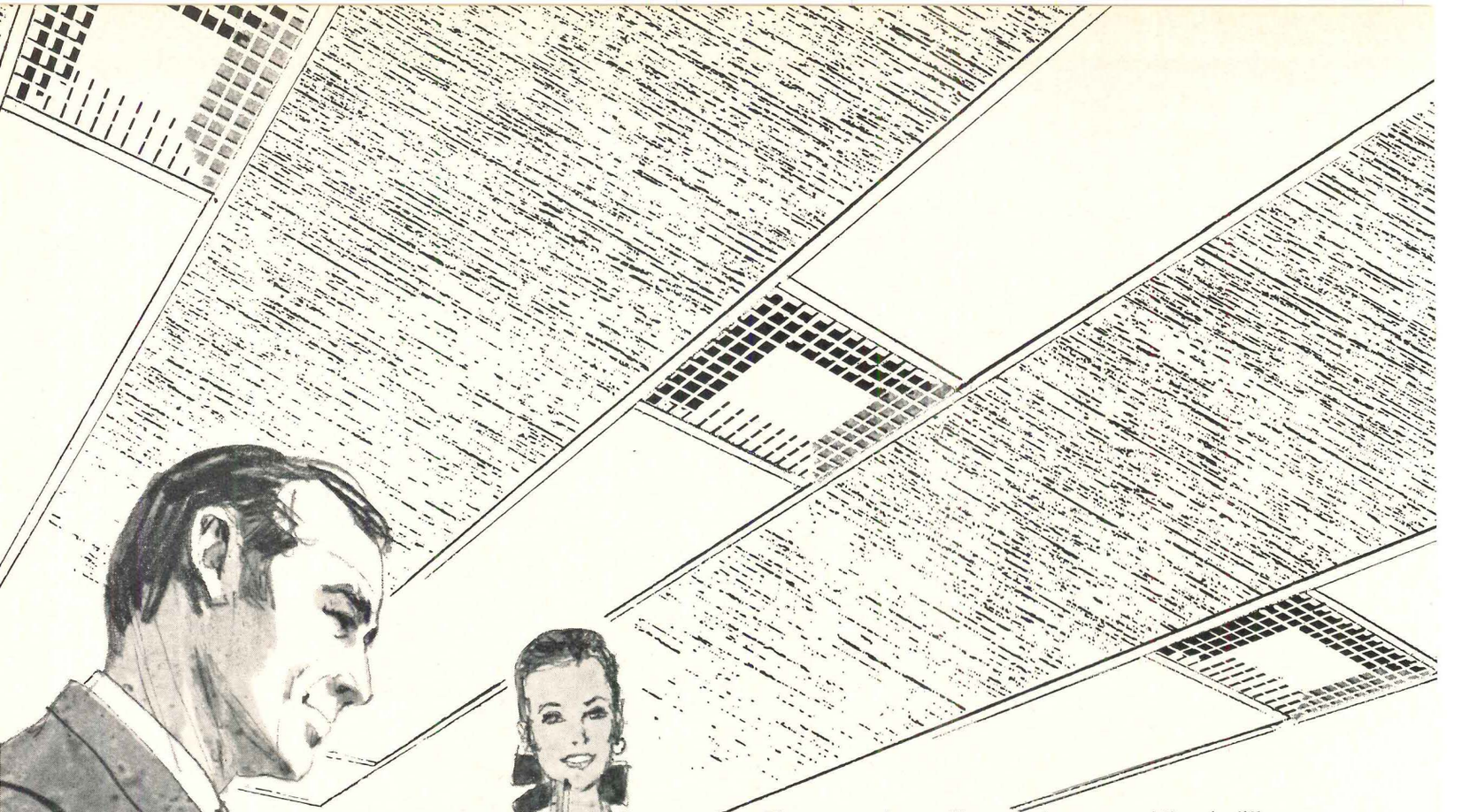
Long-lasting finishes in a spectrum of colors. Duofinish 500™ resists corrosive smog. Sheds dust, smoke, abrasives, airborne particles. Color stays true for 20 years or more. For extra economy, specify Duofinish,™ the hard, weather-resistant surface that keeps its color 10 years and longer.



COR-TEN panels: long-lasting good looks with no maintenance. Exposed to the elements, COR-TEN weathers to a rich, deep tone that's both protective and attractive. Complements a wide variety of other finishes and materials. Panels available in 12 different profiles.

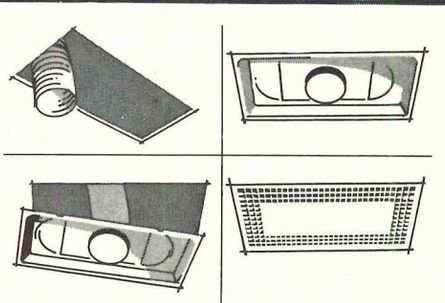
Film to protect panel surface. To guard against damage in transit and on site, you can specify Inryco MW panels with a protective plastic film that is easily removed during installation.

A1-22-1



When smudge-free high capacity air movement and modular interchangeability are a must...

you need MULTI-VENT engineered air diffusion



Installation is to flexible duct work to which the pan is attached. The pan is then positioned in the ceiling and the exposed diffuser panel is snapped into place. The air valve is adjustable through the diffuser panel.

Time was, when ceiling smudges around the air diffuser were reluctantly considered the penalty for having good air movement. Today, thanks to Multi-Vent High Capacity Modular Air Diffusers, ceiling smudge is a relic of the past.

Unique angular air throw keeps ceiling clean.

Multi-Vent diffusers won't make dirty air clean, but they will disperse the air so that it doesn't discolor or stain the adjacent ceiling. If dirt is in the air stream, it will at worst eventually smudge the air diffuser, which is quite easy to clean. The diffuser panel snaps out. With an extra diffuser panel available, one climb of a ladder permits exchange. A great saver on maintenance.

Modular units for every ceiling type.

From 12″x12″ to 24″x48″, you have intermediate modular options to satisfy any air volume requirement. In addition, Multi-Vent High Capacity Units are easily installed in ceilings composed of lay-in tile, spline tile, metal pan, radiant metal pan or plaster.

Fast, effortless installation and system balancing.

Multi-Vent High Capacity Air Diffusers are attached to primary duct work with flexible tubing. This not only speeds installation but eliminates the need for quarter-inch accuracy in the layout of primary duct work. If interior layouts change, the modular diffusers are easily rearranged to suit new occupancy needs.

The "unnoticed" air diffuser.

Certainly not the least of the reasons for specifying Multi-Vent High Capacity Air Diffusers is that they are completely unobtrusive. They blend beautifully with their surroundings.

Assistance available.

To learn more about these High Capacity Modular Air Diffusers, send for Bulletins 679 and 688. When you're ready to start designing, we'll be glad to provide engineering assistance as well as our experience.

Write:
MULTI-VENT PRODUCTS DIVISION
Dynamics Corporation of America
188 Industrial Drive
Elmhurst, Illinois 60123

DCA

For more data, circle 49 on inquiry card

Pre-finished wall system! Economical! Incombustible! UL labeled Class A flame spread rating of 25!

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And Georgia-Pacific's vinyl surfaced Eternawall is the only gypsumboard of its kind that has this UL labeled flame spread rating. With either supported or unsupported vinyl film.

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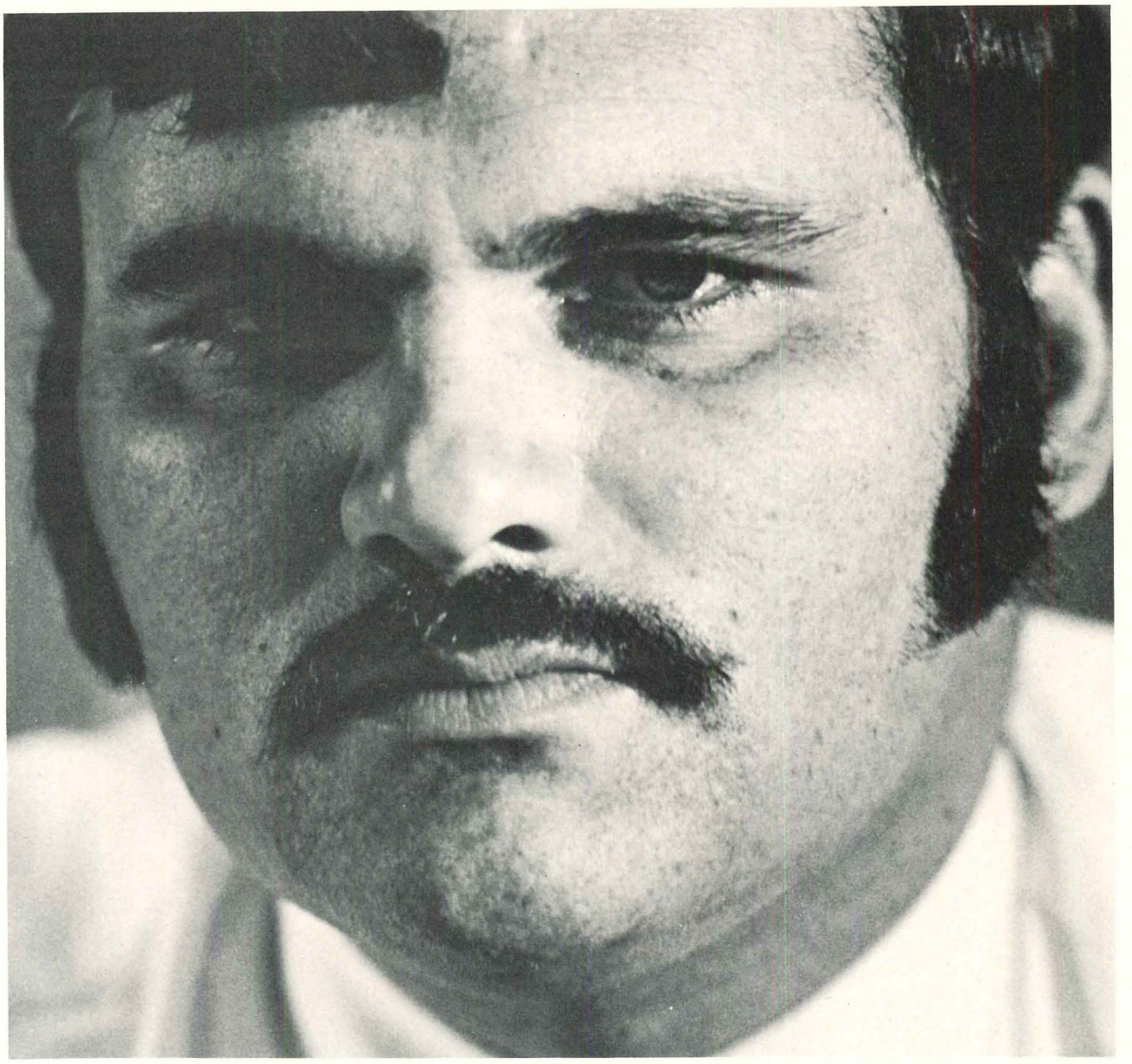

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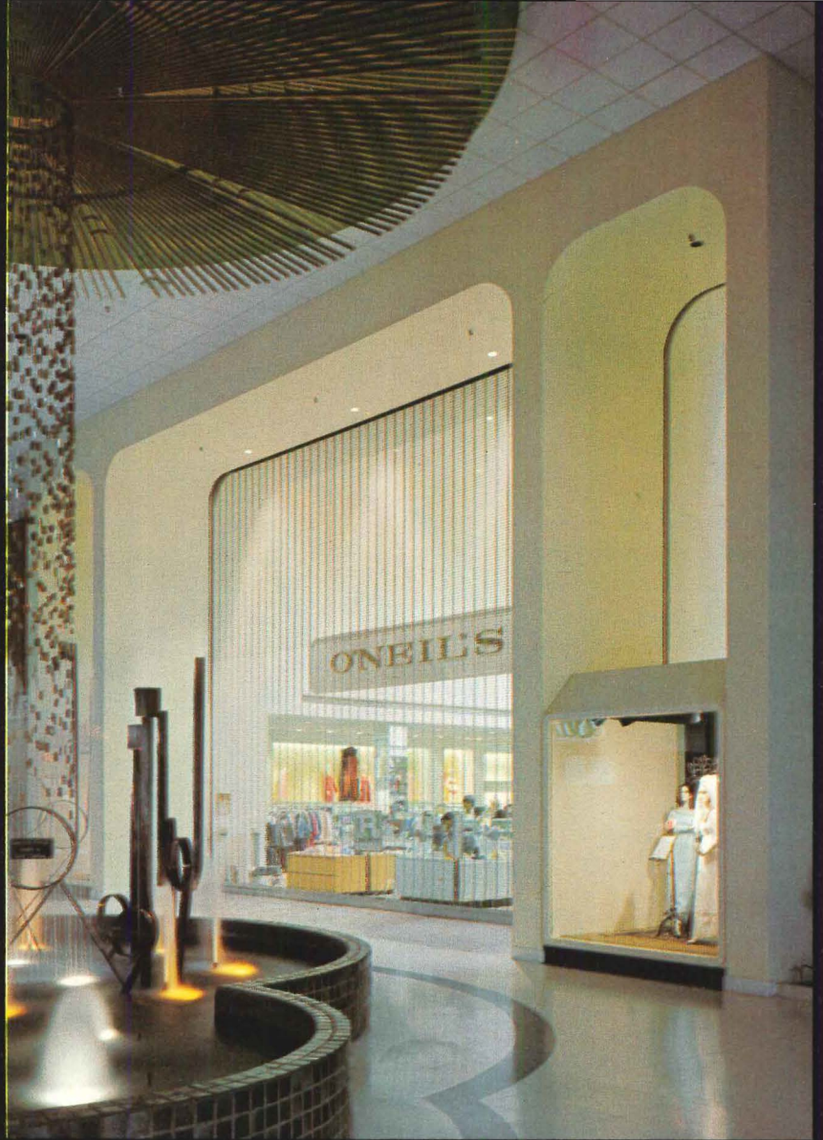

The Kinnear Rolling Grille is more than a beautiful veil for entranceways after hours. It is dependable SECURITY with a touch of beauty . . . . without sacrificing air, light or vision!

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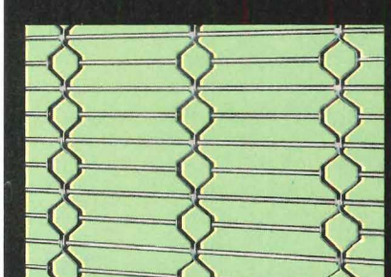
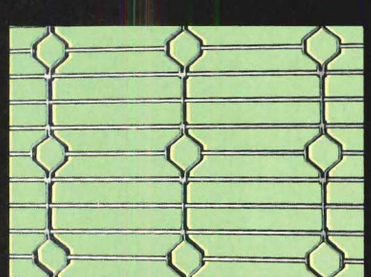
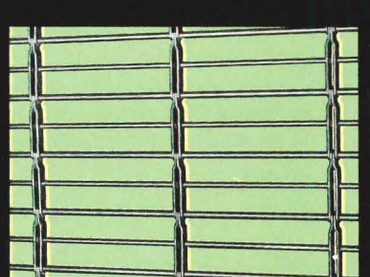
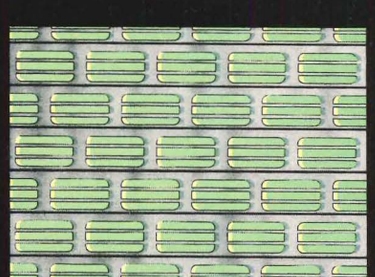

Hex Art


Hex Linc


Linc Art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LISTED IN YELLOW PAGES UNDER "DOORS." ALSO SEE SWEET'S!

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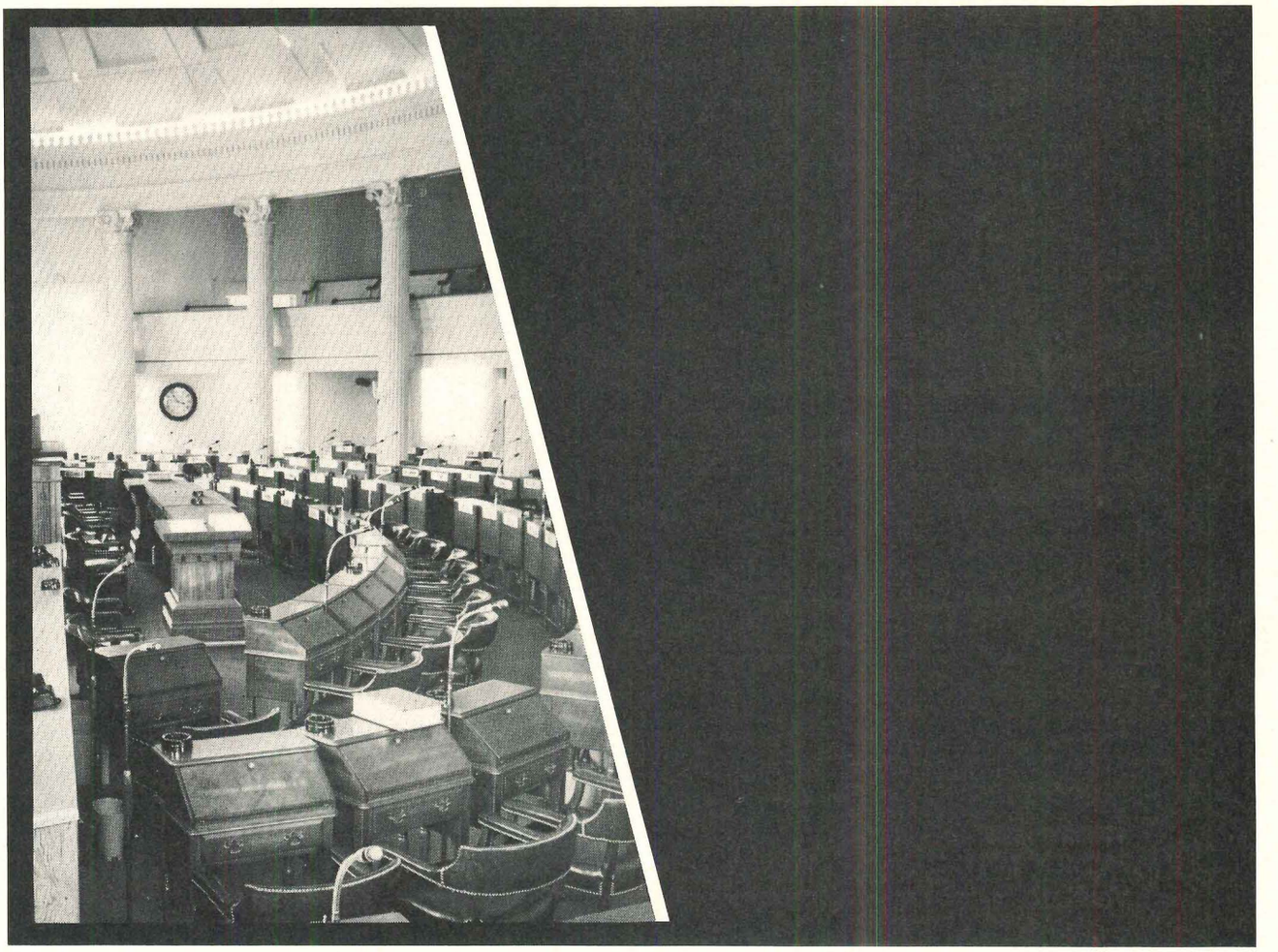
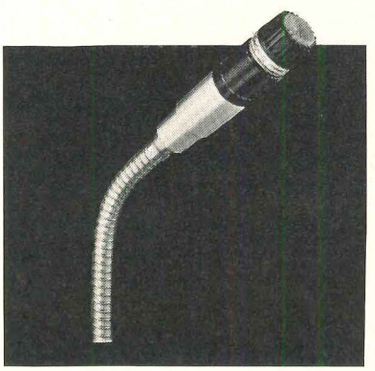


Con-Con to Congress



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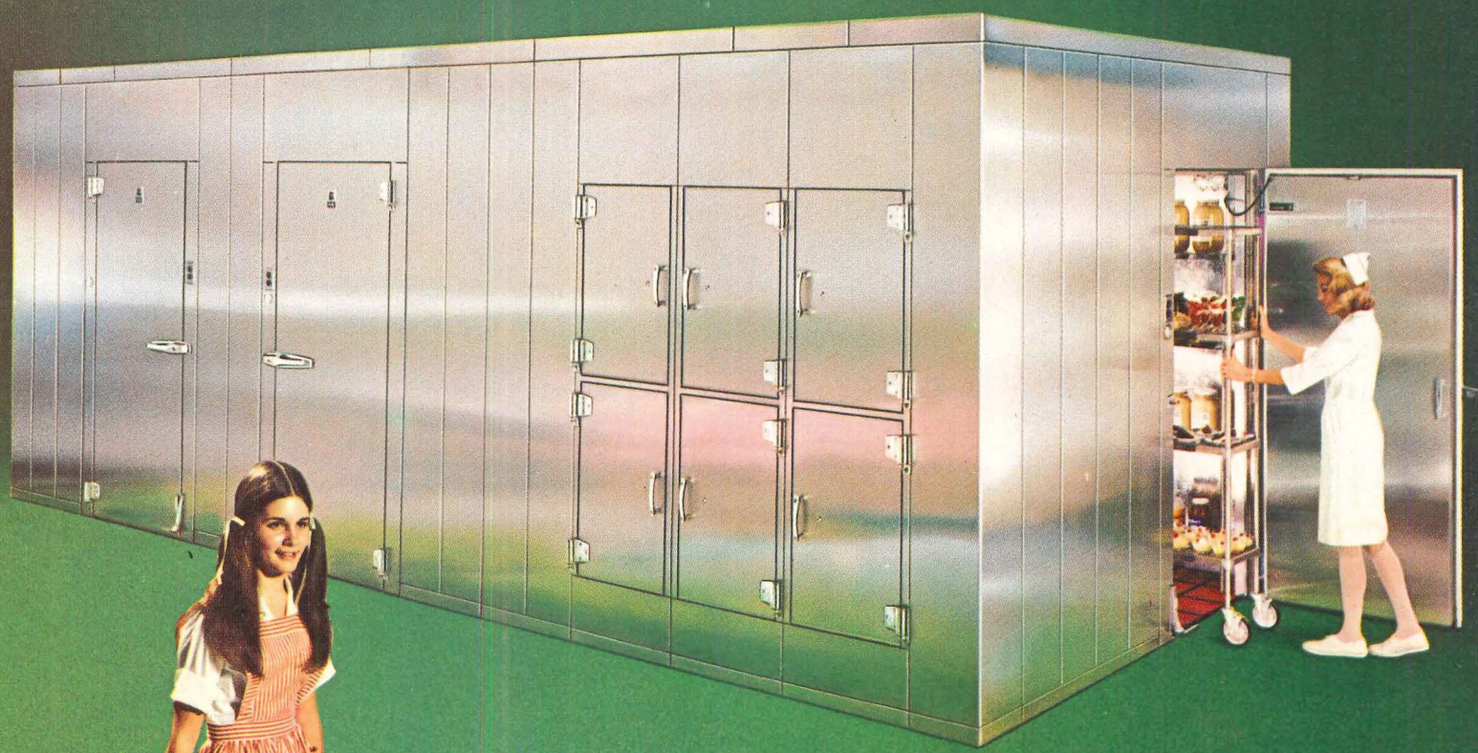

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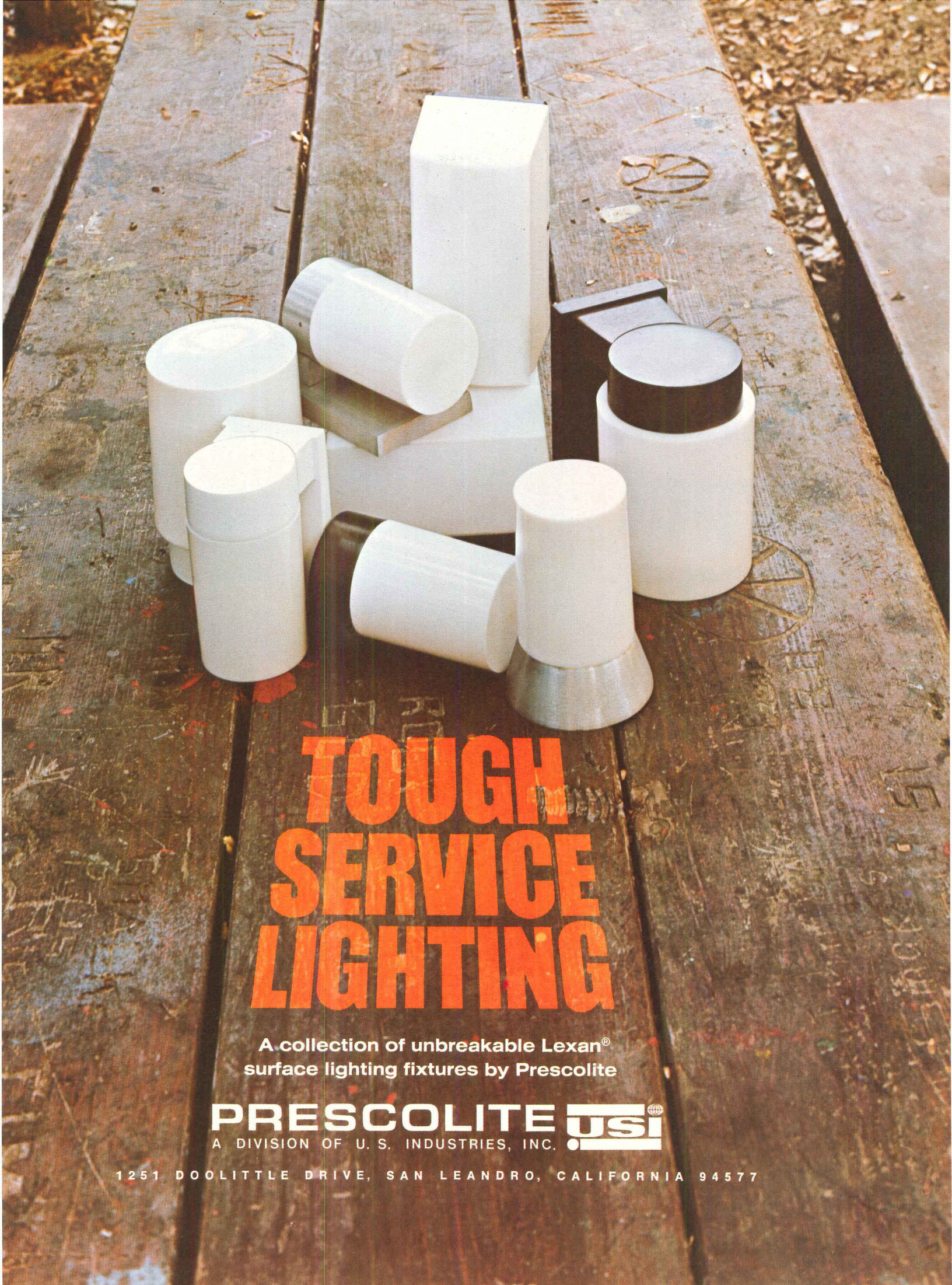
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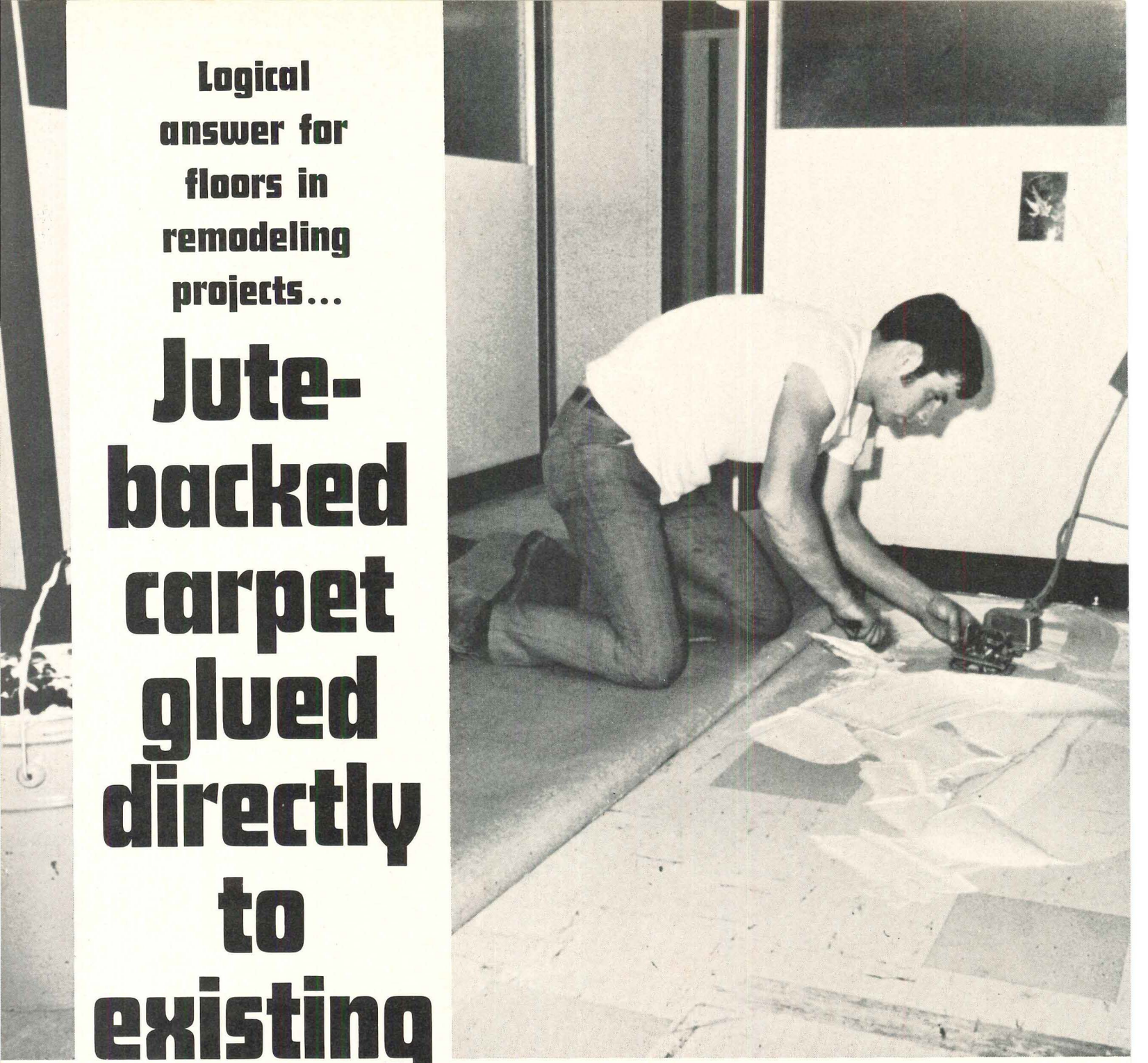
Logical answer for floors in remodeling projects...

Jute-backed carpet glued directly to existing floors



The prevalent flooring in most older structures is hard surface tiles or sheet material. Specify jute-backed carpet cemented over it. Floor preparation is minimal . . . just strip wax, fill in larger holes. Cost of removing existing material and sanding off remaining mastic is eliminated. Similar carpet application is feasible over any subfloor . . . concrete, terrazzo, metal, wood.

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Write for Architectural Guide Specification, Case Histories of Installations

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RECORD INTERIORS OF 1972

The ten winning architect-designed interiors, shown here and on the pages that follow, were chosen from among the many submissions to this year's Interior Design Award Program. The winners, all excellent, represent a cross section of building types and a wide geographic distribution. In reviewing all the submissions, the editors noted a somewhat diminished reliance on supergraphics, an increased use of highly polished or specular finish surfaces and a renewed concern with lighting as a device to animate and enrich these surfaces.

A number of the runners-up will be published in the coming months. New submissions are welcomed throughout the year.

Morley Baer photos

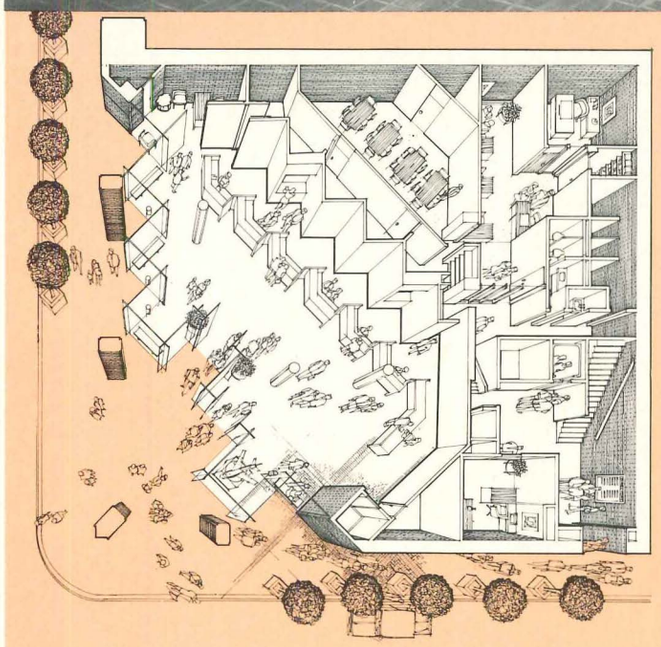

United Air

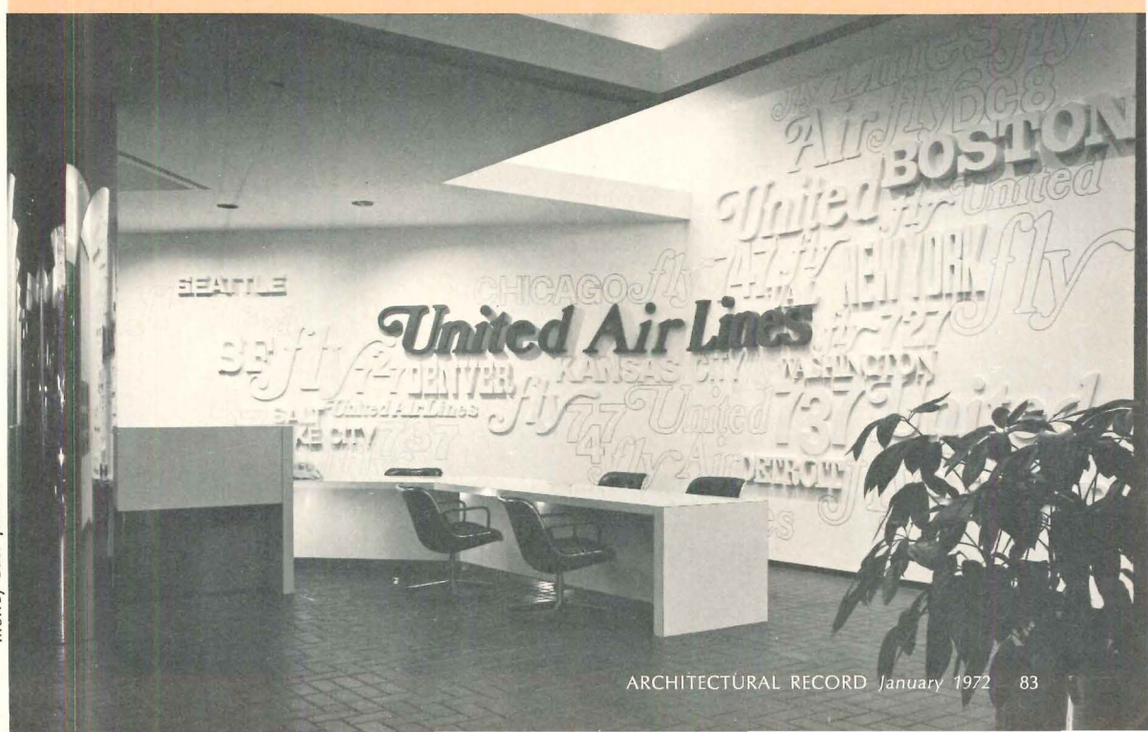
Bright primary colors and sparkling interior finishes generate enormous excitement

Part of a major renovation of United Airlines' four-story building in San Francisco, this showcase ticket office opens across a busy intersection toward Union Square. Architects Arthur Gensler & Associates turned the axis of the ticket lobby on the diagonal to face the square. From this decision, others followed directly. The enclosing glass wall was kept free of the exterior column line and allowed to step in and out, creating a series of small bays and considerable visual interest. The diagonal axis is strongly re-emphasized in the ticket counters, the lighting coffers over the counters and the saw-toothed wall behind.

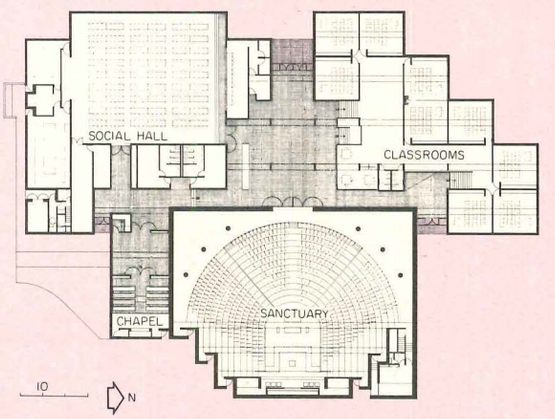
Bright primary colors and sparkling interior finishes generate enormous excitement. Floors are dark brick, partitions are plasterboard, counters are covered in plastic laminate and columns are clad in polished stainless steel to reduce their bulk and reflect the movement and color within the space. A white-on-white relief, displaying the United Airlines logo along with the principal cities served, forms a spirited and strongly textured end wall.

UNITED AIRLINES TICKET OFFICE, San Francisco, California. Architects: *M. Arthur Gensler & Associates (Don Kennedy, project architect)*; structural engineers: *Forell-Elsesser-Chan*; mechanical engineers: *Higash & Associates*; electrical engineers: *Shinn & Associates*; contractor: *Arthur Brothers, Inc.*





Morley Baer photos



Otto Baitz photos

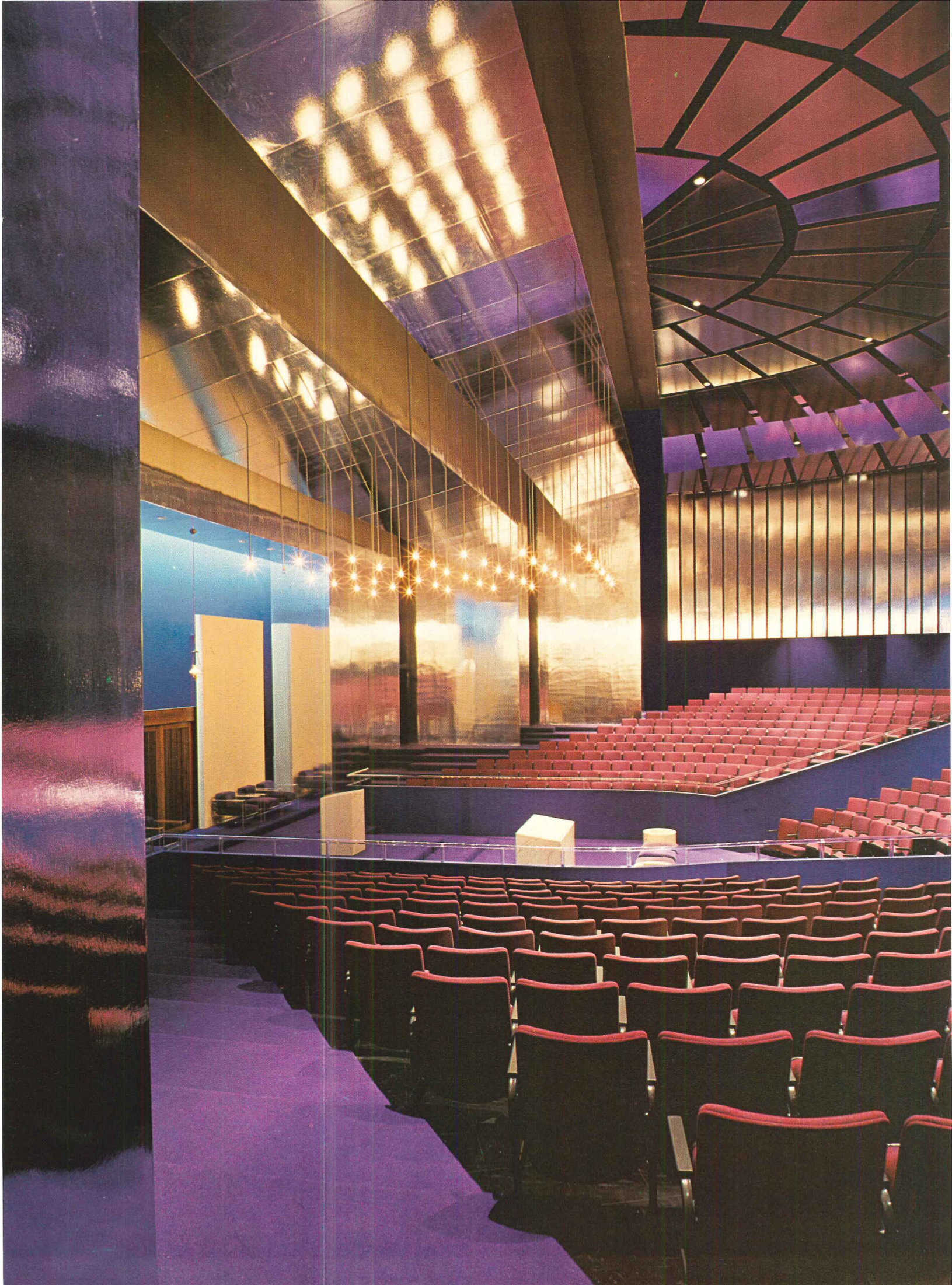
A horseshoe-shaped sanctuary that is emotive and highly charged with drama

Two Memphis congregations commissioned architects Francis Mah and Walk Jones to design a single synagogue as a center for their joint worship. Major elements in the design are a large sanctuary, a small chapel and an expansive social hall which occasionally serves both the sanctuary and the chapel as overflow space. The design for each grew out of a regularized structural system that included long bands of daylight from clerestories along transverse column lines (see plan). In the vestibule and chapel (photos, lower left), this overhead light source is a primary design tool.

The horseshoe-shaped main sanctuary is emotive and highly charged with drama. Its appeal is directly to our senses and to the emotions these senses inspire. Ranks of silver-colored, acoustical baffles hang in concentric rows from the ceiling or march in a steady cadence around the curving rear wall. Lights from sources seen and unseen pick up the colors of chair and carpet and reflect these colors from every surface. The whole interior seems suffused with color.

This arresting space, too theatrical perhaps for some, reaffirms for all how potent is interior architecture's capacity to communicate.

ANSHEI-SPHARD/BETH EL EMETH SYNAGOGUE, Memphis, Tennessee. Architects: *Mah + Jones, Inc.*; engineers: *Ellers Reaves Fanning and Oakley, Inc.* (mechanical and electrical); *Wooten-Smith & Weiss* (structural); contractor: *Grinder, Taber* and *Grinder, Inc.*



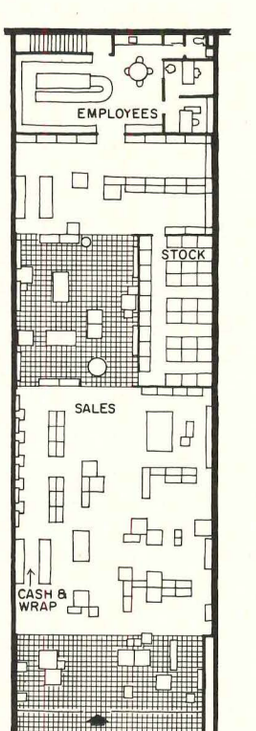
Hedrich-Blessing photos

A richly-textured background for the display of merchandise with high visual impact

Crate & Barrel is a retail chain that specializes in well-designed imported housewares and colorful Scandinavian fabrics. For its outlet in Oakbrook, Illinois, architect Richard Acott designed a restrained but richly-textured background for the display of merchandise with high visual impact. Quarry tile, clinker brick and rough-sawn beech cubes contrast strongly with crystal stemware and high-glaze china. Lighting is generally subdued and used to dramatize individual displays. Bright-colored umbrellas provide an overhead accent and give the space added height.

Despite the profusion of colors and shapes, the texture contrasts, and the variety of display techniques, the store retains an appealing clarity and a relaxed sense of order.

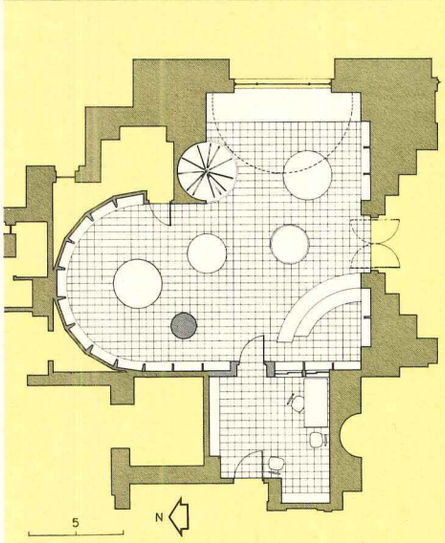
CRATE & BARREL, Oakbrook, Illinois. Owner: *Euromarket Design, Inc.* Architects: *Richard Acott & Associates;* mechanical engineers: *Khatib-Vandiver & Associates;* contractor: *Sinclair Construction Co.*



A gentle flow pattern that uses an intruding column as its pivot

The program called upon architects Robinson & Mills to design a small, modern bookstore off the grand, neo-classic entrance lobby of San Francisco's Museum of Art. Because of the building's landmark character, no external sign was allowed. Identifying graphics were restricted to the overhead, interior curved surface facing the street window. The architects began with a space that had functioned as two adjacent storage rooms. The central column was simply a fact of life. To set up a gentle flow pattern, using the intruding column as a pivot, a curved wall was introduced for book display. The circular theme is continued in the print rack, the sales desk and the portable, plastic-domed display cabinets. To emphasize this easy, uninterrupted flow visually, the designers striped the top of the walls and columns in black and white—a feature that is playfully reflected on the ceiling of silver vinyl. Other finish materials are kept light in color to augment and enliven these colorful, overhead reflections.

MUSEUM BOOKSTORE, San Francisco Museum of Art. Architects: *Robinson & Mills (Jeffrey L. Teel, project designer)*; mechanical engineer: *Paul E. Rosenthal*; electrical engineers: *Darmsted-Parenti & Associates*; graphic consultants: *Reis & Manwaring*; contractor: *Jacks & Irvine, Inc.*



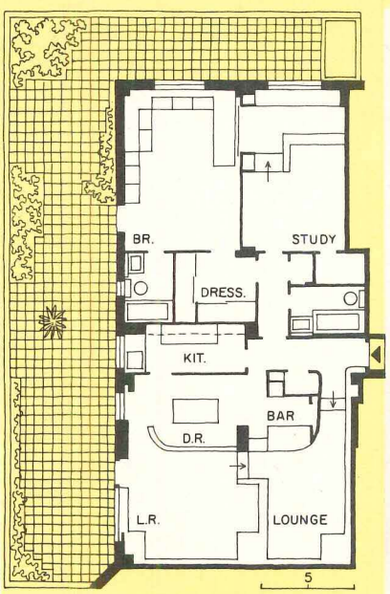
Morley Baer photos

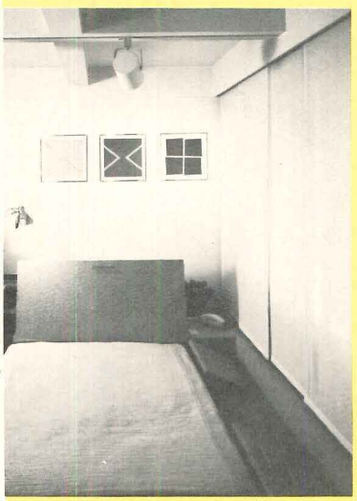
Controlled lighting to highlight wall displays and dramatize a forceful sculptural character

To organize the functions and regulate the flow of spaces in this handsome Manhattan penthouse, architect Stephen Kiviat has made use of built-ins, half-height partitions and changes of level. These design devices have also afforded him an opportunity for some innovative detailing. The dropped soffit and marble sill that wrap around two sides of the living room, for instance, provide a continuous track for plastic picture mounts. The owner, an enthusiastic print collector, can change his prints easily by lifting the plastic mount, substituting the new print, then lowering the mount into position in the track again.

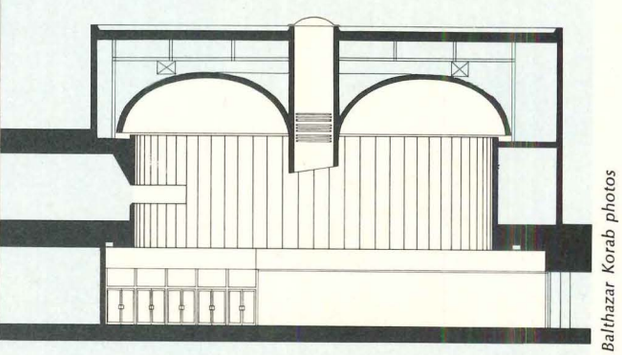
In both living room and bedroom—where a bed surround provides additional storage—lighting is carefully controlled so that it may highlight wall displays and dramatize the apartment's forceful sculptural character. Warm browns and muted earth colors in leather and paint form a low-key contrast to white walls and are exceptionally easy to live with.

PRIVATE RESIDENCE, New York City. Architects: *Kiviat-Rappoport (Stephen H. Kiviat, partner-in-charge)*; contractor: *Glen Partition Company*.





Alexandre Georges photos



A space in which everybody participates as actor and spectator

This 90- by 90-foot, two-level lobby of a Toronto department store has been transformed into a color-saturated, optically arresting social court where shoppers can gather, dine or just relax and indulge their senses.

The work of Innerspace Design, Inc., a subsidiary of Gruen Associates, the space is covered by a deep dome ceiling with a sculptured light well at its center. A circular wall, clad in silver mylar, extends downward from the base of the dome to the second level gallery. Colored lighting, in brilliant combinations and programmed in a slowly changing sequence, continually alters both the mood and the character of the space. The mylar image is vibrant and shimmering.

A bull's-eye patterned floor, executed in concentric circles of black and white, is centered under the light well. "It is a space," say its designers, "in which everyone participates as actor and spectator."

SIMPSONS COURT, Toronto, Canada. Owner: *Simpsons, Ltd. (Maxwell Miller, chief architect);* architects and engineers: *Innerspace Design, Inc.* in association with *Searle, Wilbee, Rowland;* contractor: *Ellis-Don, Ltd.*

Balthazar Korab photos

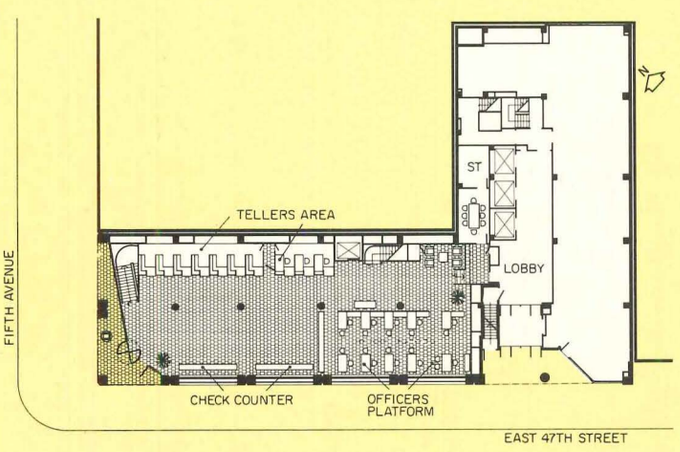
A modern, international banking image that retains a sense of national identity

Working with a limited budget and against a tight time schedule, architects Poor and Swanke (formerly the Office of Alfred Easton Poor) have created an exceptionally appealing interior for an American branch of an Israeli bank. In order to present a contemporary, international banking image while retaining some sense of national identity, the owners commissioned Maria Teresa Celinska to design a large tapestry depicting the old walled city of Jerusalem. The tapestry, executed in carpet materials and mounted prominently on walls facing the street, is the bank's principal identifying feature—a responsibility it shoulders with notable distinction.

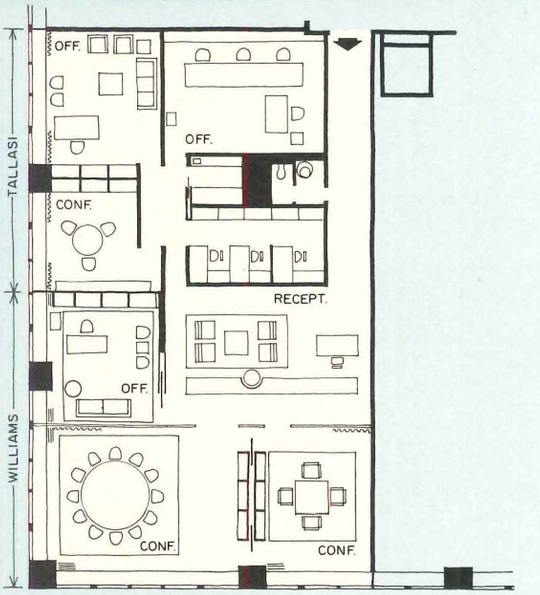
Other design elements and finish surfaces, though handsome, are sensibly subordinated. Floors are charcoal-gray slate; columns are covered in black, anodized aluminum; tellers' counters are oak veneer and black plastic laminate.

Lighting fixtures, located to dramatize the long tapestry, are fashioned directly from the metal pans used to pour the slab.

BRANCH, FIRST ISRAEL BANK & TRUST COMPANY, New York City. Architects: *Poor and Swanke (Robert H. McKay, partner-in-charge, William Maurer, project architect, Mary Halperin, interior designer);* structural engineers: *Martin Lovett & Associates;* mechanical engineers: *Harold Hecht & Associates;* lighting consultants: *Syska & Hennessy;* contractor: *A-J Contracting Corporation.*



Alexandre Georges photos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TALLASI
WILLIAMS

Offices in which a varied collection of paintings and sculptures coexist easily

Space in this exceptionally handsome New York office is shared by two informally related firms —the Williams Companies and Tallasi Management. Each has headquarters out of town. The large conference area and adjoining work space, used by The Williams Companies (see plan), are screened by a glass wall from the shared reception space. These are work spaces but get much entertaining and ceremonial use as well. The partitioned offices, at rear, for Tallasi Management, have more regularized office use. A large, ash burl storage unit, constructed around a column in the reception area, effectively separates the spaces visually.

Executives of both companies are art collectors and architect Harry Wolf provided offices in which a varied collection of paintings and sculptures coexist easily. Spatial interest, elegant finish materials and a vigorous attention to design detail complement good, solid planning.

OFFICES OF THE WILLIAMS COMPANIES and TALLASI MANAGEMENT COMPANY, New York. Architects: *Harry Wolf & Associates (Harry C. Wolf with Marley Carroll and Paul Poetzsch)*; mechanical and electrical engineers: *Jaros, Baum Bolles;* contractor: *Van Hyaning Construction Company.*

Joseph W. Molitor photos

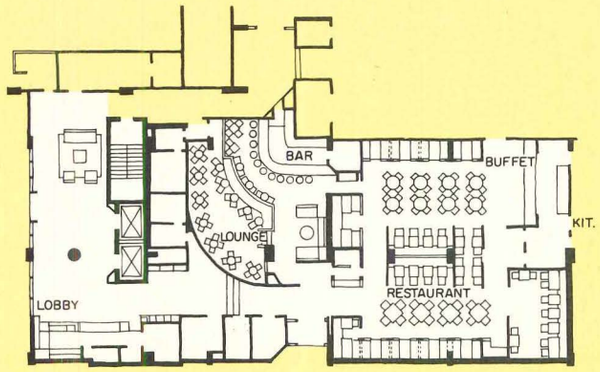

Fourteen

Bright and cheerful in the morning . . . relaxed, intimate in the evening

The owners of this Kansas City motor inn commissioned the Urban Architects to renovate the inn's main dining and entertaining areas. The first challenge was to accomplish the renovation with as little interruption to normal hotel service as possible. Second, and more difficult, the architects had to plan the space so that it could be bright and cheerful in the morning when it serves as a coffee shop and more relaxed and intimate in the evening for quiet dining. The architects attacked this problem directly and simply. They selected reflective finish surfaces and then provided variable lighting levels carefully keyed to these surfaces. By adjusting the lighting levels, finish surfaces—as well as dinner- and glass-ware—either sparkle or become subdued. Mirrors, mounted on the side walls over the booths, contribute to this process and also serve to extend the space visually.

Colors are generally dark and restrained: rich brown leather for seating, brown and black for carpeting, black laminate on table tops. The generous application of light wood trim, occasional panels of red felt and a warm reflective character keep this elegant space from ever becoming overly somber.

DOWNTOWNER MOTOR INN, Kansas City, Missouri, owner: *Downtowner Corporation*. Architects: *Urban Architects (Stephen Abend, partner-in-charge)*; mechanical engineers: *Smith & Boucher*; contractor: *Jenkins & Blaine Construction Company*.



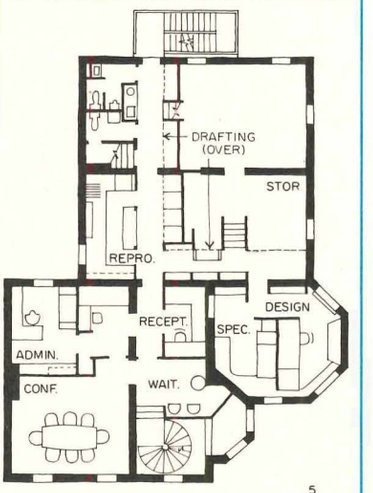
Paul Kivett photos

Stone Photography

Spaces that flow easily through generous, sculptural openings

Faced with the need to acquire more space for their own offices, architects Chrisman, Miller and Wallace purchased a century-old frame house in Lexington, Kentucky. The house had been stylistically blurred by at least two previous remodelings and, though some of its surfaces had deteriorated, it has remained structurally sound. The architects began by opening up the interiors of the upper two floors to create a series of spaces that flow together easily through generous sculptural openings. Stairs, fixtures and furnishings echo the curvilinear esthetic and give it strength. Bright primary colors are used most effectively—and unexpectedly—in arched openings, reveals and ends of stub walls. Doing much of the construction themselves, the architects have developed working spaces that are playful but efficient, personal but completely functional.

ARCHITECT'S OWN OFFICE, Lexington, Kentucky. Architects: *Chrisman, Miller and Wallace;* mechanical engineer: *James Dorough.*



Concerned by the growing evidence that the country faces a serious energy shortage, RECORD invited a group of architects, engineers, consultants, builders, lenders, government officials, and manufacturers to

A Round Table on Energy conservation through higher quality building

The editors of RECORD sponsored this Round Table because we felt—and it was confirmed—that there is indeed an energy crisis, a growing shortage of fuel and electricity that can, if not responded to, become a real constraint to the building industry. We invited architects and engineers because we felt—and this was confirmed—that there is much that they can do to conserve energy in buildings, especially if some of the ground rules and incentives that govern the building industry can be changed.

These ground rules and incentives are, in varying degrees, set by others. So we invited representatives of these other responsible factors—builders, building owners, lenders, researchers, government officials, involved manufacturers, and utility people—to talk with the design professionals about the constraints. We sought a balanced picture. On the following seven pages is an article based on the 263-page transcript of the day and a half-long meeting. We might state one conclusion here at the beginning. Conservation of energy seems a unique problem in one sense: its solution would appear to penalize no one, and profit us all—professional, entrepreneur, and member of society alike.

It is a subject, in our view, worth the most careful study—and we will be going into detail on some of the particulars of what can be done in later issues.—*Robert E. Fischer and Walter F. Wagner Jr.*

These were the participants in the Round Table:

Architects

MacDonald Becket
President
Welton Becket & Associates

John Dinkeloo
Partner
Kevin Roche John Dinkeloo

Bruce Graham
Partner
Skidmore, Owings & Merrill

Bruce Campbell Graham, architect

Robert Hastings
Chairman of the board
Smith, Hinchman & Grylls
and
President (now past-president)
American Institute of Architects

Richard Roth Jr.
Partner
Emery Roth & Sons, Inc.

Consulting engineers

Frank Bridgers
Bridgers & Paxton
and
Past-president, ASHRAE

Sital Daryanani
Partner and chief mechanical engineer
Syska & Hennessy, Inc.

Charles Erway
Erway Engineering

Stephen Squillace
Director
Hyde & Bobbio

John Yellott
Director
Solar Energy Laboratory

Other technical specialists

Dr. T. Kasuda
Senior mechanical engineer
Building Research Division
National Bureau of Standards

Prof. E. R. McLaughlin
Pennsylvania State University

Cost consultant

Seymour Berger
Vice president
McKee-Berger-Mansueto, Inc.

Builders and developers

Gordon Emerson
Executive vice president
Cabot, Cabot & Forbes

L. V. Shute
Vice president
Turner Construction Company

John Tishman
Executive vice president
Tishman Realty & Construction Company

Frank Whitney
President
Walter Kidde Constructors

Lenders

Carl Huebner
Senior vice president
Metropolitan Life Insurance Company

Building owners

Ervine Klein
Director of Environmental Control
Argonaut Realty Company
General Motors Corporation

Don Lyon
Engineering Manager—Buildings
American Telephone & Telegraph

Government

Honorable Hollis M. Dole
Assistant Secretary—Mineral Resources
Department of Interior

Honorable Arthur F. Sampson
Commissioner, Public Buildings Service
General Services Administration

James Wright
Chief, Building Research Division
National Bureau of Standards

Utilities

Bertram Schwartz
Vice president, systems planning
Consolidated Edison

Manufacturers

Charles E. Peck
Group vice president—construction group
Owens-Corning Fiberglas Corporation

Technical adviser to the RECORD: F. J. Walsh, consulting engineer

See also Round Table monitors, page 100

There's an energy crisis now in some areas—and it's spreading. Environmental concerns are making it harder to mine fuel and locate new generating plants. Then there's all that growth ahead . . .

In a statement of purpose to the Round Table, moderator Wagner began: "We start with the knowledge that in many parts of the country, energy is in short supply. Only in some parts of the country, plagued with brown-outs, real shortages of low-sulphur-content fuel, or gas shortages can the situation be called a crisis.

"But in most areas, the situation is becoming more and more difficult because of 1) the on-going construction boom, 2) the fact that our demands for electricity have doubled since 1960 and will double again by 1980, 3) the increasing costs of power generation, and 4) the environmental opposition to new generating plants (atomic or conventional) and mining and drilling operations. Conservation is clearly in order from the simple point of view of supply and demand—operating costs and the morality of needless waste aside.

"George A. Lincoln, chairman of the President's Joint Board which coordinates the Federal response to potential fuel and energy crises, said recently: 'I see only five principal sources for dealing with our energy problem. The first four are the great energy fuels—oil, gas, coal, and nuclear power. The fifth and perhaps the most important is the relatively unexplored source of energy conservation . . .' "

The Assistant Secretary for Mineral Resources spelled out the problem nationally

In a dinner speech to the Round Table, Interior Assistant Secretary Hollis M. Dole said: "In a milieu that has been variously characterized as the affluent society, the throw-away economy, and the land of plenty, it is a novel experience to see attention focused on saving resources. But it is true, all of a sudden it seems, that our concern with energy has been redirected from sales to production. Supply, rather than demand, is beginning to set the terms of energy transactions.

"The concern of suppliers—utilities—in many cases now is not how to build customers but how to gracefully turn them loose. This is particularly evident in the case of gas service, where new loads are being turned down and suppliers are in a number of cases actually buying back gas from their own customers for storage to protect their preferential loads against peak heating demand. The truth is that for various reasons we are entering a period in which it will be increasingly difficult to supply our demands from domestic fuel resources of all kinds. The result of this failure of domestic energy supply will be increased dependence upon foreign energy sources. We have a demand for gas that cannot be met by our failing domestic supplies, and coal will be barred from more and more of its markets by environmental restrictions. The only available substitute fuel to meet these deficits is oil. But we are short by at least 2½ million barrels a day of being able to produce or refine all the oil we now require, and our demand grows by at least a half million barrels a day each year . . .

"It is this climate of threatened energy scarcity and deepening dependence upon foreign sources that confers a special note of relevance—indeed, even urgency—to the discussions of this Round Table. If it is true that we are in for a long period of austere conditions relating to energy supply, then it makes eminent good sense to do what we can about conserving the supply that we have. . . . For years and years we have wasted unconscionable amounts of our nonrenewable resources just because the prices we paid did not reflect their true cost [see below for comment on electricity prices] and we therefore thought them to be cheap and readily available. Now the discipline of scarcity is forcing us to husband and respect what we have wasted and abused. The reform is long overdue . . ."

The Secretary reinforced the impact of environmental concerns . . .

"Suffusing and permeating every other consideration is the impact that environmental considerations have upon the production and use of energy. I know. We are accustomed to hearing it stated the other way round. But the truth is that the statutes and regulations for protecting the environment that have come into existence over the past six years will have an enormous impact upon the operations by which we produce, process, transport, and consume energy resources."

. . . and he made it clear he thought that actions the building industry could take mattered—were worth the effort

"I think it is abundantly clear that despite our best efforts, we are simply not going to be able—short of an all-out effort—to meet our essential minimum energy requirements from domestic sources within the next 15 years. There are the strongest of reasons, then, for reducing waste and increasing efficiency in energy consumption whenever and wherever we have the opportunity to do so. . . . Residential and commercial heating consume almost a fifth of all energy expended by end users in the United States. [Other sources put building use at one-fourth.] Vast savings in energy are therefore possible through even modest improvements in efficiency in this sector.

"We should take advantage of it. A great opportunity for constructive innovation exists in this simple but long-neglected field of energy conservation."

The situation could get worse because the growth of generating capacity has slowed for economic and environmental reasons

Bertram Schwartz of Consolidated Edison, New York City's utility, spelled out the "new economics"—as he sees them—for utilities:

"It has been commonly known in the electric utility industry that growth meant profits. Accordingly, the utilities have, historically, encouraged the use of electricity-consuming appliances, encouraged growth in their areas, and have not been terribly concerned about conservation.

"But we at Con Ed, at least, are now conservationists, and it is now in our self-interest to be so.

"The conventional economics of utility operation are no longer valid. In this period of inflation and in this period of onslaughts by environmentalists, it costs us much more to build and operate new plants than the average cost of our existing plants. Accordingly, it no longer makes sense for us to promote growth for itself."

While the economics of scale may no longer pertain, the problem of coping with energy demands brought on by population growth, per se, cannot be avoided. What the utilities are up against is made clear in the following points made by John Shannahan, president of the newly organized Electric Energy Association, Inc.*

Utilities are mandated by laws of states to supply energy as is required by the public. It follows that utilities will have to expand their facilities as the population grows.

Considering environmental requirements as well as the energy crisis, it is up to utilities to follow a controlled or directed growth.

Utilities are facing tremendous increases in their costs in order to meet the demands of environmentalists. These costs involve not only cleaning up present facilities and providing for this in future plants, but also costs (buying energy from other utilities to meet their needs) they have incurred because of litigation involving the location, construction and operation of power plants. Further, inflation will increase utilities' costs as they encounter delays in getting plants built.

Thus increased revenues are required. These can come through: a) higher rates and/or b) broader markets. Broader markets implies utilities' promotion of more off-peak loads and equalization of their loads so that they are more constant by day and season.

According to Shannahan, utilities will need to advertise to promote a "directed"

* A new organization embracing the marketing functions of Electric Heating Association, Edison Electric Institute and a number of other utility-related marketing groups.

growth that will, ultimately, mean lower end cost to the energy customer.

Why did not utilities do something about this 10 years ago? Answer, according to Shannahan: they did not anticipate the environmental "eruption," and if they had done this on their own, it is doubtful that public service commissions and the public would have been ready to go along with the higher costs.

There will also be a greater demand for electricity to improve living conditions
Architect John Dinkeloo argued the case for the local environment—for not saving energy at the cost of people's standard of living:

"We are now doing a plant for a client who is willing to spend maybe 25 per cent more than he has to, to provide a decent interior and exterior environment around the building. His old plant probably has 25 footcandles of lighting, the new one will have 80. His old plant gets up to 110 degrees in the summer time; the new one will be air conditioned. The old plant spews all of its oil and smoky emissions into the air; the new plant will have equipment to minimize emissions. All these things are desirable, indeed essential—but there is no way to create this better environment and save energy; we're increasing his energy requirement by probably 50 per cent."

The question was asked: Can we afford to keep on building? One answer was: Can we afford not to?
Architect Bruce Campbell Graham was utterly serious when we asked: "Are we not in a situation where, unless we can find ways to conserve energy, regardless of economic costs, we are going to find ourselves faced with a position where we cannot build at all?

"At the same time that the utilities are being stopped — sometimes desirably and sometimes for the wrong reasons— from increasing their capacity; we keep on building. For instance, when the World Trade Center in New York is plugged in, that is going to add a load to Con Ed's system the equivalent of the city of Schenectady. How do they provide the power that is necessary to bring energy into all the buildings we hope to build?

"Further, the air in our metropolitan areas is just too burdened already with pollution, and unless we can find less polluting ways of producing power, that certainly is a question.

"I feel we come to the point where, if we are going to build at all in metropolitan areas, we have to find ways to conserve energy."

Not in criticism of Graham's argument, but as an added dimension, Con Edison's Schwartz argued that: "When we talk in terms of not building—the so-called zero growth concept—I think we need to look beyond the economics and recognize that we are dealing with very important social issues. Are we here in this air-conditioned room going to say there ought to be zero growth of air conditioning so that people who don't have it now cannot have it? If we stop building, here in New York for example, what is going to happen with respect to employment in New York? We need to consider an environmental and economic and social balance. There are considerations of people as well as fish."

And discussion of that environmental-economic-social balance began. . . .

If we agree that there is an energy crisis, what can architects and engineers do about it? The Round Table came up with a long list of ideas—some obvious, none revolutionary, all sensible

■ Said architect Don Becket: "Certainly sun shades are a pretty easy and ordinary way to conserve energy." And solar expert John Yellott agreed: "There are some design solutions that you cannot air condition no matter how hard you try, because the architect is insisting upon purity of design and says that you must not use any shading device—you shall have nothing on the outside and no drapes or blinds on the inside. That has certain drawbacks, to say the least . . ."

■ Said architect Robert Hastings: "One important thing we can do is attempt to correct heat loss and heat gain problems at their source instead of letting them infiltrate structures and attempt to overcome the heat loss or heat gain by heating and cooling the whole space.

This means reconsideration of exterior walls designs, reflective or heat absorbent glass, and overhangs. This means, in industrial plants or laboratories in particular, concentrating on removing the heat from major heat-generating equipment at that point, as we have already removed and utilized the heat from the lighting fixtures.

"Perhaps we can even learn from the spaceflight experiments, and develop clothing that will heat and cool us. You can cool a person with about 400 Btu's, but if you have to cool the whole room in which the person is living, it requires many, many times that. The day is coming when, from a personnel point of view, we are going to have to cool industrial plants. Are we going to try to do it by cooling a volume two million square feet in area times twenty feet high, or are we going to develop methods of cooling just the small spaces where the people are?"

■ Hastings added another idea: "We should reconsider the recycling of air. We know that in some specialized buildings—particularly hospitals—we throw away 100 per cent of the air and then cool or heat all 'fresh air.' Now we are discovering that the air that comes out of those rooms is probably easier to clean than the air from the outside. . . ."

■ Architect Bruce Campbell Graham got into the effect on energy conservation of our in-vogue esthetics: "We have been heavily involved with 'all-glass' buildings. And we have, in these buildings, ignored the realities of nature. Rather, we have overcome the realities of nature by massive mechanical systems—by brute force. I think this approach to design is going to have to be reconsidered in favor of a new esthetic involving extensive sun shading and, probably, less and/or higher-quality glass."

■ Engineer Frank Bridgers reinforced the idea of attention to over-all building design. "Mechanical engineers who design heating and air conditioning systems for buildings would find their jobs easier—and would save some energy—if light-weight construction was not so prevelant and there was a trend towards more mass in buildings. The Pueblo Indians of the Southwest have known about the effects of mass for hundreds of years . . ."

■ Manufacturer Ted Peck raised another design/engineering question: "There is a constant trade-off in first costs vs. operating costs; and the need to conserve energy changes the equation. More insulation thickness costs more, but saves its first cost in lower operating costs. How much thickness of insulation to use is seldom engineered out in detail, but rather is handled as a last minute item. But as we move into a changing economy with higher fuel costs and high field labor costs, all of these cost comparisons need to be thought through again, giving higher priority to conservation than to first cost."

■ Engineer Bridgers argued that we should design systems that better utilize the heat loads inherent with a building; for example: "The sun shining on the windows of a building makes it partially solar heated —and while that solar heat may not be beneficial on the sunny side of a building it can be pumped to the other side. This type of system costs more money, but I think we are going to have to use more effectively the heat from windows, from lights, from people."

■ One owner-representative, Ervine Klein of Argonaut Realty, gave another kind of example of energy conservation—old-fashioned sounding but contemporary in its concept: "At one of our truck plants, we are expanding the powerhouse—and planning to generate steam from combustible paper, wood, and the like. Our engineers tell us that this rubbish—formerly a land-fill material—will constitute one-fourth of our fuel. This is not an energy saving, but a fuel saving."

■ On the problem of sun control and the

proper use of the proper glass, solar energy expert John Yellott laid it on the architect: "It has been my experience that most architects do not pay the slightest attention to energy conservation—do not pay any attention to the impact of the sun on a building except, perhaps, for the effect of the sun on west-facing windows on August the 1st. Actually we must pay full attention to the impact of the sun on three sides—I leave the north out. The major problem is the south side of buildings in the winter time—and unless you pay close attention to the problem of sun control you can wind up running the chillers in the winter time.

"Windows should be transparent to light and opaque to heat, and fortunately all the major glass companies are now moving in that direction with their reflective glasses—which not only bounce off the rays of the sun but, equally important, reflect the infrared radiation which tends to keep the heat in the building in the wintertime when you want it and tends to keep the heat out on a summer night."

■ Engineer Bridgers talked about savings through better siting: "Take for example, a rectangular building two and a half times longer than it is wide, with fifty percent glass, with an east-west orientation. Just turn that building 90 degrees and you have knocked off 30 percent of the cooling load, and you have only 50 per cent more load than if there were no windows at all. Then if you plant shade trees all around you get another 25 per cent saving. We have to remind people who site buildings and do planning about these things. Too often, we engineers are given a building that is completely designed, all the basic decisions made, and the budget set—and it is then too late to get into consideration of things that can save energy and save costs."

Quite apart from the "little ways" to save power, there was a lot of interest in broad scale approaches to energy conservation

Said Dr. Wright of the National Bureau of Standards: "We see a three-pronged approach to this question of energy conservation:

"No. 1, as has been discussed in detail (above), is concentration on reducing heat loss and heat gains. Here the techniques are insulation, design, better glazing and so on.

"No. 2 would be to improve the operating efficiency of heating and cooling plants. Many engineers tell me that the intermittent use of oversized equipment to handle peak loads is not the most efficient way to heat and cool—but that smaller systems continuously operated can be more efficient.

"No. 3 is to develop supplementary energy sources—for example solar energy, or the storage of energy.

"I think we need more study of the sort we are into in a small way at the Bureau of Standards—the mathematical modeling of a system. I think if we can carry this work out to where we can approach energy conservation from a total system sense—know what the technological trade-offs and the economic trade-offs are—and then give some attention to the social costs that may be implied, we may come out where everything that we do to a building to conserve energy is not necessarily an extra cost."

If there are plenty of things that we can do to conserve energy, the question is: Why don't we? The answer is that there has been no incentive—no reason for most building owners to care

In the statement of purpose of the Round Table, moderator Wagner said that "I am in real hopes that growing out of this meeting our industry can have a more effective direction towards helping to solve our nation's energy conservation problems, while at the same time building higher quality buildings that will return to their owners lower operating costs."

There was a lot of discussion (see below) that lower operating costs were not an incentive—that the savings involved were not sufficient to be much of an incentive to save energy.

But manufacturer Peck made a sound economic argument—and a strong moral argument.

"Even if heating and cooling and lighting costs are not the major costs in a building, *where we have the technology this does not excuse us from following wasteful practices or non-economic practices.*

"In my field, the question is not whether to insulate; the question becomes how much insulation to use. I think we should remember that these buildings will sit there for 20 or 50 years or maybe even 100 years, and if we build them to be wasteful today, they are going to be wasteful for 20 or 50 or 100 years. And that is an accumulation of a lot of energy—coal, gas, oil that we pump out of the ground and through the buildings and into the air—where it adds to pollution."

But there was no doubt that the ideal of lower operating costs runs up square against the facts of financial life

Said lender Carl Huebner: "Mortgage loans are based on economic value, and value is based on net income. So if you are able to prove an increased value [in terms of net income] higher first costs to conserve energy can be reflected with an increased loan.

These building-industry producers, manufacturers and consultants monitored the Round Table:

Paul Anderson
Copper Development Association

Ben Avery
General Electric Co.

Robert Barton
Aluminum Company of America

Henry Bierwirth
Mammoth Division, Lear Siegler

John Born
E.I. DuPont DeNemours & Co.

Monte Carpenter
The Flintkote Company

William Chapman
Johnson Service Co.

C. L. Crouch
Illuminating Engineering Research Institute

Ronald Flucker
United States Steel Corp.

Richard Funk
Grefco, Inc.

Albert Giannini
Carrier Air Conditioning Co.

Stanley Gilman
American Air Filter Company and President, ASHRAE

Arthur Sworn Goldman
Arthur Sworn Goldman & Associates

Sheldon Glickman
Lightolier Corp.

Clinton Hegg
Libbey-Owens-Ford Company

W. O. Herbert
Celotex Corporation

Douglas King
American Gas Association

J. Clifford Knochel
ASG Industries, Inc.

Willard A. Marks
Interior Systems Division
Keene Corporation

Robert McLaughlin
PPG Industries
Fiberglas Division

D. S. McNitt
ITT-Environmental Products Division

James H. Mitchell, Jr.
Kawneer Co., Inc.

Paul F. O'Neill
General Electric Co.

I. R. Pierce
York Division
Borg-Warner Corp.

Joseph Querner
Dunham-Bush, Inc.

B. C. Radaker
Certain-Teed Products Corp.

Robert Ries
CE Glass Corp.

William Roberts
American Standard, Inc.

Lewis Saxby
Owens-Corning Fiberglas Corp.

Frederick Schweizer
Armstrong Cork Co.

E. H. Seim
Westinghouse Electric Corp.

John Shannahan
Electric Energy Association

Donald Smith
Bethlehem Steel Corp.

Jerry L. Smith
Libbey-Owens-Ford Co.

Roger Spencer
PPG Industries

William N. Wray
Honeywell, Inc.

"But the question arises as to whether the saving involved would really be completely economical. As a lender, I certainly don't know. To the extent that the savings are not economic, then someone else has to bear the expense.

"The building industry is probably no different that any other industry. Who is going to pay for anti-pollution devices on automobiles? In the case of autos, the consumer. In the case of energy conservation, the tenant. But of course there is a limit to how far you can push the public. Then you come down to the only two other people involved: the owner and the lender. I don't think we can weigh the economic factors at this point in time and say how it is all going to fall out."

Charles Erway made a point on everyone's mind: "I know from my experience in trying to justify better efficiency equipment, we run up against the almighty dollar everytime."

Architect-constructor Frank L. Whitney made a point that summed up: "I get a chill when we talk about raising initial costs in order to save operating costs. I'm having a terrible time convincing clients they ought to build at today's costs." But, he added, "I don't think we necessarily have to raise costs to get efficient buildings."

Developer Gordon Emerson saw some hope in the future of reflecting energy-saving quality in the mortgage: "Lenders do indeed work within certain constraints; the principal one is that they are permitted to loan 75 per cent of the fair market value of the property, which, as noted, is established by net income.

"But there is another factor which some lenders recognize, and possibly more should recognize—and that is the capitalization of that net.

"There has been a plea for years for lenders to discriminate in capitalization rates because of quality of architecture, or quality of tenant income. And possibly this is an area where lenders can regard a well designed building, a building designed to conserve energy, with a lower capitalization rate, which will result in a higher value which permits a lower value loan.

"It is very hard to prove, but I think if it can be proven in the case of good architecture, it can equally be proven in the case of proper conservation of electrical energy."

For some manufacturers, conservation of energy has (happily) a profit motive

Said manufacturer Clinton Hegg: "Energy conservation is right down the alley of the insulation manufacturers and the flat glass manufacturers. We have a real incentive to promote products that will conserve energy—and have understood that since the 1920's when we actively promoted storm windows and sold two pieces of glass instead of one. We have promoted heat-absorbing glass and heat-reflecting glass. We have made a lot of studies on effective use of lighting and the use of daylighting. Sometimes we're talking about higher product costs, but many times we can save the owner money on his total original investment and on his upkeep."

But most manufacturers are as frustrated as the architects and engineers by the push to lower costs at the expense of quality

Manufacturer David McNitt spoke to a point that got nods from many manufacturers monitoring the Round Table: "There is no question that there is an energy crisis—and we have been well aware of it because it has affected the application of certain of our products in various parts of the country. But . . .

"There is also a crisis of the design team—the owners, the architects and engineers and the manufacturers—trying to meet today's costs pressures. So as we sit in product meetings, we look at the engineers' improvements which will reduce the energy consumption of a product at a given Btu, and we say 'Who is going to pay the difference, who is going to pay the little bit more that we would have to put into this product to reduce its energy consumption?'—and we haven't found an answer.

"We can change our priorities, but I think we would want to be satisfied as to who was willing to pay a little more in initial costs. And if they are willing to pay, what kind of a time frame will we need on payback? How many years of energy costs, energy costs savings, would be required to pay back initial cost increases?"

Manufacturer (and ASHRAE president) Stanley Gilman made a point about the manufacturer's investment: "The incentive to everyone to save energy is going to have to be by directive or by pocketbook.

"I remember a study in Detroit of a group of electrically heated homes. In the long run, it turned out, the heat was very economical, much less than predicted. But, individually, it turned out that every owner had his own idea of how much he should be paying, and many of them—when that first January bill came in at $50—got out their sweaters and turned down the thermostat. This is incentive.

"But what incentive does the manufacturer have to offer more efficient, hence more expensive, equipment? The trend has been to emphasize low initial cost for building systems, and ignore operating costs. The manufacturer has had no choice but to follow this trend if he expected to stay in business.

"Every so often an attempt is made to reverse this situation. Over the years, at least a dozen manufacturers have tried to sell a super-deluxe room air conditioner without success.

"The present-day reciprocating compressor-type of air-cooled equipment is down to an efficiency of about 6 to 7 Btu per watt-hour. It got there by replacing large, efficient, low-speed machines with high-speed, low-cost versions, simply because of economic pressures. Manufacturers have millions of dollars of tooling and production equipment invested in these designs that cannot be done away with overnight.

"Industry momentum is in the direction of lowest initial cost and not toward energy conservation. It will take a major educational effort, and considerable time, to turn this around."

But incentives are coming, incentives are coming! The whole equation of higher quality building versus lower operating costs could be changed drastically by changing conditions

One reason that not much has happened is that electricity has been so cheap . . .

Developer John Tishman put it in a nutshell: "One of the best ways to save energy is to reduce lighting levels. But the economics of a building are not sufficiently modified by higher or lower lighting levels to make it worth too much consideration from a real-estate developer's point of view."

Engineer Sital Daryanani added some numbers: "The cost of heating and cooling a building runs about 30 cents per square foot; lighting, about 60 cents. The cost of cleaning a building is 75 cents. The financing cost runs over $2 per square foot! So the need to conserve energy is not—at least at present—a cost consideration."

But a major increase in the cost of electricity could change the first cost-operating cost equation—and it seems to be coming

Jack Shannahan of Electric Energy Association spelled it out clearly: "Right now, there is little practical incentive to conserve energy. If there is an energy crisis, that in itself suggests an element of scarcity. the element of scarcity suggests that the price is out of whack, and that is exactly what is happening.

"There have been tremendous increases in every element of costs that go into the generation of power. Fuel costs are skyrocketing. And there are a whole series of new costs that have come into the power generation picture which are not yet factored into rates: pollution control, added costs in plant siting and plant-siting delays. A whole new range of costs in research and development.

"When these are factored into power costs—and this will take time because the commissions have not yet recognized these new factors—I think you are going to see substantial increase in the cost of energy. And this in itself might be enough to pro-

vide some of the incentives for the conservation of energy."

Bertram Schwartz of Con Ed detailed the argument: "There's no doubt the rates for electric service will increase. For one thing, the new capacity we are now building will cost about 50 per cent more per unit of capacity (megawatt) compared with the average cost of our existing system. This is going to have to be paid for in increased rates.

"Additionally, our operating costs are increasing. The most significant impact on operating costs—that is, the costs of fuel—has risen gigantically in the past year and a half. In 1969, our average cost of residual fuel oil was 34 cents per million Btu. It was 48 cents in the first six months of 1971, and it was about 52 cents in October. I expect it will average around 60 cents in 1971 and go to the high 60s when we begin burning only low sulphur oil."

Another talked-about incentive to conserving energy is tilting of rates to the heavy user

Bertram Schwartz pointed out that this is being considered: "Dave Freeman, the past head of the energy policy staff in the Office of Science and Technology, advocated several months ago a tilting of electric rates to charge more to the large consumer, in order to provide research monies to study more efficient energy conversion and pollution control. Recently, the Public Service Commission of New York has taken action on our rates which give us an indication of an interest in the matter of tilting rates.

"Historically, we have looked at rates on the basis of attempting to charge what it cost, and for the larger users the cost of service was less. However, I wonder whether an analysis of cost of service today would not indicate that perhaps the large user is creating the peak demand which is creating the need for our new and expensive plants. And in such situations perhaps there would be a rational basis for tilting rates."

Architect Don Becket asked: "Wouldn't it be possible to establish a reasonable amount of energy to be expended in a certain type of building, and penalize—by charging more—for usage over that?" And this question gets into the whole matter of standards and predictions of energy usage—covered in a separate section below.

Several proposals were made for a tax on inefficient use of power, but . . .

A number of proposals for creating an incentive to conserve energy by "taxing" inefficient use were made. Sital Daryanani suggested briefly that "suppose energy costs were not deductible as an operating cost? Would not that provide an incentive?" Bob Fischer suggested that "the corollary to Si Daryanani's comment is that there might be a use tax on inefficient equipment. The obvious example is the window air conditioner."

Stephen Squillace thought this really wouldn't work: His argument: "The consumer pays in the end anyway. It is easy for the lender or the owner or the large industrial use to pass along any tax disadvantage.

The higher first-cost/lower operating-cost equation costs could be changed by changes in the tax picture

Bob Hastings made the point—not just in terms of energy conservation, but in the broad terms of rebuilding our cities, that "We need changes in the ground rules to create the economic incentives for private enterprise to do the job right instead of cheap. In the rebuilding of cities, we are saying as a nation that we have a major housing crisis, but the only way we can solve that housing crisis is to build as inexpensively as we can at lowest first cost. And some day we are going to pay a terrible price."

The concept of lower operating costs—and energy conservation—through better materials and equipment might well gain strength if the concept of life-cycle costing gained strength. And it is . . .

Consultant Seymour Berger began the discussion: "It is of course true that the way the economic situation is now we are forced to talk about initial costs rather than life cycle costs. Now, only the sophisticated owner who is going to keep a building is really interested in life cycle costs, and sometimes he has to go for lower first costs.

"But with re-education of design professions and owners, we can redirect our design and engineering to lower life-cycle costs—I think cutting costs appreciably and reducing the need for energies now pouring into our buildings."

Both Ervine Klein of Argonaut Realty and Don Lyon of AT&T made it clear that their companies put great emphasis on life-cycle costs, because they are long-term investors.

And one of the country's biggest clients, Public Buildings Service Commissioner Arthur Sampson took it from there:

"Working with the Office of Emergency Preparedness we have developed an organized program of energy conservation for all Federal buildings.

"There are two new developments:

"The first is that all architects and engineers under contract to us for design are required to include a life-cycle analysis of the composite design of heating, refrigeration, and electrical facilities. A cost-benefit analysis is included and includes the analysis of the most promising energy sources used in combination with two different methods of refrigeration.

"Second, we are in hopes that our new construction-manager/performance specifications program will prove beneficial in terms of the conservation of energy, though it is still a little vague as to how this will work."

Engineer Frank Bridgers pointed out that "analyses such as life-cycle costs and user benefits cost money to the design team," and Commissioner Sampson replied: "I'm always willing to pay for worthwhile extra design work."

Sampson continued: "I am concerned that we lack the discipline of costing analysis. Often, if I sit down and quiz the architect or engineer who did the study for me, I have problems in having confidence in the study because we don't have this kind of discipline."

An immediate question was raised about the validity of life cycles for various parts of the building

Architect Dick Roth remarked that in the 1920s, everyone assumed that a building would last a century; whereas today, we realize that some parts of a building—air conditioning, for example, cannot possibly last as long as the basic structure; and we realize that the criteria, the standards, for air conditioning and lighting and other services will almost surely change over the years.

Bob Hastings made the point that "It does not surprise me at all that there is very little expertise in this area. That is too bad from the point of view of the architect — because the architect, who comes at a project from the design standpoint, would like to take into account long-range costs so that he can justify 'better' products and materials. But we get so bloodied by the realities of the financing of structures, by the problems of sitting down with clients and understanding their dilemma, that I am not surprised that there is little expertise in this area. Many clients do not know whether they are going to own the building five years from today; or even whether they are interested—whether it will be in their financial interest—in owning the building five years from today."

But Commissioner Sampson kept the faith: "The same questions must have been raised in the automobile industry. How can you assign a life to the tire, or the wheel. But they did something; they established some standard of work and life cycle. They made a start."

The point remains valid: Life-cycle costing would, it seems clear, favor higher first costs *if* indeed the result were off-setting operating costs—and lower operating costs could save power.

Clearly, owners could benefit by asking for more complete, comprehensive, and accurate cost studies

It is possible that many of the Round Table participants could have held the opinion that owners can base budget decisions upon *accurate* first cost analyses, along with *accurate* prediction of operating costs. Trouble is that costing is not done as accurately as many might imagine.

First of all, complete alternate systems are rarely bid, so the accuracy of cost differences for a particular installation based upon compromise costing methods is never really known. The consulting engineer cannot provide as close an estimate as a mechanical contractor because costing is only part of his activity, much of his time being taken up with analysis, design and drafting. But engineers surely could help each other in regard to costing if they were to develop means for sharing cost information —practically none of which is done today.

Frank V. McBride, Jr., mechanical contractor, who could not attend the meeting, has stated that because buildings vary in many respects from one to the other (except for standardized building types), the only way contractors can make *accurate* cost estimates is with carefully detailed plans and specifications. Bids of properly qualified mechanical contractors competing on this basis will be very close to one another. Inasmuch as it takes no special competence to do material take-offs, the only variable is labor costs, and, in some cases, these can be radically affected by installation problems, job conditions, etc. These factors have to be evaluated by the top-level engineers and field supervisory personnel in the contractor's organization. Though it is acknowledged that contractors' estimating procedures vary, nonetheless their judgment based upon experience enables them to be very close in bidding well-defined jobs.

Bids can be variable, too, unless the consulting engineer carefully indicates the quality level he wants via detailed, complete, and well-coordinated plans and specifications. Otherwise contractors, even of the same quality, will be guessing as to what the engineer wants.

Interest has grown in the prediction of energy costs, for example by the U. S. Post Office and by the various energy groups. A number of computer programs have been developed with the objective of predicting seasonal energy costs on the basis of engineers' designs. Dr. Kasuda of the National Bureau of Standards told the group that a lot has to be done before such programs can be expected to give comparable results for a wide variety of buildings. He said, "There are many, many computer programs available today, and all of them claim to be the efficient tool for designing the hardware and establishing the requirements. But the trouble is each program is specifically designed for certain problems. And if you are interested in general application to find out how the design of the system affects energy savings, you would be disappointed." For this reason, he continued, ASHRAE has a task group to develop the methodology for determining the requirements of all kinds of buildings.

With large complexes such as college campuses, downtown areas, large shopping centers, and office "parks", energy could be conserved by the efficiencies inherent with scale—more efficient large-size boilers and chillers, better control, better maintenance, etc. Engineer Erway stated that with a large central plant, efficiency gain could be from 5 to 10 per cent over smaller individual energy utilization systems. Larger plants get the advantage of higher and more continuous loading of equipment that enhances efficiency.

Architect Becket reinforced the idea of conservation of energy in large urban complexes that contain large department stores, multitudinous small shops, theaters, hotels, and office buildings. "If you can get 24-hours' use of a given plant by an urban complex, then you can get good efficiency," he remarked.

And on the same point, architect Bruce Graham asserted that energy conservation involves a whole new attitude, "not to think of buildings as individual objects, but to think of them as part of a total social system in a city. For example, new towns should be built around energy sources not far away. In existing cities, energy sources should be located so that wastage of energy is minimized."

The question of standards—on heating and cooling, on lighting, indeed our "standard of comfort and convenience"—came in for serious questioning. Are they right, or too high, and can we afford them?

There was a lot of debate as to whether or not "standards" called for physical environmental conditions that might not be justified, thus wasting energy. For example, L. V. Shute wondered what people might be willing to accept in terms of illumination levels, thermal comfort conditions, elevator waiting times—and, further, the amount of space per person. "Do we need 150 to 200 square feet per person in office buildings?" he asked. While he thought savings might be achieved with respect to lighting, air conditioning, and elevatoring, Shute suggested that the main way to get a dividend in power consumption would be to re-examine space utilization, including greater hourly use of the space we already have.

Architect Bruce Graham objected to the "overblown and fattening kind of standards that we have to live with. Today, we are setting up standards that are absolutely ridiculous," he said. "We know they are ridiculous and we as architects are looking at other values the country should address itself to if we are going to have values that the other 94 per cent of the world is still seeking."

Frank Bridgers replied that ASHRAE feels the standards that have been set for thermal comfort are proper—what people want—based upon many years of research on the conditions people say they prefer. "But," he said, "apparently some of you feel that these standards are too costly with respect to initial costs and energy requirements. Then let the societies and professions get together and agree upon a standard that is truly interprofessional."

What Frank Bridgers was referring to was "comfort conditions" per se, as identified by ASHRAE. While the engineer bases his over-all design and system selection on meeting certain comfort conditions at design loads, there are no standards—as apparently some of the architects thought—with respect to systems themselves.

Dr. Kasuda, in his discussion of prediction of energy usage, pointed out that indoor temperatures and humidities will change all the time, depending upon outdoor conditions and indoor occupancies and other internal loads (lights, equipment, etc.). This type of swing is inherent in most types of buildings because precise temperature and humidity control are not needed, except for special buildings such as laboratories.

According to Frank Bridgers, one of the current projects of ASHRAE is the categorization of air-conditioning systems according to the quality of functional and thermal performance. The feeling is that these parameters could be interpreted by architects and owners, helping them to understand the reasons for certain system selections.

Robert Hastings, when asked for a response from the architectural profession said that, "Our problem has been that we have been setting them up [standards] as ideals, so that nobody could pin anything on us when a system did not meet their hopes and aspirations—which they were not very articulate in spelling out in the first place. What is wrong is that we get factors of safety that are out of this world."

He asked the group whether they had ever tried developing a building skinned down to the barest essentials and then were able to convince the client to do such a building. Then he continued, "There is hardly a building ever done by that set of criteria that did not have trouble because the owners had dreamt of other uses in the meantime, and forgot the criteria they started with."

John Tishman said he thought that "There are lots of items that will save energy, but when you go to the design, there

are only two or three things you could do better. You cannot vary much the requirements of heating, ventilating or air conditioning. But you can vary the criteria that people themselves are taught to or are willing to accept.

He said, for example, that, "Lighting load is the one area where arbitrary decisions are made to accommodate what we believe are the users' requirements. As investment builders we believe, based upon long-term experience, that a satisfactory lighting level is approximately 75-80 footcandles. We concede there are some uses that require 100 or more footcandles. But there are many uses that don't require more than 25 or 30 footcandles." He criticized utilities for promoting installations of two-, three-, and four-hundred footcandles. He noted that "in an investment-type office building the total electrical load, including elevators, lighting, HVAC, etc., comes to about 12-13 watts per square foot. Of that, with 75 footcandles, the lighting load is about 3 watts per square foot. If you then double the lighting load to 150 footcandles, this adds about 4½ watts for the additional lighting and the additional air conditioning to take care of the lighting. "Thus, while the economics of the building are not changed much, you have increased its total energy consumption by a third."

With respect to standards of illumination, Stephen Squillace responded that, "The owner, the architect and the engineer have not involved themselves enough to understand the criteria that have been set up. Architects and engineers have not really understood who set up the standards and why. The easiest way to design is to hide behind the 'authorities' without sacrificing some of your own time and energy to find out what the standards are all about." He stated that means are now available for computing exactly how much illumination is really required for various kinds of tasks, though much more work is required for evaluating a full range of tasks." If we understand what we are trying to do, then I think we can get better lighting and less watts per square foot."

Squillace emphasized that he did not want the panelists to be under the impression that there "was no basis for standards and criteria." He pointed out that research on quantity of illumination has been going on for more than 40 years, explaining that this research dealt with contrast between a task and its background (e.g. pencil line vs. paper) and how much luminance (brightness) was needed on the task. He said that many people, including architects and engineers, did not realize that this research was conducted with completely diffuse illumination (a minimum of reflected glare), and that, therefore, any recommendations based upon such research impliedly meant diffuse illumination.

A major accomplishment, he stressed, has been the development of means by which the efficacy of *any* proposed lighting system with respect to reflected glare —and, consequently accuracy and ease of seeing a task—can be *predicted* via a computer program (see RECORD, October, 1971, pages 139-144).

In summary:

It is clear that in more and more parts of the country our supplies of fuel and electric power are under severe pressure right now. We have been lulled—by an assumption that nuclear power (or, in the more distant future, solar energy) would be available to give us the power we need for growth—for new construction.

It is clear also, from the ideas expressed at the Round Table, that there is much that architects and engineers can do to conserve energy in buildings. The need is not for new technology; this is not a problem like auto-exhaust emissions that requires research. We know how to cut heat loss and solar load; and manufacturers—with a little turnaround time—could at modest extra cost produce equipment that uses appreciably less power (for example: we know how to manufacture small air-conditioners using up to 20 per cent less power per Btu of cooling).

But as clear as it is that much can be done by architects and engineers—and by manufacturers—to conserve great amounts of energy, it is also apparent that they cannot accomplish much until their clients acknowledge the seriousness of the problem and become willing to explore the over-all economics of building—operating costs as well as first costs—much more comprehensively than they are accustomed to. For the present economic, financing and taxation framework that we now work within clearly favors lowest first cost in building; and that exacts a high price in operating costs over the life of the building. Much of that high price is in unnecessary power use; indeed, unconscionable power waste.

To be realistic in a realistic world: Nothing is going to happen without incentives that entrepeneurs understand. There are several kinds that might work:

The first are voluntary incentives. For example, one reason we waste so much electricity is that it is so cheap; but there is ample evidence that it won't be nearly as cheap in the near future, because of the utilities' sharply increasing fuel and plant-building costs. Another voluntary incentive would be the willingness of owners to have their architects and engineers make more accurate cost evaluations of various building and system alternates; and then act—not just in terms of life-cycle costs, but in terms of energy conservation. A third voluntary incentive would be a restudy of our "standards of comfort." Professionals have to examine more closely the validity of standards that are promulgated for physical comfort conditions—thermal, illumination, etc. What is their scientific basis? How should they be interpreted? Are they "overblown", and can we afford them?

If such voluntary incentives don't work, we may of course face compulsory incentives. One simple one is already at work in some areas: some gas companies are not accepting new customers. Further, since it is already national policy to conserve energy, the government could establish rules or standards governing power use in various areas or for various building types. It could penalize the use of equipment that fell below a certain minimum standard of efficiency. As an example, developers of housing might be allowed to continue fast, early depreciation provided only that they installed equipment having a specified minimum (and certified) efficiency.

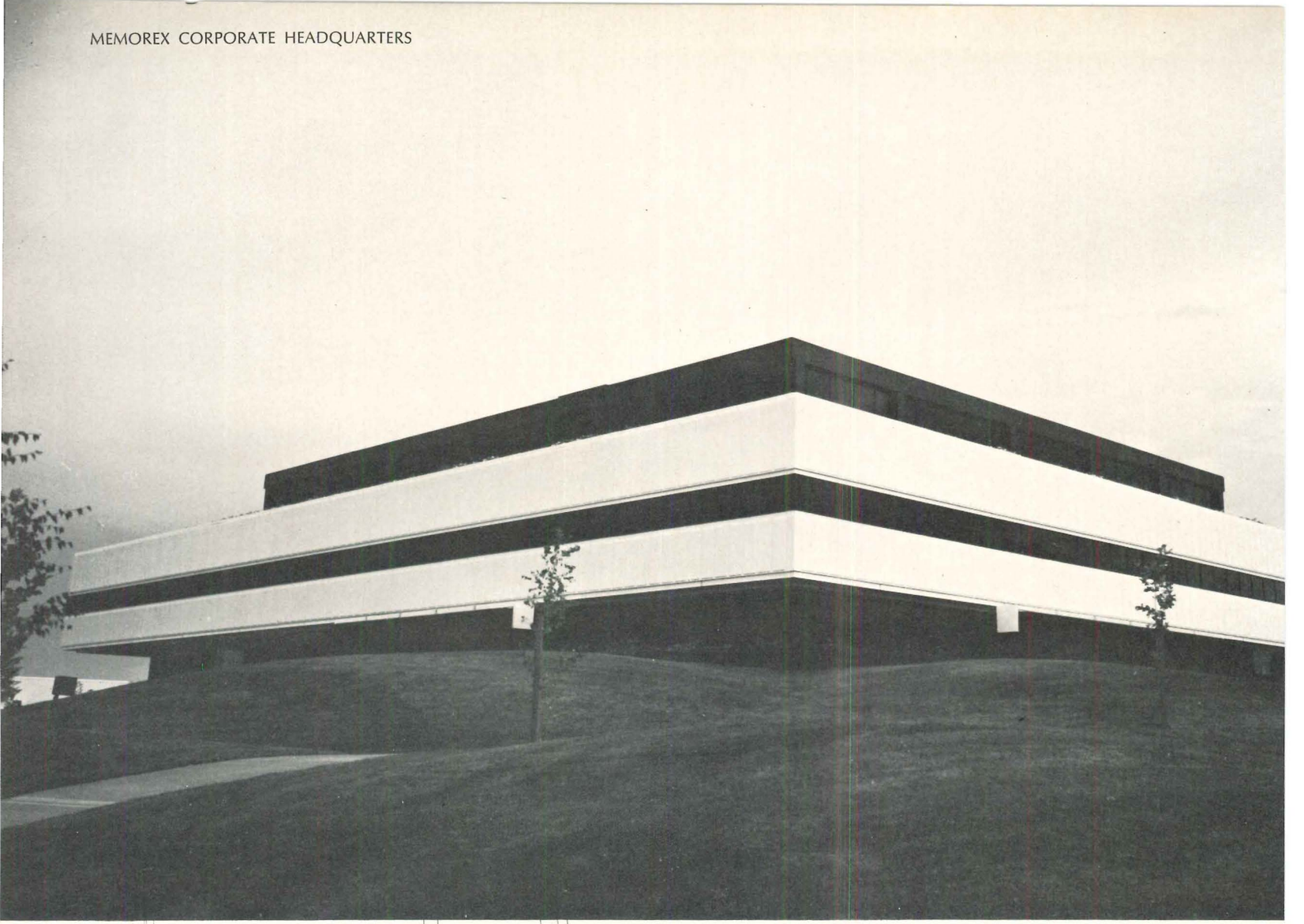
Such rules or standards will not be imposed, of course, until we are much closer to a national crisis. But there is much that architects and engineers can do now. They can—as professionals with a professional responsibility to society as a whole—work to persuade their clients to choose or accept design, material, and equipment options that will cut down the present profligate waste of energy.

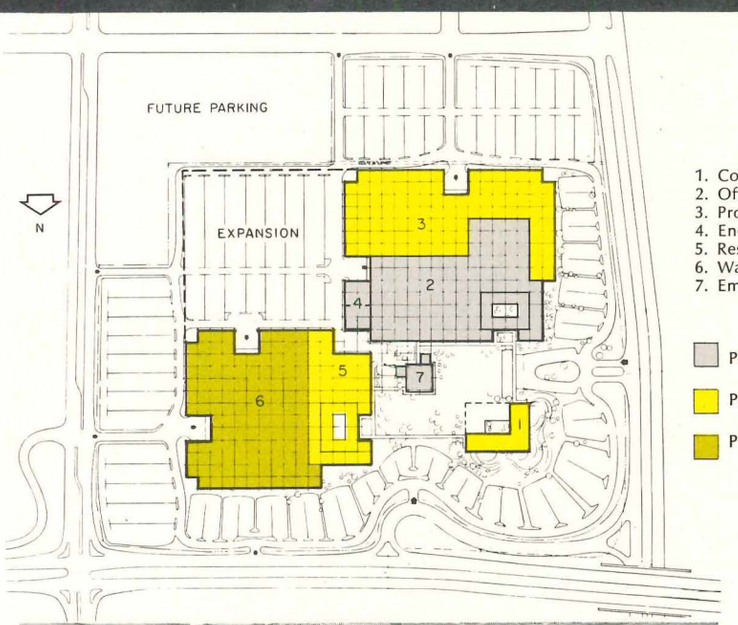
They can argue—and they should—the immorality of waste of a basic and irreplaceable resource of nature.

DISCIPLINED, BOLD, FLEXIBLE, SIMPLE AND ECONOMICAL

The handsome new world headquarters for Memorex Corporation in Santa Clara, California, is both a symbol of the company it represents—a dynamic young manufacturer of computer equipment products and communication terminals—and the efficient, economical and very flexible administration and production center for the company's operations. The bold but essentially simple design, the discipline of its forms and restraint of its color palette, the careful control of its details, the high degree of flexibility it provides and the surprising economy with which it was built, are so integral one with the other that consideration of one aspect without simultaneously considering the other aspects is difficult. Built in three phases (a fourth delineates maximum optimal expansion), the unity of the present group of buildings, and future additions, is clearly due to a master plan which permitted a six-time increase in square feet of floor area within the first year of development and after production had started in the first unit, but which also provides for retaining an impressive proportion of the site in open space—for landscaped areas, for parking and for circulation as well as for additional enclosed space as needed. Using the modular and systems approach to design—a simple structural frame based on a module applicable throughout—facilitates rapid erection and change.

ADMINISTRATION AND MANUFACTURING FACILITY FOR MEMOREX CORPORATION, Santa Clara, California. Architects: *Leland King & Associates, Leland King, partner in charge; Richard Reif, project architect.* Engineers: *Simpson, Stratta & Associates,* structural/mechanical; *Marion-Cerbatos and Tomasi,* electrical; *Cooper-Clark & Associates,* foundation. Landscape architects: *Royston, Hanamoto, Beck & Abey.* Director of facilities, Memorex: *James E. Nelson.* Consultants: *Charles Kratka,* interiors; *Janean Kitchen Designs; Marshall Food Service Planning; Unimark International Corporation,* graphics. Contractors: *Rudolph & Sletten, Inc.*





1. Corporate Headquarters
2. Offices
3. Production
4. Energy Center
5. Research & Development
6. Warehouse
7. Employee Center

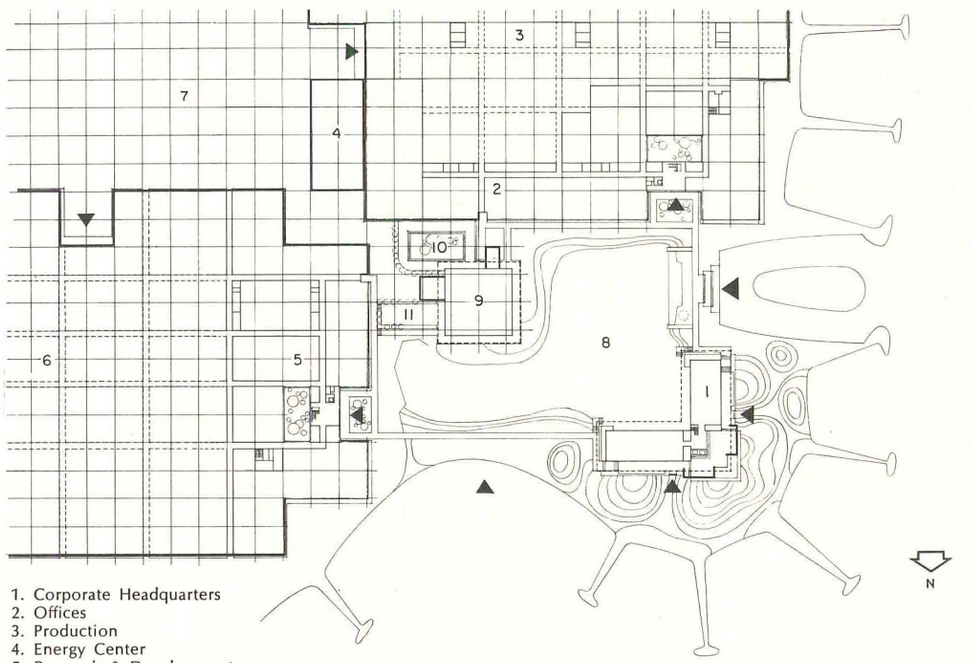
PHASE 1
PHASE 2
PHASE 3

Thomas P. Reilly

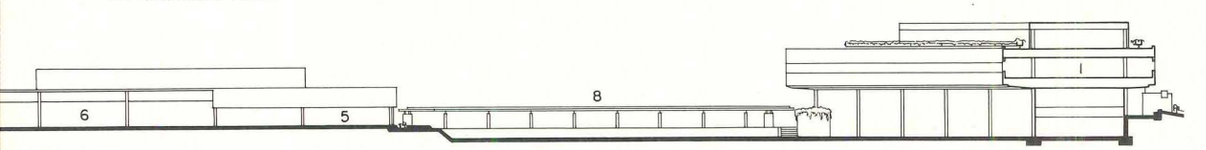
The handsome and imposing charcoal and white headquarters building for Memorex is the dominant element in the complex and a landmark from adjacent expressways. The 54-acre site, a former onion field three feet below road level, is in an agricultural area rapidly changing to industrial developments. Grading and mounding the site gave it topographical variety and produced the mound on which the main building stands. It also made possible the great sunken court, with its simple and effective landscaping, around which the buildings are grouped, and permitted development of depressed parking areas on all sides of the site. Construction was in three phases: offices, energy center and employee center; corporate headquarters, production plant and R & D offices; warehouse and landscaping. Plans were to build 130,000 square feet, but company growth soon increased this to 730,000. The facility was completed in 24 months, at $16.50 psf without land, landscaping and fees.

Interior office spaces in the production buildings open to small landscaped courts (above). Offices can be converted to plant space, or vice versa, as needed. The spacious lobby (below) in the headquarters building is reception area for the whole complex. Travertine walls provide a handsome background for displays of company products.

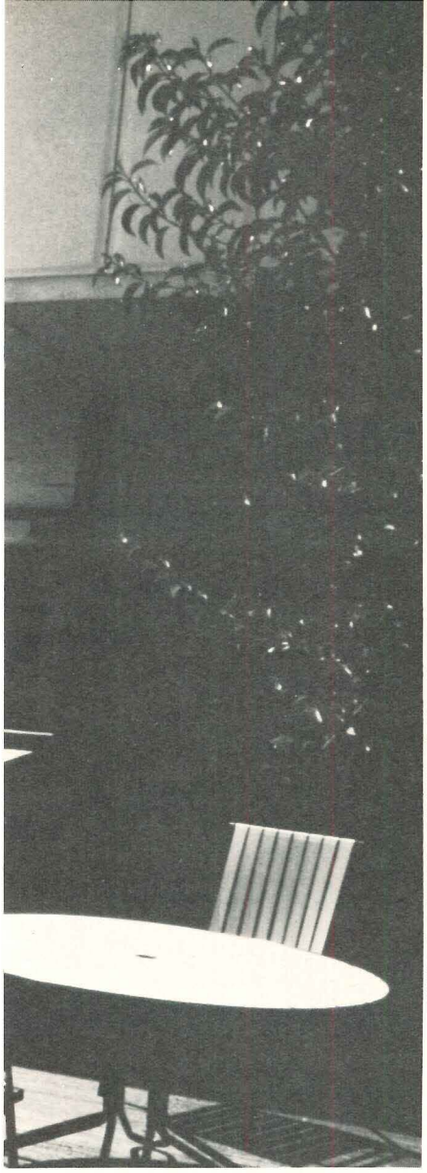
All photos by David George Krauss except as noted

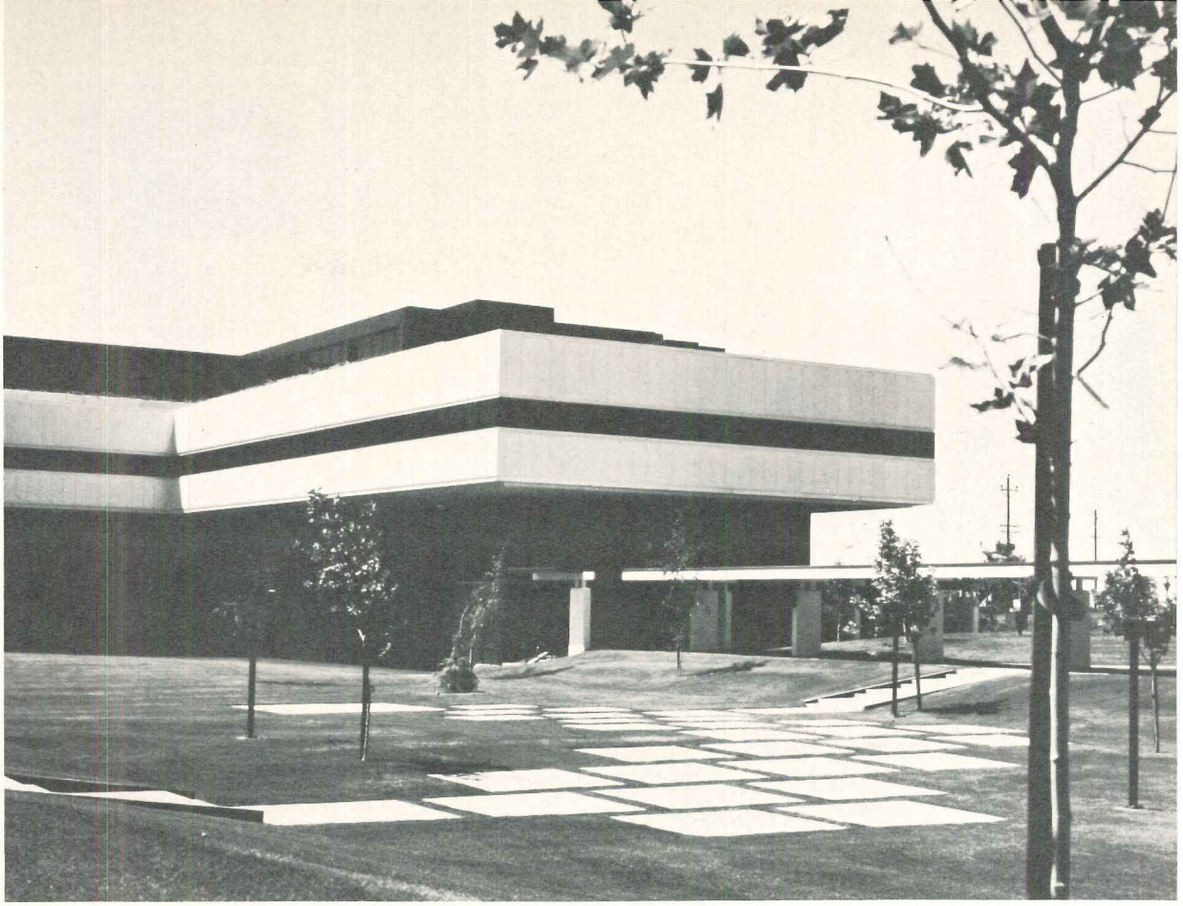


1. Corporate Headquarters
2. Offices
3. Production
4. Energy Center
5. Research & Development
6. Warehouse
7. Expansion
8. Garden Court
9. Employee Center
10. Patio
11. Recreation Court



Quality of employee environment shared importance with economy and flexibility as a design criterion for Memorex's new facility, visibly realized in the elegant detailing, the large amount of green area, and the centrally located employee center reached by covered walks. Less visible is the design of less public areas—lobbies for research offices, for instance, with glass walls overlooking landscaped courts and cantilevered stairways; and sheltered employee entrances to production areas—designed with as much care as the executive offices. The employee center itself, with a delightful outdoor patio and a recreation court, more like part of a club than a manufacturing plant, contains a 500-seat dining room. Not visible but important to environmental quality is noise control. The energy center, located behind the concrete wall shown in the lower photograph across page, concentrates noisy mechanical and electrical equipment in a free-standing masonry-walled structure.



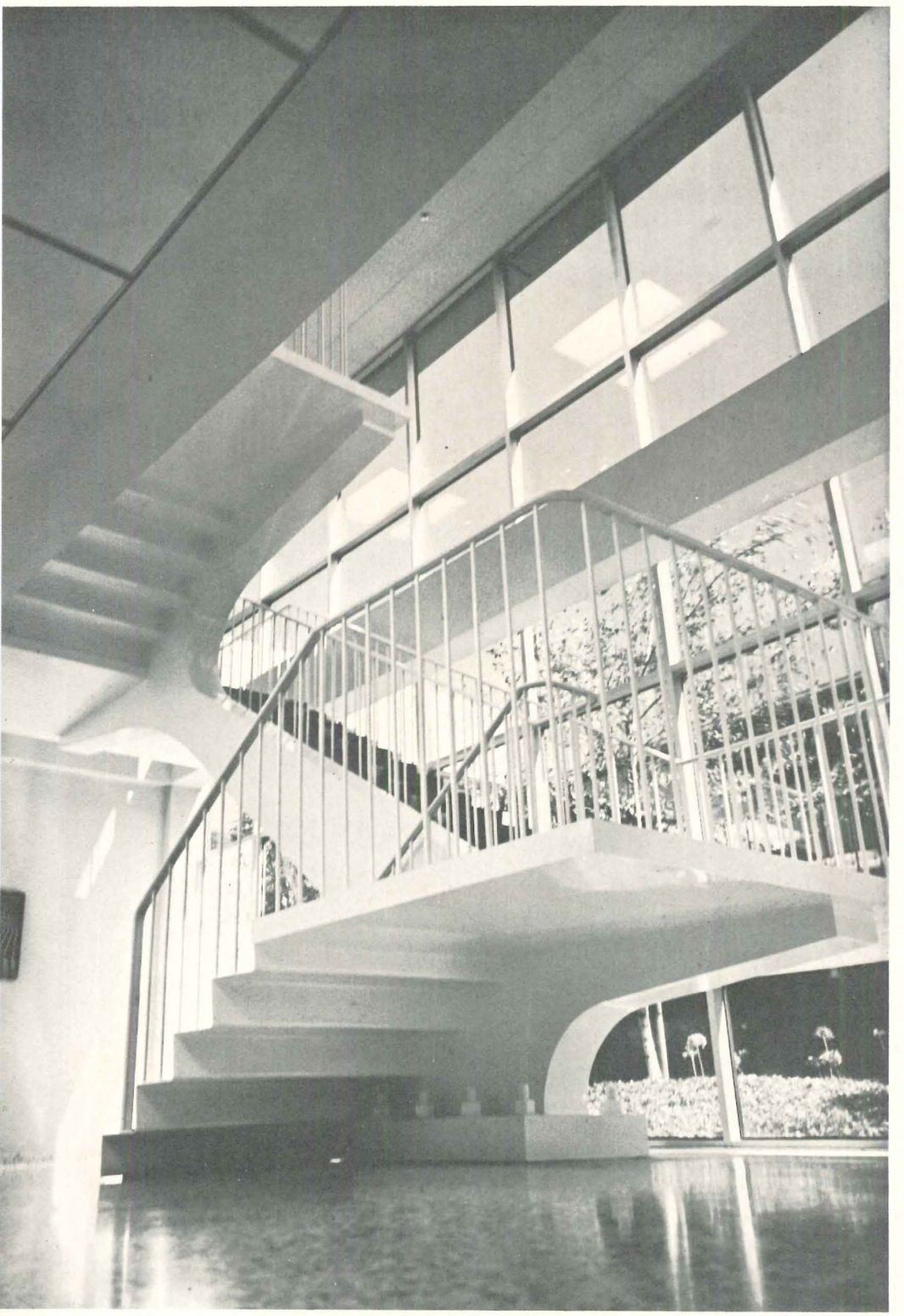


From headquarters building (above) both stepping stones and a covered walk lead to centrally located employee center (below and at left), with its colorful sunken patio, shielded from wind by buildings and wall, 500-seat dining area which opens to the patio, and recreation court on the building's north side.

EKT

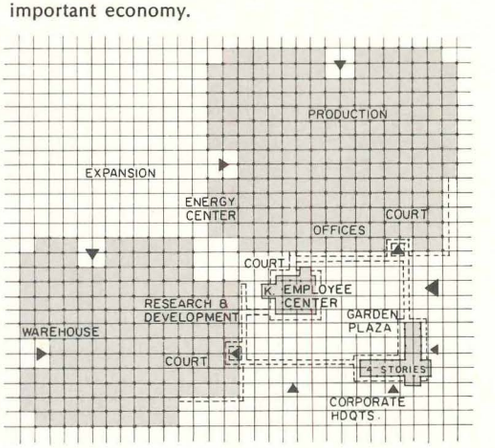
MEMOREX CORPORATE HEADQUARTERS

Thomas P. Reilly



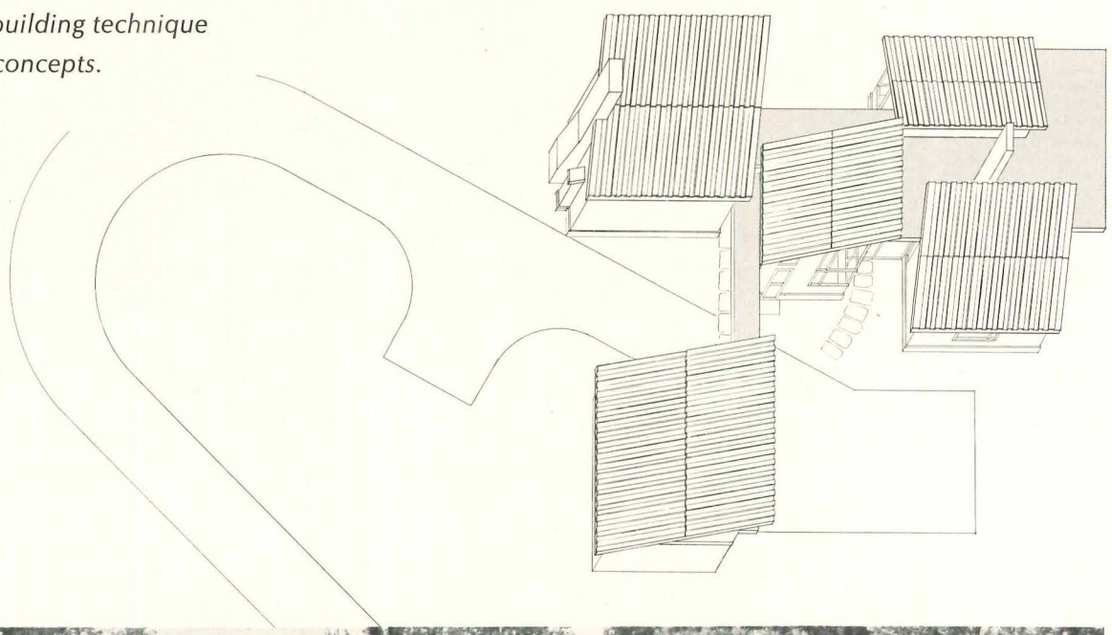
Thomas P. Reilly

Easily demounted prefabricated white enameled steel panels, 12 inches by 18 feet, are used on all buildings. The steel rigid frame structure, based on a 40-foot grid derived from bench assembly needs, works with the panels, the roof structure and the utility systems to net the high degree of flexibility needed especially in the plant buildings. For stability both before and after alterations, alternate columns are rotated 90 degrees on axis, as are alternate roof sections, a solution which avoids shear walls and x-bracing, otherwise required in a seismic zone. All joists, trusses and columns have identical construction, an important economy.



SITE, PROGRAM AND TECHNIQUE BLEND NEATLY

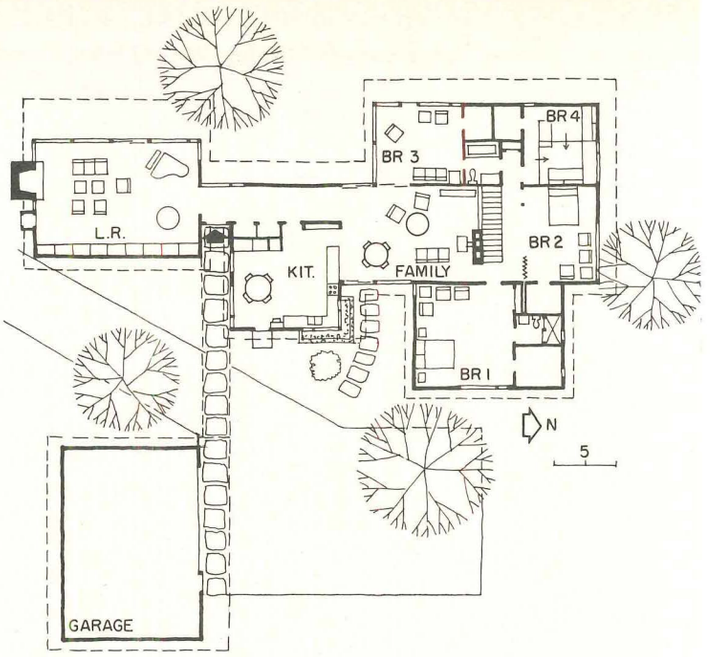
This Ohio house solves an unusual site problem in a romantic but straightforward way by blending a 19th century building technique with 20th century planning concepts.



C. W. Ackerman photos except as noted

Many architects are exploring vernacular forms and techniques in houses today as a means of re-humanizing the built environment. But if the designer does not logically relate these forms and techniques to site and program, the building loses architectural clarity and integrity. It is subject to the same excesses as badly-done Georgian, Cape Cod or whatever style. It is the strong relationship between site, program and building technique that makes this house in Painesville, Ohio, by architect William B. Morris, noteworthy.

The two acres of land on the Grand River in a completely built-up neighborhood near the center of town had long been bypassed. The flat part of the site, covered with large conifers, lay 30 feet below the road (and 40 feet above the river). Rather than try to build on the unstable hillside near the road, Morris chose to place the house on the flat land, below, and designed a gentle drive notched into the hillside which returns on itself to end in the midst of the house. Faced with the problem of a one-story house approached from above,

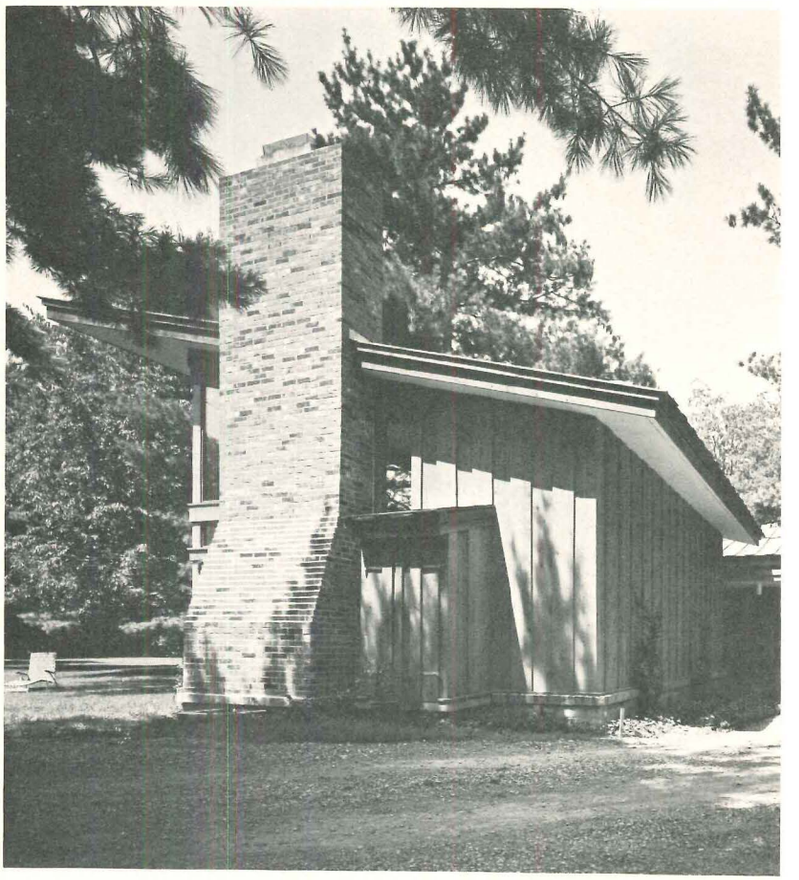


Erol Akyavas

the architect has juxtaposed shed roofs over the garage and important rooms in the house with the flat roof above circulation space and other minor rooms. The sloping roofs are roll roofing under 1 x 12 rough cedar siding laid board on board and nailed to furring strips. This technique was often used on 19th century Ohio farm buildings.

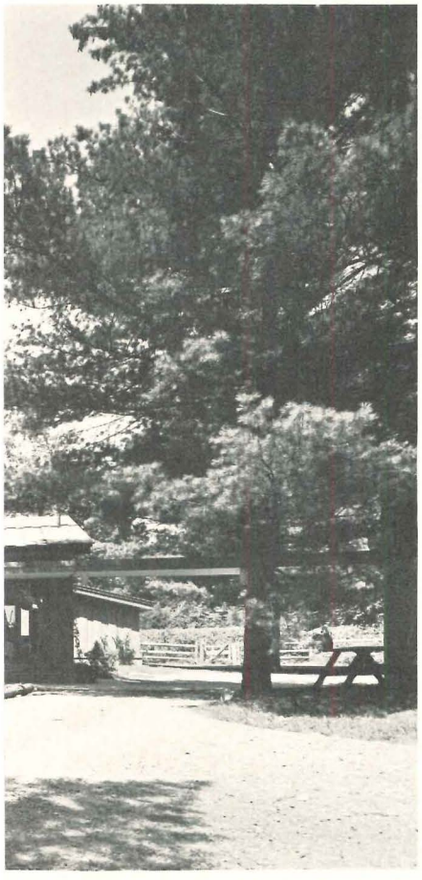
What appears then to be a well-composed collection of rural utility structures—a "village of forms" to use Aldo Van Eyck's phrase—is in fact a well-zoned, spacious house. The plan has all the functional advantages of the mid-20th century ranch-style house while relating to the site in an imaginative and appropriate way. At the time the house was designed, the Lintern family included five adolescents. This fact shaped the planning process in several interesting ways. First, provision was made for a family room, the children's living room, that was well separated from the parents' living room. Second, two of the four bedrooms were designed for other uses in the future. Bedroom 2, which is separated by a movable wall from the family room, will become Mr. Lintern's study and bedroom 3 will become a screened porch.

Finally, the owners saw the building of the house as a cultural experience for children who had grown up in a 150-year-old farmhouse. In fact, the four Lintern sons actively assisted master builder Jim Fahnestock (the only sub-contractor was an Amish mason) throughout the building process.

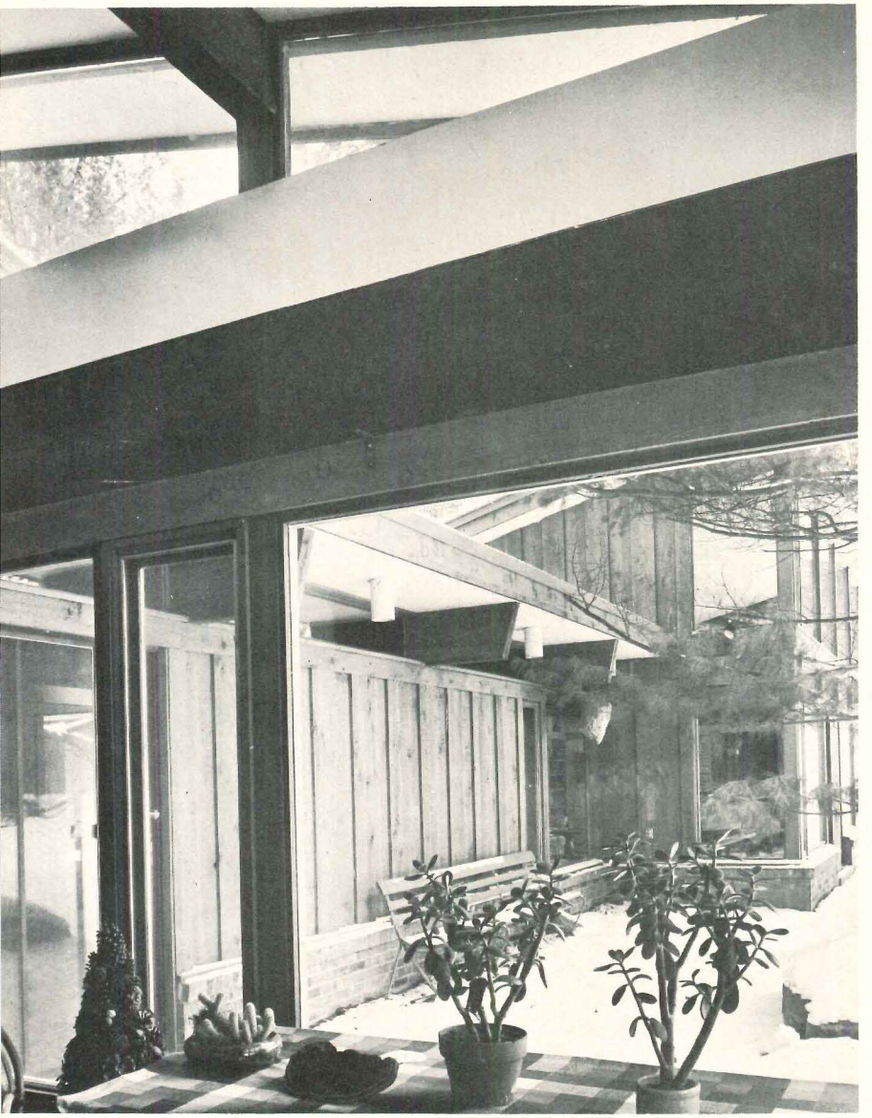


JAMES LINTERN RESIDENCE, Painesville, Ohio. Architect: *William B. Morris;* engineers: *Ed Amos (structural), Denk-Kish (mechanical);* lighting consultant: *Lloyd Amster;* general contractor: *James C. Fahnestock.*

Erol Akyavas

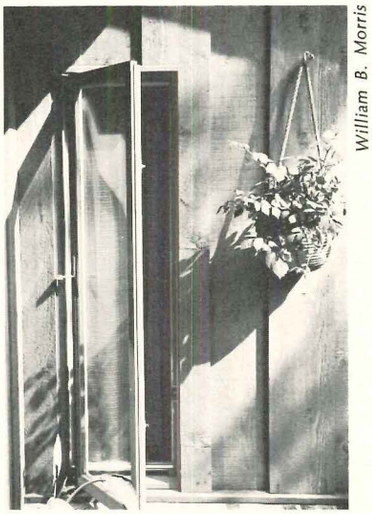


Having enjoyed the play of forms visible from the curving approach road, visitors drive past tall pines and under a low, steel-framed breezeway (left) which connects the garage and the main entrance (above). This structural tour-de-force is a well-scaled clue to the sophistication that the house has so far effectively hidden under its board roofs. The tall kitchen window (right) dominates the informal courtyard while the living room above and other areas focus on the view toward the river. The fireplace burns logs standing on end.



Erol Akyavas

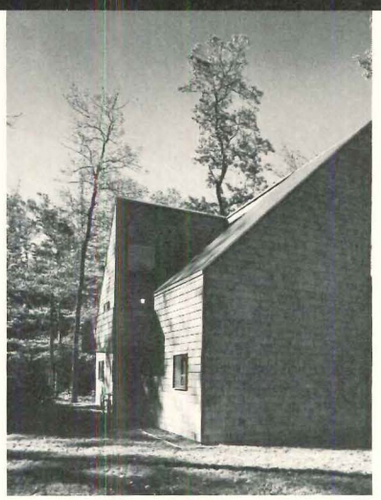
Rough-sawn cedar 1 x 12s, applied board on board as siding as well as roofing, run from brick base to the 6 x 16 Douglas fir beams (left). Standard wood casement windows have been neatly integrated into the siding (below). The butternut wood cabinets separating the kitchen from the family room (bottom) were built on the job. Unpunched roofing slate was used for the entry floor.



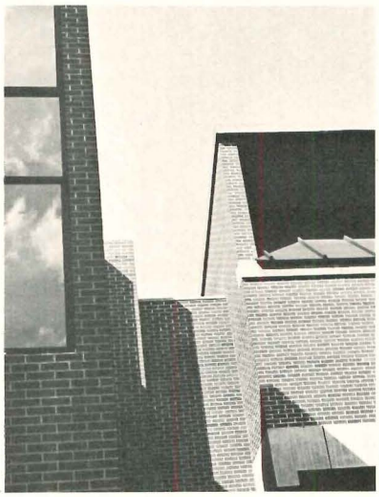
William B. Morris

®

Design for a variety of campus life styles

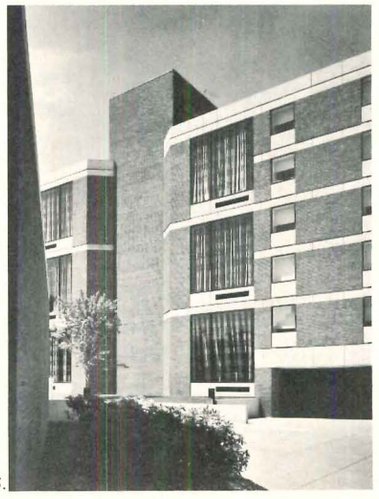


1. 2



3. 4

1. John Yang
2. Wayne Soverns, Jr.
3. Clarence E. Klaus, Jr.
4. Ezra Stroller © ESTO
5. Phokion Karas

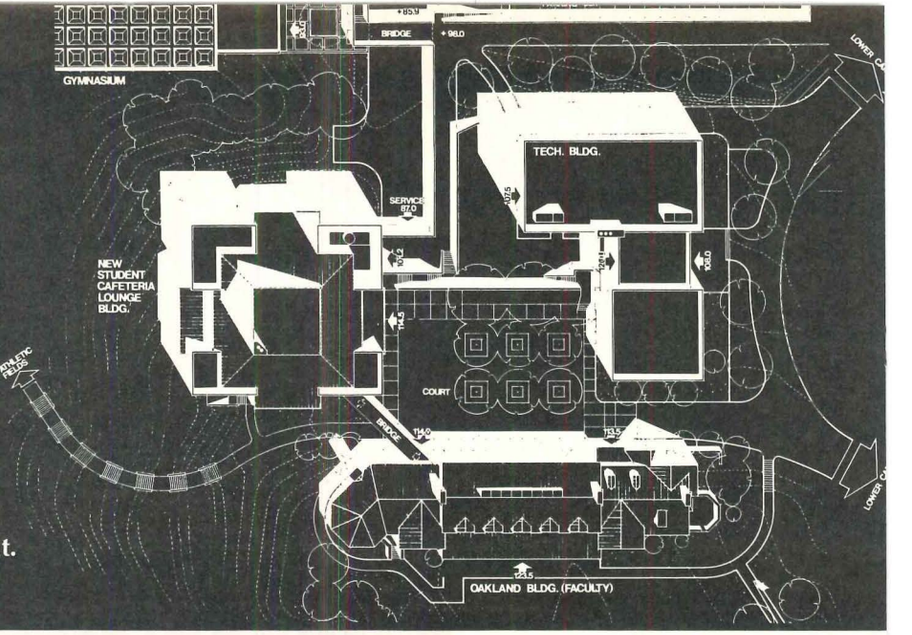


5.

Good architects now focus more on the needs and desires of the actual users of their buildings than in the past. The users of campus buildings are a varied, lively and articulate lot who increasingly are making their wants known and felt. The best of today's campus buildings are a sensitive response to these needs—as they vary, so does the architecture. The projects which follow were chosen to illustrate this point. Commuters to Queensborough Community College (1) lead lives different from those of the girls at Bradford Junior College (2), and the boys at Carnegie Mellon University (3). Harvard Law School students and faculty (4) are a sophisticated and demanding group, as are the successful executives attending advanced management courses at the Harvard Business School (5). The requirements of each group were met by perceptive, adaptive design.

—Mildred F. Schmertz

1 Cafeteria Building for Queensborough Community College



Because commuting students have a greater need for accessible gathering places, indoors and out, than full-time campus dwellers, the master plan for this commuter college provides many such spaces and the cafeteria has been located and designed to function as the campus social center and focal point.

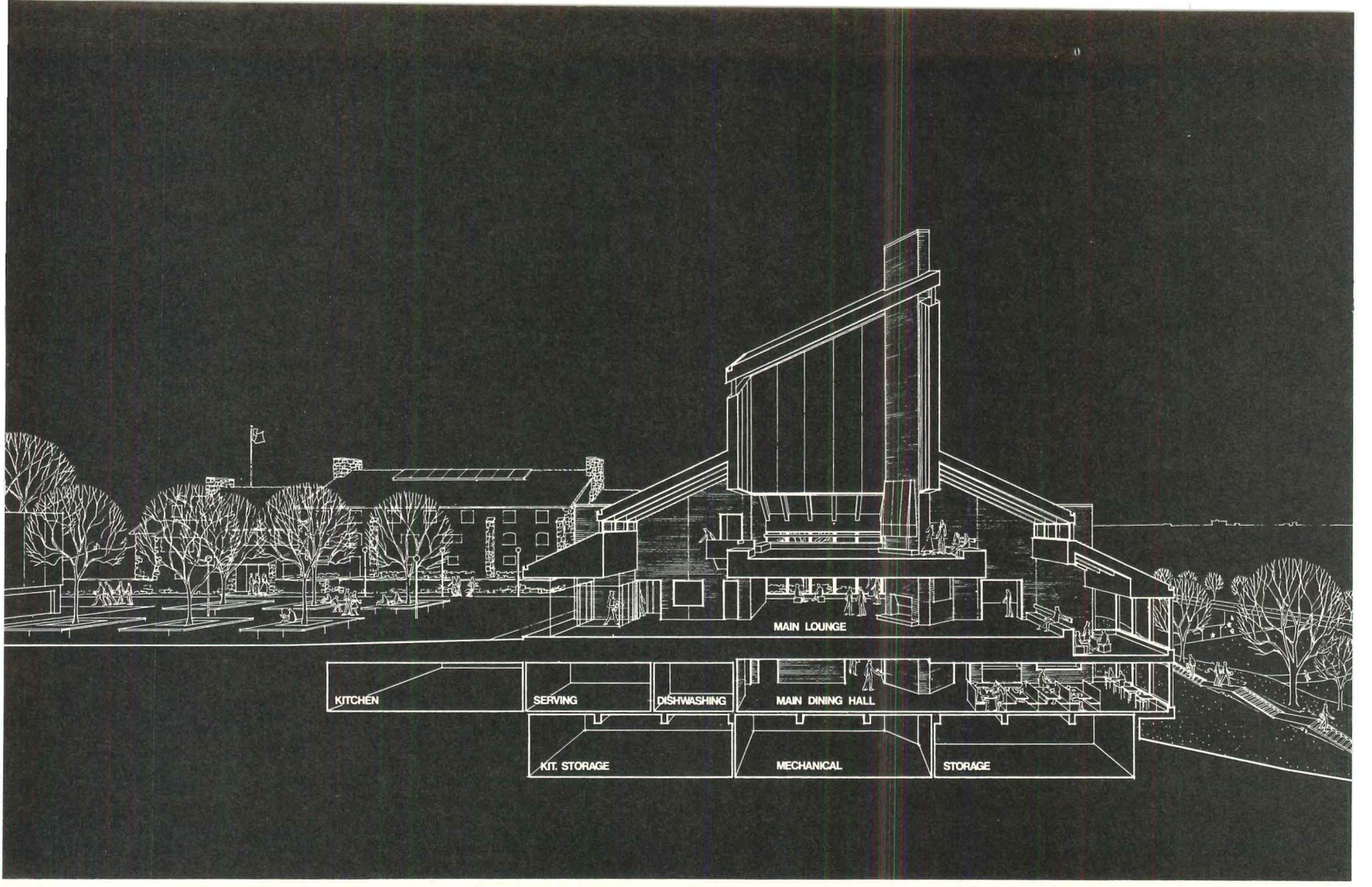
Located at the highest point of the campus with the silhouette of a landmark and sweeping views to the west and south (opposite page, top), this cafeteria building with its generous lounge and activity spaces is distinct in form from the structures surrounding it to emphasize its functional importance. The rest of the campus buildings, with three exceptions built earlier by other firms, have all been designed by the present architects as high-density structures to conserve as much of the campus property as possible as open space. They have been deliberately handled as background buildings.

As can be seen in the partial site plan (above) the cafeteria forms an entrance court (opposite page, bottom) shared by two older structures. The campus proper is immediately adjacent to the east of this group and the gym to the north. To the west and south the land falls steeply. Two well-located bridges and an outside stair assure that the building functions as well as a cafeteria as it does as a hilltop symbol.

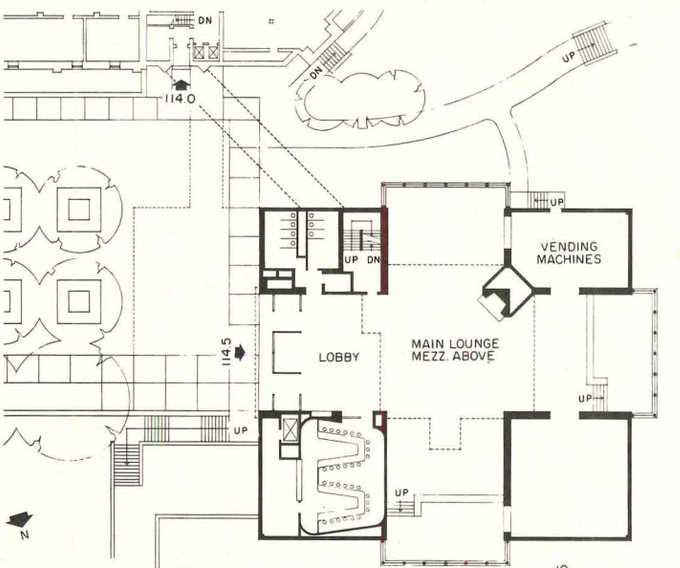
CAFETERIA BUILDING, QUEENSBOROUGH COMMUNITY COLLEGE, Bayside, N.Y. Owner: *Board of Higher Education, City University of New York;* associated architects: *Holden Yang Raemsch & Corser; and F. P. Weidersum Associates*—project architect and designer: *John Yang;* job captain: *Robert D. Livingstone;* structural engineers: *Wiesenfeld & Leon;* mechanical engineers: *Joseph R. Loring & Associates;* plumbing and electrical engineers: *Carlson & Sweatt;* interior design and graphics consultant: *Martha Burton;* site engineer: *Eberlin & Eberlin;* cost consultants: *McKee Berger Mansueto;* general contractor: *Mars Associates, Inc. and Normel Construction Corporation.*

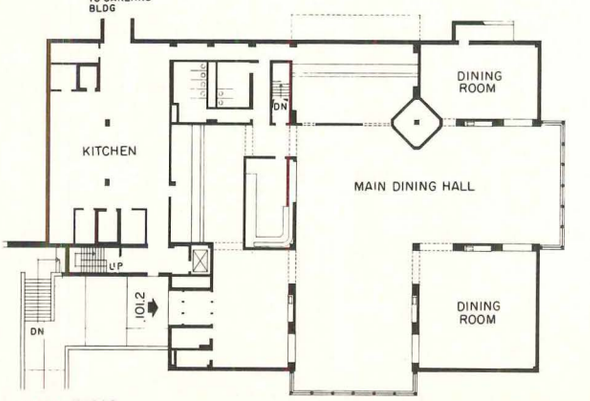
John Yang photos

The building is simple in plan, consisting of a basic cross with a square element at each corner where the segments of the cross intersect (as can be seen in the drawings overleaf). It is intriguingly complex in appearance, however, due in part to the masterful way it has been positioned on the site. As seen from the southwest corner (above) on the downhill side, its massing creates a new pinnacle for the hill. The continuous brick surfaces of the corner elements contrast effectively with the projecting two-story window walls. From the courtyard (below), which is located above the dining hall level, the scale is intimate, the sloping terne roofs are visible, and a broad entrance invites the students into the main lounge. The small bridge to the left of the photo connects the cafeteria to the former golf clubhouse which is being remodeled into a faculty club. (The campus is located on the site of a former golf course). The photo (opposite page) shows the lounge level entrance and steps which lead down to the entrance at the dining hall level. At this level a bridge links the cafeteria to the gym, playing fields and the lower level parking lots at the edge of the site.



Because the furnishings of the main lounge and mezzanine were vandalized by the students, no photos of these beautiful well-lit spaces have yet been taken. The section can only suggest the interest, complexity and exciting juxtaposition of these interior volumes as they interpenetrate.





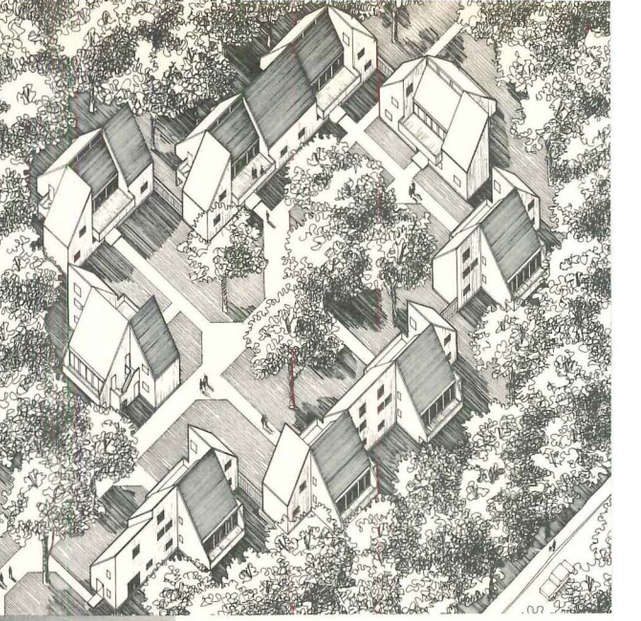
Bert Gerrard

Interior smooth plaster surfaces in the lounge and dining areas have been enhanced by designer Martha Burton's murals. The super-graphics are sadly ephemeral, however, since rough use has already damaged the plaster sufficiently to require patching and repainting. The multi-colored chandeliers (right) hang from the ceiling of the mezzanine.

Bert Gerrard

2 Bradford Junior College Dormitories

Since many Bradford girls, like more and more undergraduates, object to living in large, conventional dormitories and would prefer to set up housekeeping in their own apartments, the architects met them halfway by designing a series of domestically scaled residences for ten students each.



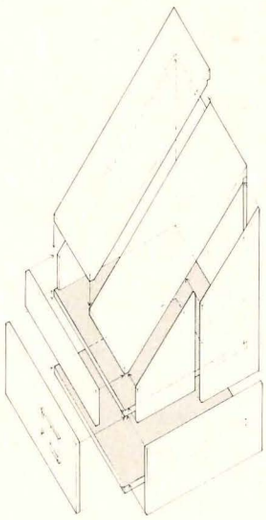
The houses are constructed within what the architects choose to call their "pinwheel system." It consists of a single module with spans of 12 or 16 feet, with a pitched roof of 45 degrees. The modules can be combined in a variety of ways to adjust to a wide range of requirements. They can be used for private and row housing and as condominium units, as well as for student housing as at Bradford.

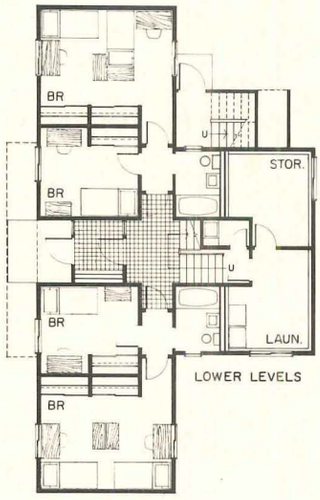
All the panels for the Bradford dormitory modules were constructed by the contractor in an on-the-site factory which consisted of two small sheds, two jig platforms and two radial saws. The system saves time—construction of seven units was accomplished in five months—and is economical—the cost per student of the buildings completely furnished was approximately $8,000.

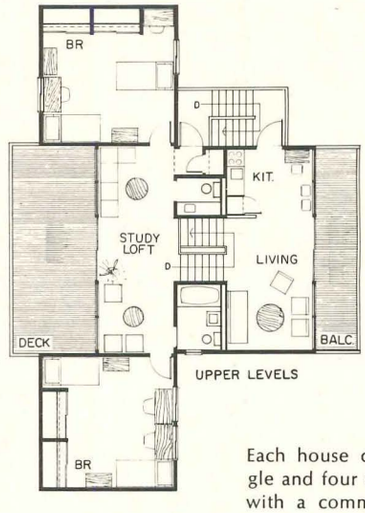
The roof sections are fabricated with plywood sheathing glued and nailed to lightweight rafters, creating a stressed skin panel. This panel becomes a diaphragm which transfers its loads to the outside shear walls. The system permits comparatively wide spans unobstructed by columns and beams and allows great flexibility in arrangement and appearance.

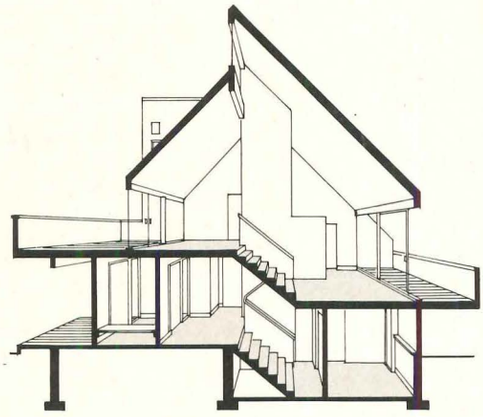
BRADFORD JUNIOR COLLEGE DORMITORIES, Bradford, Massachusetts. Architects: *Campbell, Aldrich and Nulty—partner-in-charge: Nelson W. Aldrich; project manager: Peter Crowley; design team: Mara Ogulis, Douglas Kelly*; structural engineer: *NAHB Research Foundation, Inc.*; mechanical engineer: *Shooshanian Engineering, Inc.*; general contractor: *C&L Construction Co., Inc.*

Wayne Soverns, Jr. photos





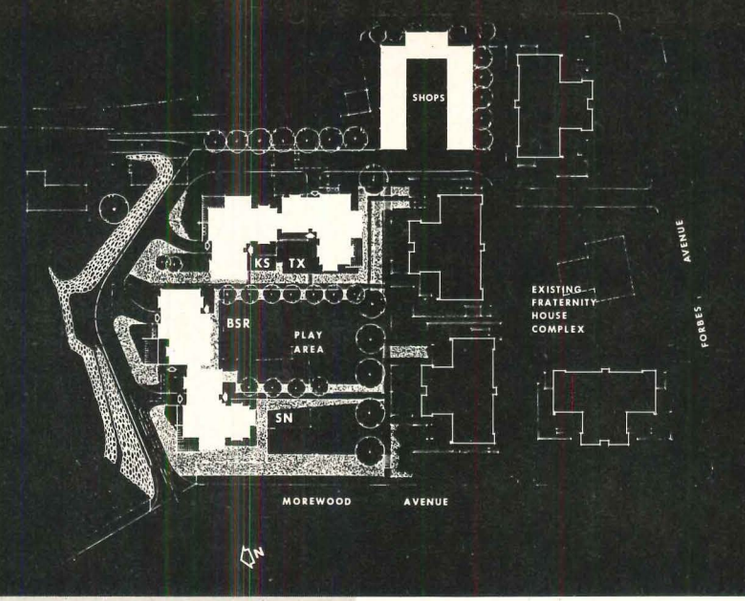


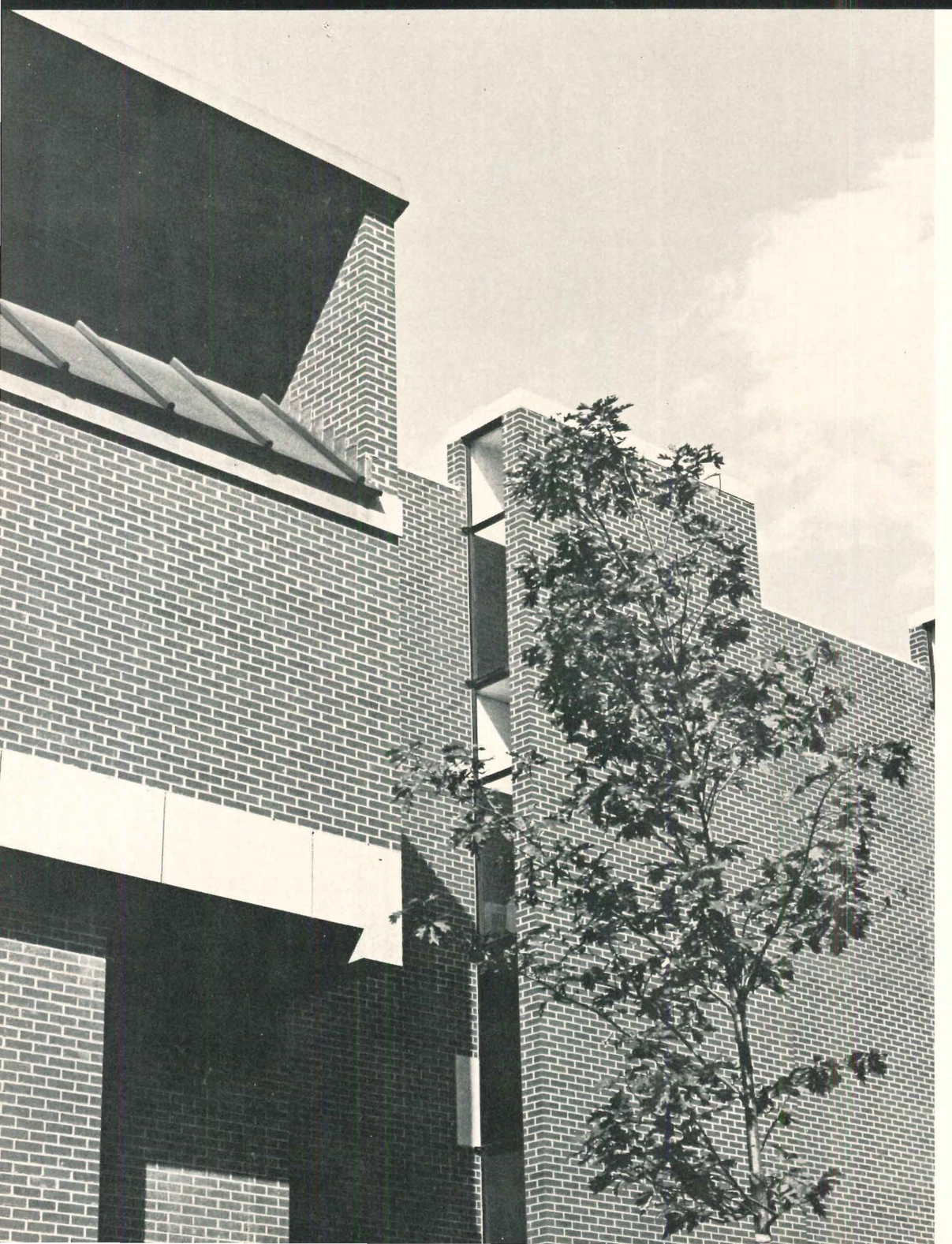


Each house contains two single and four double bedrooms with a common living-dining room and a small kitchen to permit the girls to do their own cooking. Bathrooms are shared by no more than three girls. At the top level is a study loft (shown in plan, section and interior photo).

3 Carnegie-Mellon University Fraternity Houses

Many students no longer consider fraternity house living ideal, but it nonetheless has many advantages over the typical dormitory set up—including a more human, less institutionalized atmosphere—qualities emphasized in this design.



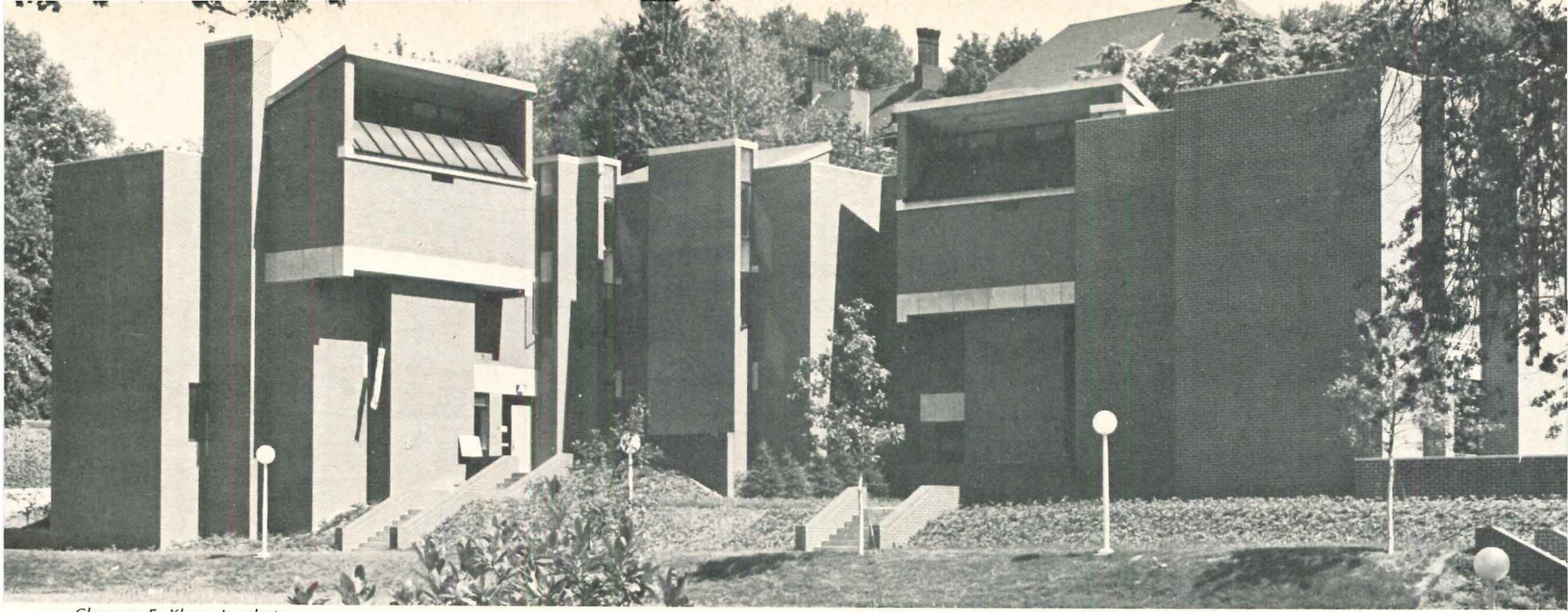


Students choose to live in fraternity houses because they are good places to make friends and to give parties; and because group eating can be economical. In the past, CMU fraternities have occupied large old turn-of-the-century Pittsburgh mansions which provided plenty of room for the active social lives of their members. These houses are disappearing for the usual reasons, and since the 1950's CMU has built several structures designed from scratch as fraternity houses.

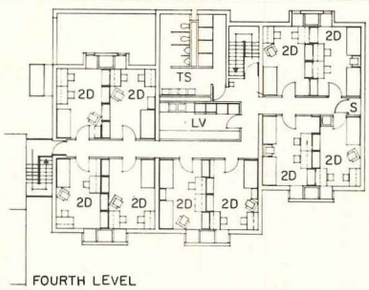
The most interesting of these buildings are the four duplexes shown here. Built to house eight existing fraternities, they provide on the first floor lounge and eating spaces that are so arranged that each can be isolated for day-to-day use or opened to each other when the social occasion requires. Two- or four-man study spaces are on the second and third floors. Three of the units provide for sleeping in dormitories on the third floor, while the remaining unit has larger rooms for sleeping and study.

The new houses are wall bearing masonry, with precast concrete floors and roofs.

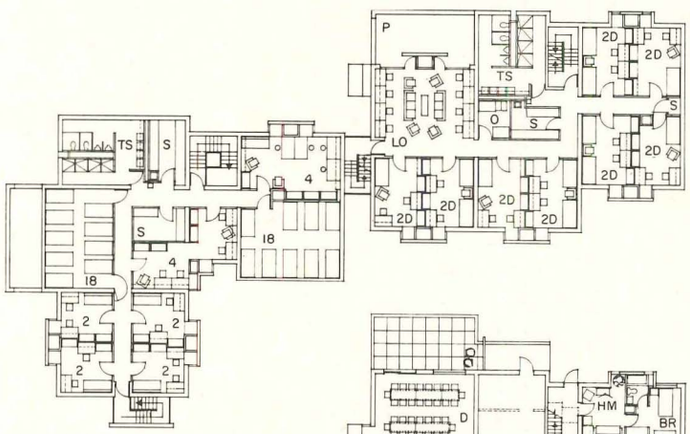
CARNEGIE-MELLON UNIVERSITY FRATERNITY HOUSES, Pittsburgh, Pennsylvania. Architects: *Curry, Martin, Highberger and Klaus—partner-in-charge: Derek Martin*; structural engineers: *R. M. Gensert Associates*; foundation engineer: *David V. Lewin*; mechanical engineers: *R. Bruce Miller and Associates*; electrical engineers: *Hornfeck Engineering, Inc.*; landscape architects: *Griswold, Winters and Swain*; cost consultant: *B. E. Bridge, Jr.*; general contractor: *Dick Corporation.*



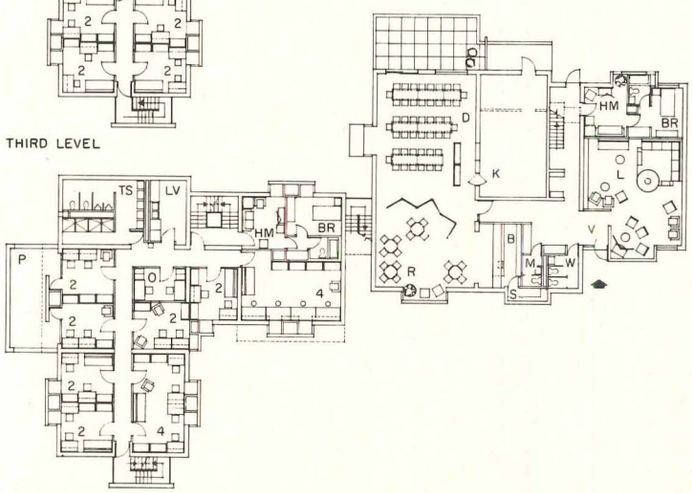
Clarence E. Klaus, Jr. photos



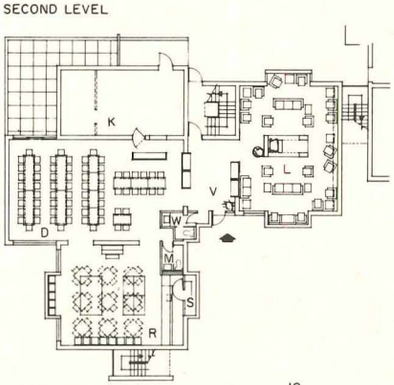
FOURTH LEVEL



THIRD LEVEL



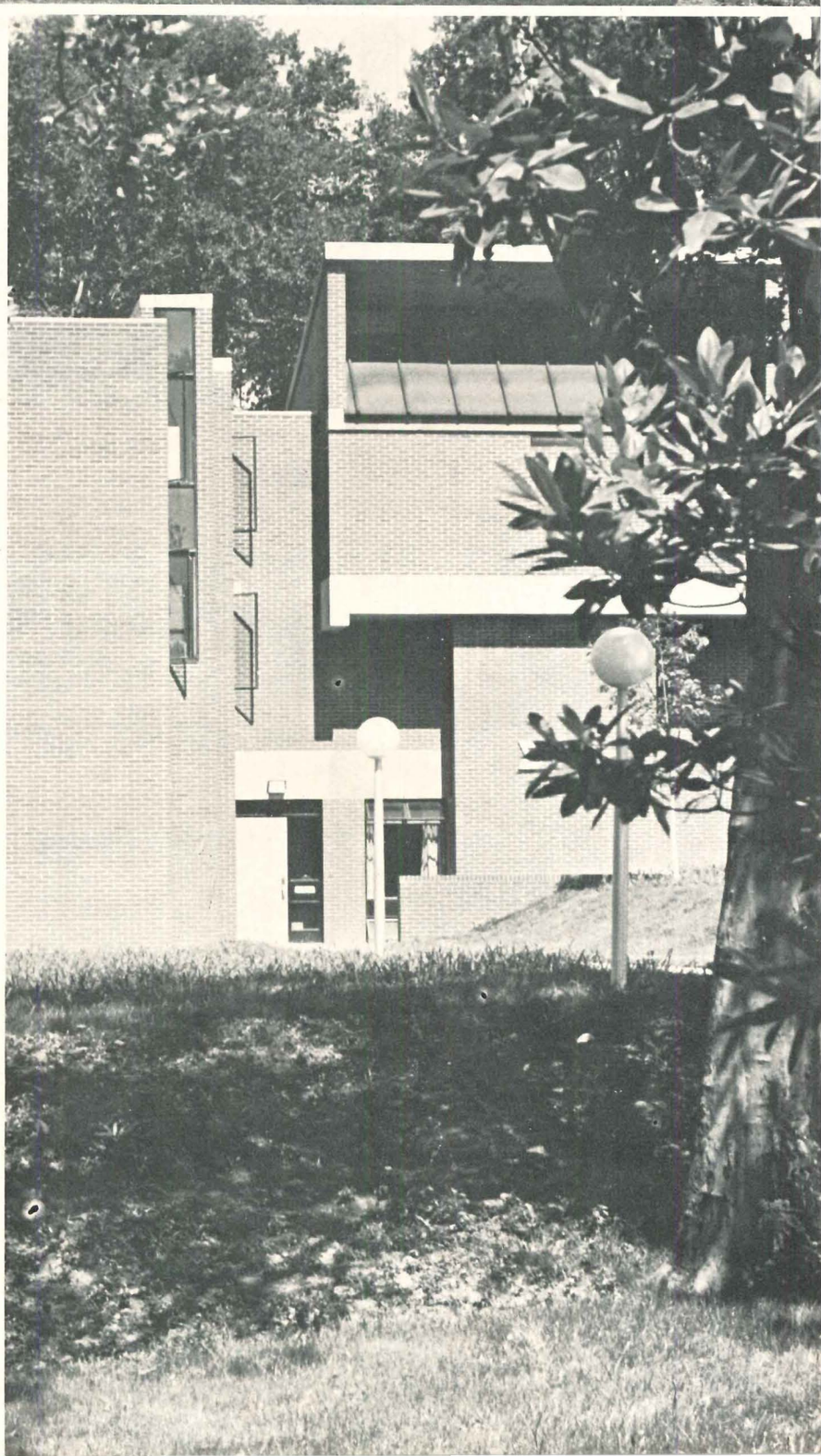
SECOND LEVEL



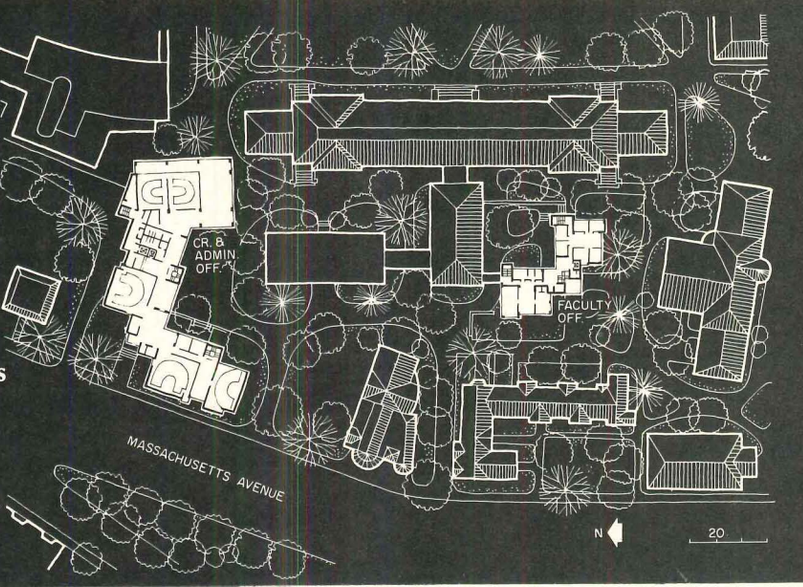
FIRST LEVEL

10

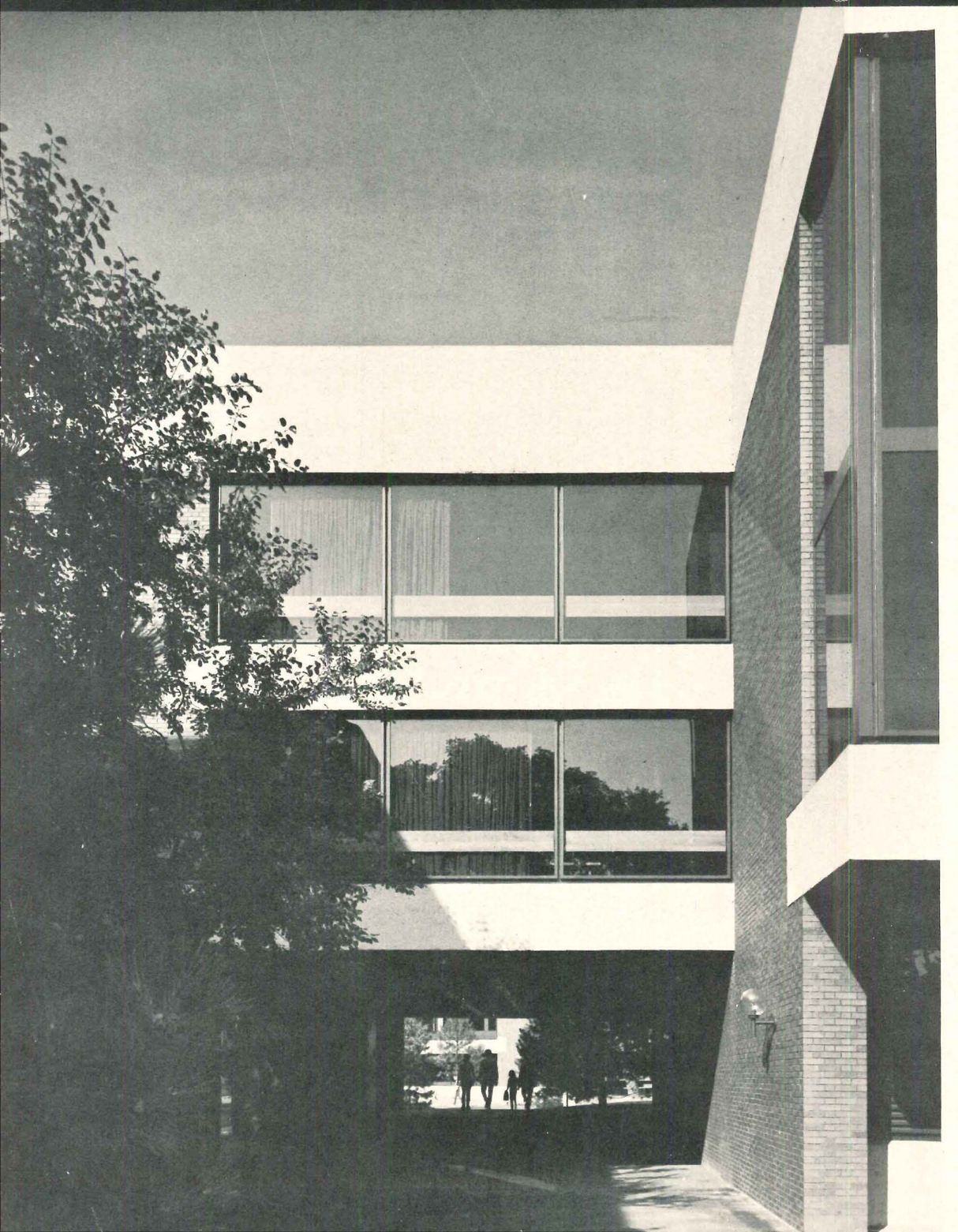
V	Vestibule
L	Living
D	Dining
BR	Bedroom
LO	Lounge
R	Recreation
B	Bar
K	Kitchen
S	Storage
HM	Housemother
M	Men
W	Women
O	Office
2D	2 man study dorm
18	18 man dorm
2	2 man study
4	4 man study
TS	Toilet shower
LV	Laundry vending
P	Porch



4 Faculty Office Building and Classroom and Administration Building for Harvard Law School



Harvard law students and faculty needed more classrooms and offices adjacent to the Law School. The design solution was to construct two buildings within existing open space in a way that gives the site more spatial complexity and interest.



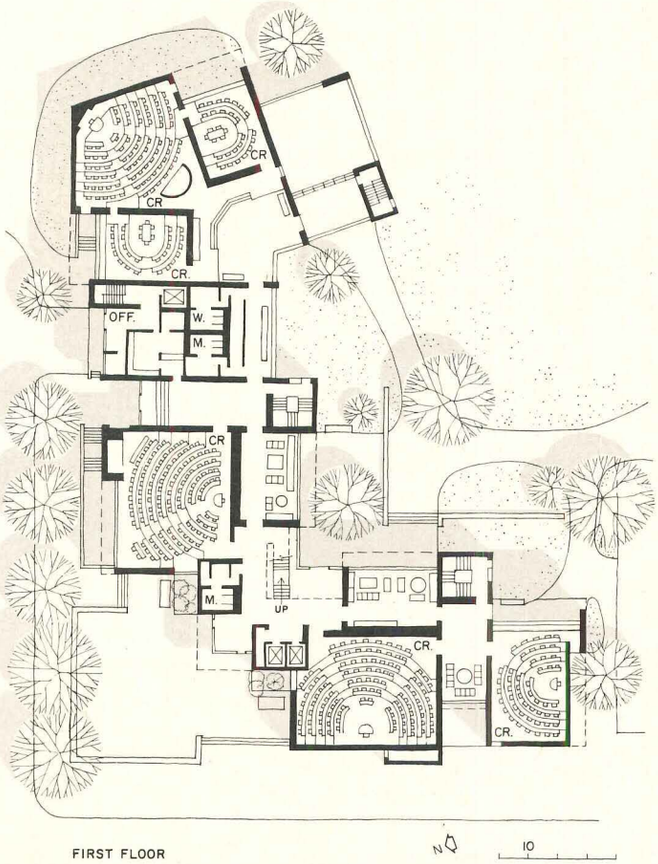
The Classroom and Administrative Office Building shown on this and the next three pages, and the Faculty Office Building which begins on page 128, are two more examples of Benjamin Thompson's design idiom for college buildings which he first established over a decade ago in the Academic Quadrangle at Brandeis University. As a planning idiom it is infinitely flexible and adapts itself to many difficult sites as here. As a structure and materials idiom it is constant.

If Mies van der Rohe was before his death modern architecture's most conservative master, perhaps Thompson deserves to inherit the title. Like Mies, Thompson refuses to invent a new architecture every Monday morning. Like Mies, Thompson refines and modifies details, makes measured experiments in proportion, colors and textures, and develops subtly different ways of expressing his essentially unvarying structural system. And, like Mies, Thompson handles his particular idiom better than anyone else.

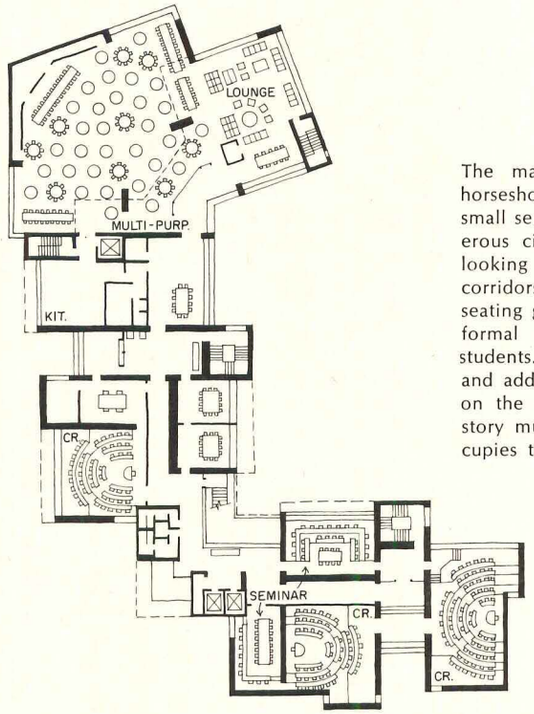
The Classroom and Administrative Office Building turns a corner and encloses the site to the north. The various parallel elements slide past each other to accommodate and express function and to create a moderately complex perimeter in good scale with the street, nearby older buildings, the newly created landscaped yard (opposite page, top), and most importantly, the user.

The brick this time is a subtle, dark brownish purple and the concrete aggregate has been carefully chosen for effective contrast.

Ezra Stroller © ESTO photos



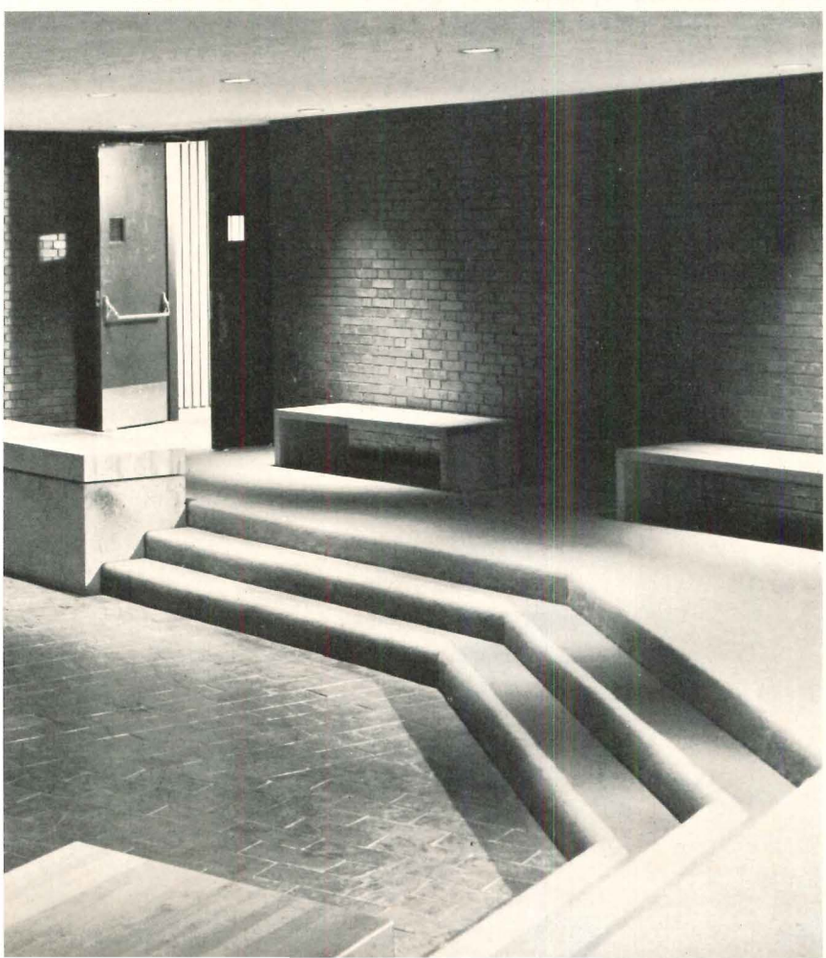
FIRST FLOOR

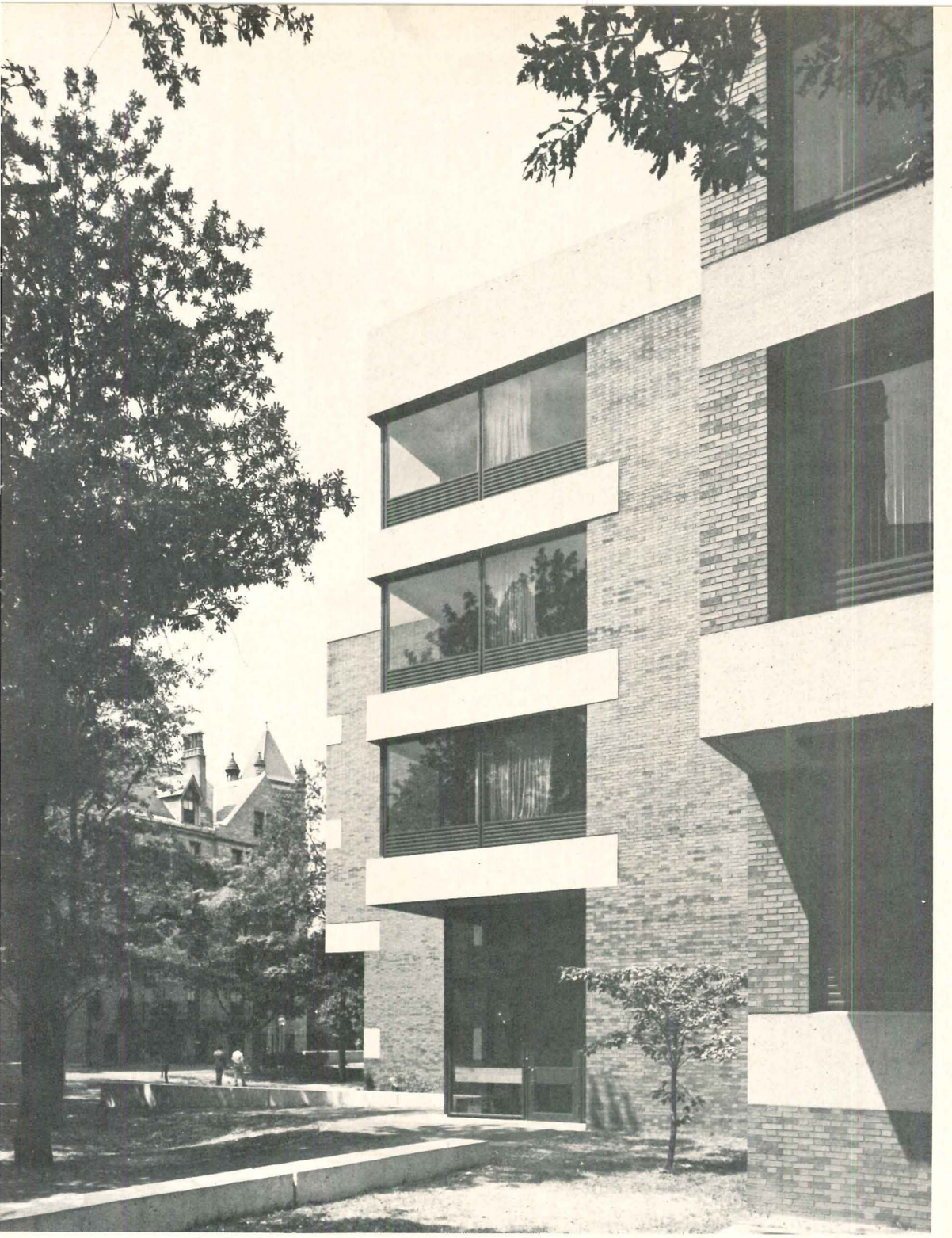


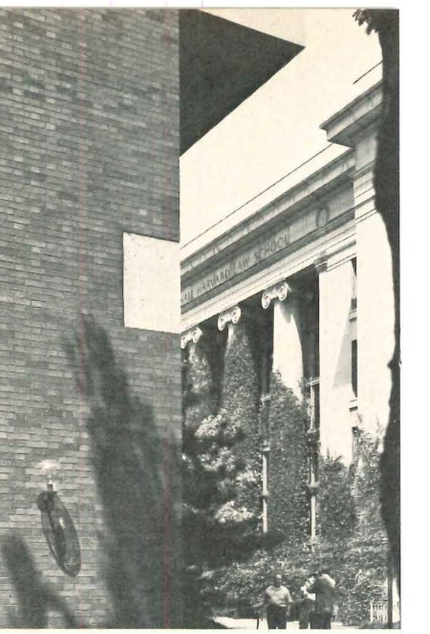
SECOND FLOOR

The main floor consists of horseshoe-shaped classrooms, small seminar rooms and generous circulation space overlooking the courtyard. These corridors contain a number of seating groups to facilitate informal contacts among the students. Administration offices and additional classrooms are on the second floor. A two-story multi-purpose room occupies the northeast corner.

The two-story multi-purpose room (above) permits the entire student body and faculty to assemble for lectures and banquets. Classrooms are of two types: the larger ones are horseshoe shaped (opposite page top) while the smaller (below) function for both lectures and seminars. Lobbies, corridors and lounge areas are informal, and relaxing (right).





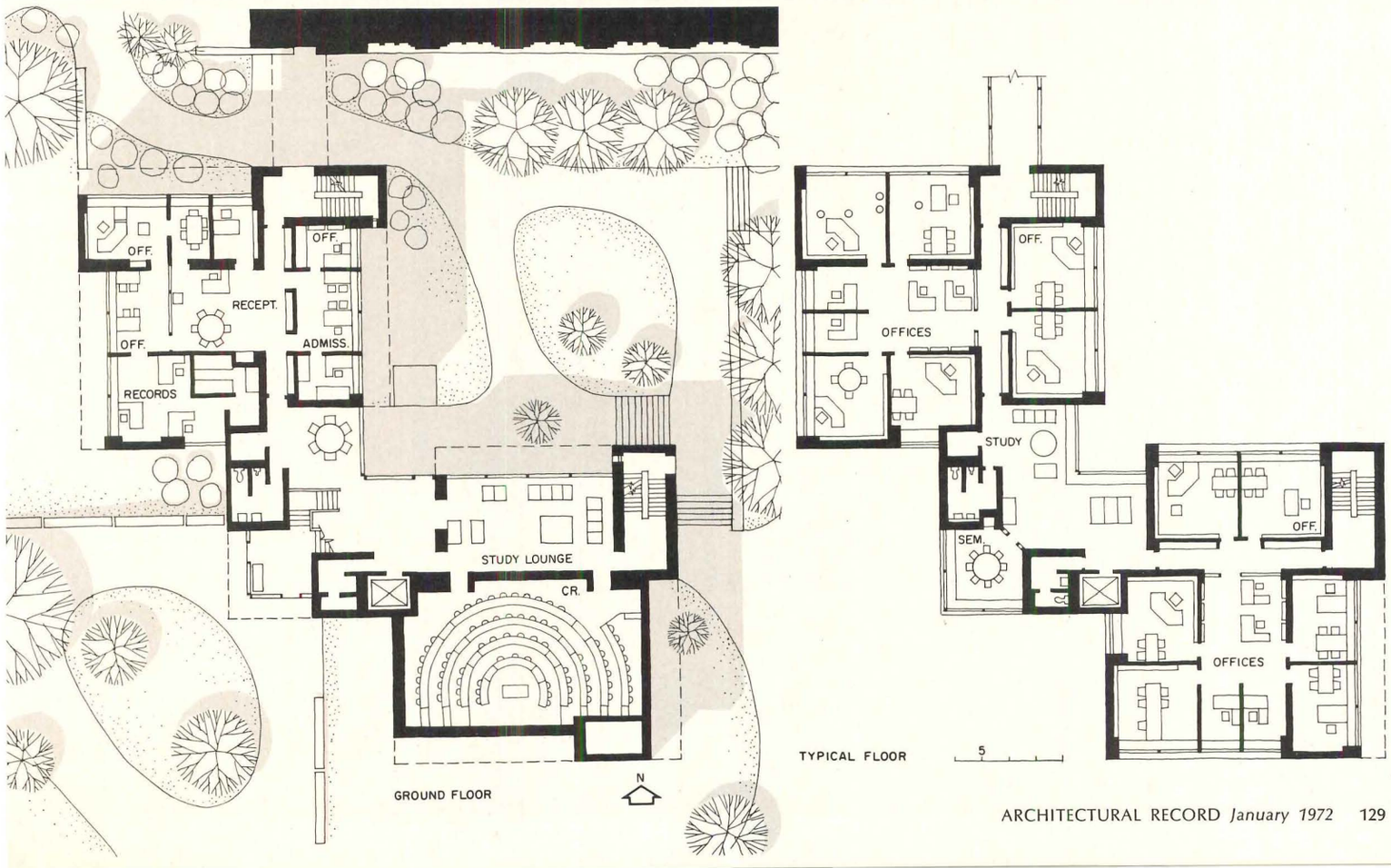


The new Faculty Office Building for the Harvard Law School is identical in structure, materials and planning concepts to the Classroom and Administration Building, and possesses the same apparent scale, but is actually a much smaller building. Connecting directly to the office wing of the Law School, it forms a small courtyard at this juncture. The building contains a law library as well as offices and includes study lounges, seminar spaces and a large classroom.

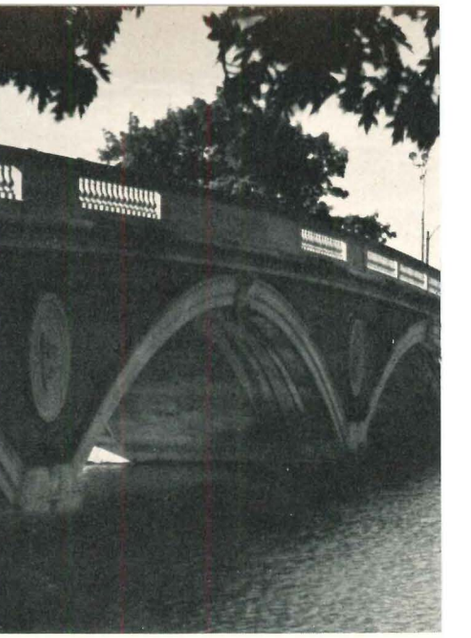
Except for the lawyers' private offices and the library, the interior finishes and furnishings are similar to those provided the law students and administrative staff in their building.

As can be seen in the photo (opposite page, top), Thompson's structural system consists of waffle slab ceilings designed on a large module, spanning great distances and supported by brick bearing walls, expressed as such both inside and out. Corridor floors are always dark slate, and butcher block furniture, designed by Thompson, is used wherever feasible.

FACULTY OFFICE BUILDING & CLASSROOM AND ADMINISTRATION BUILDING, HARVARD UNIVERSITY, Cambridge, Massachusetts. Architects: *Benjamin Thompson & Associates, Inc.;* structural engineers: *Le Messurier Associates, Inc.;* mechanical and electrical engineers: *Reardon & Turner;* acoustical consultants: *Bolt, Beranek & Newman, Inc.;* interior design: *Benjamin Thompson & Associates, Inc. & Joan Sprague (consultant);* landscape architects: *Carol R. Johnson Associates;* cost consultants: *Vappi & Company, Inc.;* general contractor: *Faculty Office Building—Cantor Construction Co., Administration & Classroom Building—Vappi & Company, Inc.*


OFF.
OFF.
RECEPT.
OFF.
ADMISS.
RECORDS
STUDY LOUNGE
CR.
GROUND FLOOR
N
OFF.
OFFICES
STUDY
SEM.
OFF.
OFFICES
TYPICAL FLOOR
5

5 Executive Development Complex, Graduate School of Business Administration, Harvard University

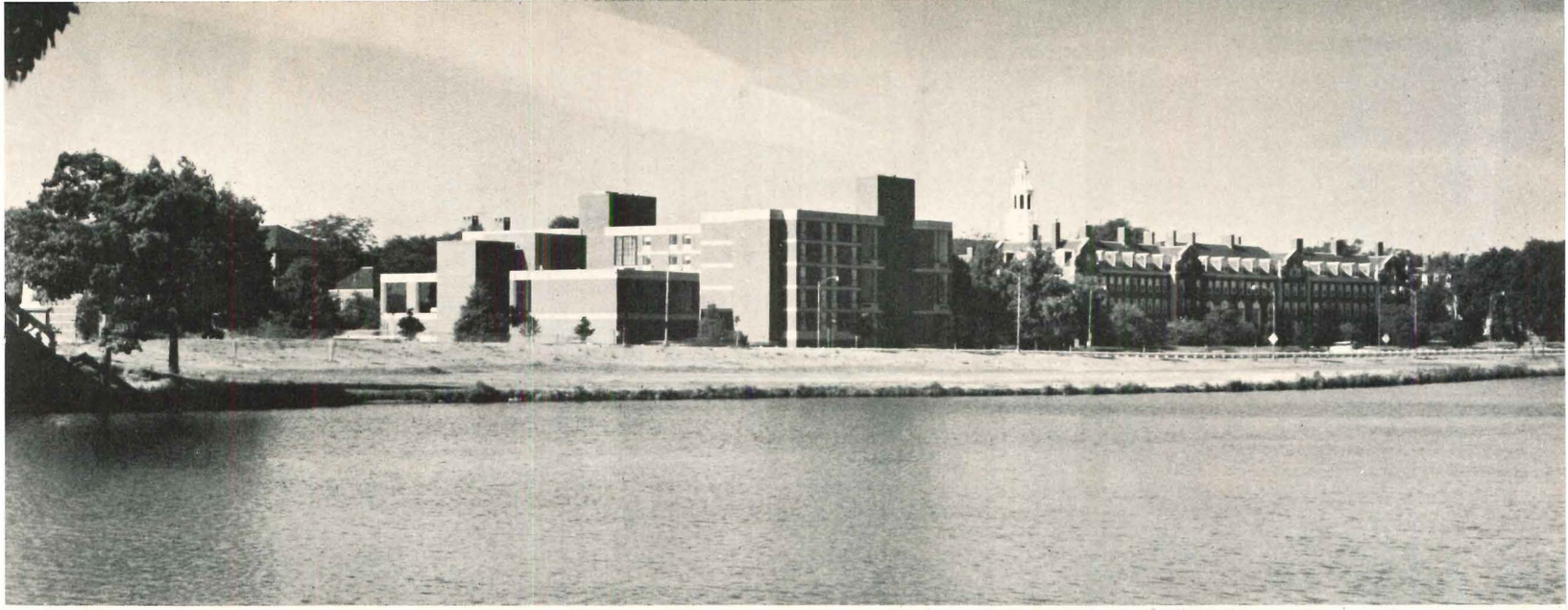


The 40- to 50-year-old executives to be housed and taught in these buildings required an environment somewhat less rigorous than most undergraduates endure, but rather more spartan than that to which successful middle age has accustomed them—thus presenting the architects with a design problem without precedent.

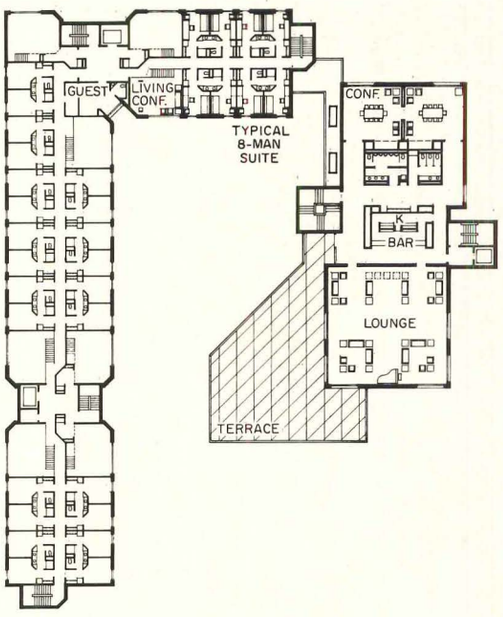
Twice a year, once in the fall and once in the spring, 160 carefully selected business executives of many nationalities, backgrounds and types of enterprise, forsake the executive suite, their homes and their families and make their way to Harvard to undergo 13 weeks of rigorous initiation into the higher mysteries of higher management. Fully sponsored by their companies or their governments at the cost of $4,590 each, with full salaries paid while they learn, they comprise a singular elite.

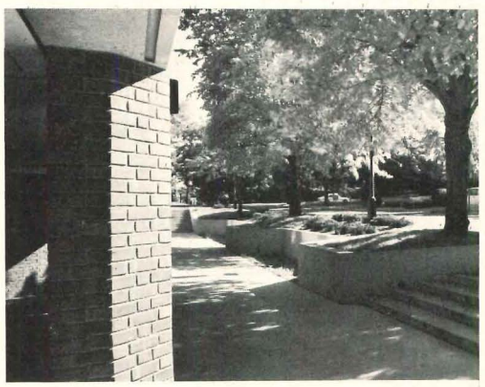
On arrival, each becomes part of an eight-man unit consisting of eight modest, yet thoughtfully designed, rooms on a 2-man-per-bath module. Each unit connects to a two-story living-discussion room arranged on a skip-stop system. This basic arrangement is clearly and handsomely expressed in the facade shown at left. The executive attends classes in a building with horseshoe shaped classrooms and lounge and dining spaces.

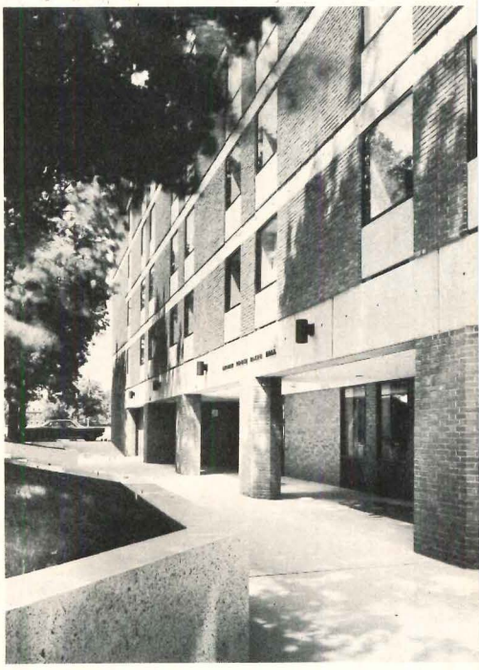
EXECUTIVE DEVELOPMENT COMPLEX, GEORGE PIERCE BAKER HALL & McCOLLUM CENTER, Boston, Mass. Owner: *Graduate School of Business Administration, Harvard University*; architects: *Shepley Bulfinch Richardson and Abbott;* structural engineers: *LeMessurier Associates, Inc.;* mechanical engineers: *Shooshanian Engineering, Inc. (HVAC), Robert W. Sullivan, Inc. (plumbing)* ; electrical engineers: *Verne Norman Associates;* acoustical consultants: *Bolt, Beranek & Newman, Inc.;* interior design: *Shepley Bulfinch Richardson and Abbott;* landscape architect: *Elizabeth M. Carlhian;* cost consultants: *McKee-Berger-Mansueto, Inc.;* general contractor: *George A. Fuller Company, Inc.*



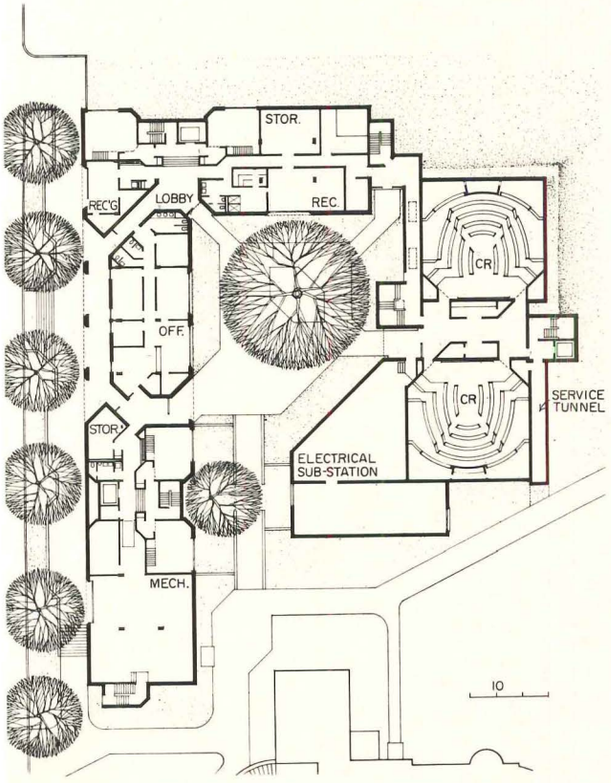
Phokion Karas photos

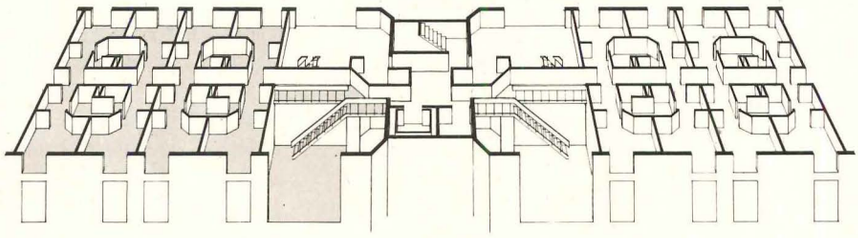


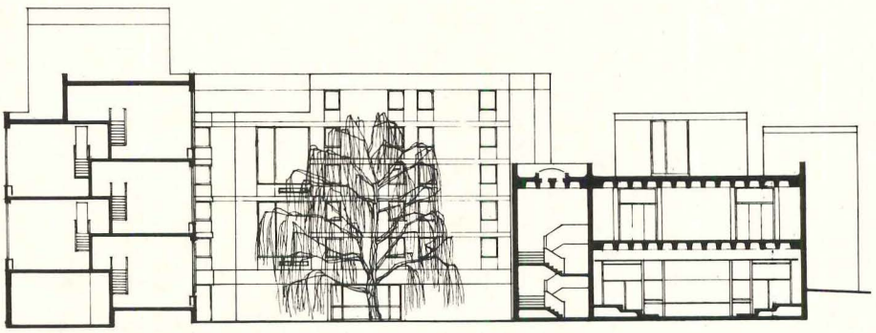


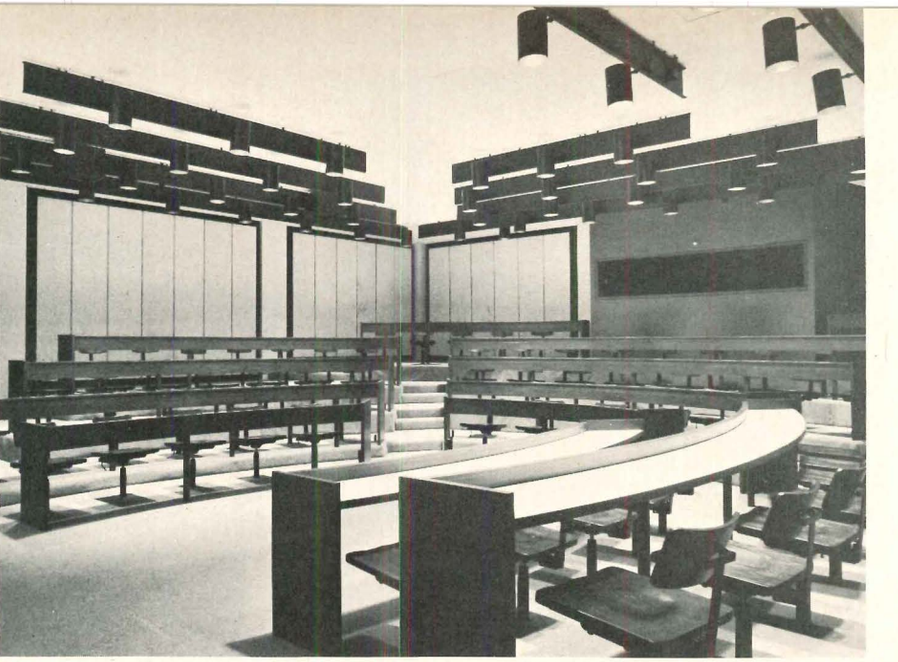


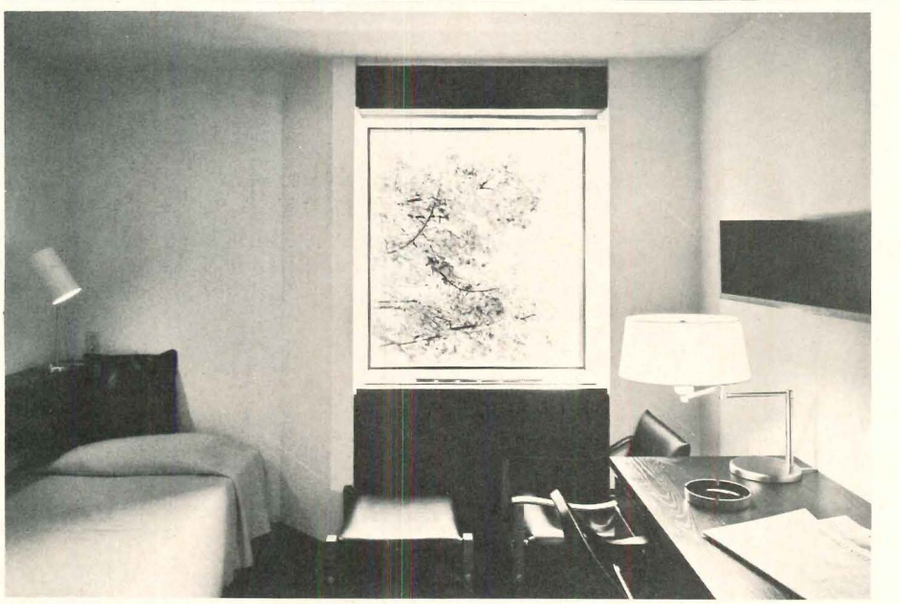
According to Shepley, Bulfinch, Richardson and Abbott partner Jean Paul Carlhian: "A major effort [was] made to provide a building complex which will prove to be a fitting companion to its Georgian predecessors." Factors which influenced the site plan were an existing underground utility tunnel and the necessity of including a large electric substation within the complex. The latter became the base of a broad terrace overlooking the river and the court.



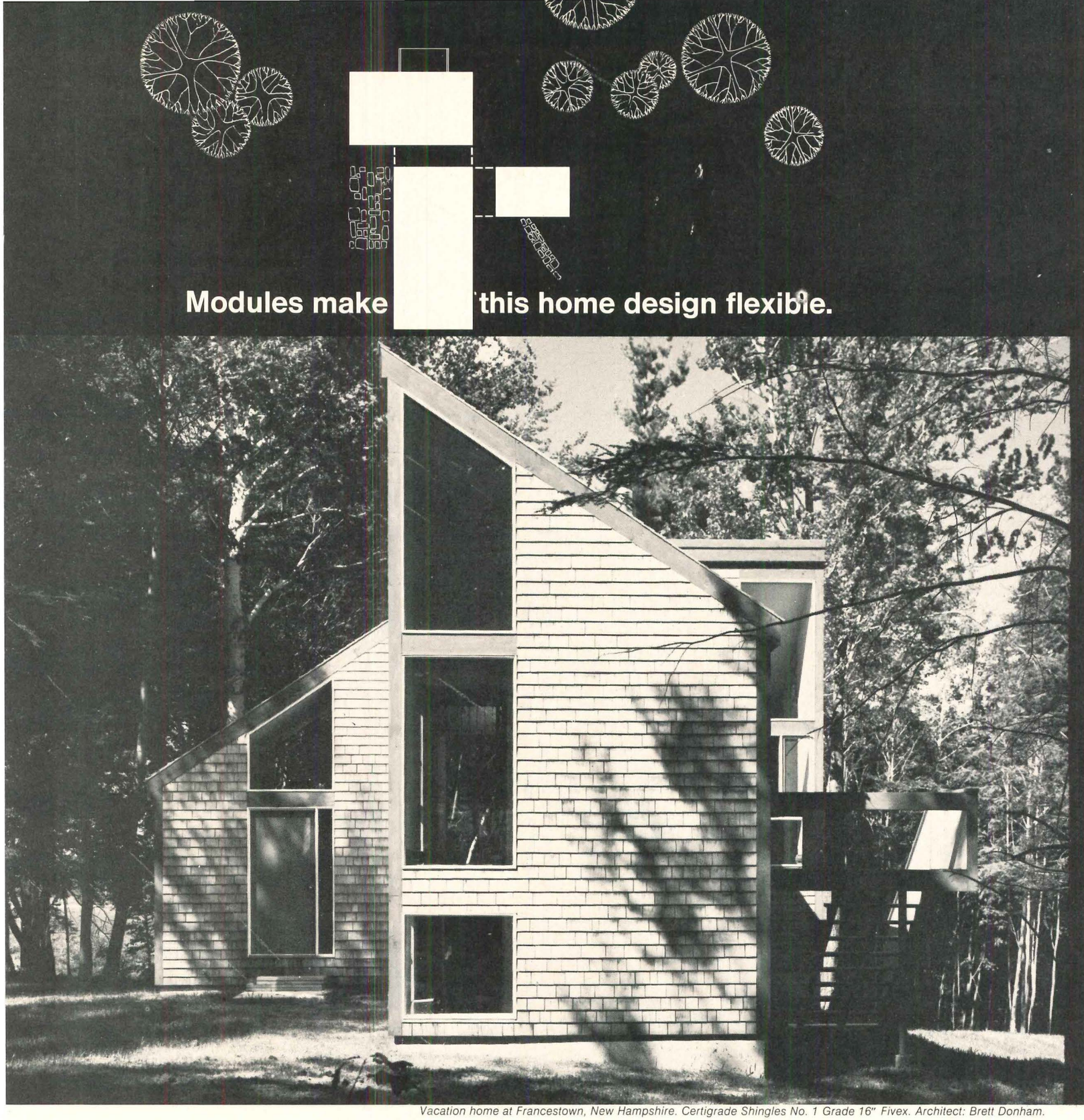








The two-story living-discussion room for each eight-man unit (above) is adjacent to the eight single rooms for sleep and private study (right). Horseshoe shaped classrooms (above right) are intended to inspire faculty-student rapport. Common facilities (below) are located on the second floor of the classroom building above the traffic and offer fine views of Harvard and Boston.



Vacation home at Francestown, New Hampshire. Certigrade Shingles No. 1 Grade 16" Fivex. Architect: Brett Donham.

Red cedar shingles make it beautiful.

This New England vacation home started out as several 20 by 12-foot modules. It ended up just right.

One reason is the versatility of the modular system. It allowed tailoring a design to the specific needs of owner and site without sacrificing economy.

Another reason is the exterior of red cedar shingles. Cedar unifies, helping to turn a system into a home. Structurally, cedar shingles easily bridge the joint between modules. Visually, their rich texture complements the rustic site and projects a feeling of natural warmth.

In addition, red cedar remains maintenance-free for decades. It will provide a generation of vacationers with a vacation from upkeep.

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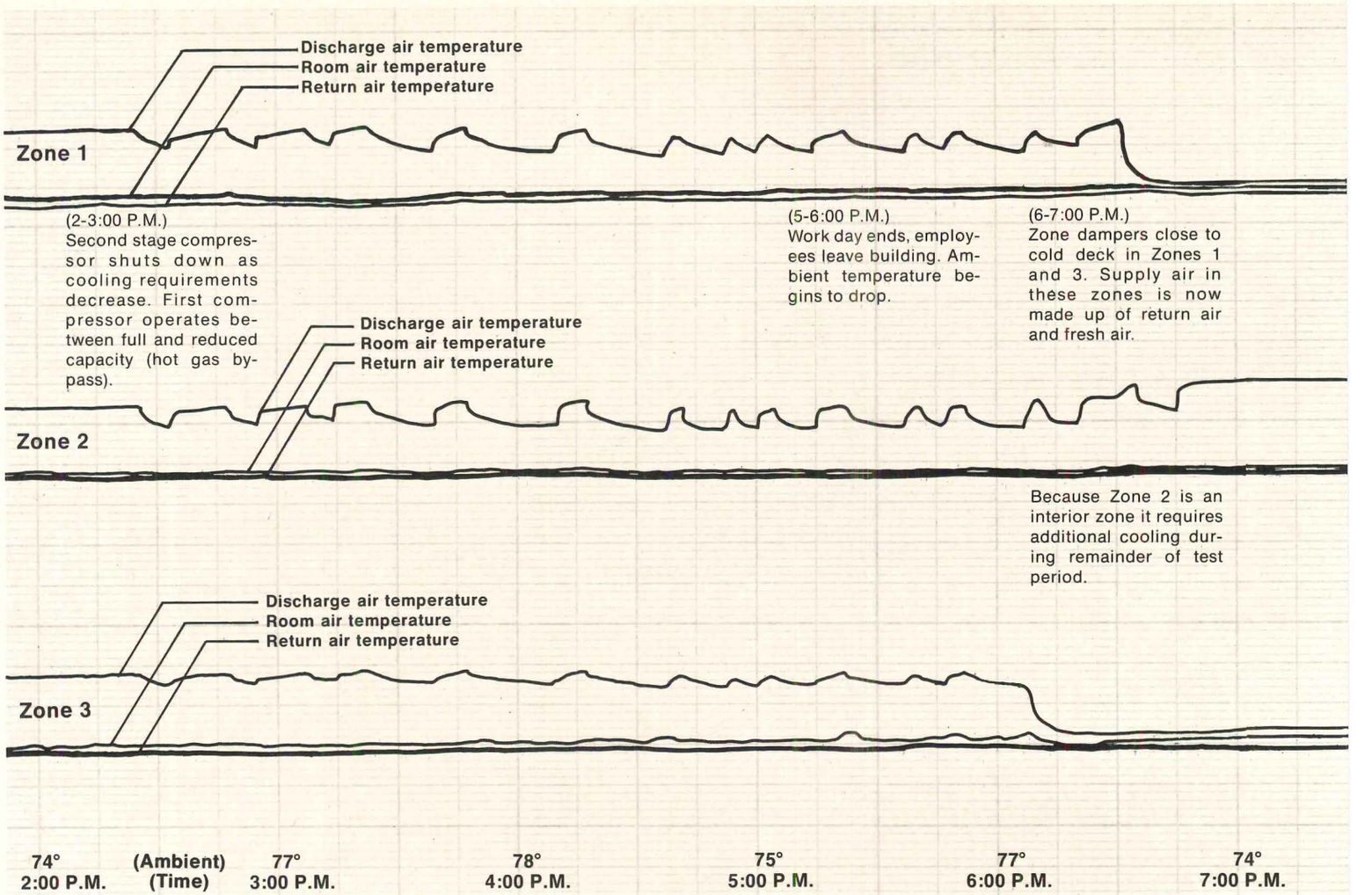


Mammoth Innovation proves itself at Fox Meadows.

This installation proved that Mammoth's FM system with Solid State control works better than any conventional multi-zone system ever made. And it cost less than $2.00 per sq. ft. installed!

When Mammoth first announced the FM Fluidic Terminal System, the news created quite a stir. For here was a terminal unit that uses the principle of fluidics to control air flow using *no moving parts* and requiring *no electrical controls or mechanical linkage!*

This revolutionized the rooftop concept, allowing a virtually unlimited number of terminal zones from a single zone primary source and offering low installation costs, no terminal unit maintenance or operating costs, greater construction flexibility, reliability, and superior comfort control due to FM's full velocity/variable volume operating characteristics.

Close on the heels of Mammoth's FM system came the announcement of their new rooftop Solid State Temperature control system. This one-of-a-kind Mammoth option "thinks" like a computer as it constantly monitors and compares space and discharge temperatures with the set point, adjusting the primary HVAC source's capacity to match the space load. So it *measures* rather than simulates the load to provide consistent interior temperatures *automatically!*

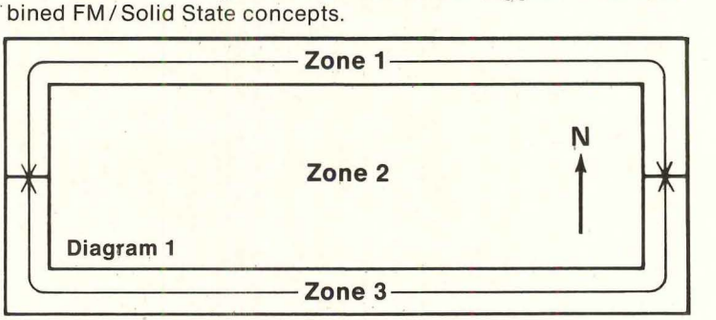
Solid State system benefits include superior temperature control in the space; improved unit efficiency for reduced energy and operating costs; maximum use of outdoor air for cooling; automatic heat/cool changeover based on space conditions; significantly reduced installation, maintenance and service costs and increased reliability because there are no moving parts!

But tests are one thing, field-tested facts another. Enter Belmar Builders, Incorporated.

Mammoth meets Fox Meadows

Belmar builds and rents office and apartment buildings in the Upper Midwest. In late 1970 they made a decision to build the Fox Meadows Office Building, part of which was to become their new headquarters. Mammoth was invited to bid on the building, a two-story structure of 32,000 sq. ft. The building's location and uses meant constantly changing load conditions throughout the day. And Minnesota's climate is notorious for its seasonal extremes.

The specs told Mammoth that here was an installation with a combination of design demands that almost begged for the combined FM/Solid State concepts.

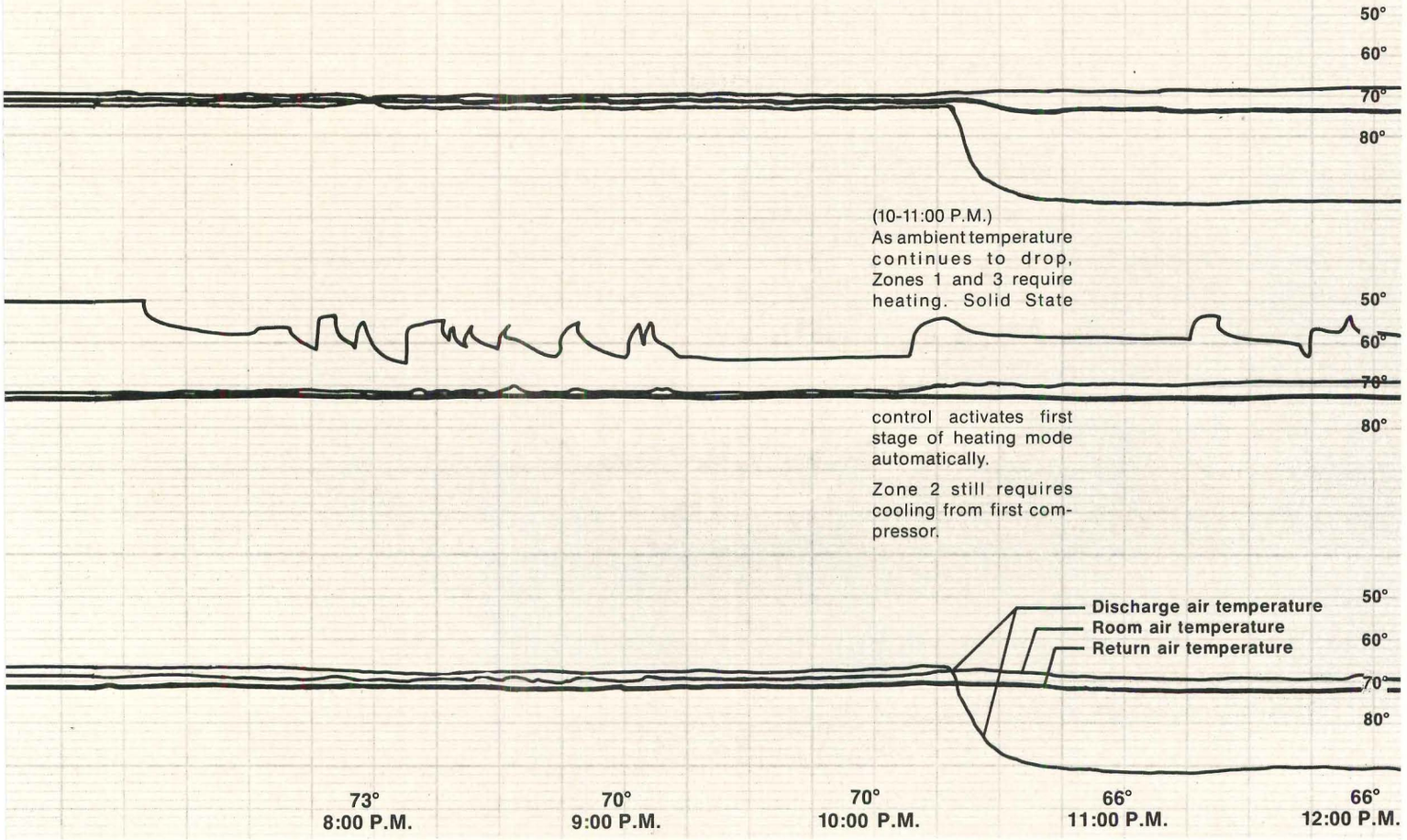


Second story floor plan (approx. 16,000 sq. ft.).

The building was divided into five master zones and 30 FM terminal zones. And when the figures were in, the job including installation was an amazing $1.60/sq. ft.! The other bids started at $3.25/sq. ft. for a competitive system.

Mammoth recommended their Solid State control system for each master zone which would make HVAC decisions for that zone independent of the others. The five master zones could

Diagram 2:
Line flow chart for zones 1, 2 and 3. All data shown recorded July 25, 1971, between 2:00 PM and Midnight.



have as many FM terminal units (secondary zones) as the builder desired. And they could be added or removed easily *after* completion, according to the degree of temperature control tenants wanted!

The special test

Once the building was completed and the system in operation, Mammoth engineers went to work setting up a special test for their own benefit.

The engineers gathered data from the three master zones in the second story, as these provide the greatest fluctuations in loads throughout the day. (See Diagram 1) Special recording equipment took three readings in each of the three zones: (1) Supply air temperature, (2) room air temperature (taken at a representative location), and (3) return air temperature. A simplified version of the resulting chart is shown in Diagram 2, above.

Belmar's Fox Meadows Office Building, Plymouth, Minnesota.

The time span shown in the diagram does not represent the total duration of the test. This portion was selected because it shows the internal and external influences that most affected interior space temperatures. The room sensor's set point for each zone was 72°F. All data shown was recorded on July 25, 1971, between 2:00 P.M. and Midnight.

The results? Unmatched success!

The most telling things about Diagram 2 are the lines indicating room temperature. They are nearly arrow straight in every zone. *Room temperature fluctuations were near zero* although the loads on the rooms varied considerably!

Observe, too, that at approximately 10:30 P.M. zones 1 and 3 called for heat while zone 2 still required some cooling. The Solid State system was able to sense this need and switched the primary unit to the heating mode *automatically* without upsetting supply air temperature in zones 1 and 3, allowing fine control of space temperatures.

Called out in Diagram 2 are the steps the primary unit took to comply with the signals given by the Solid State Temperature control.

One thing the diagram does not show is that throughout the test period the unit was operating at constant volume. Only the volume of air supplied to the room varied according to the individual FM room settings. Thus FM provides final, flexible terminal zone control while the Solid State-controlled primary unit enjoys energy savings and extended equipment life.

To find out just how much Mammoth can do for you, simply send in the coupon below.

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In spite of the chemical pollutants in the city air. The savage storms. The baking sun. And the eternal rumbles of the BMT Subway.

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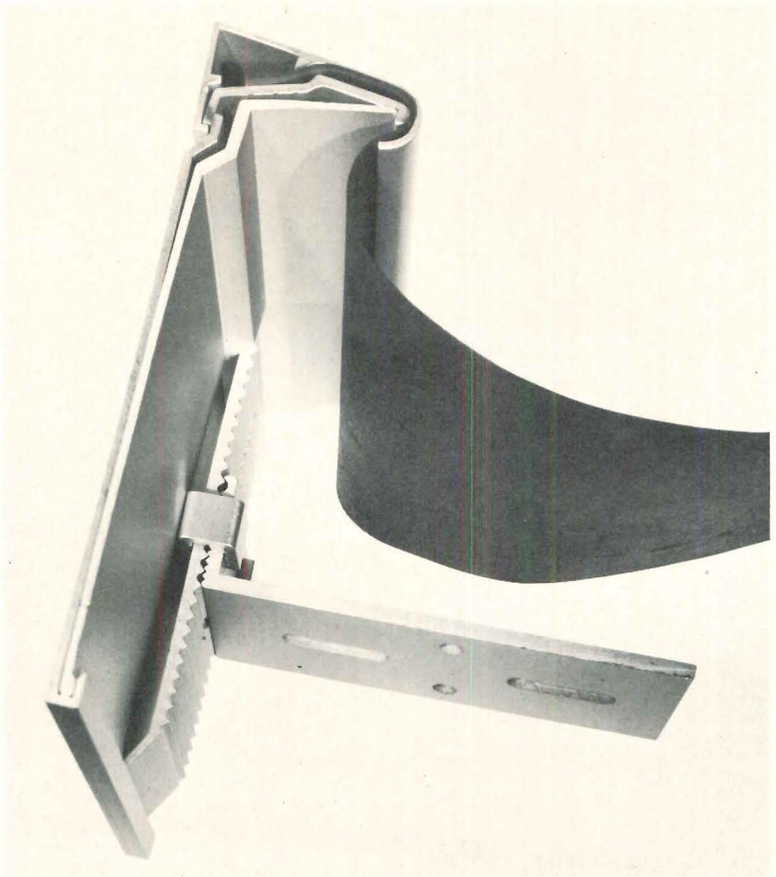
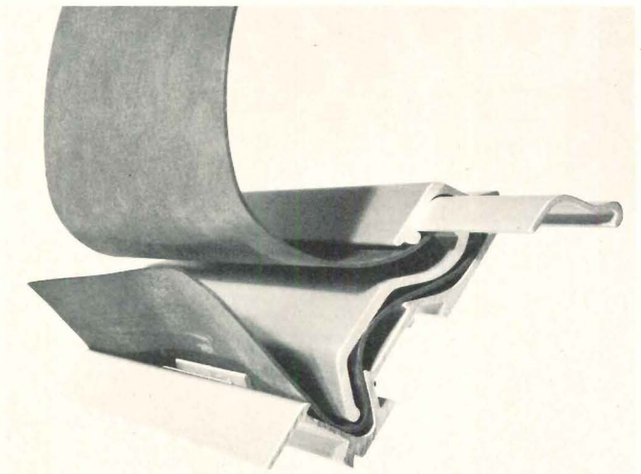
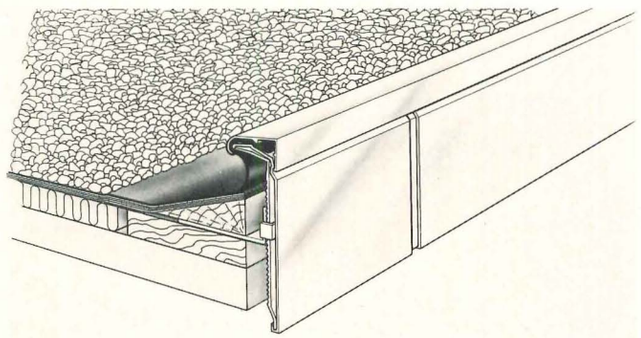
For more information circle item numbers on Readers Service Inquiry Card, pages 179-180

Fascia and flashing systems feature ability to accommodate differential movement







A **FASCIA SYSTEM** designed to accommodate roof deck movement is available in preassembled, modular extruded aluminum units including fascia, fascia holder, deck bracket and snap-on top cap, and a sheet neoprene membrane. A companion system, based upon the same principles, is available for flashings at parapet walls. Both systems go by the name of *Tremline*. Snap-on elements clamp the neoprene to the element that is attached: a) to the roof in case of the fascia system and b) to the wall in case of the parapet system. This clamping technique cuts time for field assembly while at the same time creating a watertight seal. The neoprene sheet is cemented to the roofing at the other end.

One of the most significant features of the *Tremline* systems is their ability to accommodate differential movement. The neoprene membrane works as an expansion joint—absorbing movement between roof and fascia. Further slip joints every 15 ft in the fascia allow movement and prevent oil-canning of the surface. With the parapet system, the wall mount can slide on the mounting bracket—thus components are free to move independently.

The fascia unit is attached to the roof by means of an adjustable bracket arrangement. The only fastener required with the system is used to attach the bracket to a wood strip located under the cant. Space required for the bracket automatically provides a slot for venting of the roof insulation. Tests at the University of Miami are reported to have shown that simulated wind-driven rain did not penetrate the slot.

The fascia system is available in a wide range of anodized or custom-painted finishes, as well as in natural mill-finished aluminum. ■

The Tremco Manufacturing Co., Cleveland

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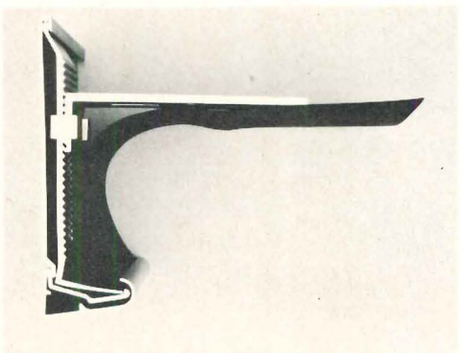

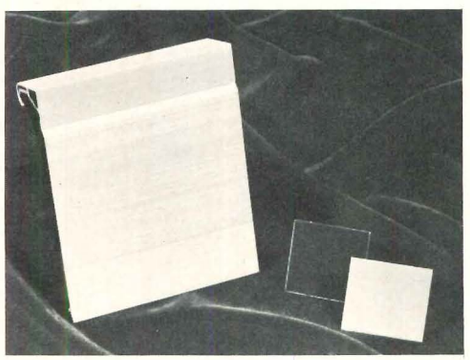

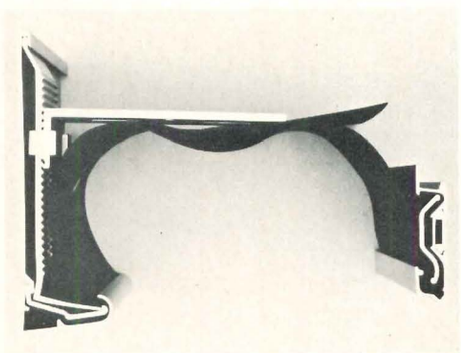

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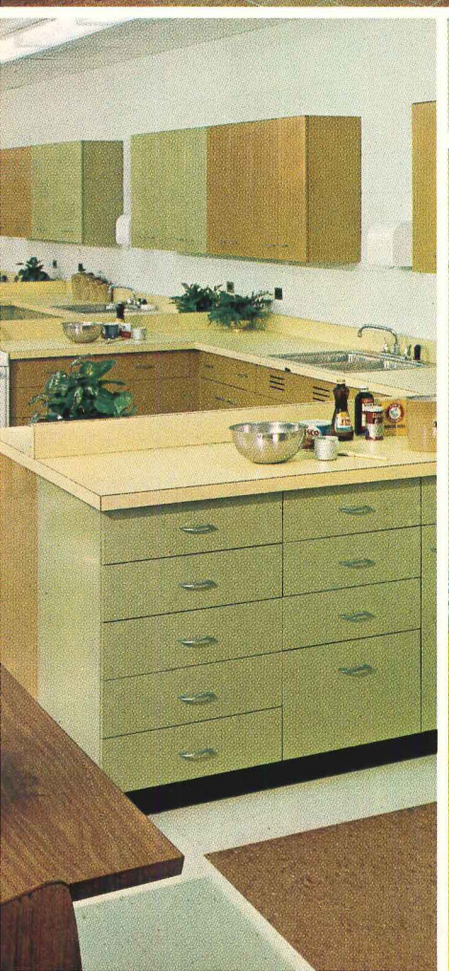

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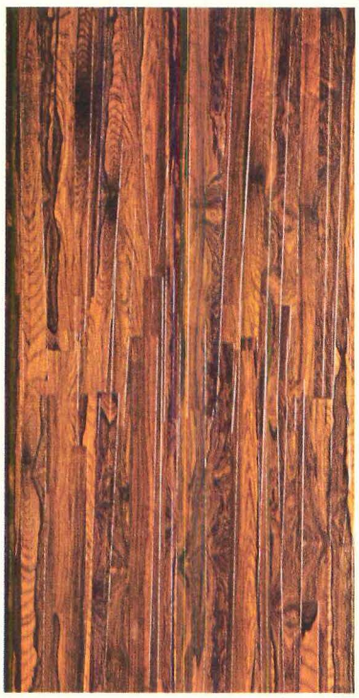
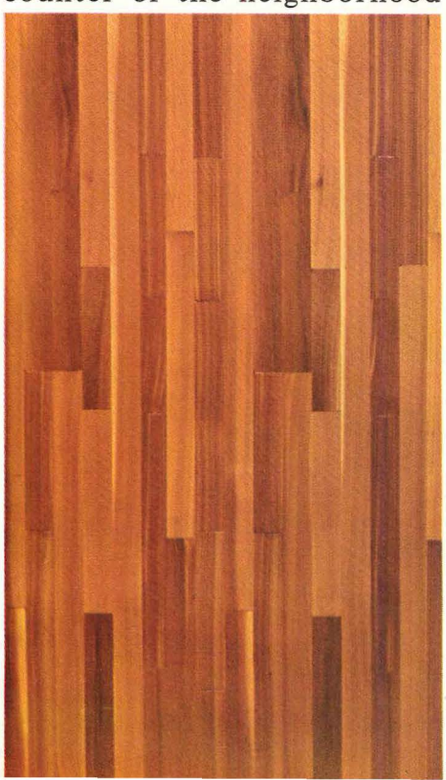


Element I™ from U.S. Plywood. Five exclusive concepts in which veneers of a wide variety of wood species are used as they've never been used before.

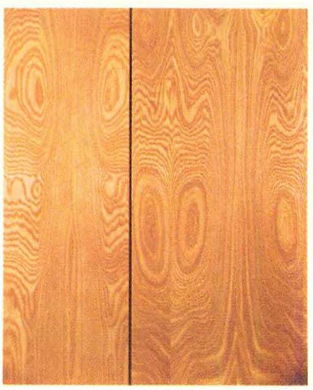
Panels of mismatched or random-matched veneers. Panels which retain the rough natural textural beauty of wood. Panels joined in new ways with plastic or built-in reveals. Panels or battens that are available in many widths to vary surface treatment.

For a breakthrough in the use of wood for interior design, U.S. Plywood's Element I includes:

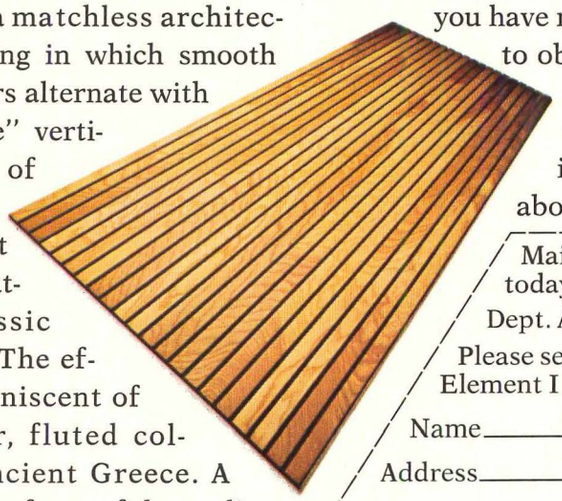
Butcherbloc™—a paneling of dramatic impact inspired by the counter of the neighborhood butcher shop. Cedar veneers are laid end-to-end in vertical rows to reproduce the handsome look of heavy board inlay. Veneers are random length, in a variety of natural color tones and grainings. The overall effect is solid and audacious—in keeping with the paneling's namesake.



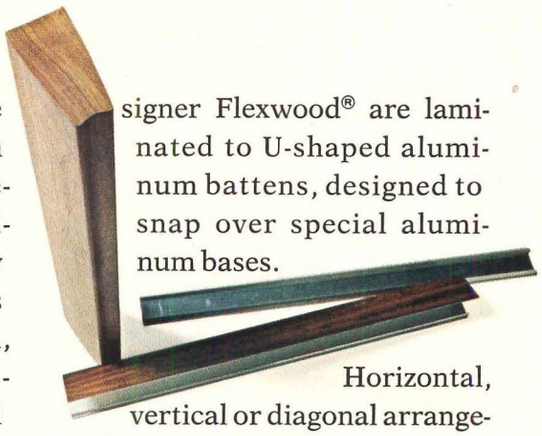
Collage™—choice wood veneers of birch, elm, oak, walnut, pecan, teak and rosewood are overlapped in random arrangements across each panel face to form a syncopated pattern of wood grains and color shadings. Veneers vary in length and width, texturing the surface of each panel in bold three-dimensional relief. A special bonding process has been devised to retain this unique and strikingly beautiful sculptured appearance.



Ionic®—a matchless architectural paneling in which smooth wood veneers alternate with "black olive" vertical reveals of plastic. This arrangement creates a pattern of classic simplicity. The effect is reminiscent of the slender, fluted columns of ancient Greece. A masterpiece of graceful paneling.



Palisade™ batten & trim—an unconventional decorating material in which veneers of Designer Flexwood® are laminated to U-shaped aluminum battens, designed to snap over special aluminum bases.



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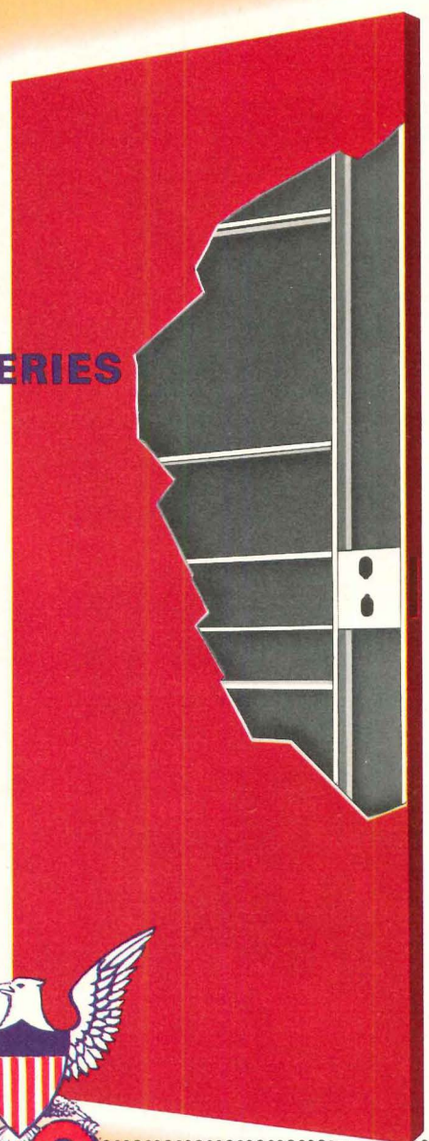

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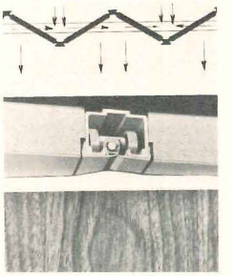
A classified advertising section devoted to helping architects and engineers keep up to date on building product manufacturers.



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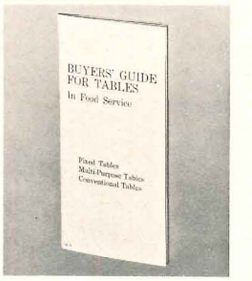

A NEW "BUYERS' GUIDE FOR TABLES" has been published by Fixtures Manufacturing Corp. This 28-page, color-illustrated booklet gives valuable information on features to consider when buying tables. Suggestions are made on table types, costs, versatility, safety and appearance, and hints given on increasing seating capacity, saving space and improving appearance and comfort. Send for your free copy of "Buyers' Guide for Tables". Just write Fixtures Manufacturing Corp., 1645 Crystal, Kansas City, Missouri 64126.

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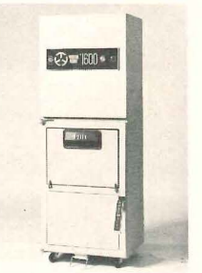

PORTABLE SOLID WASTE AND REFUSE COMPACTORS and systems from The Tony Team, Inc. includes four sizes and great versatility. Pollution Packer™ compactors bale, bag and box all types of wastes and refuse, wet or dry. Machine capacities range from .8 C. Y. to 4½ C. Y. of loose wastes at 10 to 1 compaction ratio . . . operate on low amperage, 110-V 60 cycle service. For hospitals, hotels, schools, colleges, restaurants, office and apartment bldgs. Simple adaptation to chute-type disposal systems. Spec sheets and literature available from: The Tony Team, Inc., 7399 Bush Lake Road, Mpls., Minn. 55435.

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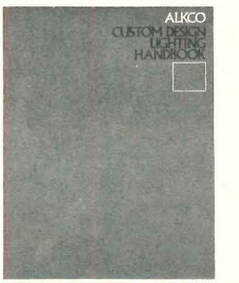

ALKCO CUSTOM DESIGN LIGHTING HANDBOOK. Latest release of 24 page handbook on custom lighting design, contains an outstanding collection of architect-designed lighting fixtures and systems by Alkco Manufacturing. Each of these lighting ideas are presented in an architectural drawing format which includes large-scale cross-sections, details and complete specifications. The innovative designs were created for a number of prestigious buildings thru-out the country including Hospitals, Schools, Universities, Dormitories, and Institutions. Write: Alkco Manufacturing Company, 4224 N. Lincoln Ave., Chicago, Illinois 60618.

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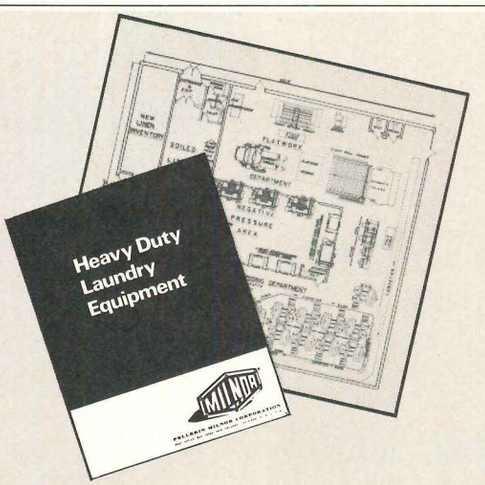

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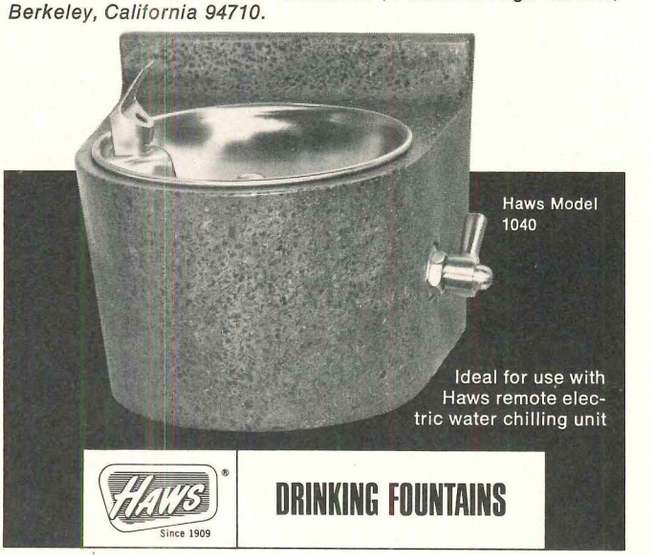

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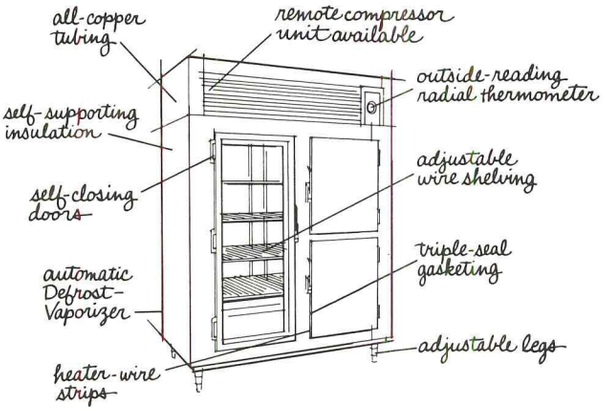
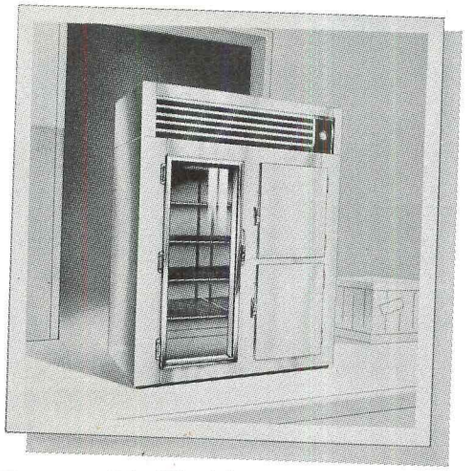


from your specs to shipment



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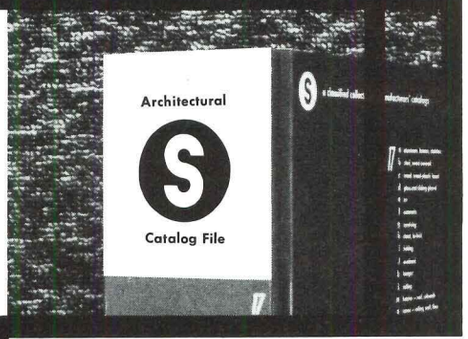

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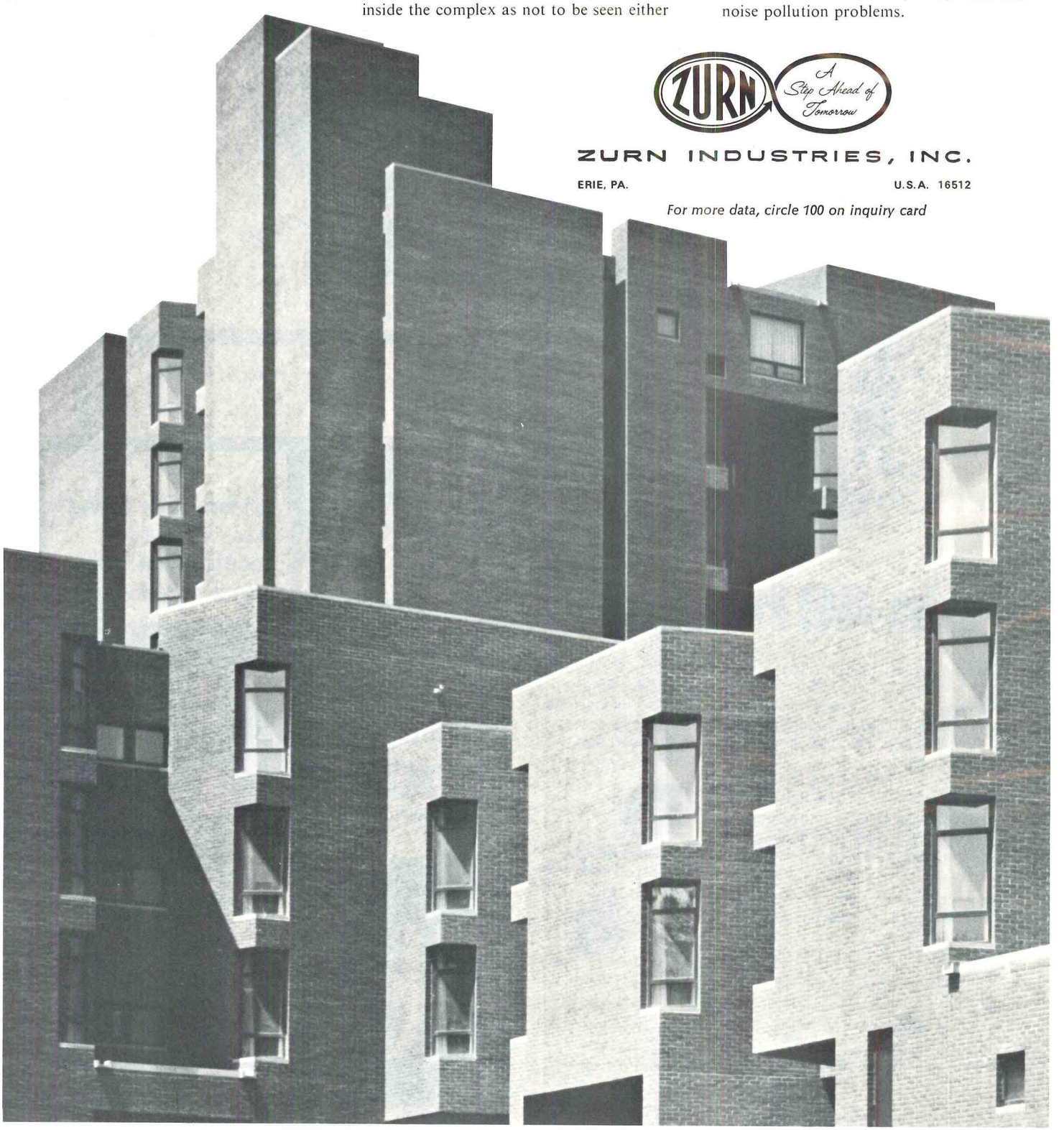

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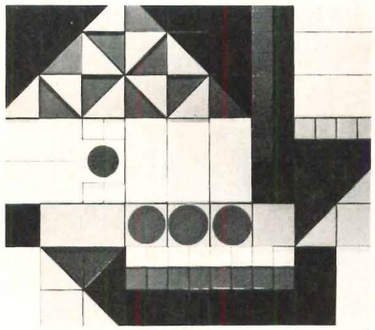

CERAMIC GRAPHICS / Raised and lowered surfaces of individual elements lend a sculptural effect. Nine original works in brilliant colors are available. ■ Design-Technics Ceramics Inc., New York City.

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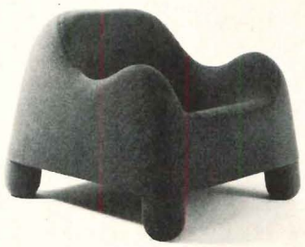

LOUNGE CHAIR / Molded foam rubber unit is available in a two-seat sofa in a selection of woolen covering material or shiny vinyl. ■ Stendig Inc., New York City.

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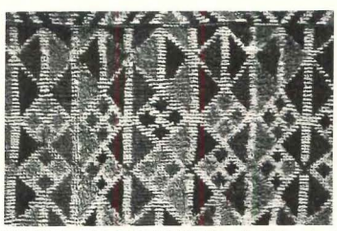
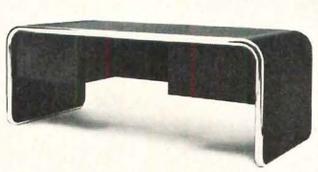


MOROCCAN HANDWEAVES / Wool fabrics and tribal rugs handwoven by native artisans in Morocco and imported by Margit Pinter can be seen by appointment at 200 Central Park South (Telephone: 212/541-7224). Shown above is a typical rug pattern. Fabric samples will be mailed on request. ■ Margit Pinter, 200 Central Park South, New York City, 10019.



DESK / Dark brown leather exterior is outlined by a continuous aluminum extrusion. Inside surfaces are covered in plastic laminate. ■ The Vecta Group, Inc., Dallas.

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more products on page 164

PPG Solarban® 575 Twindow® Insulating Glass.

How a PPG Environmental Glass gave The Regency Hyatt House—O'Hare, a highly visible and exciting design.

The architect for The Regency Hyatt House near Chicago's O'Hare Field wanted to give guests a comfortable, but exciting and "open" environment. He began working on his design concept by experimenting with circular tower shapes. Modern environmental glass, it proved out, was the most practical, exciting material for his circular design.

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PPG: a Concern for the Future

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Architect: John Portman & Associates, Atlanta, Ga.

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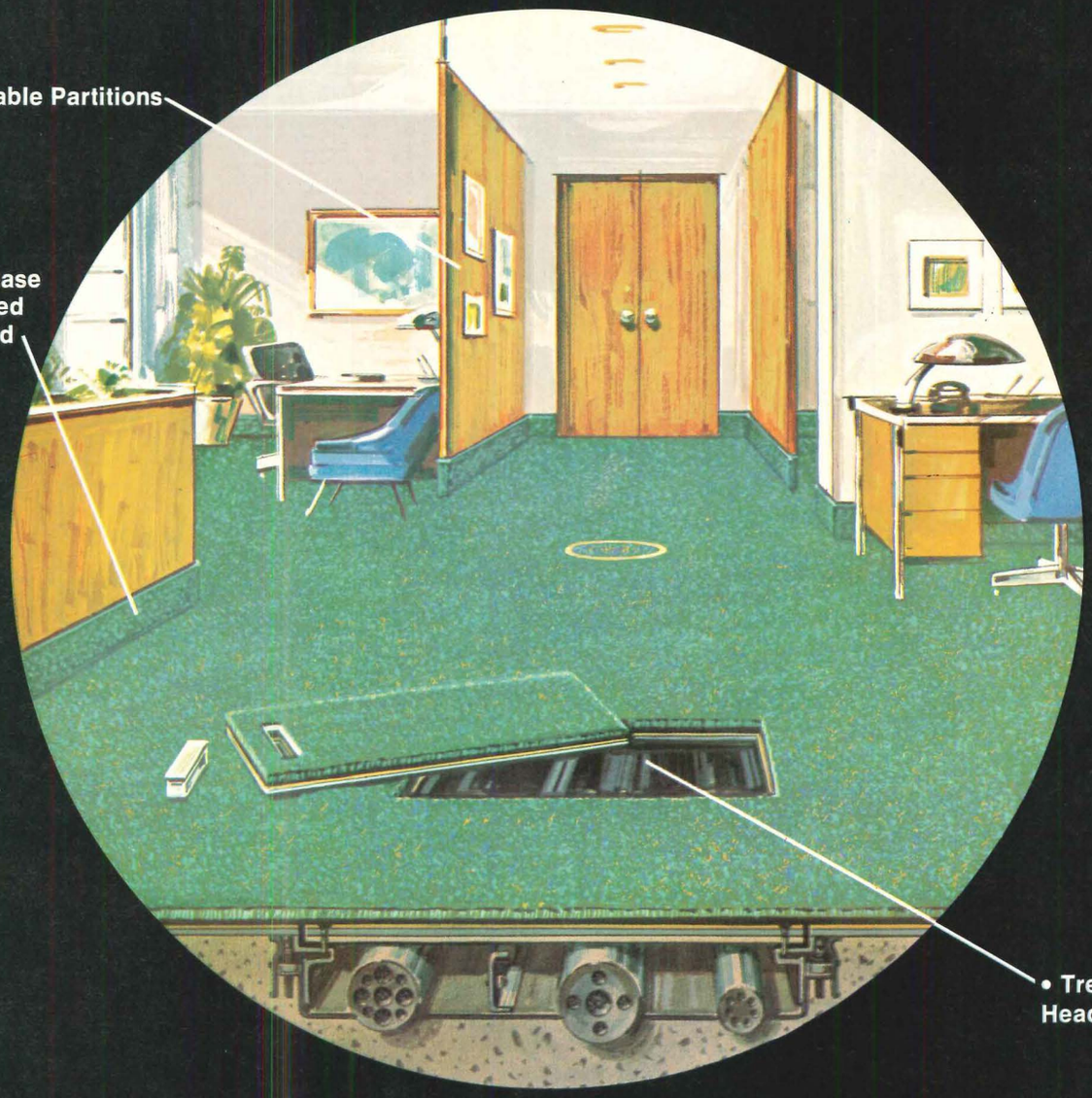

Carpeting is no longer a simple matter of beautiful floors. The challenge today is to integrate carpet with the total architectural environment.

CCC has this very complex problem down to a precise system—the unique Acrylic 73 Carpet System. We analyze every element involved—right from the blueprints. Recommendations are based on design, function and maintenance factors.

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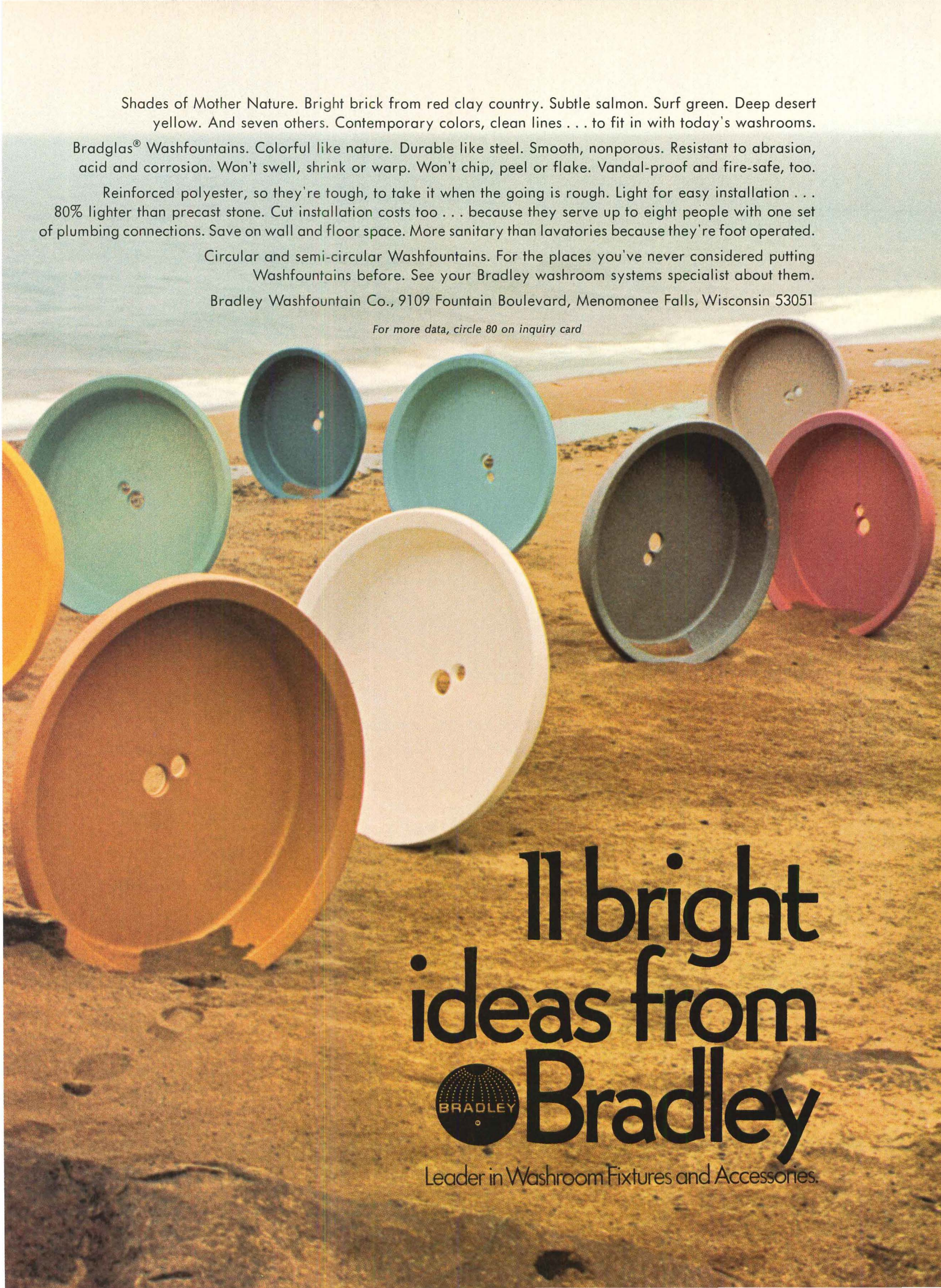
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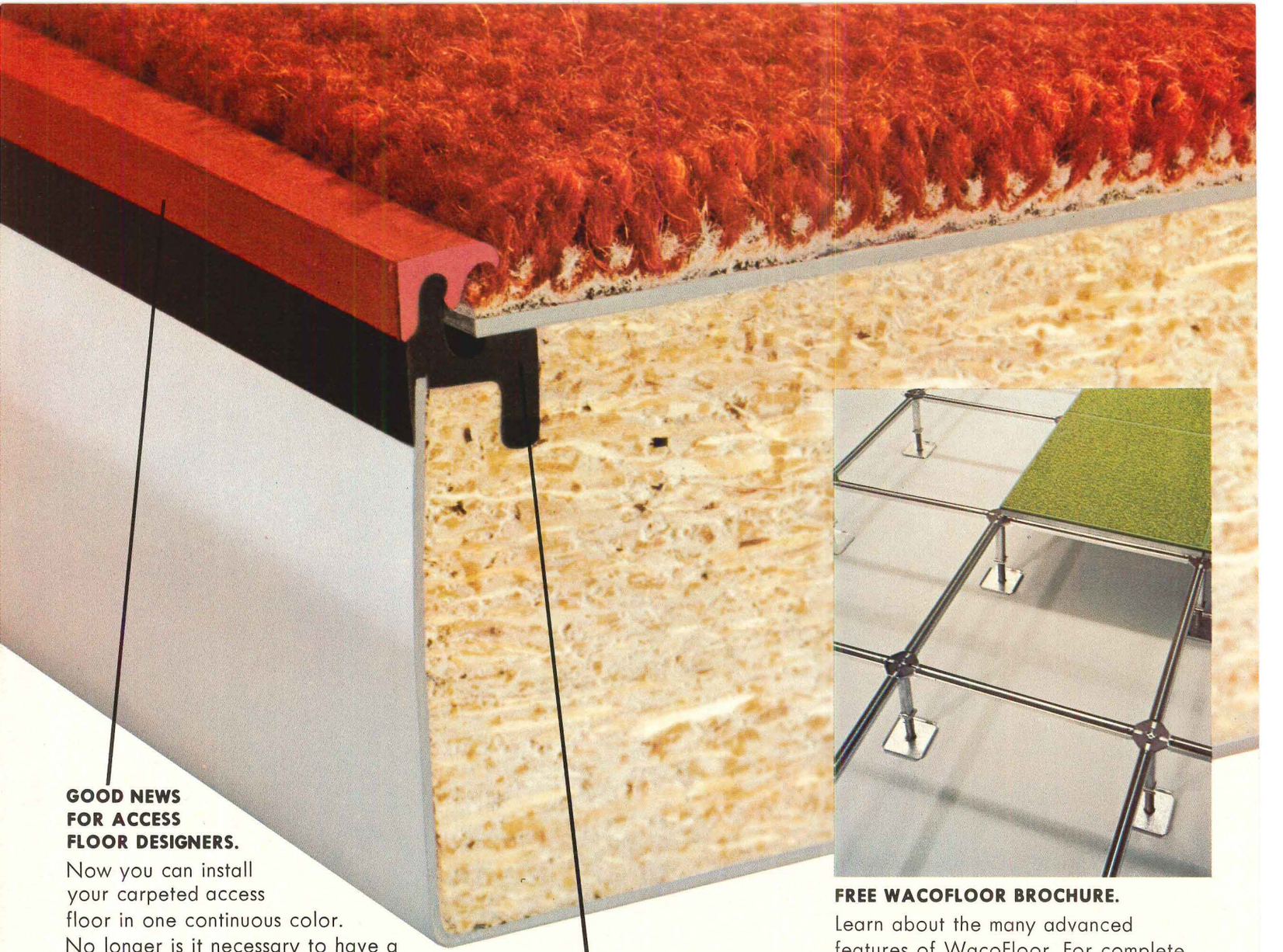

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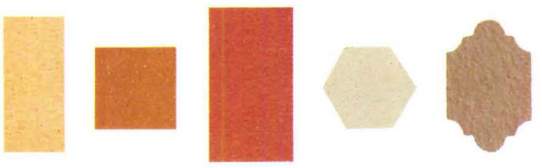

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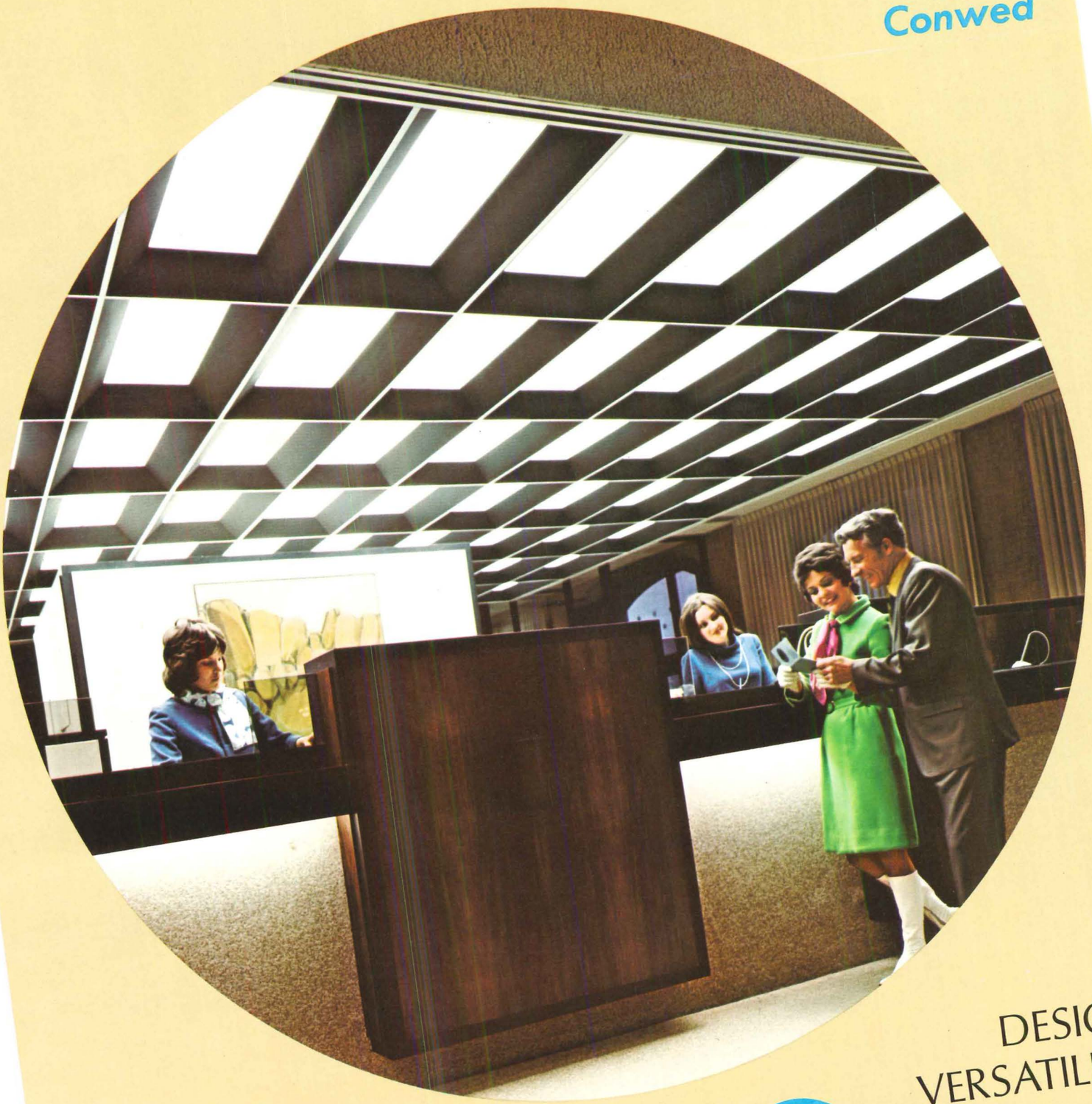

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PROJECT: Barber-Colman Corp., Rockford, Illinois

PRODUCT: Conwed Five Plus Five, 30"x60" air delivery fixtures, 30"x60" Fissura panels.

ACOUSTICAL CONTRACTOR: Continental of Rockford

Front Page Photo: Dropped bay illumination combines with tile in the Five Plus Five installation. A design focal point created by a dropped bay of coffered Five Plus Five fixtures, provides the teller's area with comfortable, quality illumination. First Federal Savings and Loan Association of Minneapolis. Acoustical Contractor: Acoustics Associates

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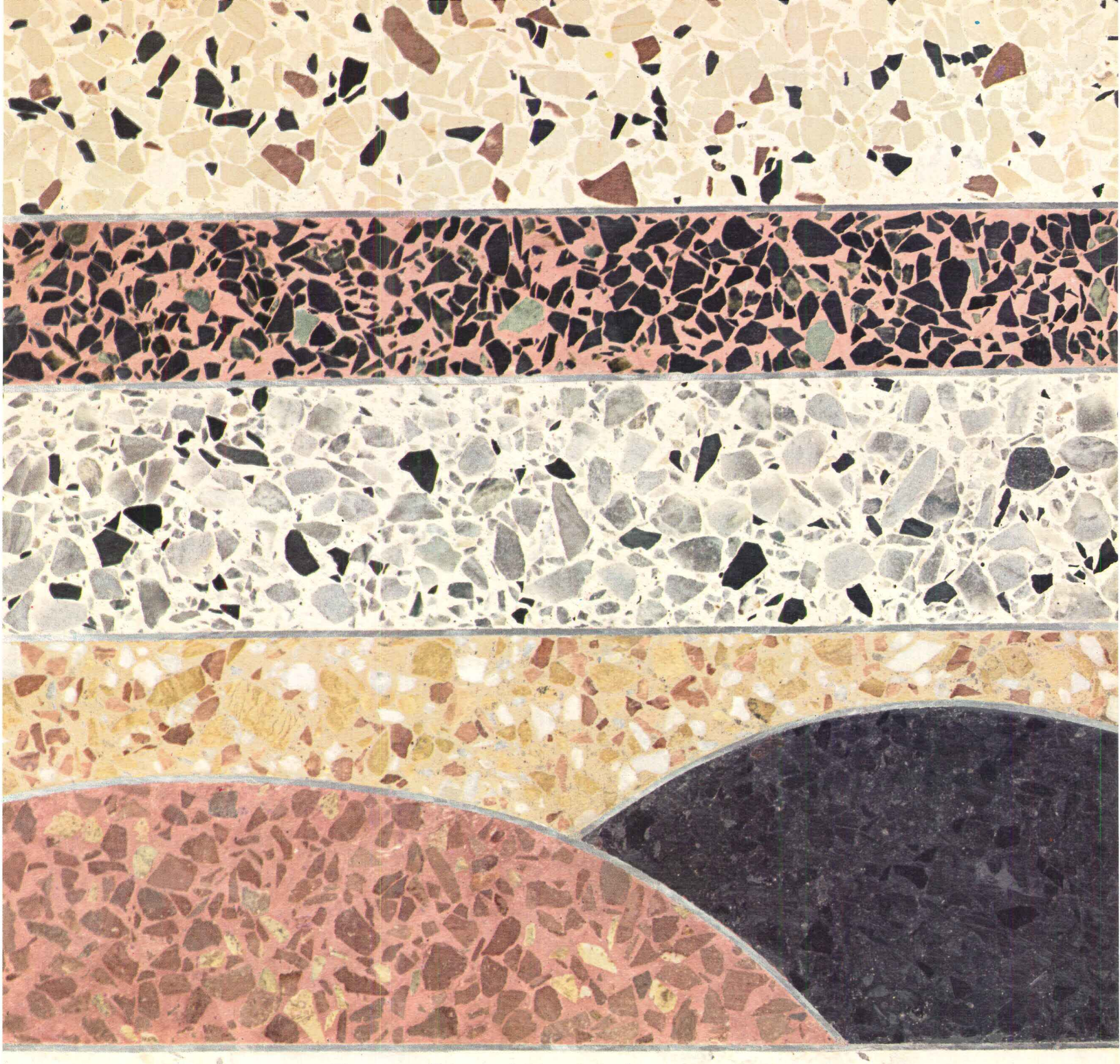

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PRODUCT REPORTS

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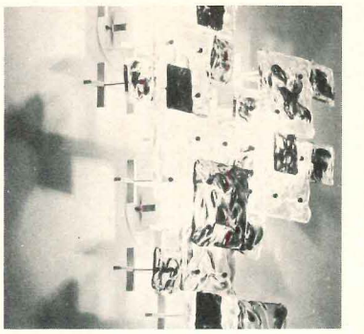


LIGHTING FIXTURES / A framework engineered to support hand-carved glass tiles is attached to an outlet box, or by mounting screws to any surface. Each additional unit is wired to the framework. All modules are connected by flexible cable. ■ Venini, Ltd., New York City.

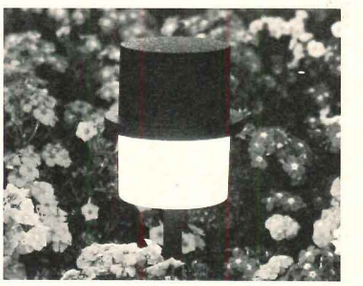
Circle 304 on inquiry card

WALL FURNITURE SYSTEM / Portable units can be used individually or grouped together. Plastic-laminated front panels need no refinishing. ■ The Valtronic Corp., Bronx, N.Y.

Circle 305 on inquiry card

CARPETING / Raised circles in merging shades of red and green create a kaleidoscope effect. All wool carpet is hand-tufted. ■ V'Soske, New York City.

Circle 306 on inquiry card



OUTDOOR LIGHTING / Aluminum fixture takes a 75-watt lamp and fits a ½-in pipe or conduit. ■ Prescolite, San Leandro, Calif.

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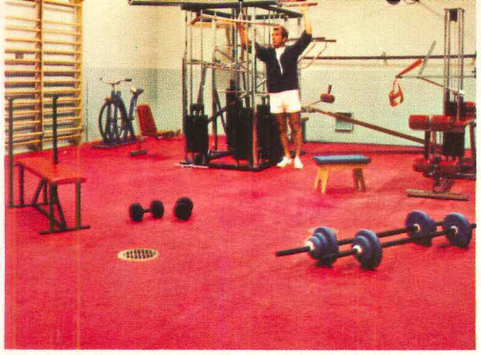

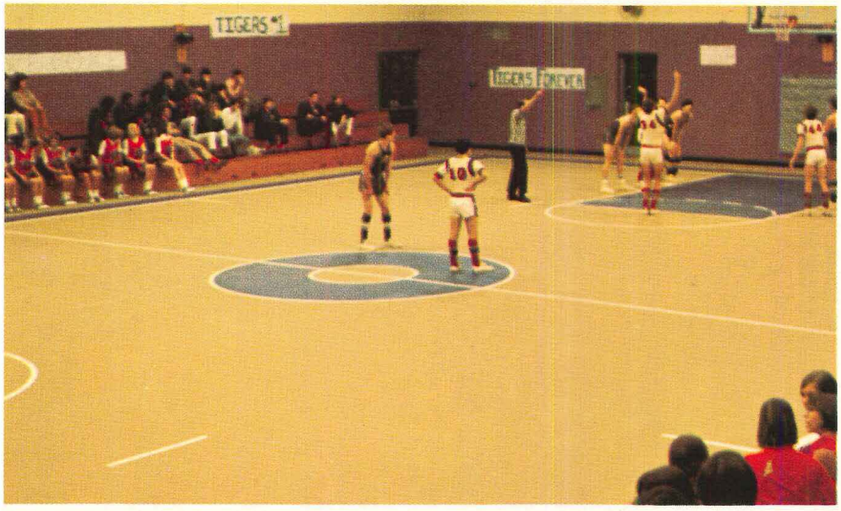

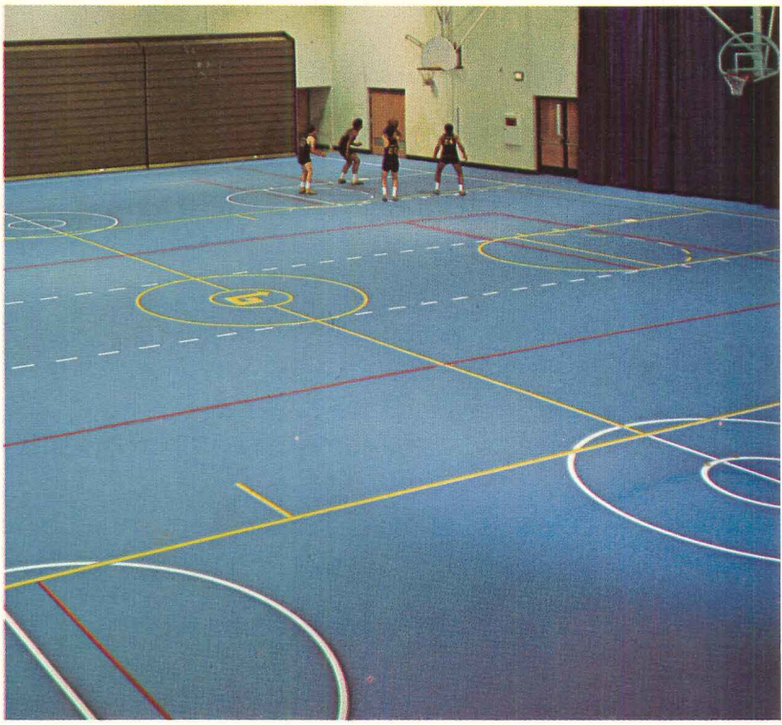

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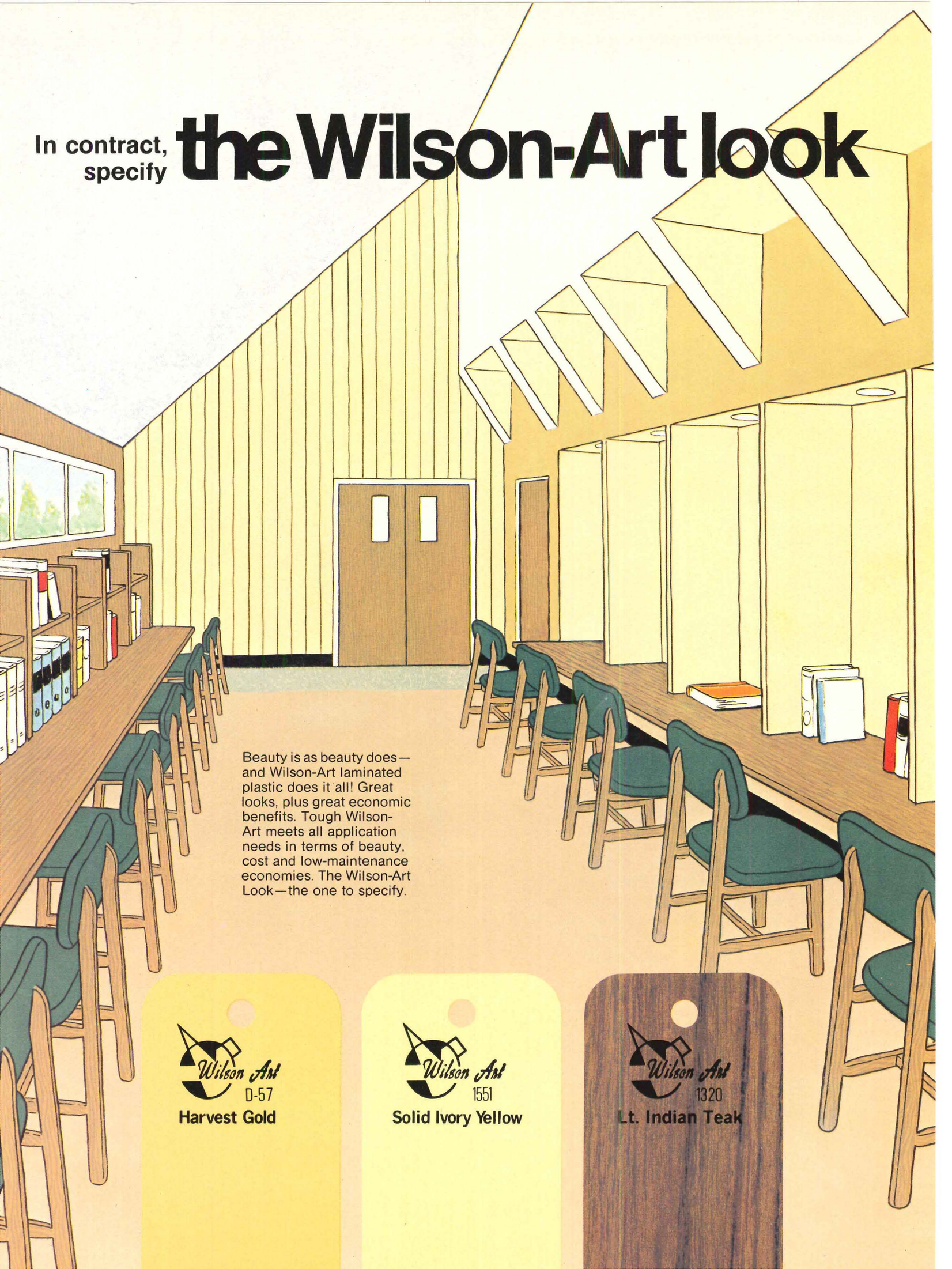
In contract, specify the Wilson-Art look



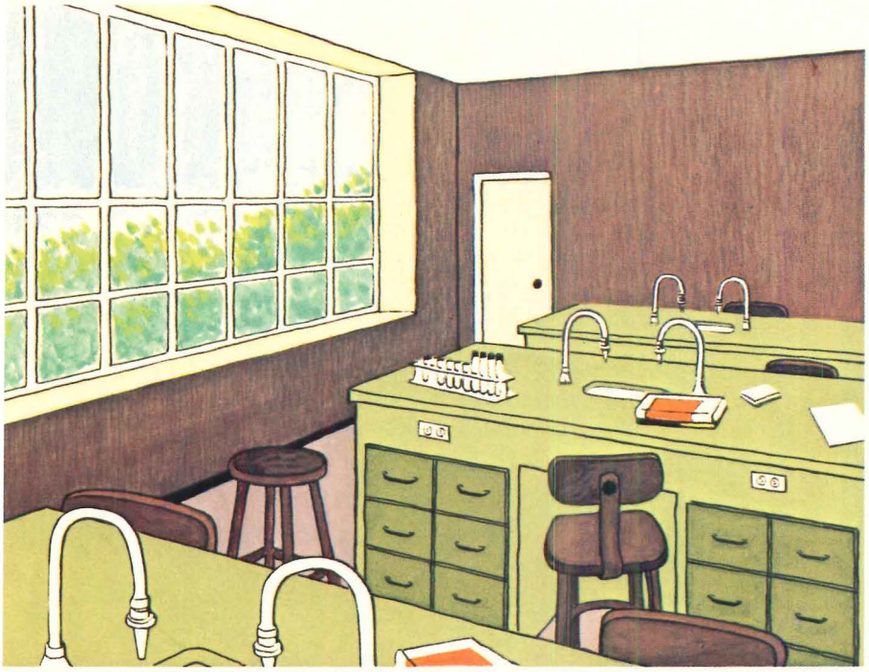
Beauty is as beauty does—and Wilson-Art laminated plastic does it all! Great looks, plus great economic benefits. Tough Wilson-Art meets all application needs in terms of beauty, cost and low-maintenance economies. The Wilson-Art Look—the one to specify.

Wilson Art
D-57
Harvest Gold

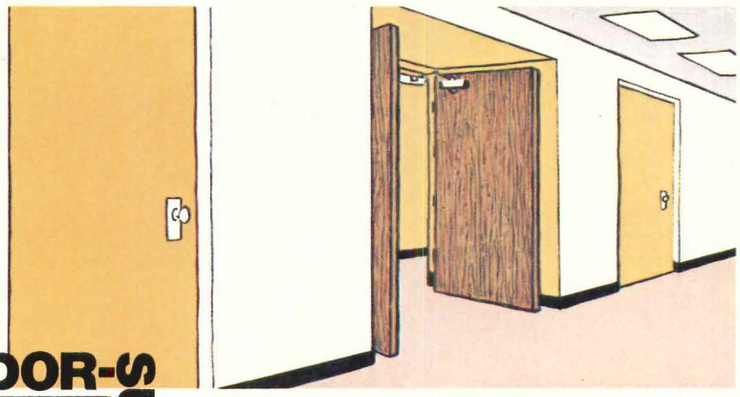
Wilson Art
1551
Solid Ivory Yellow

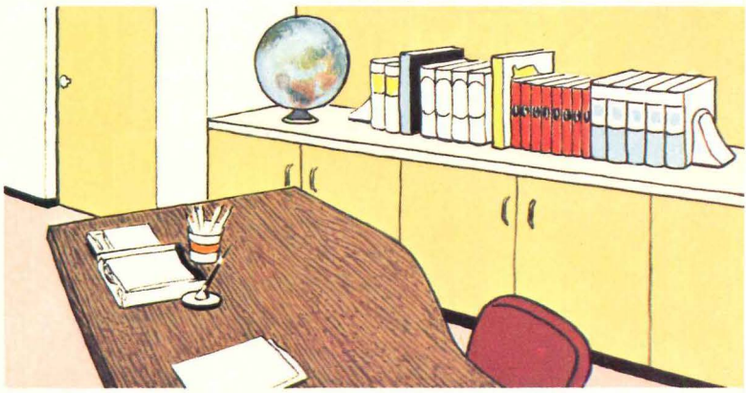
Wilson Art
1320
Lt. Indian Teak

there's more than meets the eye!

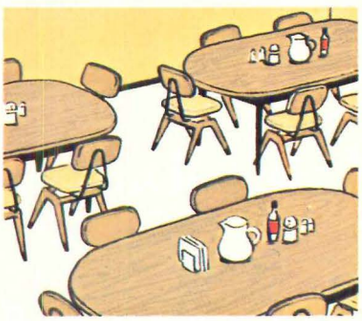


Clinical, clean and functional, Wilson-Art laminated plastic Danish Walnut, Olivine and Apple Green combine to make this school lab more productive—and more appealing! Add pluses for pleasing light reflective qualities and years of extra durability—you've got the right choice for functional work surfaces, anywhere.





DOR-SURF



DOR-SURF—a tough new face, from Wilson-Art! Doors covered with 1/8" thick Wilson-Art DOR-SURF are exceptionally tough and never need refinishing. Wilson-Art DOR-SURF is available in a wide variety of solid colors and woodgrains and two functional finishes. When high-traffic needs call for a highly durable door surface, it's time to specify Wilson-Art DOR-SURF. An added feature: Wilson-Art DOR-SURF is so impact-resistant that design integrity is maintained because no kick- or push-plates are ever needed!

Wilson-Art laminated plastics look better and last longer on fixtures, furniture, cabinets and counter tops. And Wilson Wall Systems install quickly and economically for permanent beauty. When it comes to the hard knocks of classroom wear, nothing beats Wilson-Art.

Illustrated: Antique White counter tops with Honey cabinets and a desk with Flat Cut Oak surfacing. Flexibility. Versatility. Design freedom with a flair for function.

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

In contract, contact the helpful ones—Wilson-Art Architectural Design Representatives!

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Wilson Art®
LAMINATED PLASTICS

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1-72

IN MAY, ARCHITECTURAL RECORD'S IDEA ANNUAL

RECORD HOUSES AND APARTMENTS OF 1972

1972 will be another boom year for the housing market. F. W. Dodge predicts that nearly 2.5 million housing units will be built at a cost of $32 billion.

In mid-May Architectural Record's *Record Houses and Apartments of 1972* offers a timely opportunity for manufacturers of quality building products to exert year-long influence on those architects and builders who are at the forefront of the housing boom. It will reach all major groups of specifiers and buyers in this market:

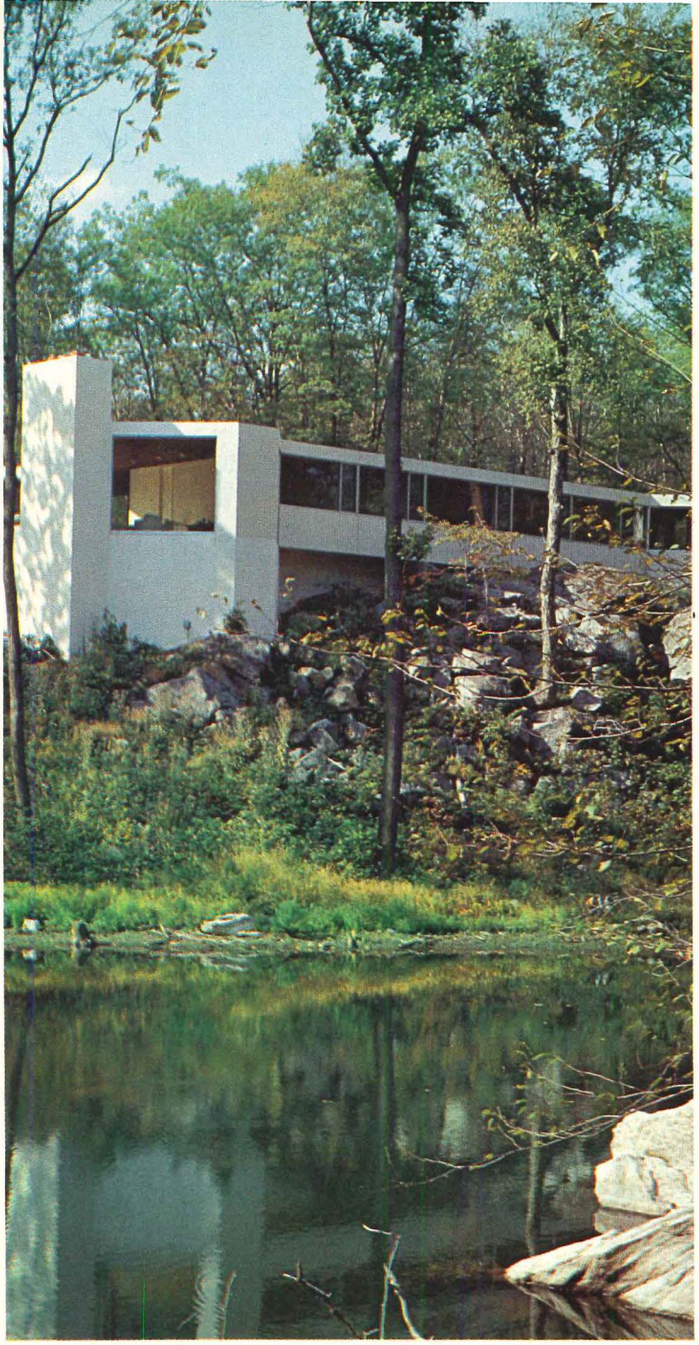
- over 41,000 architects and engineers who are verifiably responsible for 87 per cent of the dollar volume of all architect-planned residential building.
- 20,000 of the nation's foremost builders qualified by Sweet's on the basis of annual building activity to receive the Light Construction File.
- (at your option) 5,000 leading interior design offices qualified by Sweet's to receive the Interior Design File
- in addition, bonus bookstore distribution to an influential segment of the house building and buying public.

Record Houses and Apartments offers two very special advantages:

The issue has the longest working life of any issue of any architectural magazine! Architects refer to it five, ten, even fifteen years after publication.

Advertisers in Record Houses and Apartments earn a lower rate for all their advertising in regular issues of Architectural Record.

Don't miss it! April 15th is the deadline.



OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry card, pages 179-180.

REPRINT CATALOG / The "McGraw-Hill 1972 Catalog of Scientific, Engineering and Business Reports" lists over 400 reports for sale in reprint form, prepared by McGraw-Hill's 40 specialized publications and newsletters. The reports cover a wide spectrum of subjects including engineering fundamentals, industrial service equipment and applied technology, computers, industry and market analyses, managerial controls and architectural design. Most reprints are priced in the $1 to $2 range. Copies of the catalog are free. ■ McGraw-Hill Publications Co., New York City.

Circle 400 on inquiry card

LAMPS / Three six-page brochures present the company's Lucalox lamps in area and floodlighting, in industry and in roadway lighting. All describe the physical, electrical and performance characteristics of the sodium light sources. ■ General Electric Co., Cleveland.

Circle 401 on inquiry card

FLAME-RETARDANT VINYL UPHOLSTERY / Designed for vacuum formable products, material eliminates the need for cutting and sewing upholstery for shell-type designs. Twelve colors are available. ■ The General Tire & Rubber Co., New York City.

Circle 402 on inquiry card

GLASS PARTITION / A bullet-resistant barrier currently being used in bank interiors, jewelry stores and other robbery-prone businesses is described in literature. Clear-plate thicknesses for stopping medium-power bullets and high-power rifle bullets are available. ■ Laminated Glass Corp., Haverford, Pa.

Circle 403 on inquiry card

FURNITURE / A complete line of furnishings is presented in a catalog including a wide range of stainless steel and bronze tables. A price list is included. ■ Scope Furniture Inc., New York City.

Circle 404 on inquiry card

CONTRACT CARPETING / A 4-page brochure outlines the wide range of styles and man-made fibers available in a carpeting line. The company's capabilities in the manufacture and marketing of contract carpeting are discussed. ■ Certainteed Products Corp., Valley Forge, Pa.*

Circle 405 on inquiry card

METAL BUILDING SYSTEMS / A 48-page manual contains sections covering recommended design practices, guide specifications and metal building systems nomenclature. ■ Metal Building Manufacturers Assn., Cleveland.

Circle 406 on inquiry card

PLANK PANELING / Thirteen solid hardwood varieties are illustrated in a 4-page brochure. ■ Townsend Paneling, Div. of Potlatch Forests, Inc., Stuttgart, Ark.*

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**Additional product information in Sweet's Architectural File*

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.

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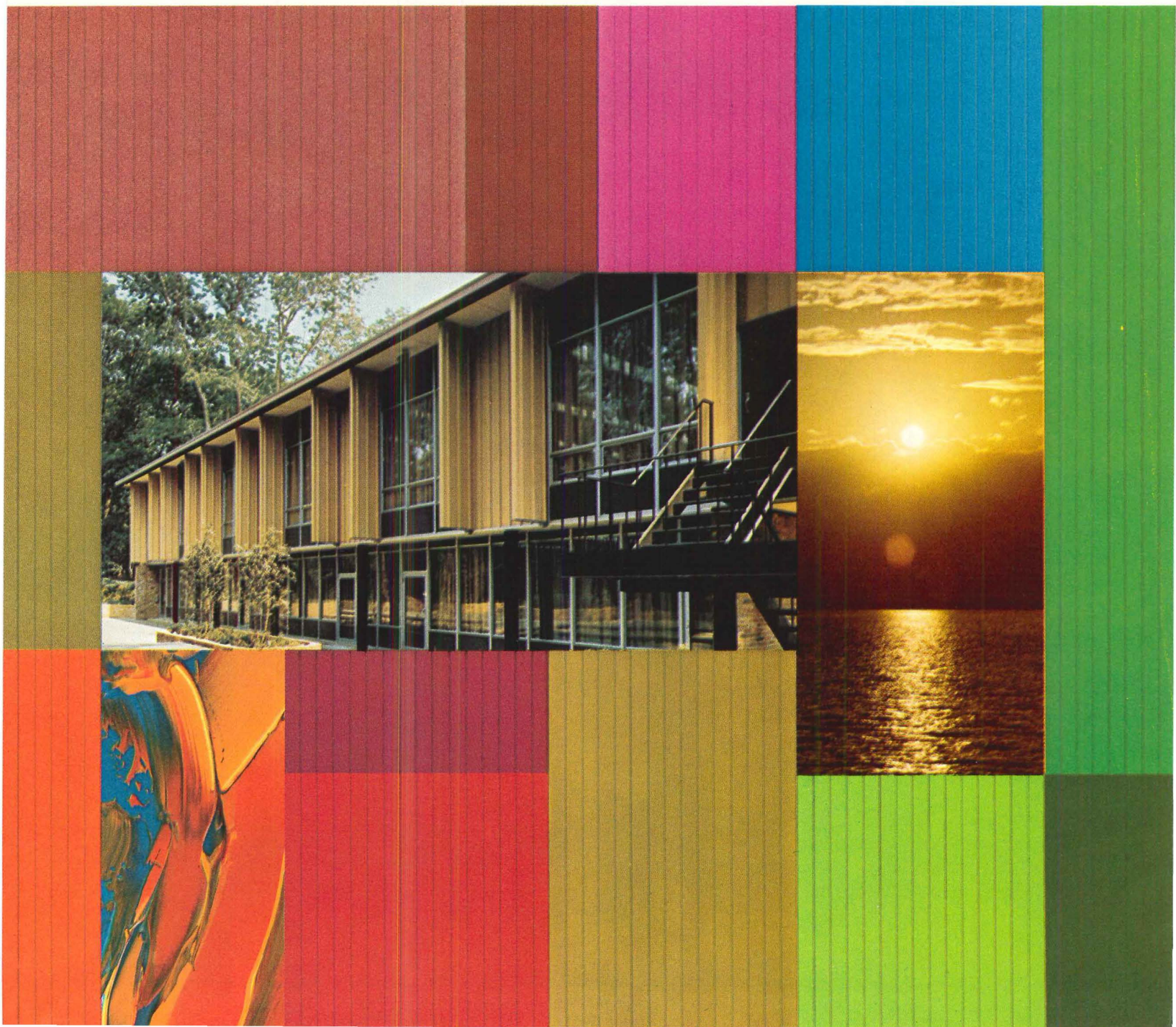
For "life-of-the-building" beauty ...and proved performance.



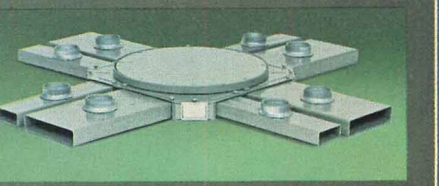
For more data, circle 90 on inquiry card

Some communication systems have holes in them.

The communications explosion can really sneak up on you. If you're not ready for it, you may have to use poke-through holes to accommodate new phones, new sophisticated equipment. And that can be a fire hazard. So get set. Put a Walkerduct Underfloor System in your building specs. It will help keep the building booming.

By running all the communication, power and signal requirements under the floor inside Walkerduct, you've got nothing to worry about. The building is safer, more efficient and able to handle any future needs quickly, easily and neatly. Without tearing up the floors. Without spending a small fortune.

Contact your nearby Walkerman for more information. Or write: Walkerduct, Parkersburg, West Virginia 26101. In Canada: Walkerduct of Canada.



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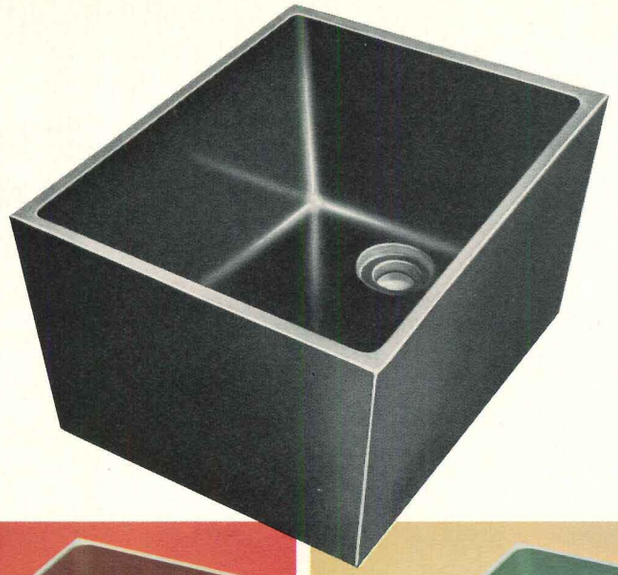
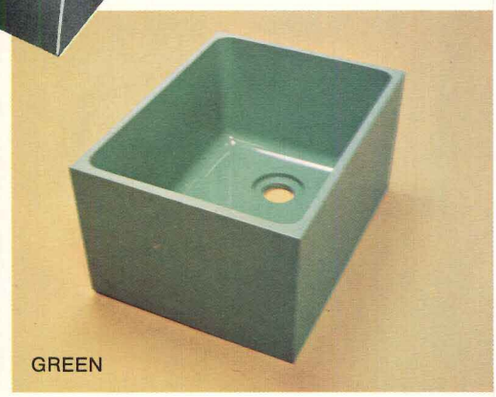
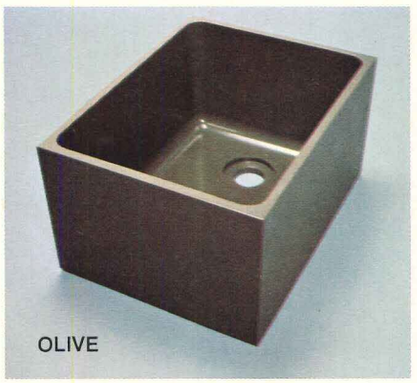
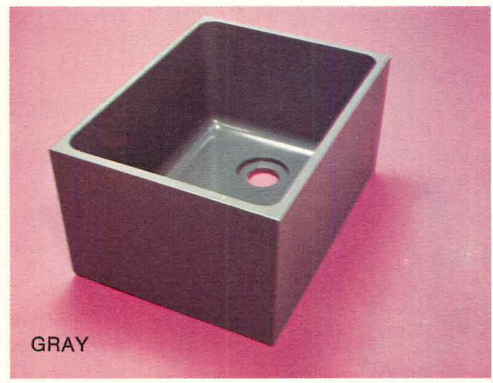
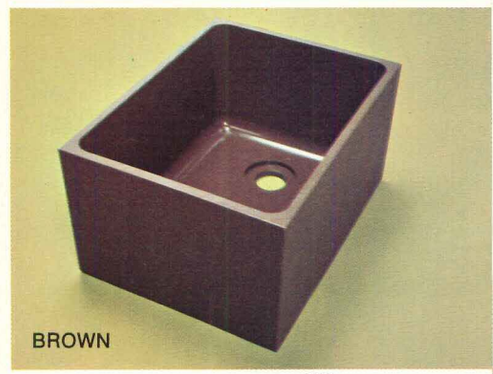
COLORED LAB SINKS











GSR® Lab Sinks give you a choice. Now you can color-coordinate GSR solid polypropylene laboratory sinks with today's colorful counter tops. Choose one of the six appealing colors or standard non-glare black. They are highly resistant to the corrosive action of alkalies, alcohols, acids, dilute mineral acids, salt, aqueous solutions, and solvents. Lightweight but tough, they are impervious to chipping, denting, breaking, and extreme temperature changes. Polypropylene has the least surface porosity of any sink material, particularly significant in maintaining sterile conditions.

GSR lab sinks are available in six standard sizes from 16″ x 12″ x 8″ deep to 24″ x 16″ x 12″ deep. Install them with flame-retardant GSR Fuseal® polypropylene pipe and fittings and you'll have the ultimate in corrosion-resistant laboratory waste systems. Call your GSR Fuseal representative or write for information.

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For more data, circle 92 on inquiry card

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Fits Glazing Functions Eight Ways

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Names to remember for specific performance . . . whatever the light, heat, glare, sound or safety control you want to build into structural walls:

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Architect: Toombs, Amisano & Wells
Stopray #2016 glazed by PPG, Atlanta

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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Los Angeles 90017
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Milan
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NEW YORK, N.Y. 10036 P.O. Box 12

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Manufacturers Reps wanted by long established aluminum metal pan acoustical ceiling tile manufacturer with new and proven items to merchandise. Looking for agents who call on architects for our "Spec" items; and general contractors, acoustical contractors, lumber yards, building supply houses, etc., for our "Direct Sale Items". Many territories open. Commission basis. Flexible agency policy. No stock to carry. Write to Simplex Ceiling Corp., 663 Fifth Avenue, New York, N.Y. 10022.

Manufacturer's Representative covering Washington, Oregon and Alaska for Eastern Manufacturers of Construction Industry Products is seeking additional lines in the Architectural and Mechanical fields. Many years experience with Architects, Engineers, Contractors and Suppliers. Write RA-5803, Architectural Record, re details of product and terms. Representative will send complete

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Public relations professional with 15 years' experience handling top architectural clients recently gave up Madison Avenue hoopla to operate modest, personalized one-man service. I am seeking one or two clients, large or small, requiring expertise in publicizing projects nationally or locally, brochures, reports, speeches, all writing assignments. Retainer or project basis. Please reply to BO-5225, Architectural Record.

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The MONARCH, a high intensity area light mounted less than 4′ above grade. Yet it can illuminate a 1200 sq. ft. area with a horizontal footcandle brightness ratio of 10 to 1. And it's brought to you in an architecturally appealing package. ■ Spaulding's MONARCH was created for areas where poles aren't desired. Areas such as plazas, town squares, campuses, drives and entrances/exits. For people's sake, the MONARCH has a safe operating surface temperature. ■ Glare? Nothing to speak of . . . it's virtually eliminated by a system of reflected, redirected light through a prismatic refractor. ■ Durable? You bet . . . as durable as practicality will allow. Its high strength, impact resistant polycarbonate refractor is permanently sealed in the MONARCH's all aluminum housing. The housing is mounted to an extruded aluminum post. Together they'll support up to 785 pounds without permanent deflection. The entire assembly has a factory finish that's guaranteed for five years. ■ One catalog number gets you a complete MONARCH assembly . . . luminaire, post and base cover, all with a matching factory finish plus a pre-set anchoring system.

Spaulding

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The Regency Hyatt House, a 750 room, 30 million dollar hostelry, is located in Rosemont, Illinois near Chicago's O'Hare International Airport. Architects John Portman & Associates designed this elegant yet functional hotel around the theme of "exploding" interior space, a concept so dramatic as to make the O'Hare Hyatt House a virtual tourist attraction.

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