

TORONTO-DOMINION CENTRE BANK BY MIES VAN DER ROHE—REFLECTED CEILING
NEW DORMITORY FOR ST. PAUL'S SCHOOL BY EDWARD LARRABEE BARNES
COMPLEX FOR SCOTTSDALE, ARIZONA CIVIC CENTER
COMPUTERS AND ARCHITECTURAL DESIGN
BUILDING TYPES STUDY: BUILDINGS FOR THE BROAD SPECTRUM OF HEALTH CARE
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ARCHITECTURAL RECORD

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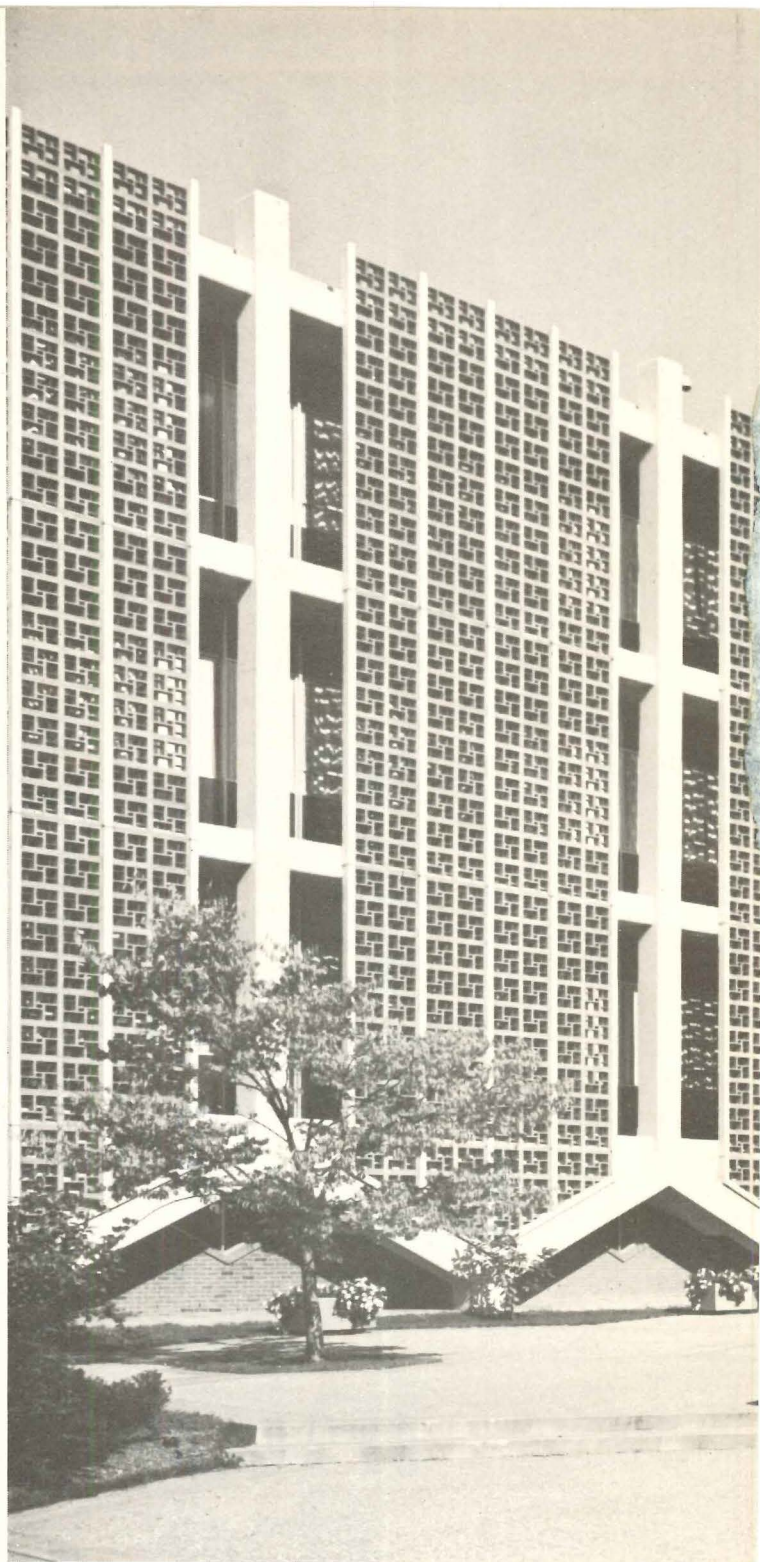
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(Above) Patterson Office Tower and White Classroom Building. Architects: Johnson-Romanowitz, Lexington. General Contractor: Foster & Creighton Company, Lexington. Six Dover gearless traction elevators with Computamatic IV Control.

(Right) Agricultural Science Building One. Architects: McCulloch & Bickel, Louisville. General Contractor: Foster & Creighton Co., Lexington. Two Dover Oildraulic Elevators with Duplex Control.

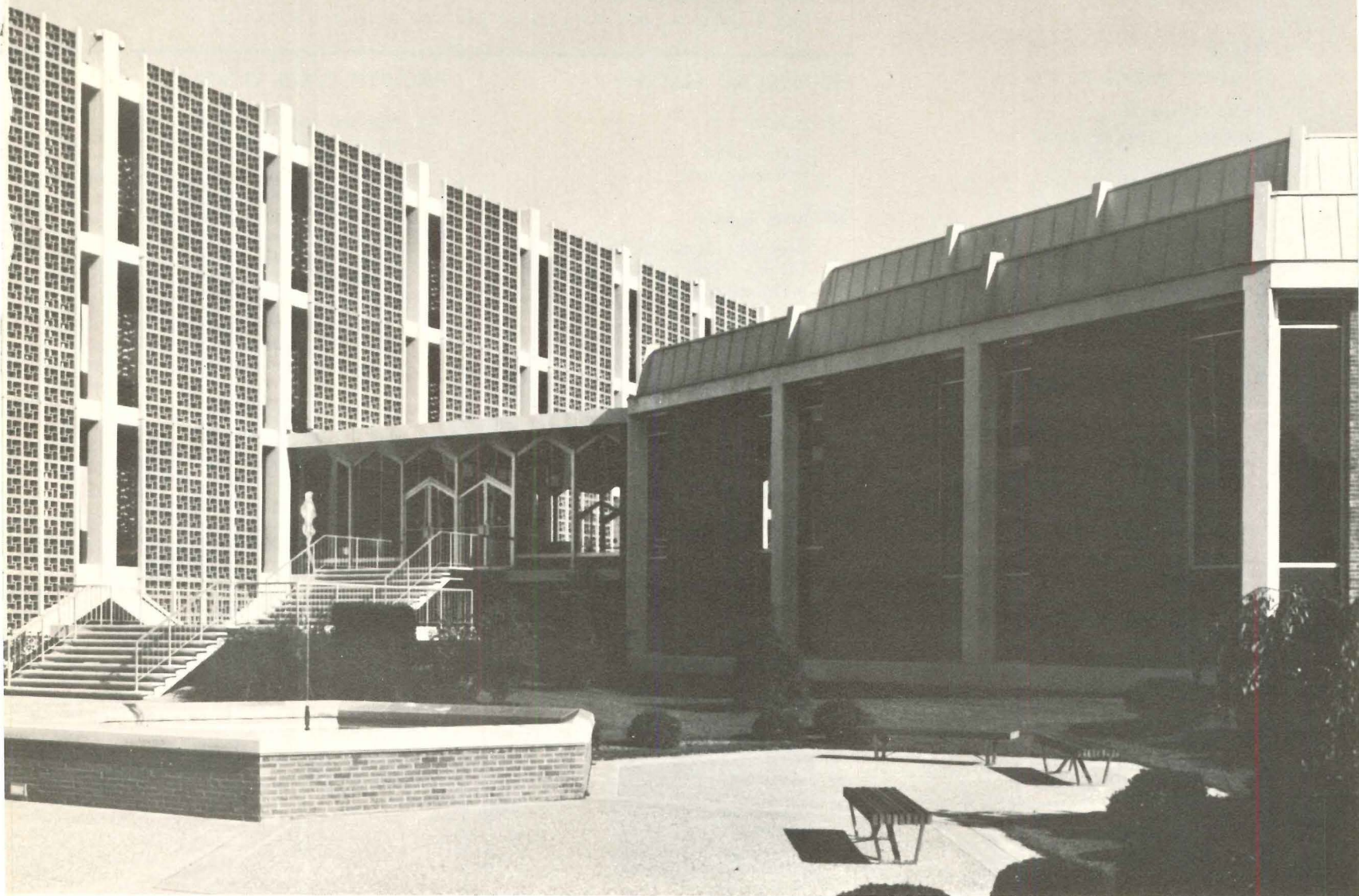


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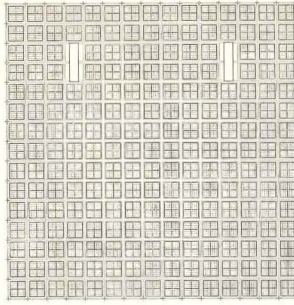
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the elevator innovators



Cover: Reflected ceiling plan, Toronto-Dominion Centre

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Architects & Engineers: John B. Parkin and Associates & Bregman & Hamann

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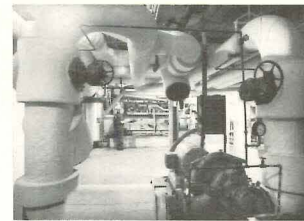
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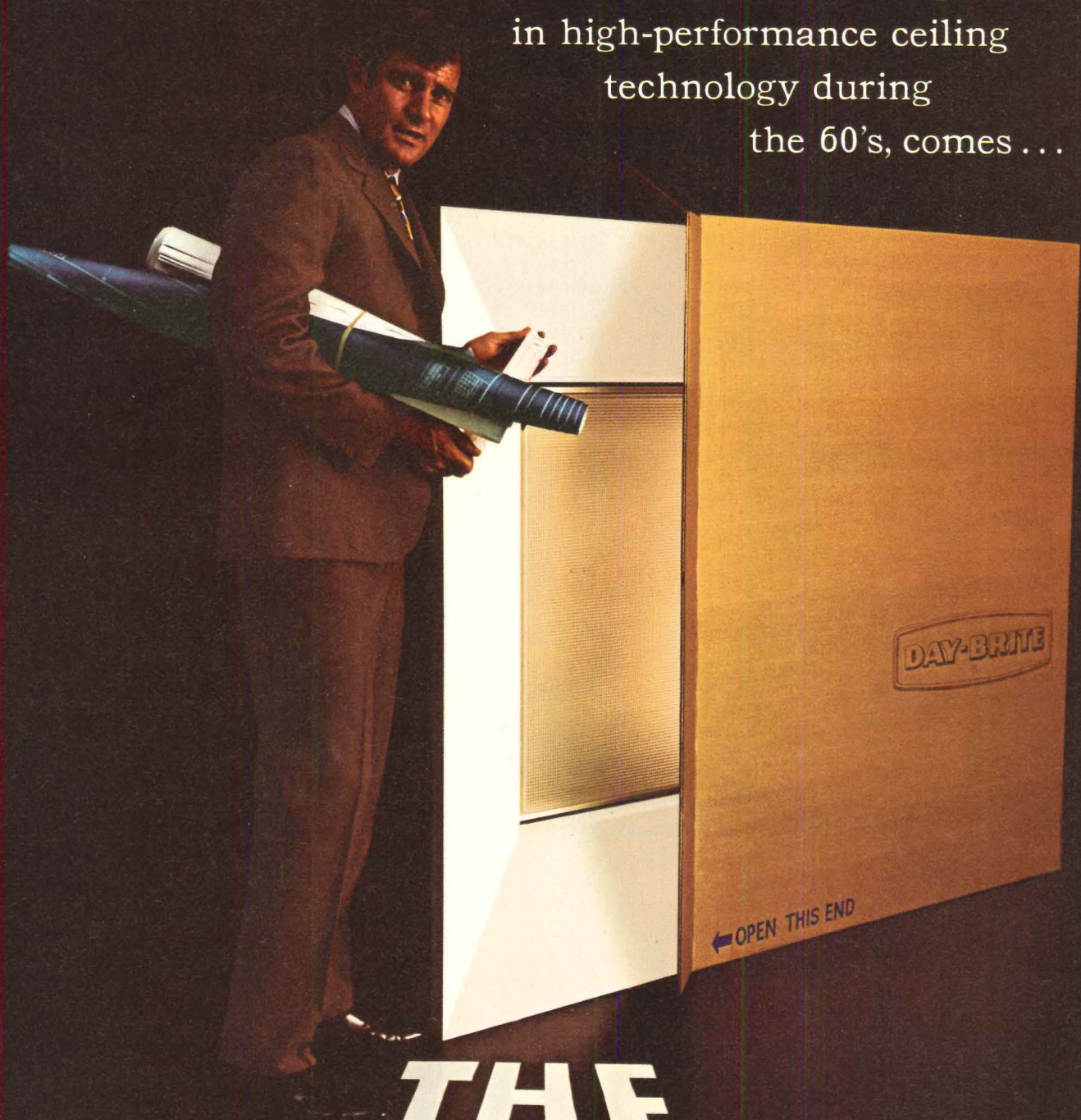
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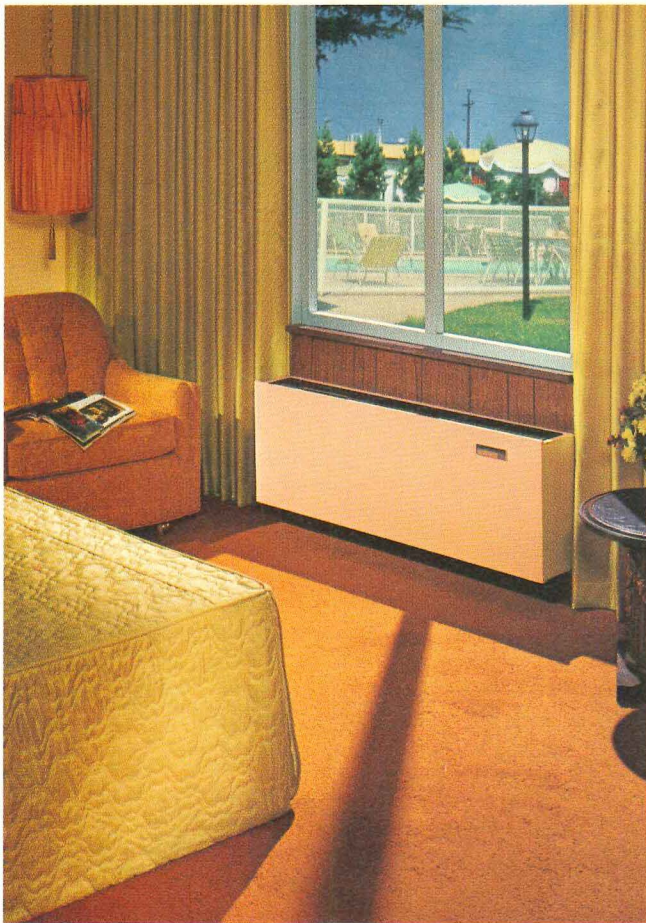
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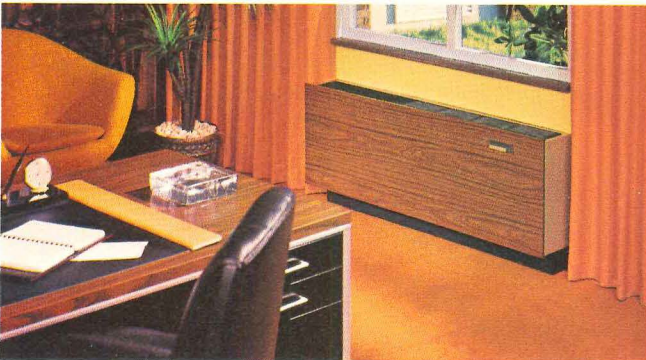
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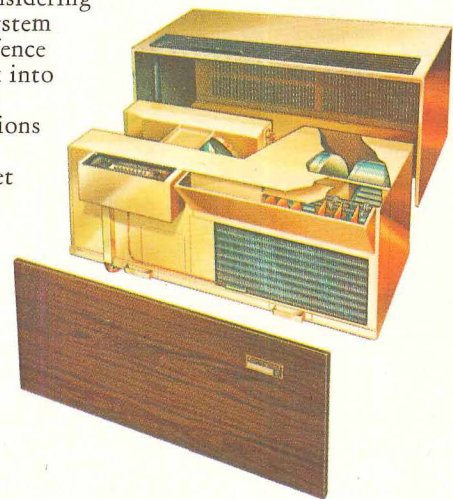
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Quips, quotes, and perspectives

■ **On standards, specifications, and common sense.** One sentence in a fine new booklet published by the U.S. Savings and Loan League points out: "Criteria or standards often are sought by those engaged in judging land plans. To the lender or builder, 'standards' may bring to mind automatically such items as street specifications. But judging the quality of a subdivision or neighborhood plan involves much more than consideration of paving thickness, curb profile, setback dimensions and other engineering minimums. There is great danger in attempting to formulate rigid rules which a lender or any regulatory authority might exercise *without intelligent discretion.*" [italics mine].

The matter of leaning on rigid standards (which tend to be minimum standards) as a substitute for intelligent discretion (or willingness to make decisions) has been commented on here many times before. But it's good to see the lenders reading about it.

The quote is, by the way, from "Land Planning, Better Housing Environments, Volume 1b," a 60-page booklet that any architect involved in a housing project would find most useful in explaining to planning commissions and zoning boards and developers the alternates to their existing mindless practices and demonstrating—through well-illustrated case examples—that others have accepted cluster planning, planned unit development, and other 10-year-old new ideas without destroying their local communities (in fact, making them better places to live). John Schmidt, A.I.A., Director of Architectural and Construction Research of the USS&LL, says you can get a copy by writing him (enclosing \$2), at 111 E. Wacker

Drive, Chicago, Illinois 60601.

■ **Hooray for the road builders,** who clearly have something we haven't got. Did everyone notice that the Congressional debate on whether or not to extend the Federal highway system resulted (surprise!) in a boost from the present \$2.2 billion authorization for fiscal 1974 to \$4 billion, and provides similar sums for 1975 and 1976. (That's all before matching funds.)

Meanwhile (in case you're given to making invidious comparisons), all of the HUD programs put together got \$3.4 billion for fiscal 1971. The final bill providing funds for (among other agencies) HUD puts \$1.2 billion into urban renewal, \$350 million into water and sewer grants, \$575 million into Model Cities, and spreads the rest among a host of other programs any one of which would appear to deserve a much higher priority than more four-lane roads that lead from one crumbling city to another.

■ **If it t'aint one thing, it's snowmobiles.** There are now more than one million snowmobiles in use in North America, and *half* of that number were sold last winter (which is some kind of growth pattern). So, increasingly, we're getting noise and air pollution and accidents not just on the highways but deep in the woods; along with some fresh problems of harassed wildlife, injured or destroyed vegetation, damage to trails and stream banks.

The Conservation Foundation has caused to be published a thoughtful, calm-in-tone, but much-to-the-point booklet that concerns itself with the new kinds of problems developing as a result of the new kinds of off-road vehicles such as snowmobiles,

dune buggies, and trail bikes. It speaks sense:

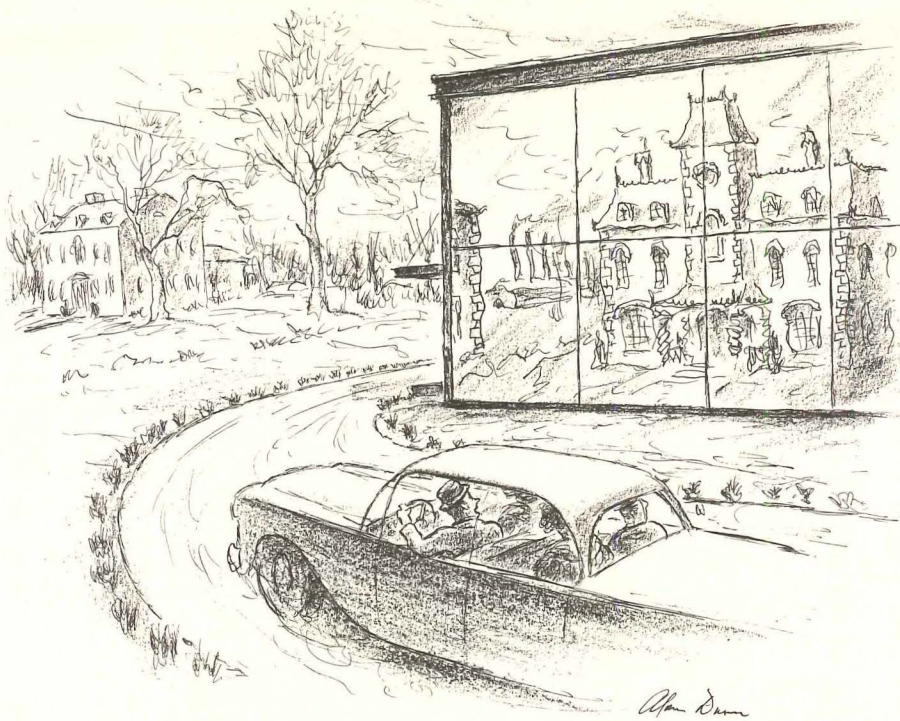
"No less than any other public policy, recreation policy must reflect long-range social and ecological realities, look skeptically toward technological frivolity and wisely at its hidden cost. . . . We must ensure that we not squander our natural and capital resources. The phenomenon of the off-road vehicle reflects a misplaced sense of national priorities, responding neither to this country's problems of decay and social dismay, nor to the world's need for our help in arresting its pollution and human misery.

"It is not too much to ask that public recreation policy reflect these facts."

If you share concern about sensible and nonsensical use of off-road vehicles, you'll find background information and forward-looking suggestions for their use and partial control in "The Off-Road Vehicle and Environmental Quality," by Malcolm F. Baldwin, published by The Conservation Foundation, 1717 Massachusetts Avenue, N.W., Washington, D.C. 20036. The price is \$1.

■ **A quote and a contribution.** From Ulrich Franzen's statement on receiving the Thomas Jefferson Award for Architecture from the Bricklayers, Masons & Plasterers International Union: "In less complicated times the architect and craftsman were often one and the same. The great architects of the past were members of the craft guilds before they became master builders. Ours was a historic and meaningful association. Today, when we communicate only by way of a specification—usually written in such a way that none can win—we have lost much of the satisfaction that comes from being an artisan."

As one way of "reaffirming the ancient partnership of building craftsman and architects," Franzen donated the \$5,000 prize money to the A. Philip Randolph Institute's "Outreach" program, devoted to helping black youths enter apprentice



"We built it of reflecting glass—
not knowing—"

training courses in the building trades.

■ **Creative zoning—inside and outside the city.** Zoning, we are frequently reminded, is often used as a negative tool designed to maintain the status quo of those who rather like their status quo. But zoning can be a creative positive tool, we are too rarely reminded. As in these two cases:

A proposed new master plan for Southampton, Long Island, would allow the owner of a farm to deed 80 per cent of his property to a town-administered public trust. In return, he or a new owner could develop the remaining 20 per cent using a cluster plan. The number of units permitted in the cluster would be the same number permitted by prevailing zoning regulations for the whole tract. Thus, it would appear, benefits for all: the farmer would get full price for his land; the developer the opportunity to build the same number of units (and therefore have the same number of shots at profit) while saving on roadway, sewer, and other site development costs; the town would get its taxes (though the public land would be tax-free) but have lower street and other maintenance costs; those who wanted a house could buy it; and the public would have new public recreation and wild space.

The plan is now under study by New York State for resolution of legal and financial questions that it raises. Since suburban sprawl was practically invented on Long Island potato farms closer in than Southampton (for example, the first Levittown), one wonders how much more handsome and vigorous the spaces around our cities might have been if creative zoning concepts like this had been proposed and pushed years ago.

A more urban example of creative zoning has been proposed by New York City's Office of Midtown Planning and Development. The new proposal developed from a problem common in cities around the country: The land on which downtown stores stand has become so valuable that

the pressure to replace the stores with office towers is becoming irresistible. Fifth Avenue has long been one of New York's showcases; but gradually, banks and travel agencies and corporate showrooms—able to support higher rents than retail stores—have taken over something like half of the frontage. Said Mayor Lindsay in commenting on the proposed zoning: "Without some form of public intervention, Fifth Avenue could be transformed from an international boulevard into a street lined with anonymous office buildings." The public intervention here is a proposal to require (along designated blocks of the Avenue) that at least the two lower floors of all new buildings would have to be rented to retail tenants, then to permit developers who elect to provide still more retail space to build extra "bonus" floors above the office floors for use as apartment or hotel space.

Thus, in a single bound of creative thought, there is a strong new pressure on developers to preserve the prestigious shopping district while meeting the profitable demand for office space and returning some of the residential character to the city core that has long since been gone.

■ **A.I.A.'s president-elect on housing.** From a speech last month by Max Urbahn to the Southern California chapter: "I believe housing is our No. 1 national problem and that as architects as well as citizens we have an obligation to work for the development of a more rational national housing policy. We need more housing; much, much more housing. To get it will take a major national commitment, and that means money, vast sums of money. . . . And we need more imaginative housing for a more humane environment, and that will take the involvement of architects. . . . many architects . . . MOST architects.

"We cannot stand aside any longer and cry that nobody wants us to do housing. We must commit ourselves to creating political climates—creating the clients, if

necessary—which demand our involvement."

Play it again, Max.

■ **On another kind of housing: brownstones.** Bill Edgerton, who among other things writes the "Indexes and Indicators" page of the RECORD and is some kind of expert on building costs, has written a fine book on "How to Renovate a Brownstone." It is, as its cover says, a comprehensive and reliable working guide to the purchase and renovation of brownstone buildings, and includes in its 396 pages just about everything—from dickering and tenant relocation to move-in and maintenance—that an architect, attorney, contractor, broker, lender, and owner might want to know. \$14.95 and well worth it from Halsey Publishing Company, P.O. Box 680, Times Square Station, New York, New York 10036.

■ **The West Front—a victory for preservation.** The news that our Capitol is to be spared the four-and-a-half acre addition proposed by the late J. George Stewart is welcome news—a rare victory for those rare people who believe in saving good things, and a rare victory for the taxpayers, who may now—assuming the 200,000 square feet of office space and tourist facilities is really needed—be able to buy it for less than the \$40 million the addition would have cost.

■ **Four-day week.** A trend? You can start to dream. Two reports this month of switches to the scheme. First comes from a producer, Harris Manufacturing Company of Johnson City, Tennessee—whose mill and yard employees will work 38 hours Monday through Thursday and get a two-hour bonus for perfect attendance during the week. Aha, you say, but what about creative, hard-working professionals like me, you say? Haines Lundberg & Waehler, an old-line New York firm is shifting its 400 employees to a four-day, 34-hour week—8 to 5 Monday through Thursday with a non-New York-style half hour for lunch.

—Walter F. Wagner, Jr.

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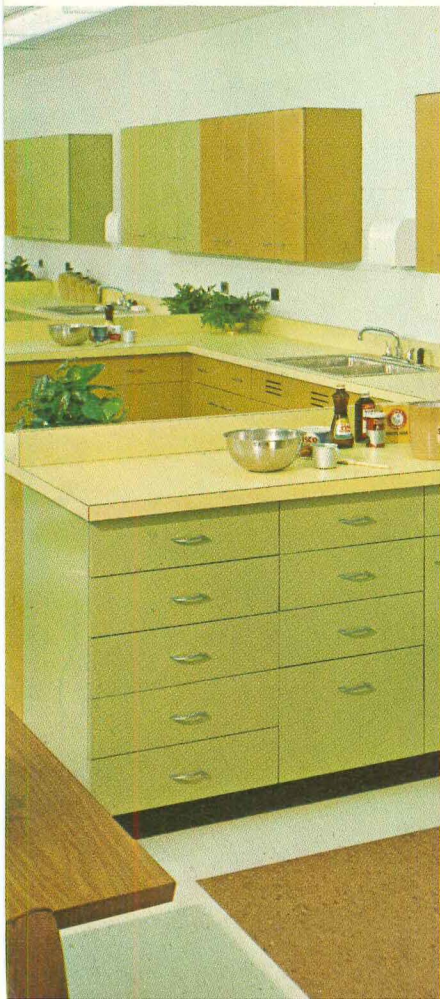
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Robert R. Butler

Building Superintendent

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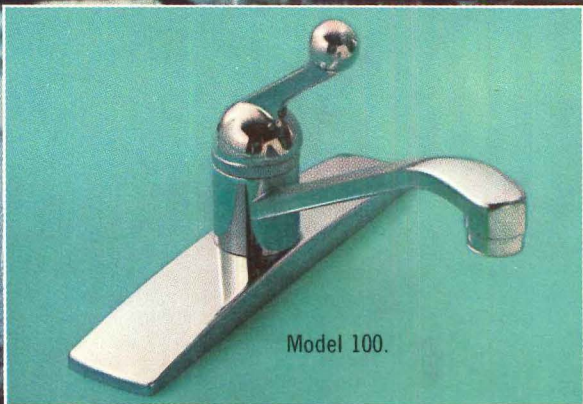
The success of Chicago's famous Marina City is no accident. It's the result of specifying Delta single-handle faucets exclusively in the building complex.

Mr. Butler, who's been at Marina City from its beginning, figures that in 8 years less than \$200 was spent to maintain over 5000 faucets. But low maintenance cost is just one of the advantages you get when you specify Delta single-handle faucets.

Delta's also simply beautiful . . . simply beautiful to look at, beautifully convenient to operate. And that prompted many Marina City tenants building new homes to ask where and how they can get Delta faucets.

Let us tell you more about Delta faucets. Write Delta Faucet Company, a Division of Masco Corporation, Greensburg, Indiana 47240. That's forward thinking.

Delta Faucet.
Simply beautiful.



For more data, circle 5 on inquiry card



LOAD-BEARING ELEGANCE WITH MEDUSA WHITE

Today in Philadelphia precast architectural load-bearing walls are now twenty stories high . . . tomorrow they may be thirty stories or higher.

By combining structural and architectural design requirements, a need is fulfilled with one product. Medusa White Portland Cement with its uniformity provides color control, whether for pure white or tinted concrete. Medusa White also provides compressive and flexible strengths equal to gray cement.

Specify Medusa White with confidence. Get complete data. Write Medusa, P.O. Box 5668, Cleveland, Ohio 44101.

MUTUAL BENEFIT LIFE INSURANCE CO., PHILADELPHIA, PA.

Architects: Nowicki and Polillo of Philadelphia.

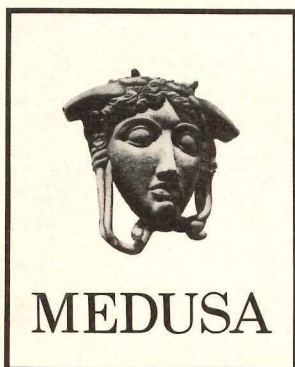
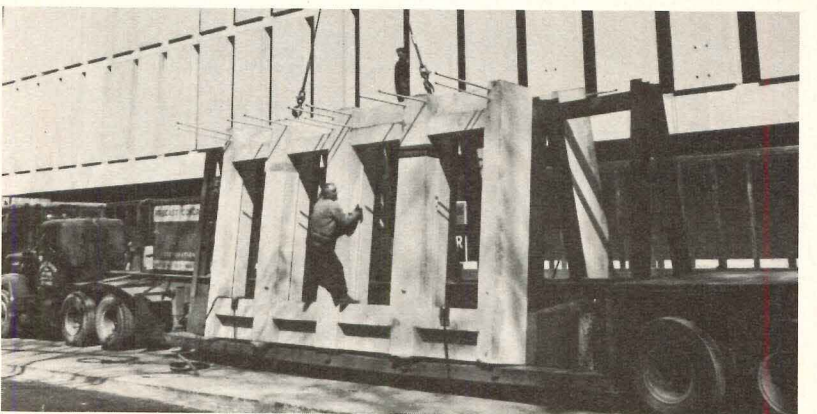
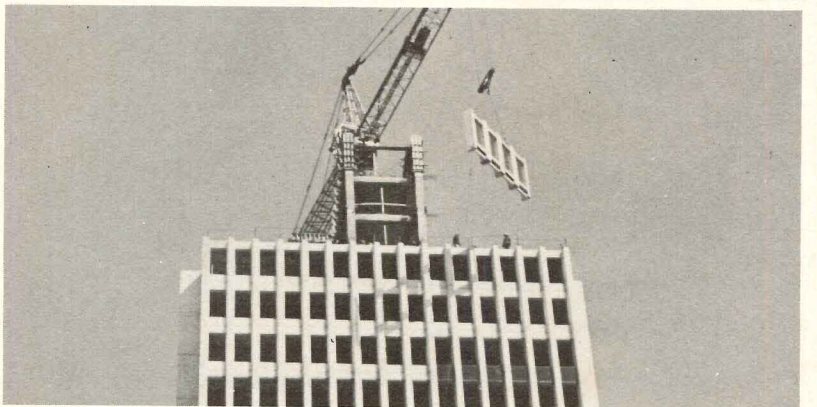
Eggers & Higgins, New York City, New York

Engineers: David Bloom Associates, Philadelphia.

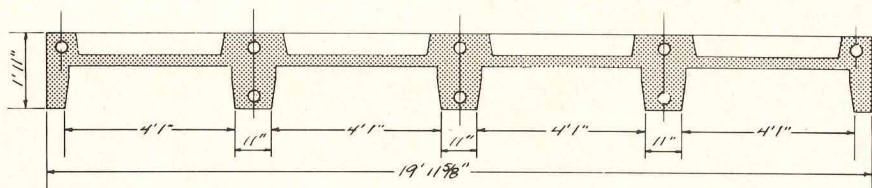
Robert Rosenwasser, New York City, New York

General Contractor: E. Frankel Enterprises, Philadelphia.

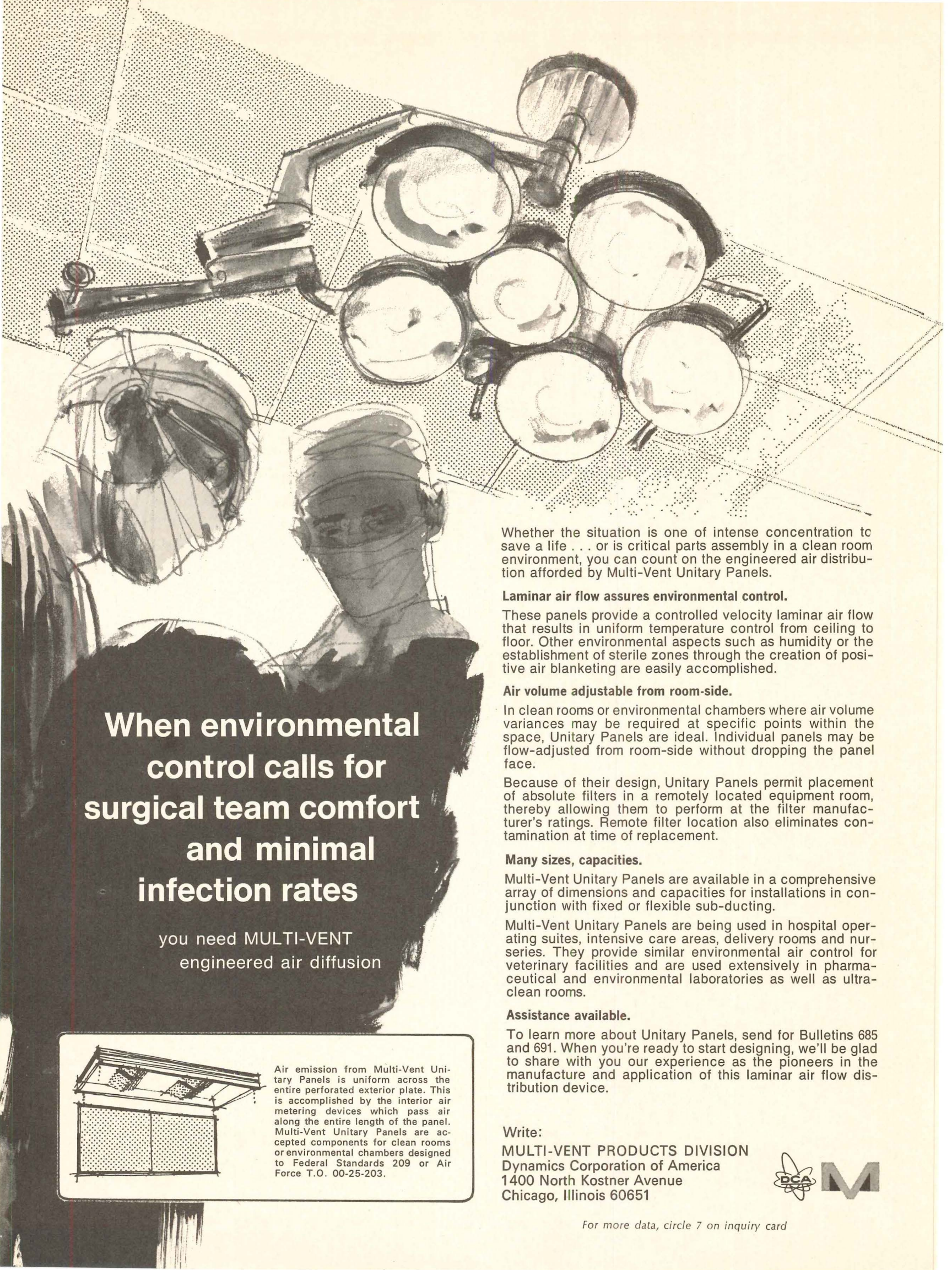
Precast Producer: Formigli Corp., Philadelphia, Pa.



Precast load bearing units are 19'-11 5/8" wide x 11' high. Average weight 12 tons. Spandrels are covered with black glass to accent vertical mullions.

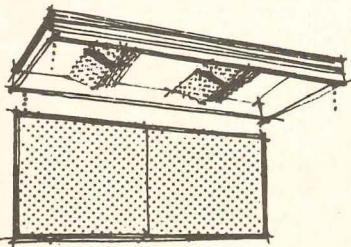


For more data, circle 6 on inquiry card



When environmental control calls for surgical team comfort and minimal infection rates

you need MULTI-VENT
engineered air diffusion



Air emission from Multi-Vent Unitary Panels is uniform across the entire perforated exterior plate. This is accomplished by the interior air metering devices which pass air along the entire length of the panel. Multi-Vent Unitary Panels are accepted components for clean rooms or environmental chambers designed to Federal Standards 209 or Air Force T.O. 00-25-203.

Whether the situation is one of intense concentration to save a life . . . or is critical parts assembly in a clean room environment, you can count on the engineered air distribution afforded by Multi-Vent Unitary Panels.

Laminar air flow assures environmental control.

These panels provide a controlled velocity laminar air flow that results in uniform temperature control from ceiling to floor. Other environmental aspects such as humidity or the establishment of sterile zones through the creation of positive air blanketing are easily accomplished.

Air volume adjustable from room-side.

In clean rooms or environmental chambers where air volume variances may be required at specific points within the space, Unitary Panels are ideal. Individual panels may be flow-adjusted from room-side without dropping the panel face.

Because of their design, Unitary Panels permit placement of absolute filters in a remotely located equipment room, thereby allowing them to perform at the filter manufacturer's ratings. Remote filter location also eliminates contamination at time of replacement.

Many sizes, capacities.

Multi-Vent Unitary Panels are available in a comprehensive array of dimensions and capacities for installations in conjunction with fixed or flexible sub-ducting.

Multi-Vent Unitary Panels are being used in hospital operating suites, intensive care areas, delivery rooms and nurseries. They provide similar environmental air control for veterinary facilities and are used extensively in pharmaceutical and environmental laboratories as well as ultra-clean rooms.

Assistance available.

To learn more about Unitary Panels, send for Bulletins 685 and 691. When you're ready to start designing, we'll be glad to share with you our experience as the pioneers in the manufacture and application of this laminar air flow distribution device.

Write:

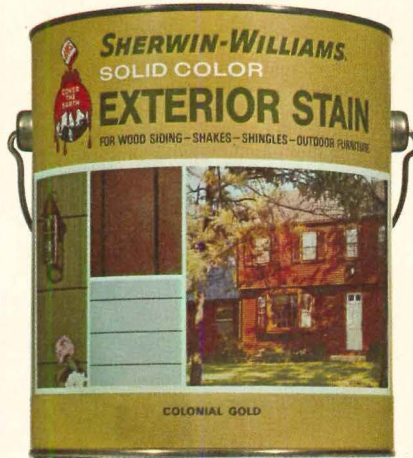
MULTI-VENT PRODUCTS DIVISION
Dynamics Corporation of America
1400 North Kostner Avenue
Chicago, Illinois 60651



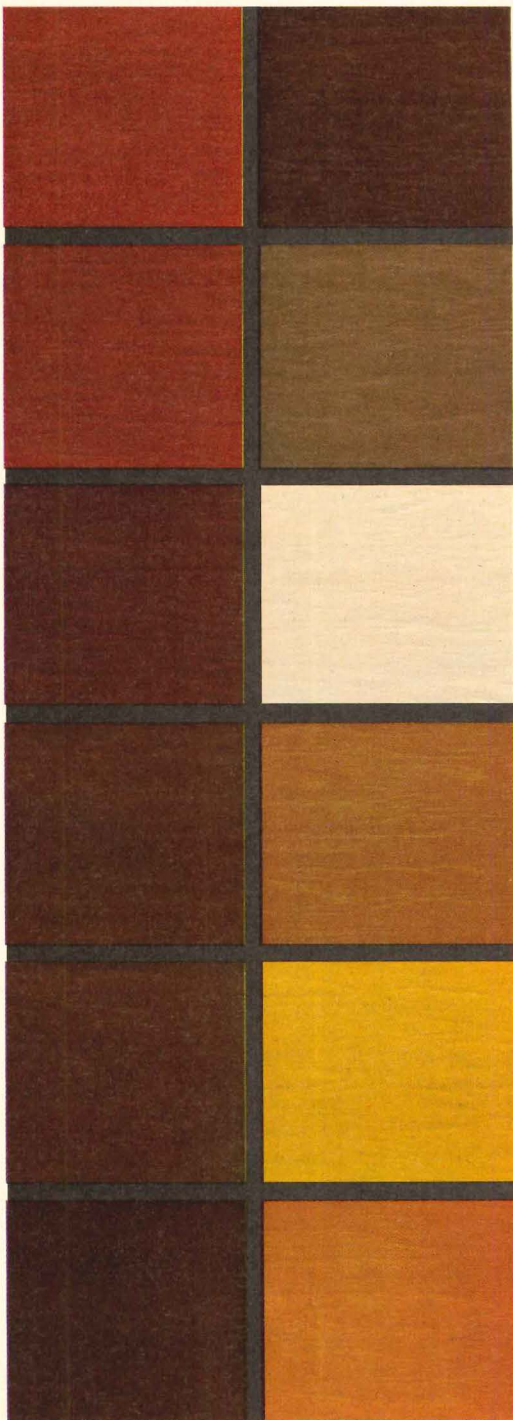
For more data, circle 7 on inquiry card

NEW FROM SHERWIN-WILLIAMS® FULL HIDING, SOLID COLOR STAIN

For wood siding, shingles, shakes, decks, porches, steps, railings, fences, benches.



For terrace walls, interior beams, ceilings, paneling, or any area where wood is used.



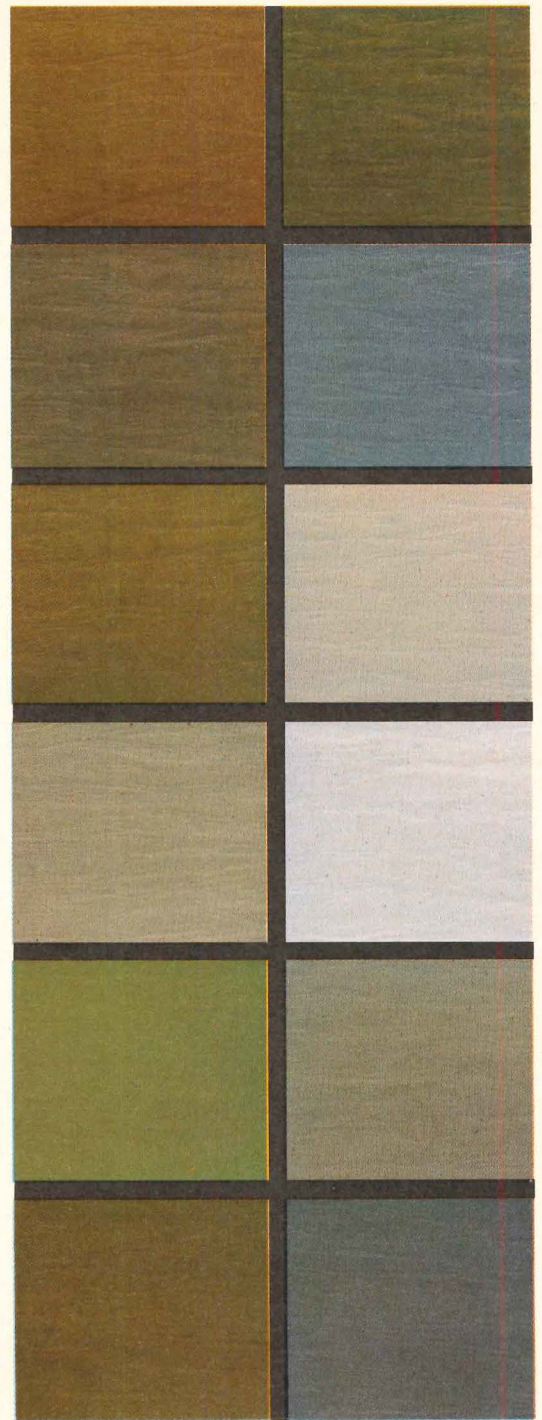
- For exterior — interior use.
- Use on new wood or previously stained or painted wood.
- No topcoat necessary.
- Superior *alkyd* formulation for toughness and longer life — not a conventional oil stain.
- Excellent weather resistance.
- Repels moisture; mildew and mold resistant.
- Won't crack, peel, or blister.
- Lap marks won't show.
- Needs no priming or thinning.
- Easy to apply by brush, roller, spray, or dipping.
- 24 beautiful non-fading colors, plus white.

Now you have a choice of using Solid Color or Semi-Transparent Sherwin-Williams Stains, or Weathering Oil® for a rich weathered effect.

See specification Nos. 71.07, 71.14, in our catalog 9.9/SH, Sweet's Architectural and Industrial Construction Catalog Files. Or circle inquiry card or write the Sherwin-Williams Co., Architectural Service Division, Cleveland, Ohio 44101.



SHERWIN-WILLIAMS



For more data, circle 8 on inquiry card



**Government Housing for the Elderly.
How Andersen Windows help make it home.**

To be successful, housing for the elderly must feel like a real home to the residents, and avoid the aura of an "institution."

The architect who designed this unique project in Minneapolis began with this premise.

He gave it residential character and European flavor, and designed the whole project to function as a community within itself.

At the center of the complex there are comfortable recreation and visiting areas with a courtyard and fountain.

To help the residents feel even more at home, the architect specified Andersen Perma-Shield® Windows.

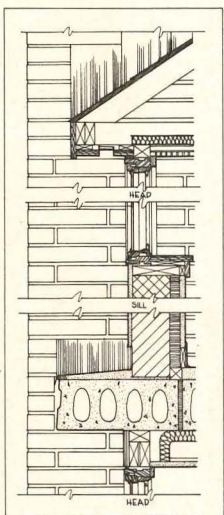
He wanted Perma-Shield for its tough, durable exterior vinyl sheath that doesn't need painting. And for the natural beauty and warmth of wood on the inside.

The natural insulating factor of wood and the extra-weathertight quality of Perma-Shield Windows are important in the bitter Minnesota winters. The welded-insulating glass option eliminated the need for storm windows.

In warm weather the Casements open wide, letting in lots of fresh air with top to bottom ventilation.

With 5 styles and hundreds of combinations to choose from, Andersen Perma-Shield Windows can add a touch of home to your next project without sacrificing low maintenance. And without straining the budget either, when total installed costs are figured.

For more information, check your Sweet's File. (Sections 8.16/An. and 8.4/An.). Or see your nearest Andersen distributor or dealer.



Andersen Windows™ 
Window beauty is Andersen. Andersen Corp., Bayport, Minnesota 55003

For more data, circle 9 on inquiry card



Building: Housing Project for The Elderly, Minnesota 2-25.
Architect: Bettenburg Townsend Stolte & Comb, Inc., Minneapolis, Minnesota



Road-test us in the worst traffic.

Carpets with pile of Marvess® olefin, a Phillips 66 fiber, are made to go where the going is roughest.

The special heavy-traffic places. That call for special ruggedness. The kind of ruggedness you get in carpets made with pile of 100% Marvess olefin.

Because carpets made with Marvess are built to really resist wear and abrasion. To resist stains. And mildew, rot, insects and static buildup as well.

All while keeping their good looks longer. Keeping the full vitality of their solution-dyed colors beautifully.

Of course, the unique No-Strings Guarantee stands behind every approved carpet grade of Marvess too. For indoor and outdoor use.

If you're looking for carpet that really offers performance plus appearance, look no further than carpeting made with Marvess. You get the green light on both features for years to come. Your carpet resource can show you... today.

The No-Strings Guarantee

For Tufted Indoor-Outdoor Carpet

Phillips Fibers guarantees this carpet made with pile of MARVESS[®]OLEFIN, a Phillips 66 fiber, against rotting, wearing out, or the effects of weather.

For 2 years indoor or outdoor commercial use.

Or we will replace this carpet. Free.

Exclusive of installation.

Consult your carpet resource for details



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*REG. T.M. PHILLIPS PETROLEUM COMPANY

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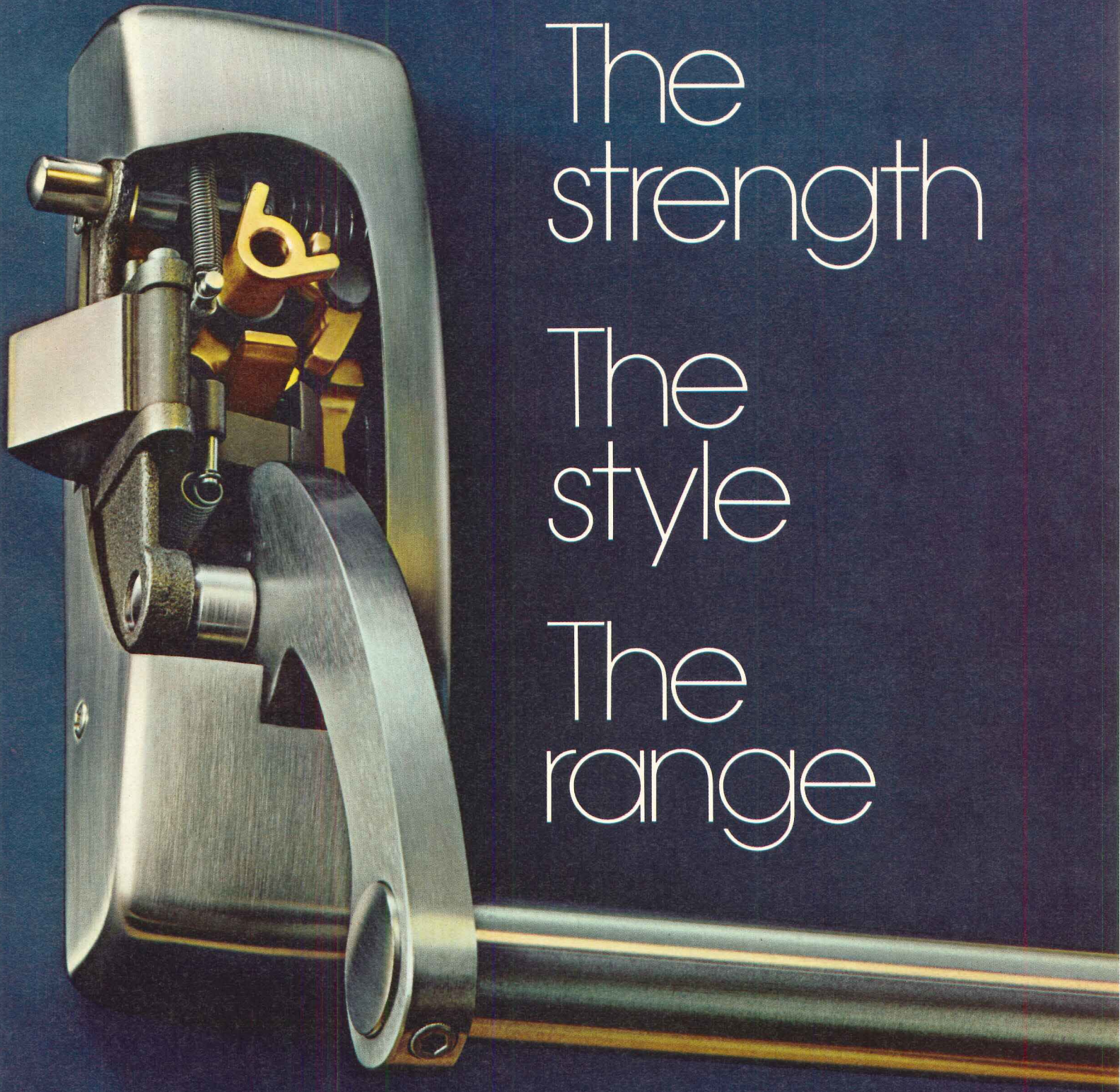
MARVESS[®] OLEFIN

FIBER BY  PHILLIPS 66
*

PHILLIPS FIBERS CORPORATION, GREENVILLE, S. C., A SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY. PRODUCERS OF: MARVESS[®]OLEFIN, QUINTESS[®]POLYESTER, PHILLIPS 66[®] NYLON AND LOKTUFT[®]CARPET BACKING. MARKETING OFFICES: P. O. BOX 66, GREENVILLE, SOUTH CAROLINA 29602. TELEPHONE (803) 242-6600; 1120 AVENUE OF THE AMERICAS, NEW YORK, NEW YORK 10036. TELEPHONE (212) 697-5050.
REG. T.M. PHILLIPS PETROLEUM COMPANY

For more data, circle 10 on inquiry card

Exit devices. Outwardly, their design reflects an inner strength and reliability. □ Now look beneath the cover for the real Sargent quality. Built for service through simple design; a smooth, positive interaction of all moving parts. □ And look at the completeness of the line . . . all functions in all finishes, including a full line of Fire Exit Hardware. □ Sargent exit devices . . . well worth another look.



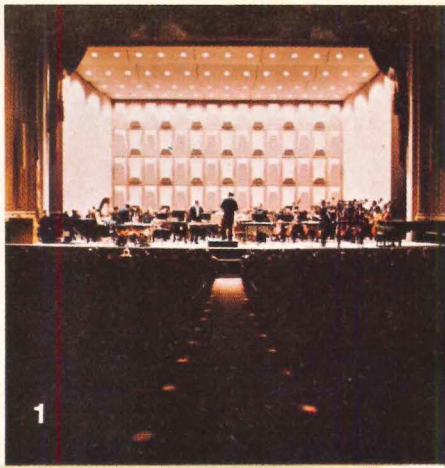
The
strength

The
style

The
range

 **SARGENT**[®]

A complete line of advanced architectural hardware, including the Sargent Maximum Security System
New Haven, Connecticut □ Ontario, Canada



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2



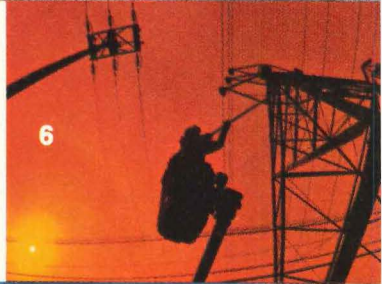
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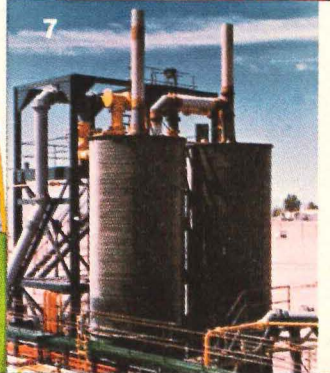
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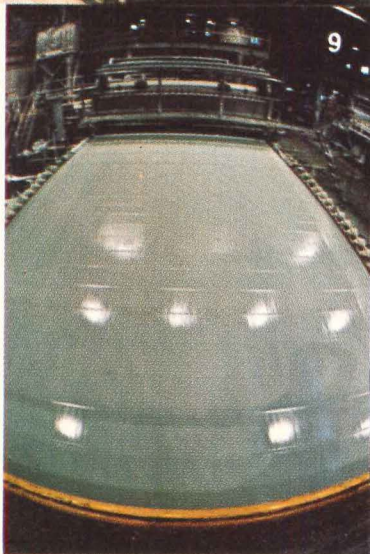
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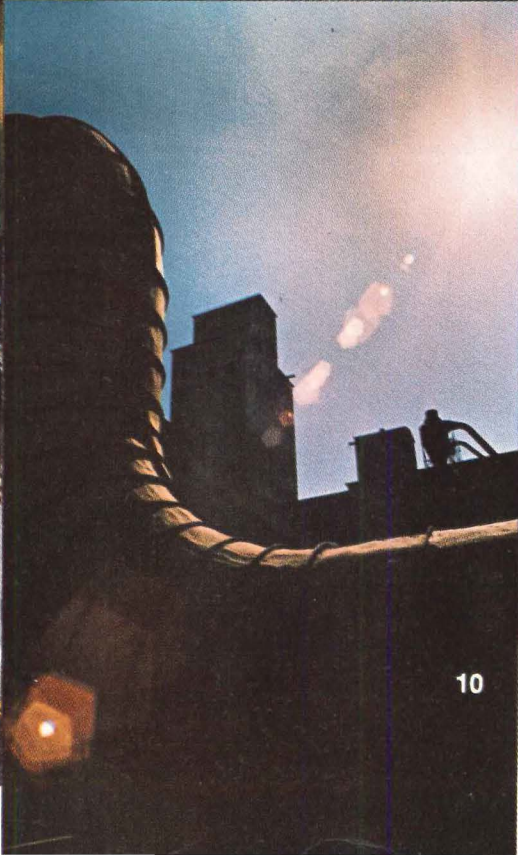
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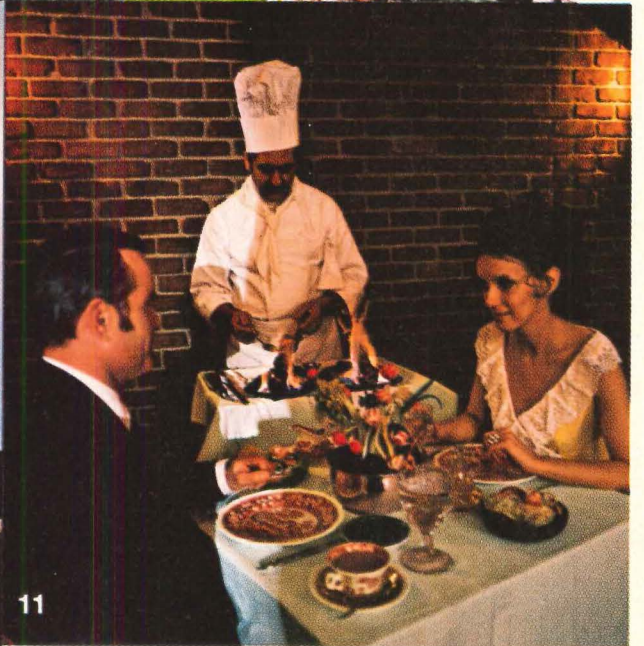
8



9



10



11

1. The San Francisco Opera House picked Hetron-based acoustical panels to sound off to the best advantage. Structurally safe and flame retardant. Meets fire codes for sell-out crowds.

2. Up in the big birds, it's good to have fire-retardant Hetron along for galley panels, flooring, wing tips and tail fins. Meets the stiffest FAR requirements. Stands the roughest stress. Light enough to pay its own fare.

3. Uniflite puts Hetron safety in the hull of every boat. Slaps out fire. Stands up to salt water and the knocks of floating debris. Makes the long voyage just like home.

4. From bathtub stall to outer wall, Hetron-based sanitary units and plumbing fixtures will douse the welder's spark for sure installation and provides a safer building for the bathing beauty.

5. Hetron-based Sanpan® translucent panels let daylight inside the biggest man-made missile complex. Won't break up when rockets blast off. Holds up in hurricane, sun and salt water.

6. To squeeze 300,000 volts, a lineman needs a mobile aerial bucket made of Hetron. Shock-proof. Meets NEMA standards. UL tested. Tough enough for computers, switchgear and complex electrical systems.

7. Hetron took on the Chile desert for Anglo-Lautaro Nitrate Corporation's iodine-extraction complex. Takes the load stress of 425,000 gallons in tanks and scrubbers. Corrosive problems of iodine, kerosene and brine. Outside temperatures from subfreezing to sizzling hot.

8. Rapid-transit cars put passenger safety on top with Hetron on the ends, front light housings, seats and window trim. Fights fire and corrosive fumes. Holds down repairs and repainting. Keeps everything moving, from motor vehicles to monorails.

9. Tough enough to handle chlorine dioxide bleaching, Hetron FRP laminates are inherently corrosion and fire resistant. Takes chemicals at 250°F operating temperature.

10. To buffer a fast-running, humid air system, Froedtert-Malt Corp. picked Hetron for one of the largest duct systems in the world. Stands tight when fire and corrosive fumes at 200°F try to stop a job.

11. Cavrok® simulated-brick FRP panels with fire-retardant Hetron keeps dinner guests safe. Smart looking inside and out. Flame-spread ratings under 25 comply with building codes wherever people get together.

**You supply
the sparks,
the sizzle,
the rot,
the stress.**

Hetron supplies the durability.

You've got to take your design off paper. Put it in the field and make it work.

**Get Hetron.®
Works like its own fire engine.
Proven in the toughest surroundings.
FRP resins with built-in fire retardance.
Self-extinguishing to nonburning.
Meets the stiffest building codes.**

**Structurally safe and sound.
For opaque and translucent building panels and sandwich-wall applications. Simulated brick and wood veneers.**

Plumbing fixtures and most any architectural shape. Inside and out.

Corrosion resistant. Shock-proof. Or a combination to fit your specs.

Think creative for your environment. Then let Durez® supply Hetron resins for durability. Contact our technical staff now.

Durez Division
Hooker Chemical Corporation
8031 Walck Road
North Tonawanda, N.Y. 14120
Subsidiary of
Occidental Petroleum Corporation

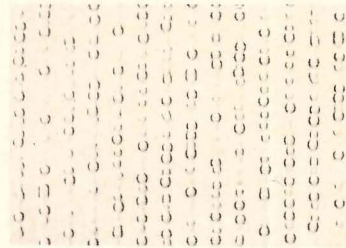
 **hooker**
durez DIVISION

It takes all kinds.

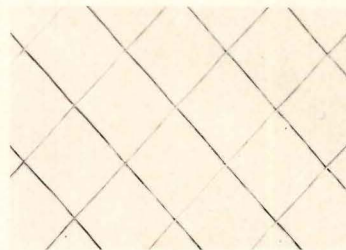
and all kinds of patterned and wired glass are made by ASG
over 40 varieties, all from a single source.



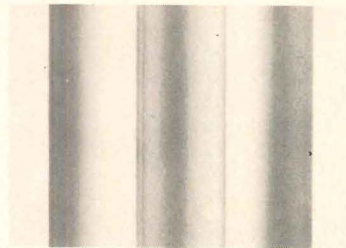
For businessmen: Here's a place to swing free with elegant walls of shimmering Beadex® and its raindrop surface, or Randex® with its random linear pattern. Both obviously creative material.



For schools: For beauty and safety select Tru-Temp® tempered glass from a wide choice of patterns. These and polished wired glasses, qualify as Safety glass under USAS Z97.1—1966. Nuweld® wired glasses are approved by the National Board of Fire Underwriters as fire retardant.



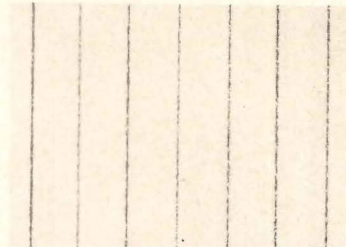
For homes: Bring new light and freedom to any architectural style, and do it safely. Use tempered Flutex® as entrance side lights. Or select finely textured Muralex® to provide both light and privacy. ASG patterned glasses are ideal for privacy panels, room dividers, or clerestories.



For doctors: Nothing somber here. Brighten the patient's visit with Flax®. Or give maximum privacy in the examining room with softly translucent Huewhite®, the most obscure of patterned glasses and exclusive with ASG. Just what the doctor ordered.



For lawyers: It's a pinstripe world and ASG gives you full power of attorney. Make it a clear case with Pinstripe® Polished. Or obscure the issue with Pinstripe Huewhite and its subtly muted lines. The Pinstripe family is another ASG exclusive. Write today for complete information about our wide line of wired and patterned glass.



ASG Industries Inc.

P.O. Box 929, Kingsport, Tennessee 37662

For more data, circle 134 on inquiry card

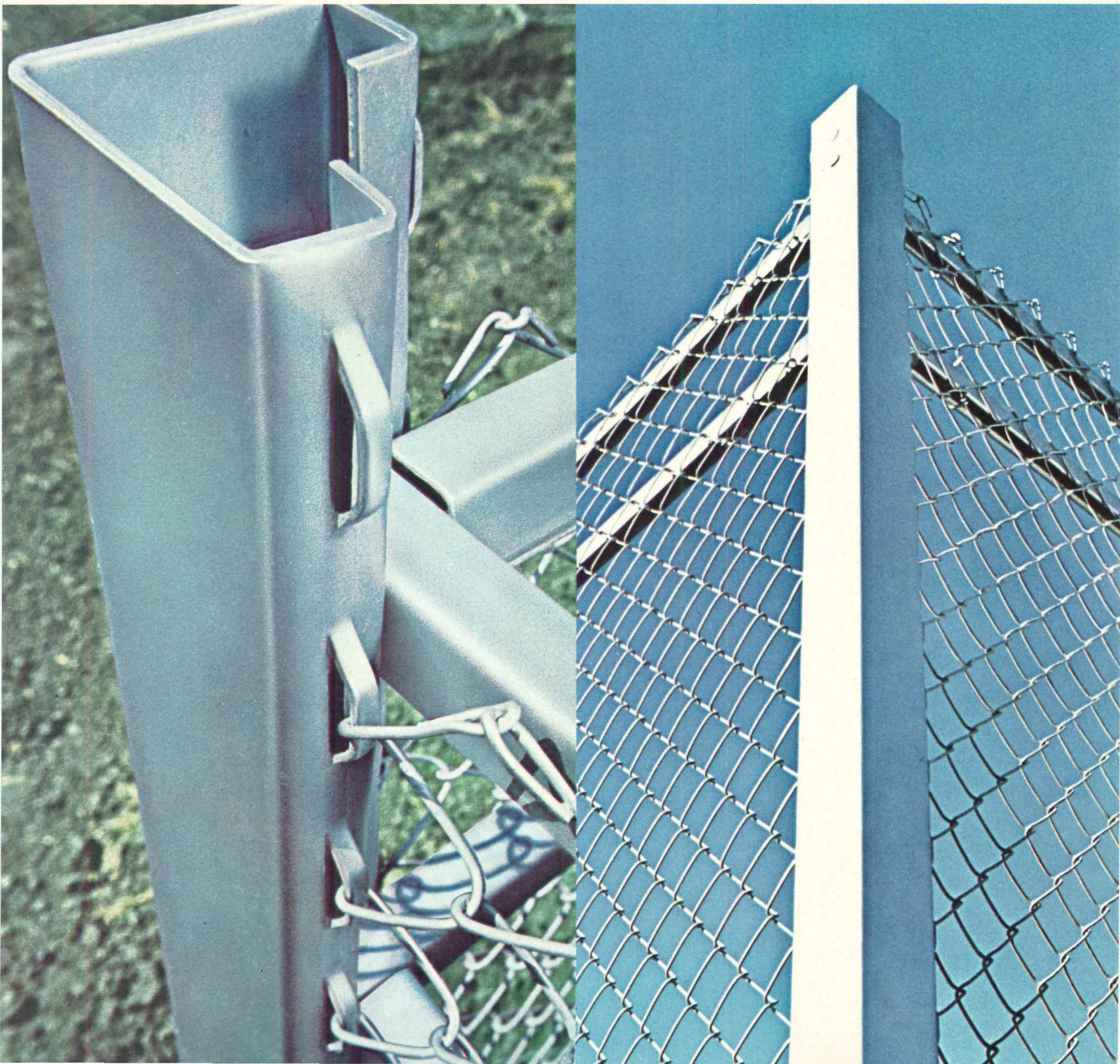


What's happened to the necessary evil?

There's a whole new technology to the necessary evil...the fence. Take 1½ minutes and catch up with it.

The usual chain link fence uses pipe posts. Not USS CYCLONE Type II. Look at this terminal post. It's one-piece, box beam construction. No hidden places where moisture can collect and cause corrosion. And notice the fabric isn't just fastened on . . . it's woven right into lock loops, each with 1200 lbs. holding power.

Result: the new look in chain link fence. A clean, neat, architectural appearance. Posts and top rails have a functional, square configuration. No protruding fittings, nuts, or bolts. Very compatible with modern design. It also means a more vandal-proof fence and lower maintenance costs.

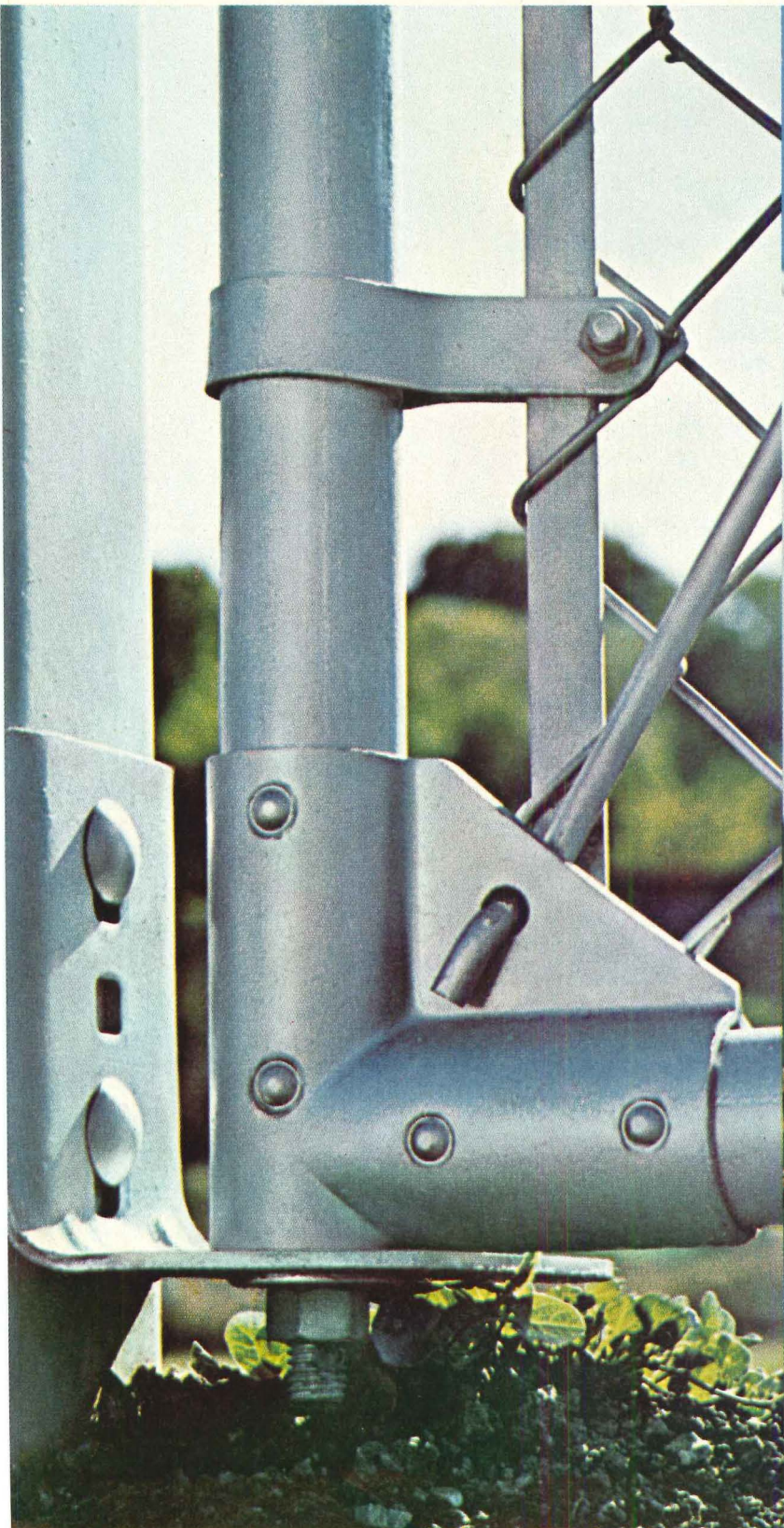


USS Cyclone Fence

USS & Cyclone are registered trademarks

Gates are a key to fence quality. Most industrial gates are welded. This not only invites rust at the weld . . . it makes for expensive repairs. CYCLONE gates are riveted. Remove a few rivets, replace any damaged part, and you have a new gate. And our adjustable truss rods make it easy to correct sag.

Corrosion protection in a fence is directly proportional to the amount of zinc coating. CYCLONE doesn't take shortcuts. CYCLONE terminal posts, line posts, and top rails, for instance, have a 2-oz. coating . . . not the 1.2-oz. coating often used. Gates and fittings are heavily galvanized. Complete specs on the next page.



How to specify the new technology in fence:

Basic Specifications* (Circle one of each):

Height: 6', 7', 8', 9'

Fabric 2" mesh: 6 ga., 9 ga., or 11 ga.

Barbed Wire: 3 strands, 6 strands, none

Top rail or Top Tension wire, Bottom rail or Bottom Tension Wire

Line Posts: 2.7#H or 4.1#H

Fabric shall be zinc coated class II chain link per ASTM specification A-392-68 or shall be aluminum coated per ASTM specification A-491-68. Fabric shall be connected: to line posts with 6 ga. wire clips every 14"; to top rail with 9 ga. wires every 24"; to terminal, corner, and gate posts by integrally weaving into the post or by using 1/4" x 3/4" tension bars tied to the post every 14" with 11 ga. 1" wide steel bands and 3/8" diameter bolts and nuts; to tension wire with 11 ga. hog rings every 24".

Barbed Wire shall have a class 2 aluminum coating per ASTM A-585-69 or a class 3 galvanized coating per ASTM A-121-66 and consists of two 12 1/2" gage stranded line wires with 14 gage barbs and a 4 point pattern on 5" centers.

Top rail shall be 1 1/4" (1.66" O.D.) standard weight pipe or 1 5/8" x 1 1/4" roll formed sections. Top rail shall pass through intermediate post tops and form a continuous brace within each stretch of fence and be securely fastened to terminal posts.

End, corner, and pull posts shall be 2 7/8" O.D. pipe, 5.79 pounds per foot, or 3 1/2" x 3 1/2" roll formed sections with integral fabric loops, 5.14 pounds per foot. Posts for swing gates shall be according to the following gate leaf widths:

		Lbs. Per lineal Foot
Up to 6'	3 1/2" x 3 1/2" roll formed section or	5.14
	2 7/8" O.D. pipe	5.79
Over 6' to 13'	4" O.D.	9.11
Over 13' to 18'	6 5/8" O.D.	18.97
Over 18'	8 5/8" O.D.	24.70

Gate frames shall be 1.90" O.D. pipe connected with fittings riveted at each corner. Each frame shall have 3/8" diameter adjustable truss rods. Gates shall have positive type latching devices with provisions for padlocking; and drive gates shall have a center plunger rod, catch, and semi-automatic outer catches.

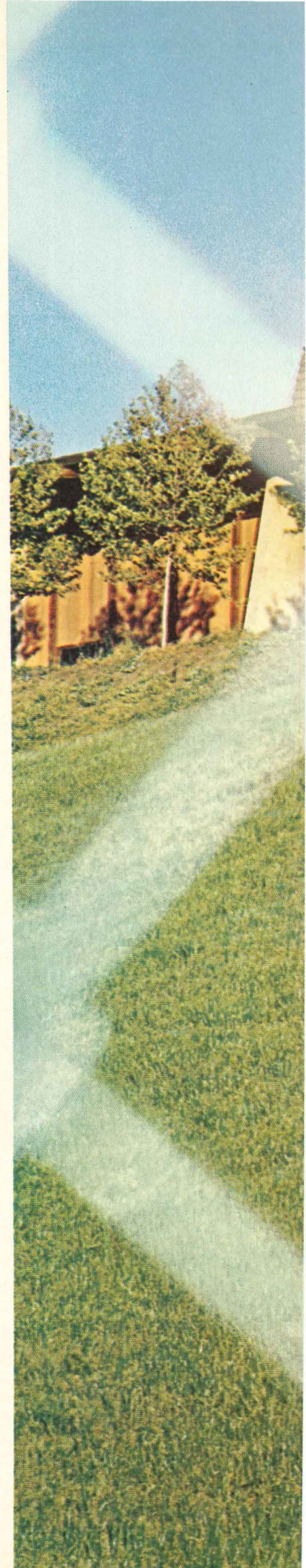
All posts, rails, and appurtenances shall be hot-dipped zinc coated steel per ASTM specifications A-120-65, A-123-66 or A-153-65, whichever is applicable. Pipe posts shall have tops which exclude moisture. End, corner, pull, and gate posts shall be braced with the same material as top rail and trussed to line posts with 3/8" rods and tighteners. Each post shall be set in a concrete foundation of 1-2-4 mix having a minimum diameter of 9" or three times the diameter of the post and at least 36" deep. Line posts shall be evenly spaced 10' or less apart.

Standard tolerances apply. Installation shall be by experienced fence erectors, on lines and grades furnished by owner.

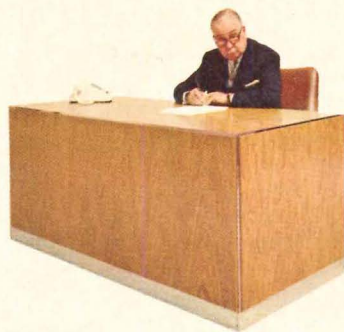
*Non-restrictive specifications

USS Cyclone Fence
USS & Cyclone are registered trademarks

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These are one desk.



THE CHAIRMAN'S DESK. IN AMERICAN OAK.



THE EXECUTIVE VP'S DESK. IN WALNUT.




THE STAFF VPS' DESKS. IN TEAK.



THE SECRETARIES' DESKS. IN ENAMELED METAL.

The Davis Allen Desk.

The Davis Allen Desk doesn't look like other desks you can buy. In fact, one Davis Allen Desk doesn't even look like another. You could furnish a whole office with the one desk, and by changing colors, and woods, and tops, and accessories never get monotonous. Yet because the desks are structurally the same, regardless of size, you'd keep the same character and design integrity from one part of the office to another. The Davis Allen Desk also takes account of electricity. Wires from telephones and typewriters don't run across the desk to mar the appearance. They run into the desk itself. The end panels of the desk are easily removed without tools and provide access to outlets in the desk as well as on the floor. As you can see, the Davis Allen Desk is virtually custom made. You could say it's the first custom-made desk made on the production line. The Davis Allen Desk. Part of a collection by The General Fireproofing Company, Youngstown, Ohio 44501. GF Business Equipment. 

**COLOR
DYNAMICS®
adds
functional
color to the
interior of
a plant...**

**for better
employee
morale.**

All too often, no more thought is given to painting the inside of a plant than to painting the inside of a cardboard box . . .

Yet frequently, the difference between profit and loss is represented in the efficiency of the employees. Color can produce tension or relaxation depending upon how it is used. The *Color Dynamics* system creates the right mood to keep employee morale at a consistently high level for greater efficiency in the production, and related plant areas.

Color Dynamics enables you, the architect, to specify color arrangements that could result in fewer accidents, less absenteeism, greater efficiency, improved production both in quality and quantity, and reduced eye fatigue. It's a valuable aid in servicing your clients.

When you specify *Pittsburgh Paints* for new construction or renovation, you provide economical long-lasting paint protection. Write for free 16-page booklet on *Color Dynamics*. PPG Industries, One Gateway Center, 3W, Pittsburgh, Pa. 15222.

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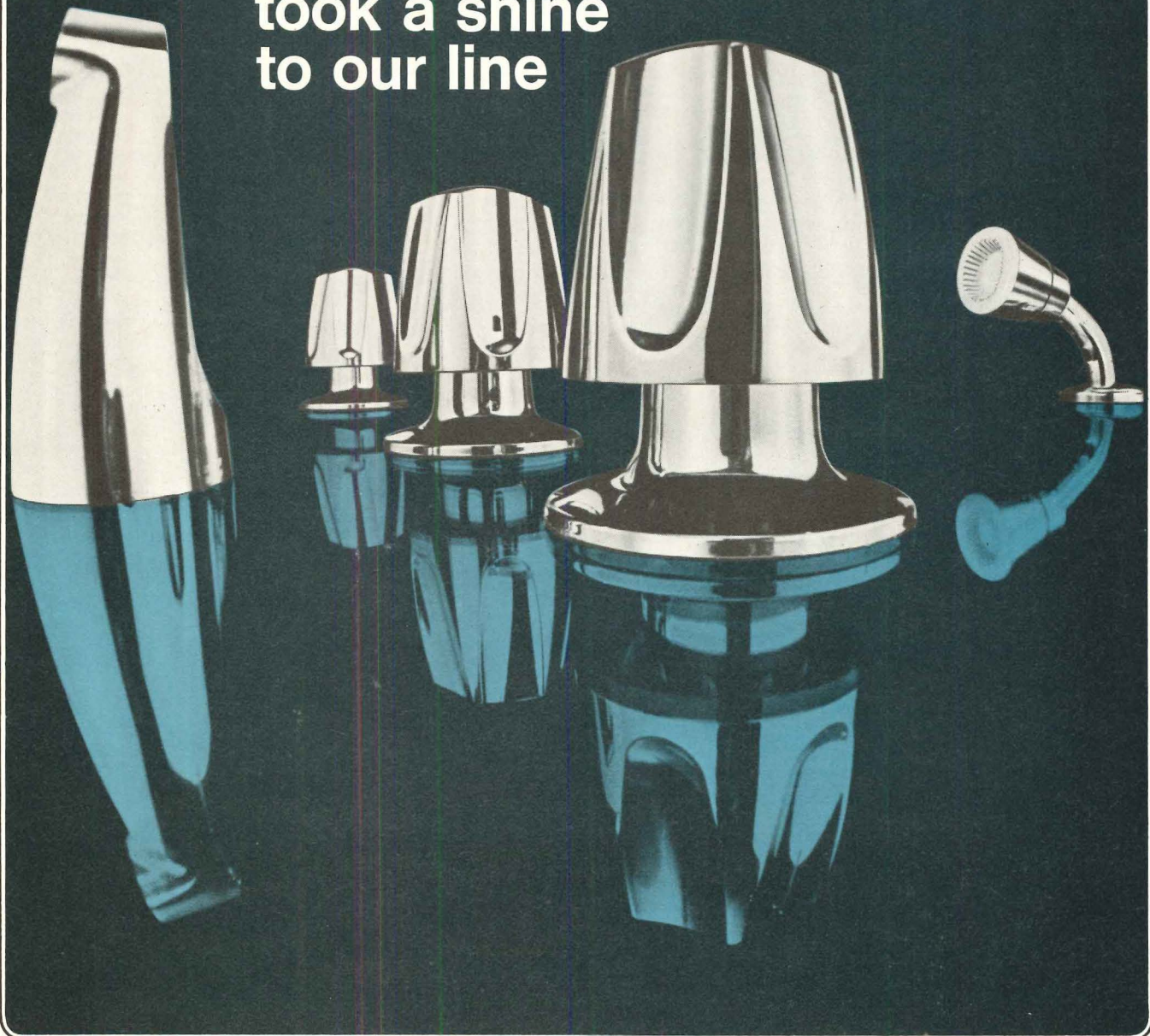


**COLOR
DYNAMICS®
the
inside
story**



Verve by  PRICE PFISTER

the day
Verve
took a shine
to our line



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For more data, circle 19 on inquiry card



Light and man.

What is light? Light is a medium of perception which makes the world visible. But what is the nature of light? How does it interact with man's environment to influence his life and his work? To deal with light, to shape it, direct it and utilize it is what Sunbeam does. To us, light is a medium as dramatic and potent in man's environment as any other form of energy. Our product is the tool which allows the architect and designer to create the proper environment for working and living, whether that tool is a single fixture or an entire system of illumination and air distribution. As part of our involvement in the architectural community, Sunbeam Lighting

is preparing a series of booklets entitled *Light in the Human Environment*, written by authorities of various disciplines...art psychology, anthropology, behavioral science, human engineering and the social sciences. The second in this series, ...*as the Psychologist sees it*, is available free of charge or obligation merely by writing David T. Traitel, President, Sunbeam Lighting, 777 East 14th Place, Los Angeles, California 90021. On your letterhead, please.



News in brief

The Dodge Index of architect-designed projects gained slightly again in December, reaching 263 (1957-59 equals 100). For this year, institutional building types are expected to be strongest, while business-related construction remains sluggish until mid-year.

December housing starts were at a twenty-year high of 1.99 million units, an 18 per cent jump from November. The rate of all residential starts was up 29 per cent in the final half of 1970 over the first half. The increased supply of loanable funds and interest declines were major causes of the increase.

Earth Week is being proposed for the third week in April. Senator Gaylord Nelson (D., Wis.) and Representative Paul N. McCloskey, Jr. (R., Cal.) have introduced measures in Congress calling for its recognition, and such groups as Environmental Action, Inc., Friends of the Earth, and the Sierra Club are supporting it. Earth Week is intended to be "a time of quiet community organizing, focusing upon concerns relevant to the local area." **President Nixon's 1971 environmental program includes**, beyond extensive anti-pollution measures, Federal grants to the states for land use programs, to be implemented by 1974, also measures to preserve historic structures, including amendment of the Internal Revenue Code to discourage their demolition.

The construction industry led other non-manufacturers in high wage settlements for 1970, according to new Labor Department figures, showing that the average first-year-of-contract wage adjustment was 18.3 per cent. It was 13.1 per cent in 1969. As a result of these and other high wage settlements, President Nixon has called for a new wage-labor stabilization plan. February 23, the President suspended provisions of the Davis-Bacon Act requiring contractors on Federal or Federally-assisted projects to pay "prevailing" wage rates, after a tripartite panel (industry-labor-public), under the Secretary of Labor, failed to develop a successful collective bargaining scheme to prevent runaway wage settlements. \$25 billion of Federal construction is involved. Mr. Nixon may still impose a wage-price freeze on construction if this measure fails.

The National Science Foundation is funding a 20-month study of human reactions to physical surroundings at the University of California at Berkeley. Dr. Richard L. Meier heads the architectural research training unit in U.C.'s Department of Architecture and will supervise the study. The \$66,380 grant will be for development of graduate-level course methods of conducting research in behavioral responses to architectural factors. According to Dr. Meier, there has been practically no research in this area.

Environment quote: "Failing a more cooperative course now for environmental protection and resource management, survival itself might eventually demand a society so tightly organized with individual initiative and property under government control, that liberty, and free enterprise would become antiques." —Senator Gaylord Nelson (D., Wis.), upon introducing 24 Senate environmental bills and resolutions January 26.

American Institute of Architects 1971 honors are: Gold Medal: Louis I. Kahn (February, page 36); Architecture Critics' Medal: Sibyl Moholy-Nagy (posthumous) (January, page 37; February, page 37); Architectural Firm Award: Albert Kahn Associates; Craftsmanship Medal: Wharton Esherick (posthumous); Industrial Arts Medal: Edith Heath; Allied Professions Medal: Daniel U. Kiley; Architectural Photography Medal: Alexandre Georges; Citation of an Organization: San Francisco Bay Conservation and Development Commission; Architecture Critics' Citation: "Perspecta," Yale Architectural Journal; Edward C. Kemper Award: Gerald M. McCue, F.A.I.A.; Special Citation: Ansel Adams.

Giant traffic jams for two American cities are being organized by architect and city planner Peter Seidel "to create a public awareness that will result in good public transportation, inexpensive travel, uncongested roads, and a cleaner environment." The "Drive-Ins" are planned for April 2 between 3:00 and 7:00 PM on arteries leading away from central city areas in Detroit and Washington, D.C. Mr. Seidel argues traffic levels are increasing roughly ten times faster than the expansion of roads and that more traffic and roads will only degenerate the urban and natural environment.

The American Academy of Arts and Letters has elected Philip Johnson to membership. The Academy is limited to 50 members. **Moshe Safdie has been named to the highest architectural chair of the Yale School of Art and Architecture.** Mr. Safdie is 32. **The new chairman of the Department of City and Regional Planning at the University of California in Berkeley is Michael B Teitz**, 35, an expert on inner-city problems.

Architectural Employees organize in California

A San Francisco area group, the Organization of Architectural Employees, is seeking legal recognition as bargaining agent to bring about improvements in their conditions of employment. The O.A.E. has petitioned the National Labor Relations Board to hold elections in two Bay Area offices, Wurster, Bernardi & Emmons, and Hertzka and Knowles, and has written a first-step letter to three other firms: Howard Friedman, Skidmore, Owings and Merrill, and Fisher/Friedman. All of these firms are considered to have comparatively liberal working conditions. The NLRB began hearings in mid-February.

O.A.E. aims at changes in three main areas: economic and individual, professional, and social and community, as described in its "Guidelines for Minimum Standards of Employment." A substantially increased basic wage of \$4.76 an hour is first on the list of "economic goals" followed by fringe benefits transferable from one office to another including pensions, medical and dental plans, vacations, profit sharing, and sabbatical leaves. "Individual goals" include clarification of responsibilities and status, improved job security, a more comfortable working environment, and

"a more gratifying employee participation in the development of each architectural project." "Professional goals" include an apprenticeship program for beginning architects with special emphasis on members of minority groups. "Social and community goals" include initiation of community-oriented projects and increased awareness of the public interest on all projects.

The O.A.E. "Guidelines" place heavy emphasis on this last area: "The insidious decay of our environment is no accidental bedfellow of a weak and irresponsive profession."

The O.A.E. also states its "Guidelines" are not just an effort to get more money, although it stressed the importance of this aspect, but it is also attempting to create new professional standards, giving increased recognition to the academic and professional training of lower-scale employees.

A survey of 175 Bay Area architectural employees conducted by the O.A.E. showed an average of 5.4 years of higher education, 45 per cent licensed, 8.2 years of employment, and 1969 income from architectural employment of \$10,192. According to O.A.E. figures, architectural employees are the lowest paid in the design and construction process. The chart

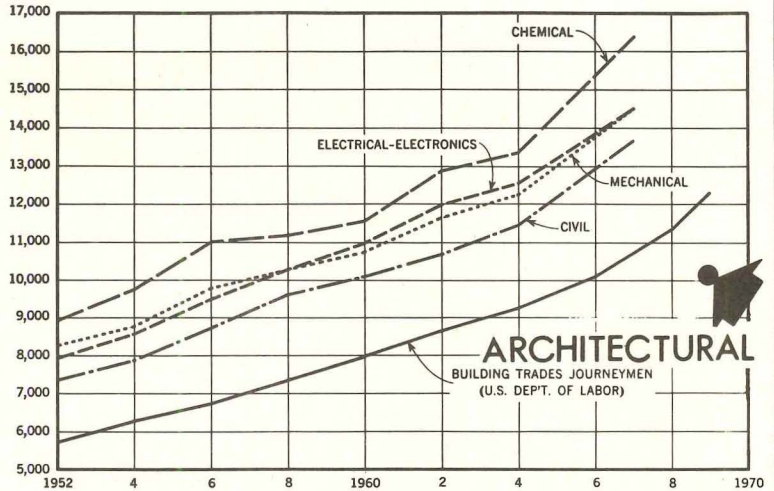
below compares the O.A.E. figure to other professions' pay.

O.A.E. is made up largely of employees who expect to remain employees. This is a realistic attitude, according to former O.A.E. president Peter Ekstein: "Starting one's own office means being on welfare. And in a large office like SOM, how many employees will get to be partners?"

The Northern California Chapter of the American Institute of Architects has proposed to its members a set of mandatory standards

for professional practice to be voted on by March 16. However, the standards do not meet O.A.E. goals. Further, not all employers and employees are members of the A.I.A. Says one prominent architect, "If unionism takes over, I will close my office."

O.A.E. is not a union at present, but it may soon become one, having said in its "Guidelines," "Unionization may be the only foundation from which our efforts to revitalize ourselves and our profession can begin."



Organization of Architectural Employees figure on architectural employee wages in the San Francisco area compared with national statistics for engineers and building trades journeymen. (Dot indicates O.A.E. figure.)



Black community shopping center opens in Memphis

Memphis Metro Shopping Plaza, which opened this winter, will offer black people the rare chance of a neighborhood shopping center while helping to develop management skills within the black labor market. The Shopping Plaza was designed by Robert Lee Hall and Associates and is located in a black neighborhood 10 minutes from downtown Memphis, Tenn.

It developed out of a program sponsored by the National Business League, an organization of black businessmen, designed to increase minority business opportunities. 60 per cent of the shareholders are black and nearly all of the 16 businesses (expansion is already planned) are black-owned; all are black-run. White participation has also been significant, and about 25 per cent of the shoppers so far have been white.

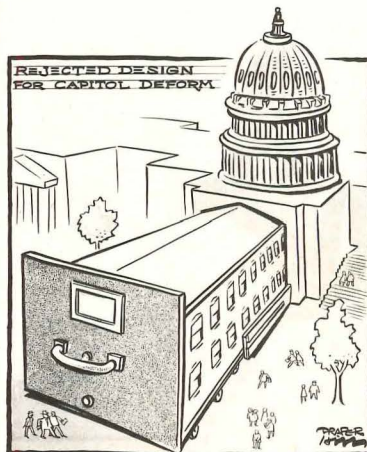
Report opposes Capitol West Front expansion

A structural report from the engineering firm of Praeger, Kavanagh

and Waterbury, New York, has vindicated the long-held American Institute of Architects position that there is no need to extend the West Front of the Capitol as was done with the East Front several years ago.

Former Capitol Architect, J. George Stewart, who died last year (page 37), had proposed a \$45 million West Front rebuilding project which would have moved the old wall line outward, providing new space for offices, and tourist facilities.

The new report argues the present wall can be repaired for less than \$15 million, commenting, in support of preservation, "The Capitol is 150 years old and should give an impression of venerable age, not a crisp newness that denies its historical background."



Subway station competition to be held in Boston

Boston's Institute of Contemporary Art and the Massachusetts Bay Transportation Authority are holding an open competition to improve a long, dreary passageway (above) inside the State Station, built 1902-1908. The winner will get \$5,000, plus a budget of \$8,000 for supplies, the money coming from a Rockefeller Family Fund grant. The competition is open to anyone

who wants to apply, but there's a catch: the designer is also the builder (he'll have help, though, from apprentices, supplied by the I.C.A.).

Deadline for preliminary proposals is April 15; final deadline is June 1; project completion by the end of the year. For more information, maps and plans, contact, as soon as possible, Susan Channing or Edwin Child, Institute of Contemporary Art, 33 Beacon St., Boston, Mass. 02108, 227-617-6940.

L. A. quake damage assessed

The highest buildings in town—the Atlantic Richfield towers, 52 stories high and still under construction—were unhurt. But the 28-story City Hall sustained \$500,000 worth of damage and 675 buildings suffered major damage, according to the Los Angeles building and safety department. 114 were posted unsafe, but all of those were built before 1933 regulations which followed the equally intense Long Beach earthquake.

Accelerographs installed in all new skyscrapers measured the quake's effects, and the results are now being compared against the mathematical models by which the buildings were designed.

Some earthquake specialists insist there is still cause for worry about the new skyscrapers, pointing out that most of them were 25 or more miles from the epicenter near Sylmar. Dr. C. F. Richter, who devised the Richter Scale of earthquake measurement, still thinks buildings over 30 stories are inadvisable in seismic areas.

Olive View Medical Center, much nearer the epicenter, was the victim of tremendously increased localized forces, according to L. A. County Engineer John A. Lambie. According to Mr. Lambie, the quake hit Olive View with an intensity several times that measured generally. (See photo above right.)

The reinforced concrete structure, opened only last October, was



considered a total loss, although most of its structure remained intact. Ground movements of several feet shifted the first floor, twisting, undermining, and weakening the supporting structure. The upper five stories of the six-story building were left undamaged but in a precarious position. Two stair towers also fell away from the main building. The top floor of an adjoining two-story psychiatric unit did come down when its supports shifted out from under it. Olive View met all earthquake standards both in design and construction, according to Mr. Lambie. After demolition, a park will take its place on the site. Engineers are calling for more thorough geological maps in hopes of locating such dangerous pockets of high energy release in advance.

Schools built after the 1933 regulations came through well; however, most of them were not in the area of greatest ground motion. Seven older schools were seriously damaged. Recent California legislation requires that public schools either be brought up to present standards by 1975 or be abandoned. A 1949 parapet ordinance was credited with preventing many deaths from falling objects.

A.I.A. vice president George M. White, to be new Capitol architect

Breaking with a century-old "tradition," the White House has named an architect, George Malcolm White, to be Architect of the Capitol, filling the place vacated last May by the death of J. George Stewart, a former contractor and congressman. The last architect to fill the post was Thomas U. Walter, who supervised the building of the Capitol dome under Lincoln.

Mr. White, 50, is not only a registered architect, heading a firm with his father in Cleveland; but he is also an engineer and a lawyer, having received B.S. and M.S. degrees from M.I.T. and a law degree from Western Reserve University (he also has a business degree from Harvard).

Mr. White is deeply interested in the legal, financial and organizational aspects of architectural practice. He has lectured local chapters across the country extensively on these subjects, and has also written many articles. He has had a major part in formulating recommendations for restructuring American Institute of Architects operations,



which will be presented at the June convention.

In the \$38,000-a-year life-time job, Mr. White will supervise all construction on Capitol Hill, including the Supreme Court and Library of Congress buildings, heading a staff of about 2,000.

Mr. White will walk into an imbroglio over expansion of the Capitol's West Front (page 36), strongly opposed by the A.I.A. but strongly recommended by his predecessor, Mr. Stewart.

New Construction Action Council meets in Washington, D.C.

Measured in terms of attendance and interest the first national conference of the Construction Action Council, the Chamber of Commerce "network for progress" aimed at analyzing major building industry problems, must be counted a success. More than 200 participants discussed building codes and standards, labor cost and supply, and mortgage money costs and availability in three concurrent sessions. The January 28 meeting in Washington, D.C. laid the groundwork for future moves toward smoothing out many of the problem areas, according to many of the participants.

In the codes and standards seminar, where organization operations and attitudes were outlined by spokesmen for the National Conference of States on Building Codes and Standards, the American National Standards Institute, the American Society for Testing and Materials and the International Conference of Building Officials, the audience voted overwhelmingly in favor of Congress taking a more active role in the codes and standards field. The expression came in response to questions asked by Rep. William S. Moorhead (D-Pa.), a panelist. He authored a bill in the last Congress which, if passed, would have established a National Institute of Building Sciences within the National Academy of Sciences to act as a clearinghouse and code coordination center for those working on code-related problems, including the model code groups. He asked for comment from the C.A.C. as he considers introducing the legislation in the new Congress.

Almost none of the Council participants wanted to see the Federal government back away from its current involvement, nor did they wish to see Congress go all the way, superseding local codes with a national Federally-imposed building regulation.

The labor conferees decided the most effective action they could take now would be toward greater

political involvement—telling their elected officials what they want and fighting for implementation.

They cited a need for tougher employment standards at the work site, one of several moves required to reclaim responsibility for the contractor. Size of the bargaining unit, they agreed, should be studied, recognizing at the same time a hazard in the greater aggregation of union power. The need for greater inter-industry cooperation was stressed as exemplified in the Construction Users Anti-Inflation (Rogers') Roundtable.

The money panel concluded the property tax had failed completely to do the job for which it was intended and that revision in the system must come soon. Surprisingly, the session moderator reported a feeling that builders can expect to live with a chronic money shortage "for the rest of our business careers" in spite of the money flow.

The money seminar called for better communications on credit matters at the local level and said it must be made believable that there is a long-term shortage of capital funds. With housing a subsidized business and with money markets in extremely fluid condition, "tremendous numbers of new lending capabilities" were cited. Participants were told that if their local lending institutions were not using the several new Federal credit authorizations, their people were being short-changed.

The keynote conference address was made by Wallace F. Traendly, president, McGraw-Hill Information Systems Co., who said previous efforts at construction industry coordination had not been fruitful because of chronic industry fragmentation.

He said if the industry now is to marshal successfully its capabilities in solving urban reconstruction problems, it must 1) coordinate efforts; 2) become deeply committed to the task of rebuilding cities; 3) establish a closer relationship with government agencies, and 4) be allowed to make a fair profit on low-income urban housing.

Landscape architect designs surprise peace dove

When an oil company subsidiary hired landscape architects Eckbo, Dean, Austin and Williams to plant a newly graded area near Los Angeles International Airport, they left esthetic decisions to Gordon Andrews, who was in charge of the project. Mr. Andrews chose a variety of grass and flowers, planting the seeds on a 100-ft grid. In a few weeks, a pattern began to read—but not from the ground—it was too large for that: 1100 by 600 ft.

Passing airplanes had a view of an enormous white peace dove (eye width: 30 ft). Everyone involved was surprised, but also pleased, according to Mr. Andrews, who calls it "one of my gifts to the world and mankind."





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In the face of rising costs, tough design requirements, and a poor site, our bumps helped make the grind easier for the architect and engineer of the New Bedford (Mass.) High School.

They wanted the strongest, lightest and least expensive structure. So they chose a composite system, using 200,000 sq. ft. of our SUPERBOND BC Composite Deck.

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BC Deck helped them bring in the design almost \$500,000 under budget. As a structural component used with composite beams, up to 15% less steel is used in the entire structure.

The shallower composite beams gave them more usable space by cutting down on floor-to-floor height. In addition to reducing the overall height, it gave them the lightest structure per sq. ft. without losing any strength. (Foundation load was critical because of poor drainage on the site.)

Finally, the deck met their performance specs for construction loads as well as dead load, without shoring.

SUPERBOND BC Deck comes in light-weight galvanized coating, 1-1/4 oz. galvanized coating and prime coat painted. For more information, write for our free brochure WC-450.

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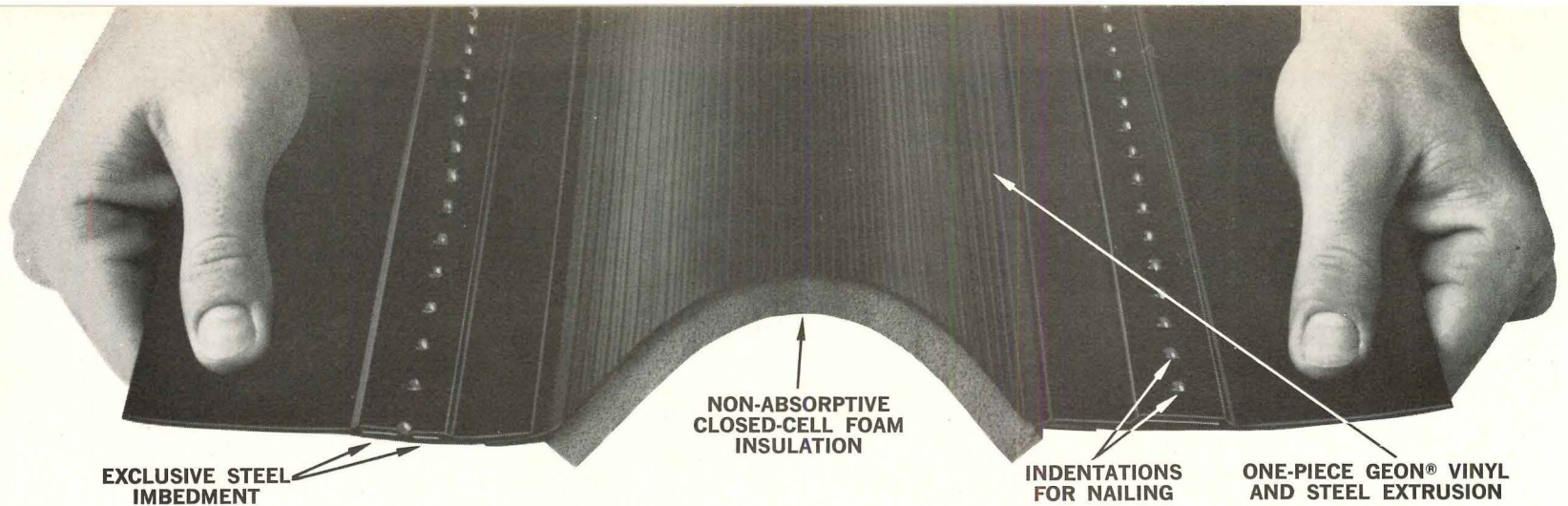


Architect: Owen F. Hackett, Jr. & Associates, New Bedford, Mass.
Structural Engineer: MacLellan, Dormer, Mulcahy, Inc., Providence, R.I.
General Contractor: Perini Corp., Framingham, Mass.

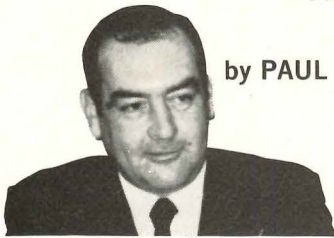

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ANSWERS TO YOUR QUESTIONS ABOUT METALASTIC[®] MARK II new principle expansion joint cover



by **PAUL J. RAABE**, Products Manager,
Building Products Division,
GREFCO, Inc.



A subsidiary of
General Refractories Company

YOU: What is Metalastic Mark II?

PAUL: It is a new type of expansion joint cover that assures your clients of weatherproof joints in rooftop construction. It permits roof sections to expand, contract and distort without causing breaks in the joint cover.

YOU: How is Metalastic Mark II made?

PAUL: By a new principle. Extruded simultaneously through a single die is a Geon* vinyl bellows flanked by two semi-rigid flanges containing continuous metal imbedments. After extrusion, the bellows is lined with closed-cell vinyl foam insulation.

YOU: What is meant by metal imbedment?

PAUL: It is a continuous perforated strip of steel that controls the expansion and contraction of the joint cover; the vinyl flange and the metal assume identical coefficients. This metal strip is an integral extruded part of the flange. It has neither been glued nor crimped in place. It won't work loose. It can't rust. It can't corrode.

YOU: Why is this strip perforated?

PAUL: Molten vinyl flowing through the perforations "keys" the metal in place. The slight indentations occurring every $\frac{3}{4}$ " along the imbedment show where nails can be driven.

YOU: Do these perforations have other advantages?

PAUL: In addition to speeding nailing, nails driven through the perforations are automatically sealed tightly against entrance of water.

YOU: What about the "dissimilar metals" problem?

PAUL: Metalastic Mark II solves that because its metal imbedments, as the term implies, are completely encased in Geon* vinyl, which is compatible with any metal.

YOU: How is Metalastic Mark II packaged?

PAUL: Straight flange Metalastic Mark II comes packaged in 50-ft. rolls together with nails and splicing kit. Curb-shape is available in 10-ft. lengths. Also available are cross-over, tee and corner transition pieces, which lap over straight runs and eliminate butt joints and splices.

YOU: Is there an advantage to roll material?

PAUL: Sure, it eliminates most of the splicing.

YOU: What is the splicing procedure?

PAUL: It's as simple as putting a patch over a joint and takes less than five minutes under most weather conditions. A properly executed splice is almost impossible to remove after 24 hours.

YOU: Why a 50-ft. roll and not 100-ft.?

PAUL: We can supply 100-ft. and 150-ft. rolls if you order them. The 50-ft. roll is the result of conferences with roofers. Since the 50-ft. roll fits in a carton less than 20 in. square and 14 in. high, roofers found it easier to handle. They like its light weight—only 45 lbs. In addition, they can now purchase closer to the exact footage required and eliminate waste.

YOU: Why furnish nails?

PAUL: To make sure the proper size and type of nail is used.

YOU: Has Metalastic Mark II been thoroughly tested?

PAUL: Yes, in both field and laboratory and in testing programs set up with the Illinois Institute of Technology as well as GREFCO's own Research and Development Laboratory. Many roofers participated in our initial testing program, and we benefited greatly from their experiences.

YOU: What are architects' reactions?

PAUL: They appreciate the ability of Metalastic Mark II to conform to unusual roof design. They like Geon* vinyl's established resistance to industrial and atmospheric pollutants, its toughness and its flame-retardance.

YOU: Is there any significance to the word "Mark" instead of just Metalastic II?

PAUL: My boss, Mr. B, insisted on it. Everyone else was against it.

YOU: Is the name set?

PAUL: Looks like it. Metalastic Mark II is a registered trademark.

YOU: Sounds great! How can I secure a free sample and technical data?

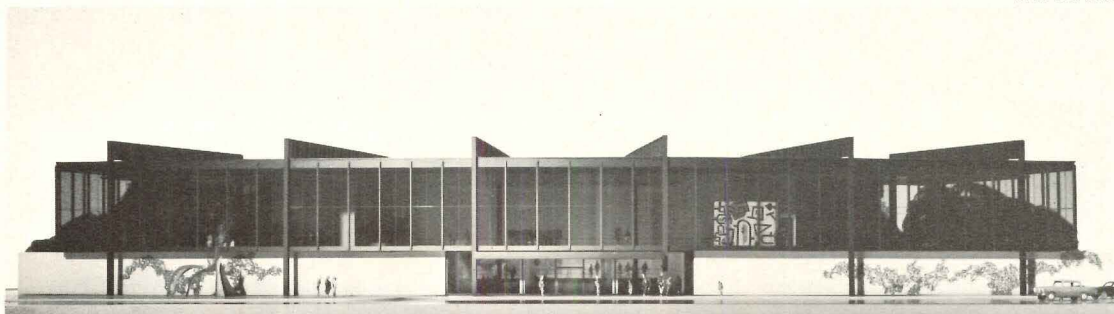
PAUL: I thought you'd never ask. Write GREFCO, Inc./ Building Products Division, Dept. AR-1, 333 N. Michigan Ave., Chicago, Illinois 60601.

*Registered Trade Mark of B. F. Goodrich Chemical Company

GO AHEAD... SPECIFY METALASTIC MARK II

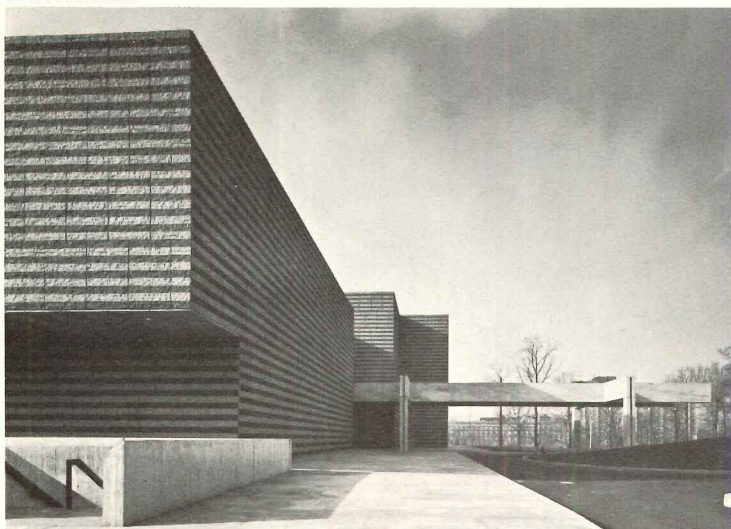
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Rick Gardner



Mies van der Rohe Wing, Museum of Fine Arts, Houston, Texas, Mies van der Rohe, architect, will enclose Mies' 1958 Cullinan Hall (July, 1959, page 10), containing, on ground level, offices, the museum library and shops. The second level will be one gallery, interrupted only by two small service shafts. An auditorium will be below grade. The design was completed shortly before Mies' death.

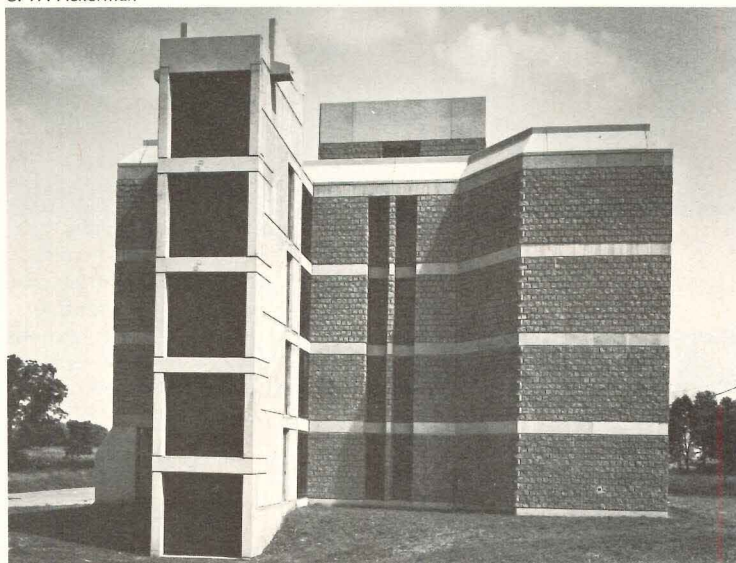
C. W. Ackerman



The Cleveland Museum of Art, Education Wing Expansion, Cleveland, Ohio, Marcel Breuer and Hamilton P. Smith, architects, provides new galleries and a new front entrance, also houses several museum departments, a 750-seat au-

ditorium, lecture and recital halls, audio-visual facilities, and classrooms. Unity with existing structures is emphasized. Bands of light and dark gray granite alternate on the facades. Spaces requiring natural light face interior courts.

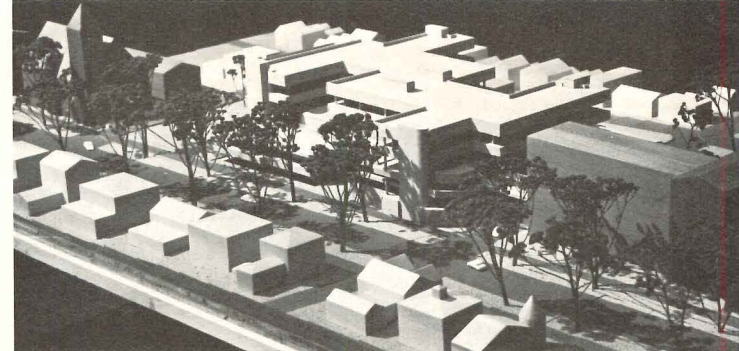
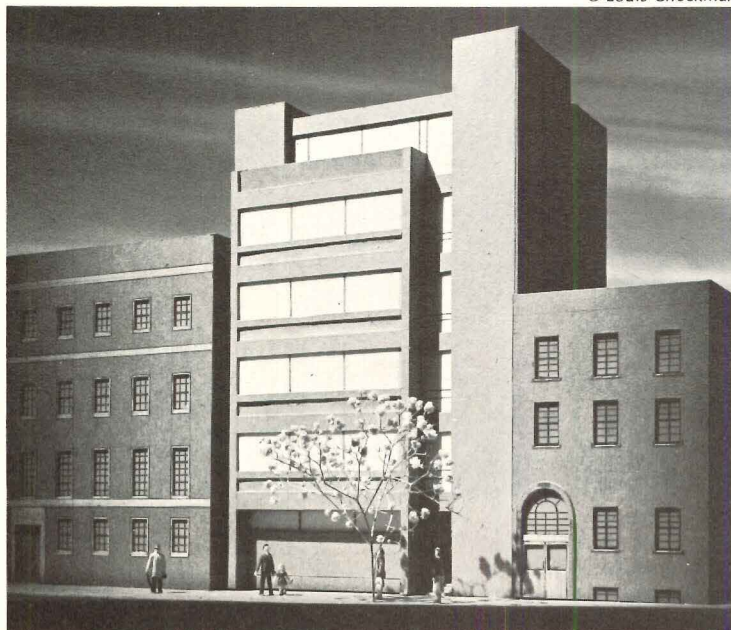
C. W. Ackerman



Dormitory, Wilberforce University, Wilberforce, Ohio, Dalton-Dalton-Little, architects, is the first of eight buildings on a new campus for an existing small Negro university,

master-planned by the same architects. Bearing walls are of specially developed split concrete units, matching precast and poured concrete used throughout the campus.

© Louis Checkman



Malcolm McVickar

Henry Street Child Care Center, New York City, Welton Becket and Associates, architects, an atypical project for a large firm, is designed to match neighboring buildings, using the roof of one (at left) as a play area. The six-story steel structure will be a community consultation center and a day care center.

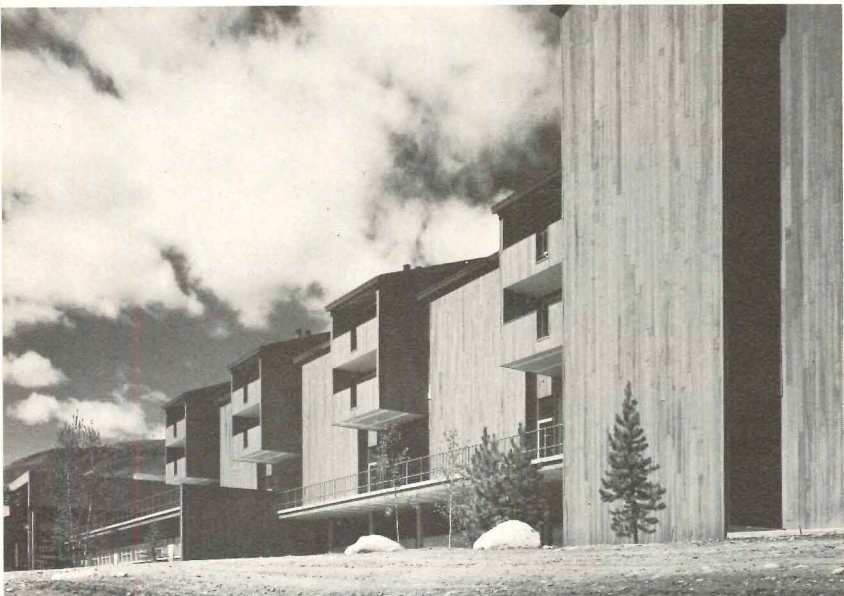
Mercy Hospital, Portland, Maine, Perry, Dean and Stewart, architects, Ryan Advisors, Inc., hospital consultants, is designed for high flexibility, having long-spanned interstitial mechanical floors. Parking is in lowest level. A major pedestrian "street" connects the new building to an existing structure via a skylit bridge.

American Institute of Architects Western Mountain Region Chapter gives awards

Two Honor Awards and 10 Merit awards were given. Not shown below are: **Kissinger Petroleum, Ltd. office building**, Englewood, Colo., Rogers/Nagel/Langhard, architects, (November, 1969, page 43); **Ski Shack**, Park City, Utah, Robert A. Fowler Associated Architects (September, 1970, page 37); **executive office for the**

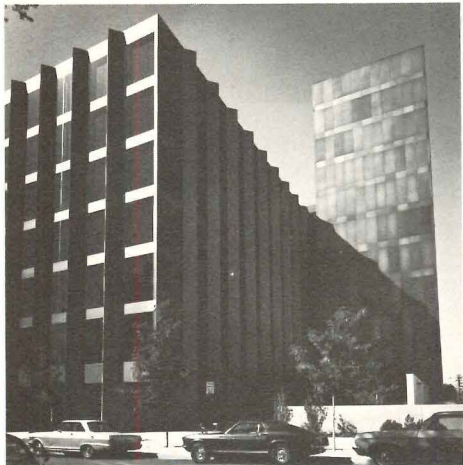
Great Western United Equitable Building, Denver, Charles S. Sink and Associates, architects; **Table Mesa Electronic Service Systems Building**, Boulder, Colo., Elwood C. Grabow, architect; **Frank M. Gonzales house**, Paradise Valley, Ariz., Bennie M. Gonzales, Associates, architects.

Daniel Ilko

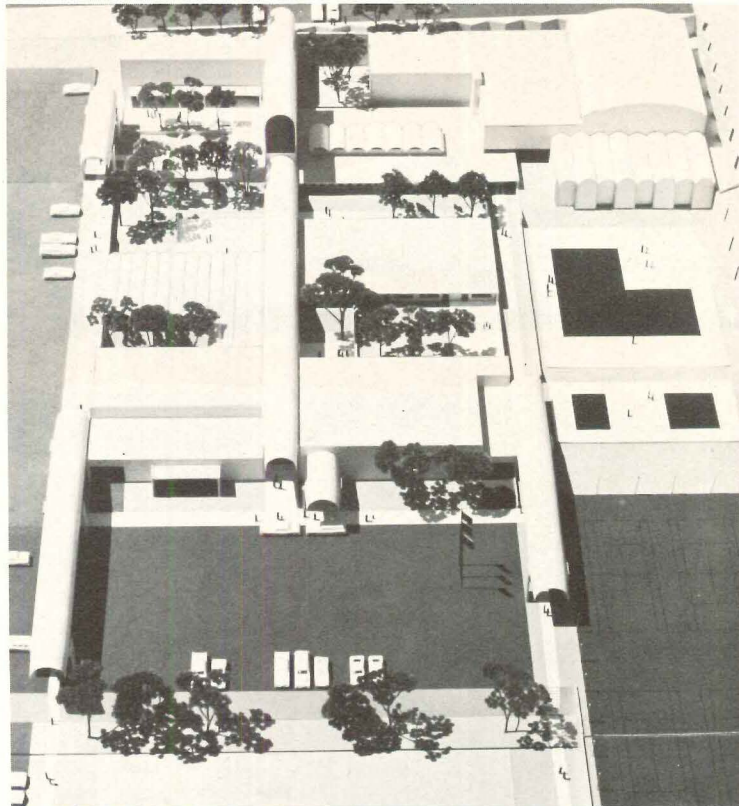


Vail Lionshead Condominium, Vail, Colo., Charles S. Sink Architect, contains 24 units, varying from one to four bedrooms, on upper floors, commercial facilities at ground level, as well as enclosed parking, a nursery, and a ski school.

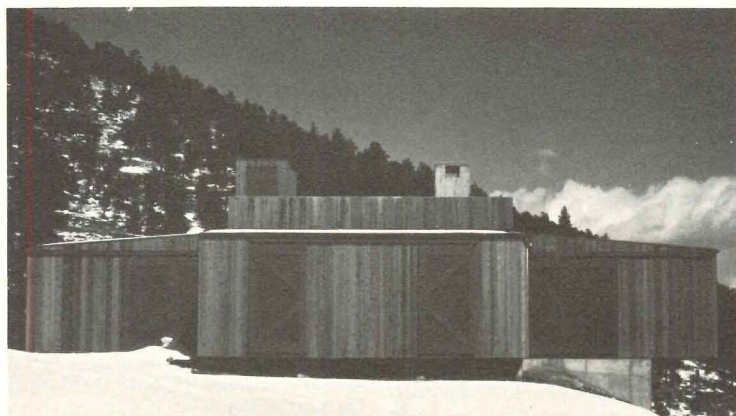
Rush J. McCoy



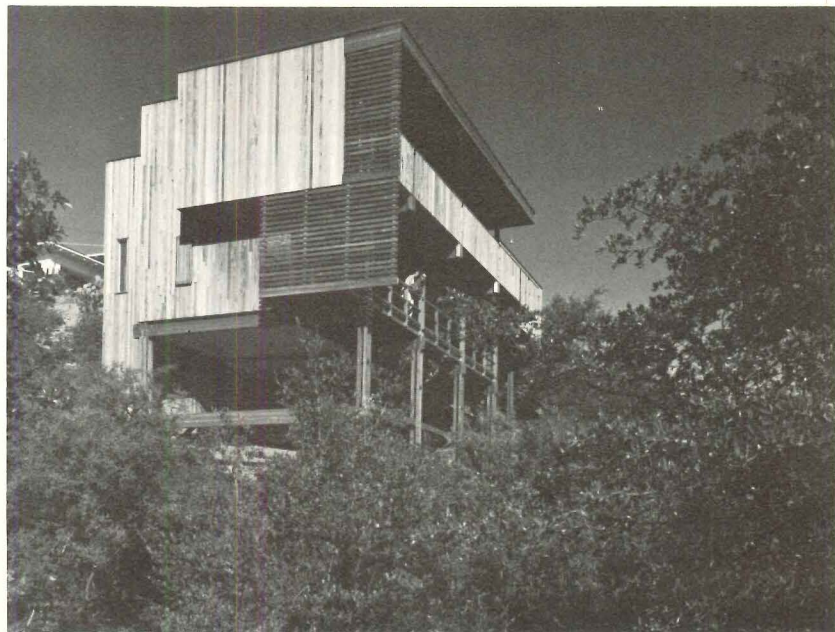
Financial Programs Building, Denver, W. C. Muchow Associates, architects, has a flexible modular open floor plan with detached supporting core. Vertical louvers are solar activated. Exterior is of granite and bronze colored aluminum. Outdoor space is for public use.



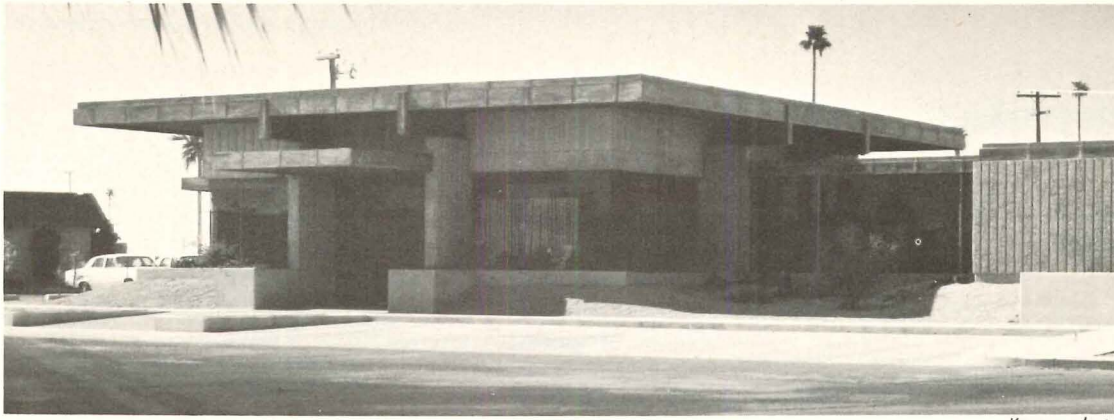
Expansion of the Jewish Community Center, Denver, Colo., W. C. Muchow Associates, architects, will continue over five years along a central circulation spine to which new facilities will be added when required. Structure will be poured-in-place concrete walls and precast twin-tee roofs. Precast concrete barrel vaults roof circulation ways.



Mrs. Thomas R. White residence, Boulder, Colo., Rigomar A. Thurmer, architect, is built of cast-in-place rough concrete, and rough, unfinished wood throughout. Barn doors, painted orange and magenta, protect against Boulder's high winds and provide security.



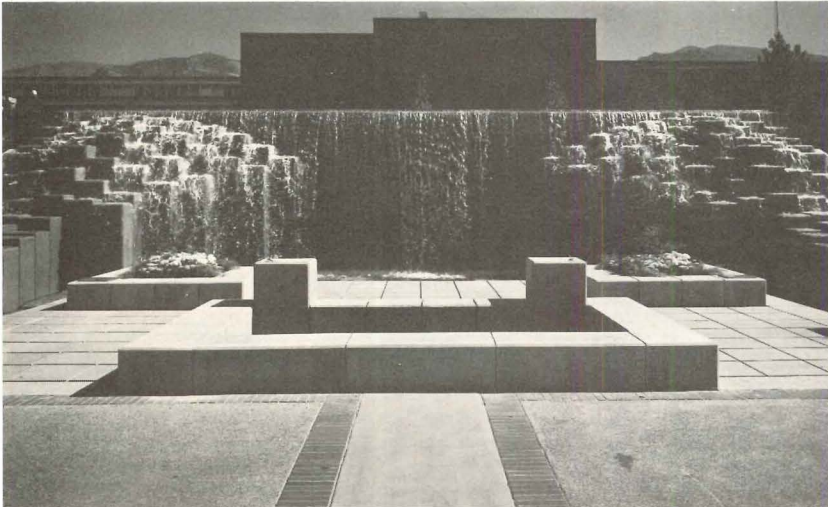
Starr House, Nogales, Arizona, Edward L. Starr, architect, is on a steep site facing the view to the north. Entry is via a timber bridge to living areas; bedrooms are below. Structure is clustered 4 in. by 4 in. redwood columns and laminated wood beams. Siding is also redwood. The architect and his family are the occupants.



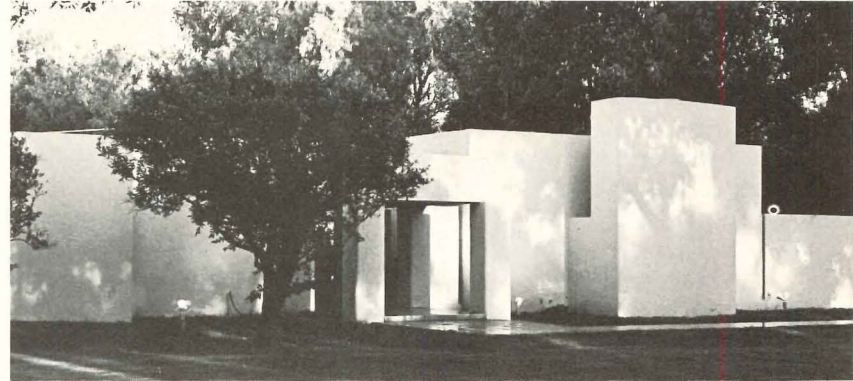
Koppes photo

Western Saving and Loan, Sun City, Arizona, Guirey, Srnka, Arnold and Sprinkle, architects, is of cast-in-place exposed aggregate concrete with bronze-tinted-glass. The broad-roofed main pavilion is linked to a more inward-oriented smaller community club room and service area wing.

Richard Burton



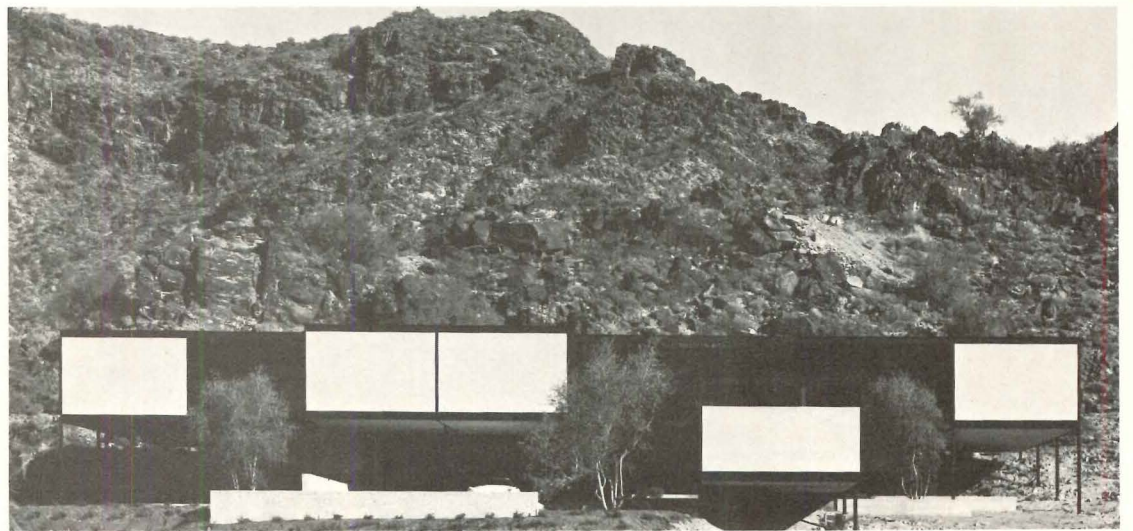
University of Utah Waterfall Fountain, Salt Lake City, Boyd A. Blackner, architect, is "designed for use", bringing people onto a central island and encouraging wading and climbing through the spray. Water is heated in winter. The Fountain is the focal point of a plaza planned to be the central outdoor crossroads for the campus.



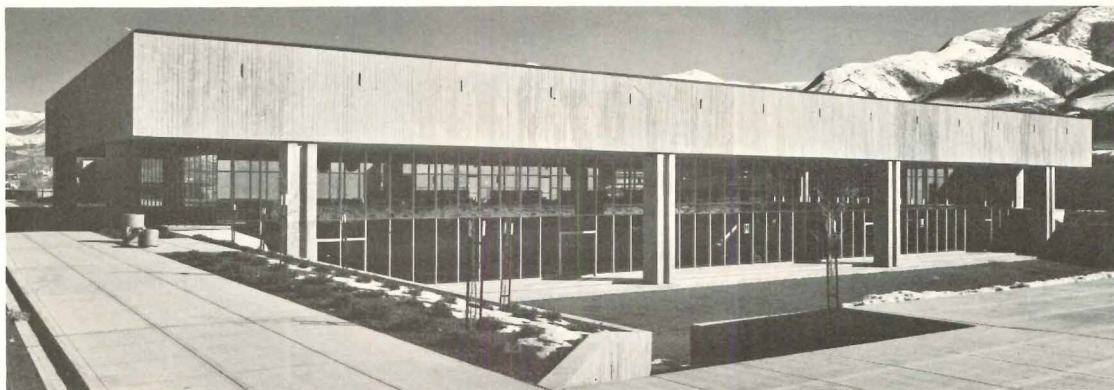
John Driggs residence, Phoenix, Arizona, Bennie M. Gonzales and Associates, architects, is introverted because of street noise and west exposure, using galleries to provide

access to various living zones. Materials are mortar-washed masonry units with rough beams and wood sheathing. Mr. Driggs is the mayor of Phoenix.

Driggs residence, Paradise Valley, Arizona, Alfred Newman Beadle, architect, was designed to leave the site as unmolested as possible, while contrasting a hard-edged structure with the natural environment of rocky hills.



Gordon Peery



University of Utah Natatorium, Salt Lake City, Robert A. Fowler Associated Architects, becomes a focal point because of its massive visual and structural treatment. Access to pool from other complex buildings plus space for spectators caused a dual circulation problem.

The one book in every office

ARCHITECTURAL GRAPHIC STANDARDS, Sixth Edition by the American Institute of Architects, Joseph N. Boaz, A.I.A., Editor.

John Wiley and Sons, New York, 1970, 695 pp., illus., hard cover, \$39.50.

A vastly broadened authorship is the most basic change in the *Sixth Edition of Architectural Graphic Standards*. Ninety-four architectural firms are among the contributors to this wholly-revised edition of what has truly become the architect's "bible."

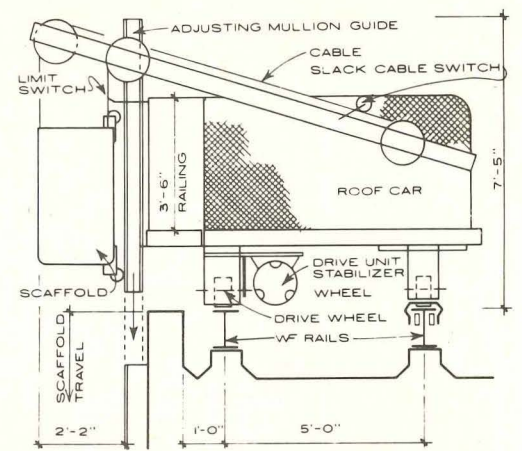
Almost ten years ago, Harold Sleeper, who with Charles Ramsey produced the first edition in 1932, asked John Wiley and Sons, the original publisher, to assist him in producing a *Sixth Edition*. Upon his death the work passed entirely to Wiley, which subsequently approached the American Institute of Architects as potential co-sponsors. Under William H. Scheick, then executive director of the A.I.A., an advisory board was formed which enthusiastically agreed to pursue the work and in July, 1964, Joseph N. Boaz, A.I.A., was appointed editor. Six years later we can see the results of the

large-scale collaboration which he directed.

Although contributions have come from many sources, users of the new edition will feel very much at home with the clear and concise presentations of specific material. The drawings on any given page are smaller, but the amount of tabulated material, which represents increased research into the designer's specific needs, is much greater. For instance, the seven pages on metal roofing in the *Fifth Edition*, each representing a different metal, have been consolidated into six with the emphasis placed on the generic problems of detailing metal roofs. The various standard roofing metals are compared through the use of tables.

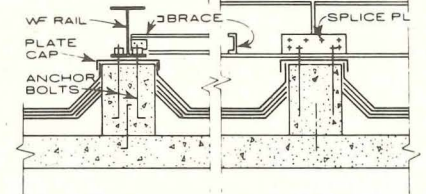
The general reorganization of the volume follows a similarly sophisticated pattern. From 23 sections in the *Fifth Edition*, the table of contents now lists 16 chapters that correspond generally to the 16 divisions of the Uniform System for Construction Specifications, Data Filing and Cost Accounting. Interestingly, general planning and design data, which was the last segment of the *Fifth Edition*, is now the first chapter.

ROOF MOUNTED WINDOW WASHING SYSTEMS



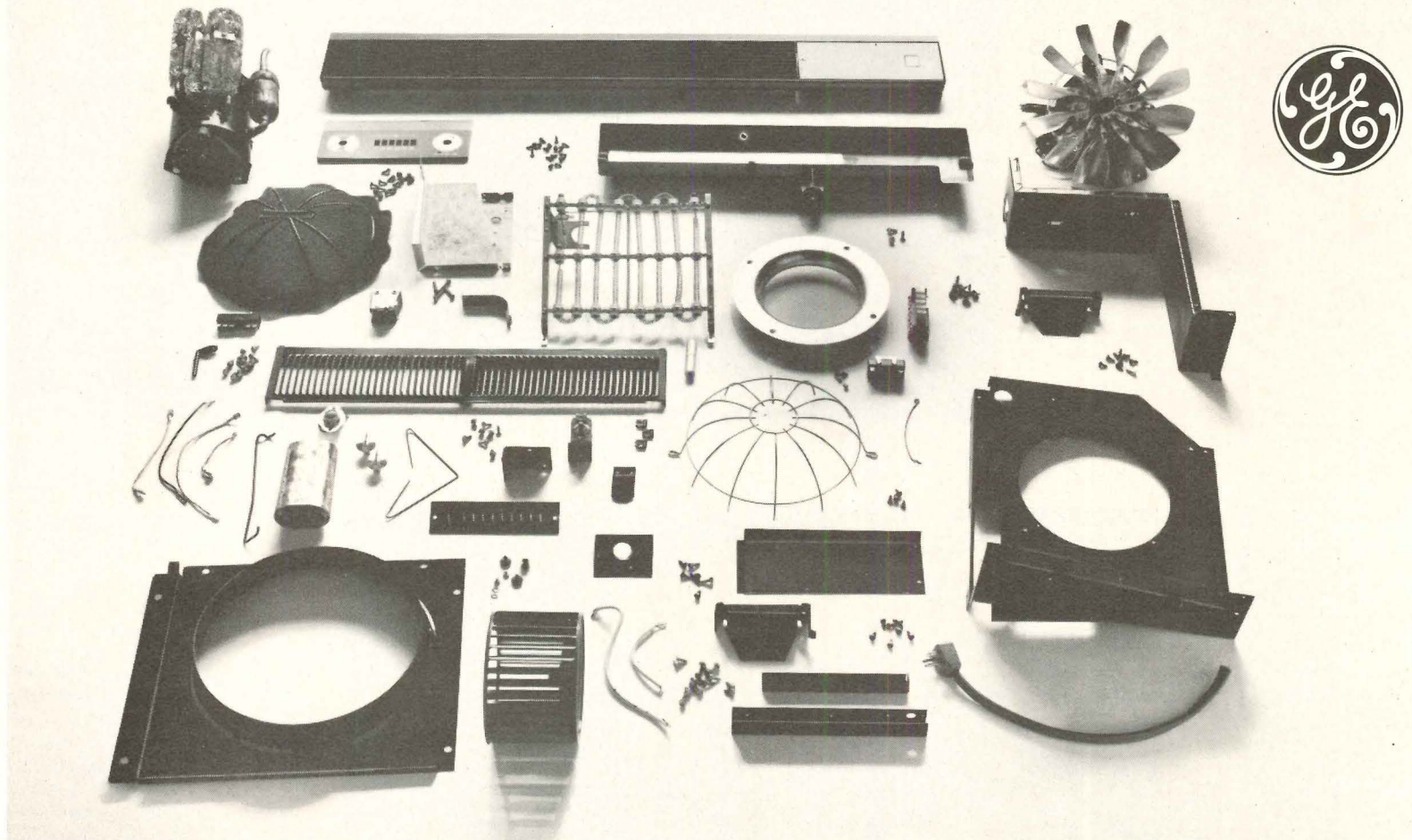
WASHING SYSTEMS DATA

High-rise equipment 400'-450' & over	Speed 60-70 F.P.M.	Suspended scaffold roof hoist	Provide wall guides and intermediate cable stabilizers
Intermediate rise equip. 130'-150' to 400'-450'	Speed 35 + F.P.M.	Suspended scaffold roof hoist	Provide wall guides
Low rise equipment up to 130'-150'	Speed 35 F.P.M.	Climber scaffold roof davits	Angle cables to hold scaffold against wall face



RAIL INSTALLATION - CONCRETE STR.

We made a few changes



It has grown from 25 to 86 pages, since much applicable information formerly spread throughout the book has been collected here.

Another area which has been substantially reorganized is the chapter on elevators and conveying systems. Now a chapter in itself, the material on passenger and freight elevators is presented in much clearer terms than before. Perhaps it is only the up-to-date graphics that make the difference, but the effect is one that any reader will welcome. One page is devoted to a brand-new topic for AGS: roof-mounted window-washing systems.

The mechanical equipment section in general has been expanded, in keeping with its increasingly important place in building today. Air-conditioning data, almost nonexistent before, now covers ten pages. Fire extinguishing systems, not mentioned before, are discussed, as are emergency power facilities and buried power service. Separated now from mechanical equipment, as a chapter in itself, thermal and moisture protection now incorporates roofing information with completely reworked data on thermal transmission and moisture vapor migration in buildings. Pages devoted to dimensions of computers and data processing equipment, to seismic information, and to Critical Path Method for Architects are additional examples of new information concisely presented.—James D. Morgan

ADDITIONAL BOOKS

THE URBANIZATION OF THE EARTH, by Jorge Arango. This book is based on the thesis that the world's population will continue to leave the country for the city, as they have done for 200 years—that global urbanization is inevitable. We must, therefore develop large-scale solutions—large-scale ideas—for dealing with city life: the escapism of suburbia will not continue to work. Arango gives us some accurate and biting characterizations of our present urban patterns, characterizations that build up the readers' trust in Arango's judgments about the future. He proposes his own concepts for guiding the transformation of cities and directing their development.

Beacon Press, Boston, 1970. 175 pp., hardcover, \$6.95.

WITH MAN IN MIND: AN INTERDISCIPLINARY PROSPECTUS FOR ENVIRONMENTAL DESIGN, by Constance Perin. There is a growing body of writing that can constitute a "theory of environmental design"—a paradigm on which to base further research in our attempts at creating more satisfying built-environments. This book is an articulate survey of the best of these current ideas and research directions, and Mrs. Perin clearly explains her own views about how we should proceed; chiefly, she be-

lieves, by enlarging the base upon which designs are now conceived into the fields of sociology and psychology, and by drastically increasing our emphasis on pre-design programming.

The MIT Press, Boston, 1970. 175 pp., hardcover, \$7.50.

RUSSIA: AN ARCHITECTURE OF WORLD REVOLUTION, by El Lissitzky, translated by Eric Dluhosch. This book is a primary source for any full understanding of the origins of modern architecture in the early twentieth century, and this is the first translation available in English. First published in Vienna in 1930, it is a review of the achievements of Lissitzky's post-revolutionary compatriots in Russia, and an outline of his own program for future action. From 1918 to 1921, the main forces for the promotion of art and architecture in Russia were totally in the hands of the radical left avant-garde. To a lesser degree after 1921, they were able to continue in strength, and create some completed projects, until Stalin's decree of 1932 established "Socialist Realism" (i.e. eclectic classicism) as the only acceptable style. Lissitzky not only leads the avant-garde in his commitment to architecture as primarily a social task, but when Stalinist suppression came, chose to remain in Russia as a Communist who dissented but did not run. The book is illustrated with photographs of

continued on page 50

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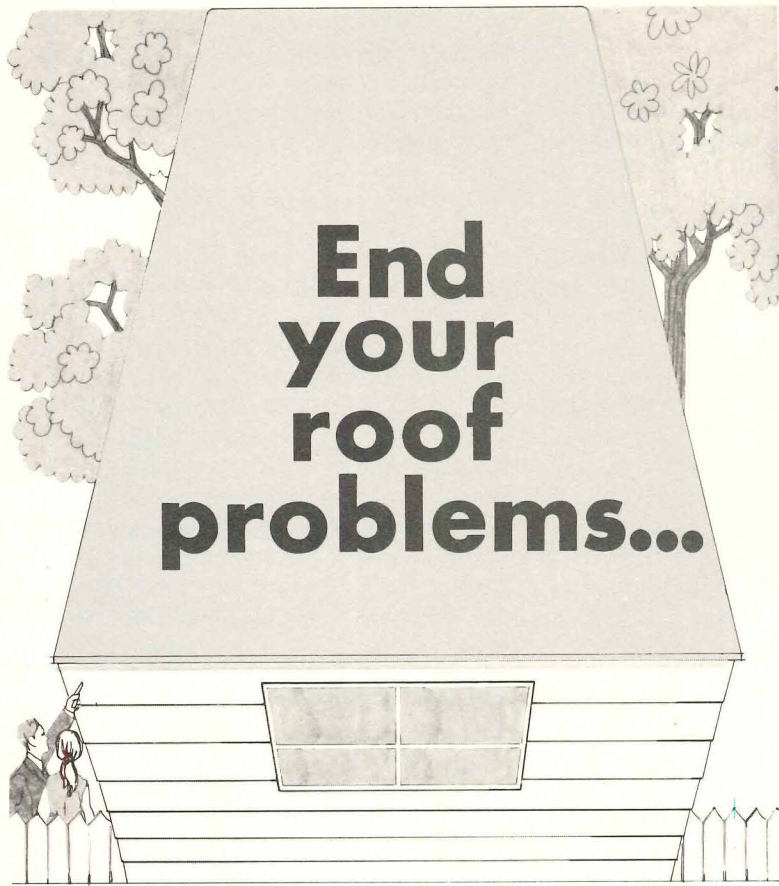
If you're looking for terminal thru-the-wall heating/cooling units, see the new Zonline for office, hotel/motel, apartment, school or hospital. Available in deluxe and standard models for 208 V., 230 V., and 277 V., and a variety of installations. See your General Electric Central Air Conditioning distributor right away. Or write the Air Conditioning Dept., Commercial & Industrial Sales Section, Louisville, Kentucky 40225.



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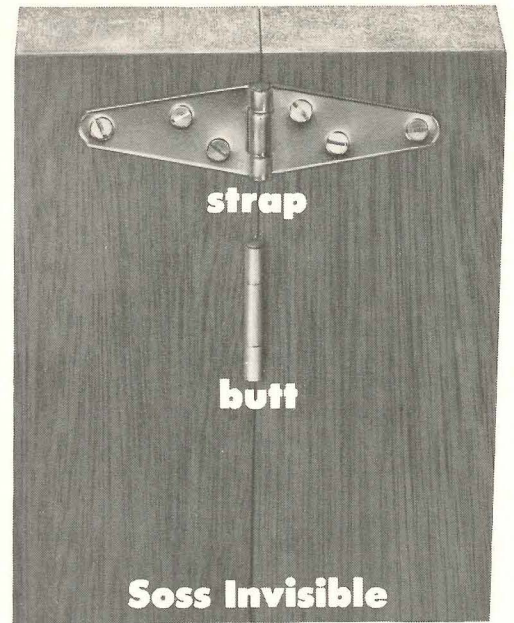
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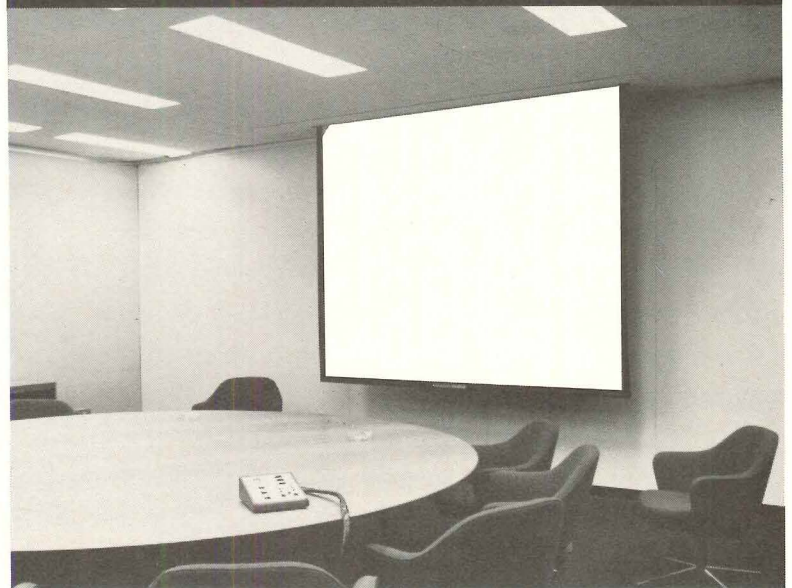


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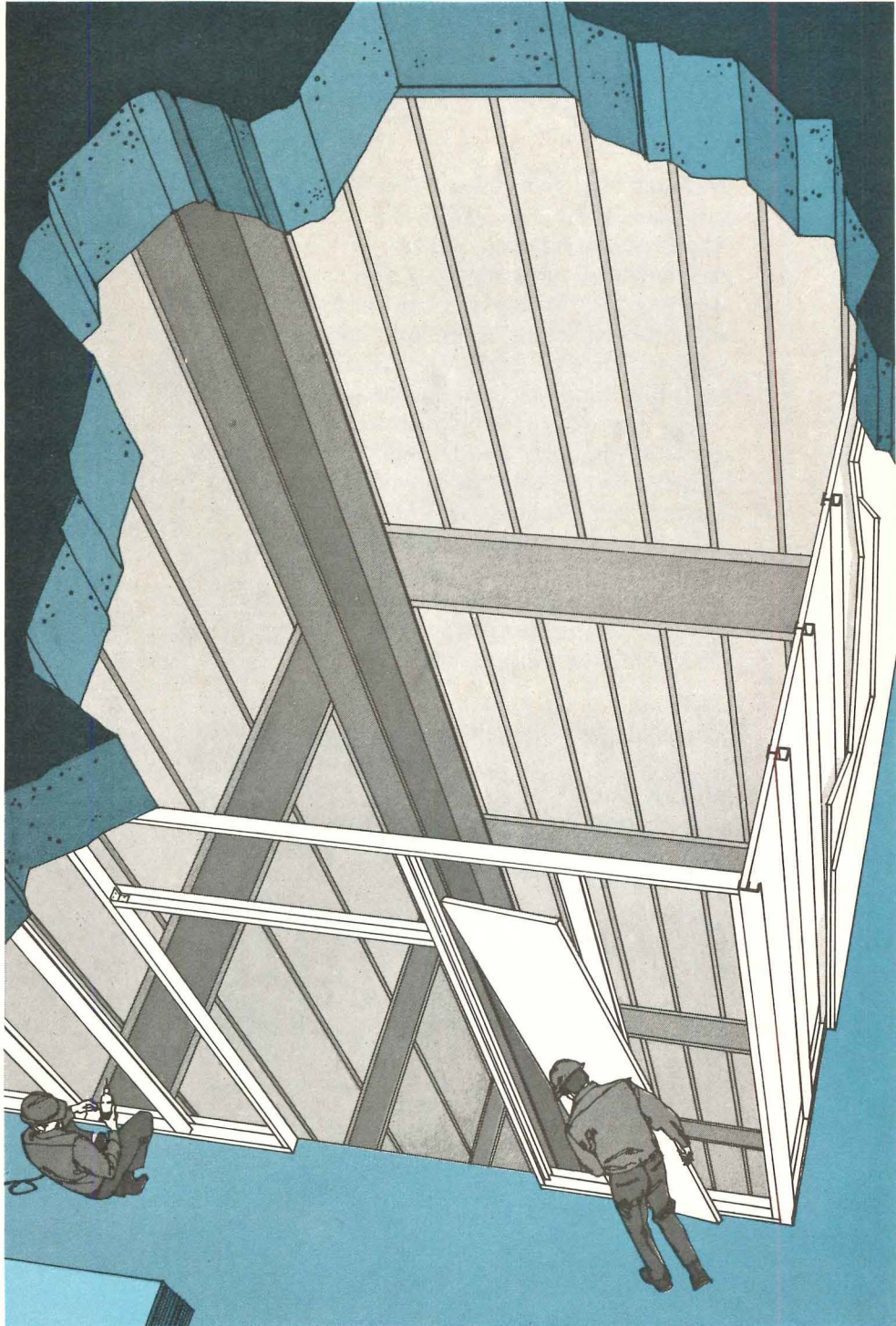
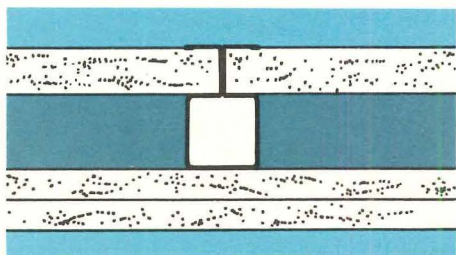
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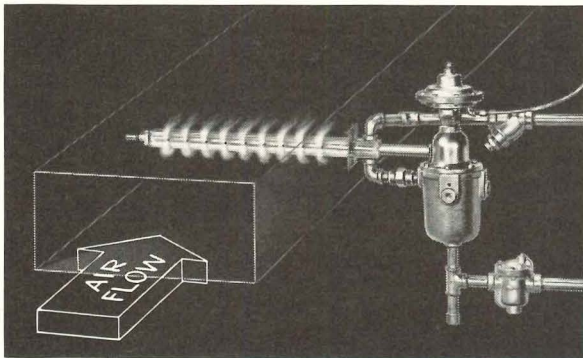
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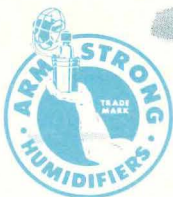
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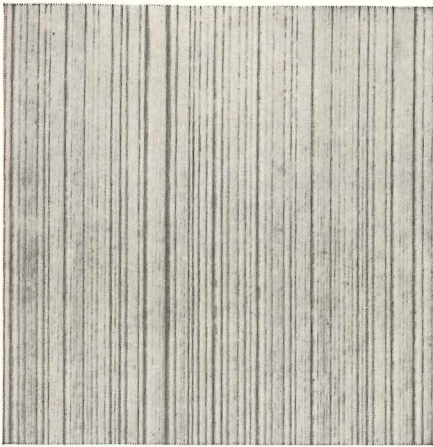
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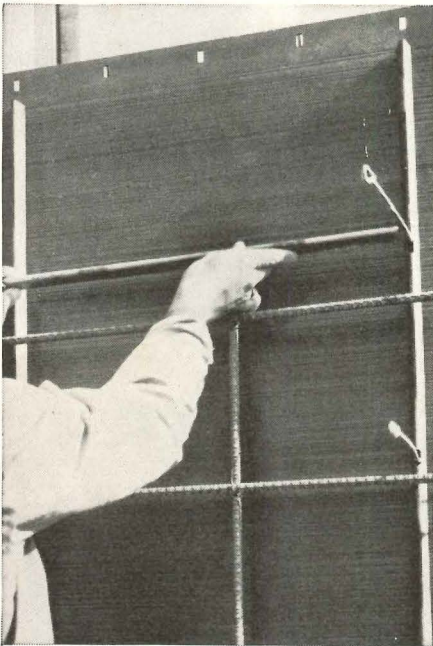
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modern architectural projects and some remarkable but little-known buildings from Russia in the 1920's.

The MIT Press, Boston, 1970. 229 pp., illus., hardcover, \$10.00.

VARIETIES OF HUMAN HABITATION, by R. Martin Helick. This book compares the plans of various dwellings in which man has lived, from the beginnings of Egyptian civilization to the typical American suburban tract house. All plans are shown at the identical scale of one-inch equals 10 feet, and a lightly printed rectilinear grid at this scale is superimposed over every plan, so room dimensions are instantly available. The style of the drawings is that of sharply contrasting black walls over a light background, so that each plan has an abstract presence that relates it to all other plans. Mr. Helick has organized the house plans into overlapping and rather personal categories that are a bit confusing, but no matter. It is fascinating to compare a typical apartment from Le Corbusier's Unite' d'Habitation to J. Gould's private railway car, or to compare a modern Soviet collective farm house to stone-cutter's dwellings during Egypt's XVII Dynasty. "A floor plan has a power to denote and imply things that an elevation or a section cannot. There is a universality about its stark, two-dimensional quality that transcends historical and cultural barriers. It spells out circulation patterns and living conditions and evokes the drama of the life within its walls. . . . It involves us with the human quality of the occupants, which in reality is what architecture is all about."

Regent Graphic Services Company, P.O. Box 8372, Pittsburgh, 1970. 110 pp., paperback, \$27.50.

OTTO WAGNER 1841-1918: THE EXPANDING CITY/THE BEGINNINGS OF MODERN ARCHITECTURE, by Heinz Geretsegger and Max Peintner. Translated by Gerald Onn. Magnificently illustrated and carefully produced books such as this one are overpowering in their first impact. This book exposes the extraordinary diversity of Wagner's designs, through new photographs of all extant Wagner buildings, and through his finely drawn color and black-and-white renderings. The authors say in their notes: "The alien quality which characterizes much of Wagner's work has been largely responsible for the unthinking reverence which has all too often been paid to his creations. Such an uncritical approach is . . . inadequate response to the scope and complexity of Wagner's architecture and the principal reason for this book was the desire to rectify this situation."

Praeger Publishers, New York, 1970; first publication, Salzburg, 1964. 276 pp., illus., hardcover, \$25.00.

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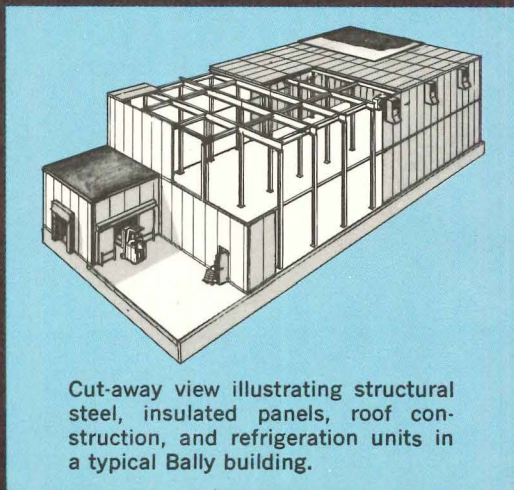
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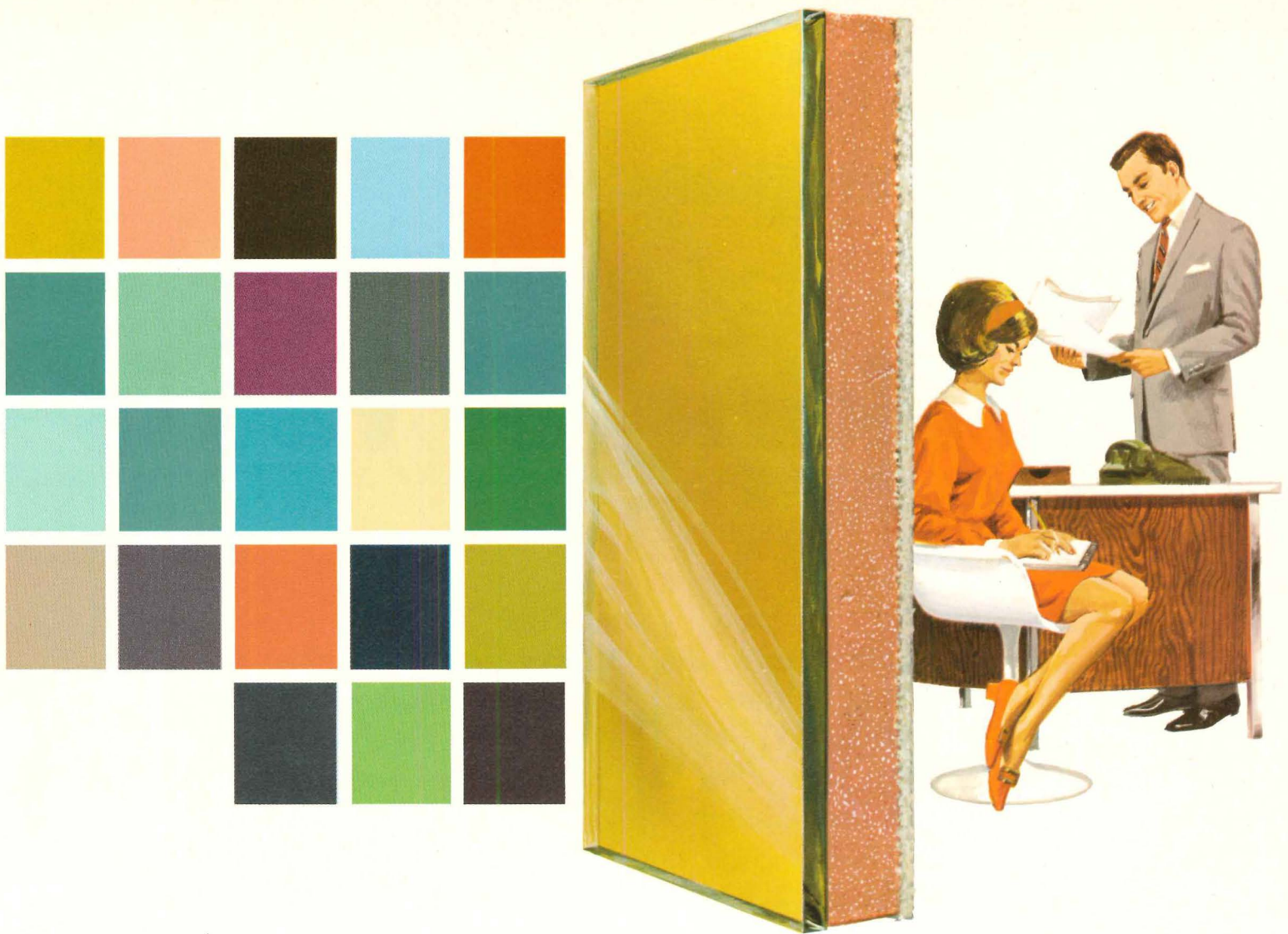
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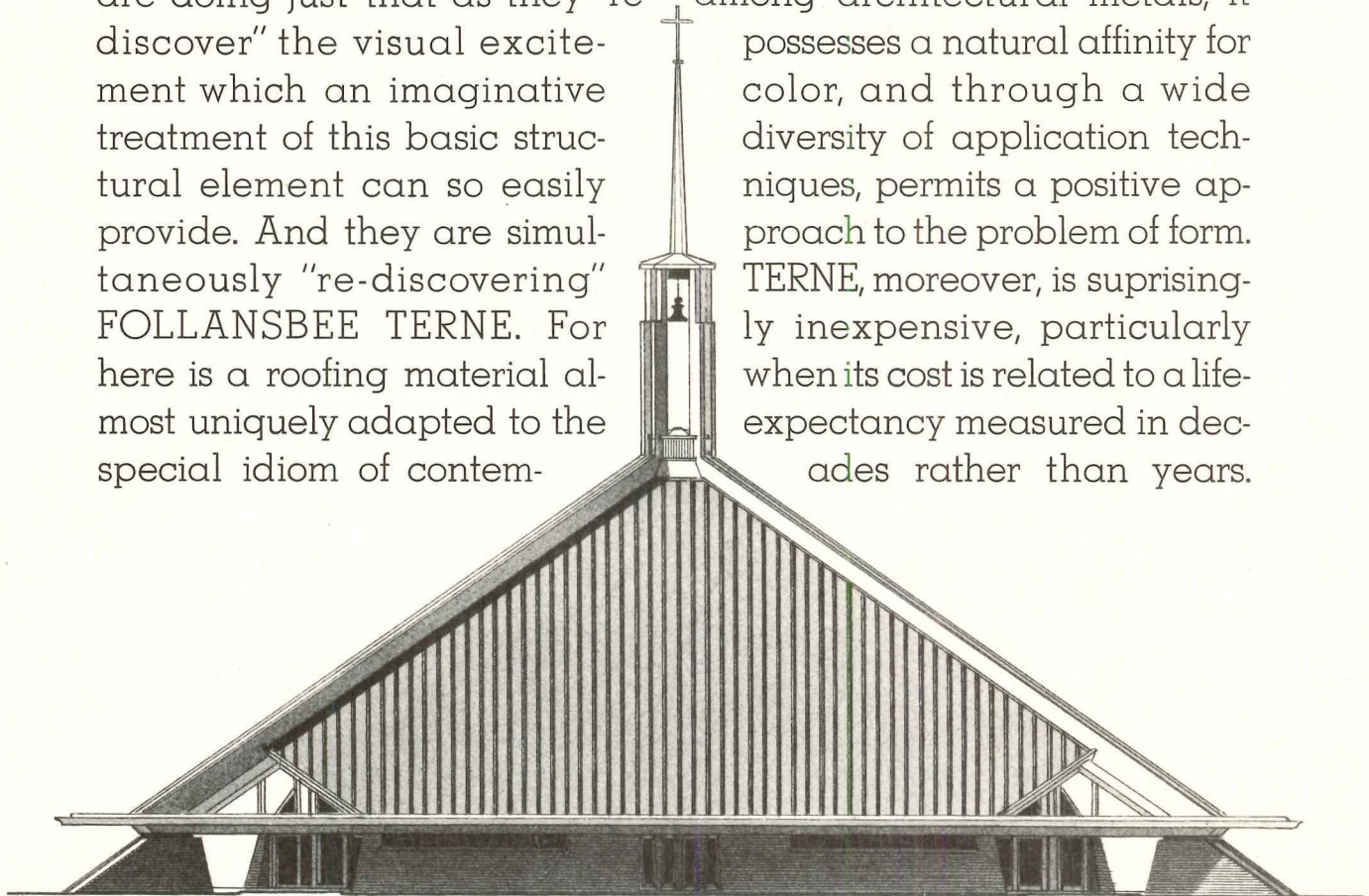
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The Administrative Revolution
- Management Decisions**
The Marriage of Man and Efficiency
- Scientific Factors**
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- Economic Factors**
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- Practical Details**
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- Interior Design Factors**
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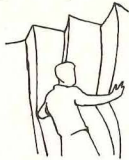
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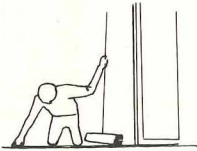
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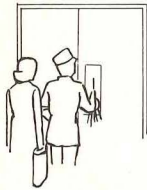
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Nightly closing throws air conditioning and heating out of balance

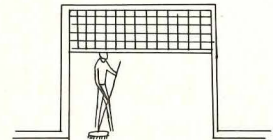


With Kinnear Upward Rolling Grilles you gain many convenience features and added merchandise display not available with other methods of store front closures. You **save** every time you open or close the Grilles. Day or night the public has full vision of stores' interior merchandise displays. Whether arranged for manual or motor operation, Kinnear Grilles are counterbalanced to raise or lower quickly and most conveniently. They roll up out of the way, completely concealed above the doorway. No display space is lost for door storage. When closed, they are an artistic barricade that is tough enough to insure positive after-hour protection. And their closure does not affect the air conditioning system. In every detail, Kinnear Rolling Grilles are perfect for today's enclosed mall, and they can be engineered to fit any opening. Even service is as close as your telephone, since Kinnear Service Centers are located in metropolitan areas coast to coast. Call Kinnear in on your next store front installation. Kinnear is as modern as tomorrow's mall.

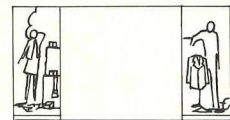
The Kinnear Way . . .



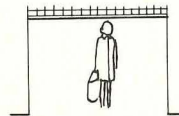
Convenient time-saving push-button operation



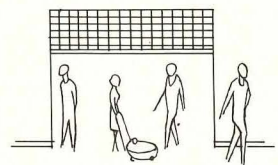
No dirt catching floor track to hamper operation



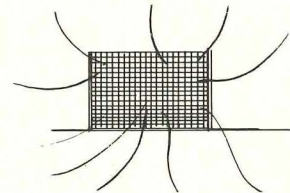
Added square footage of Sales Space — right out to the lease line



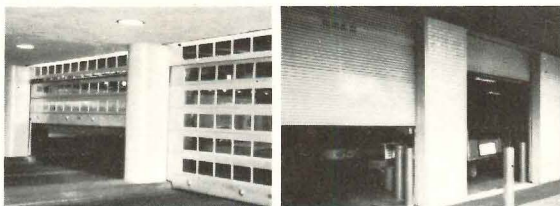
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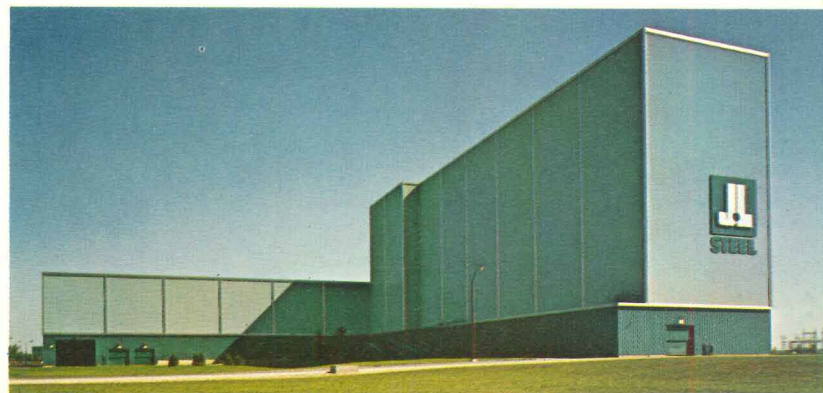
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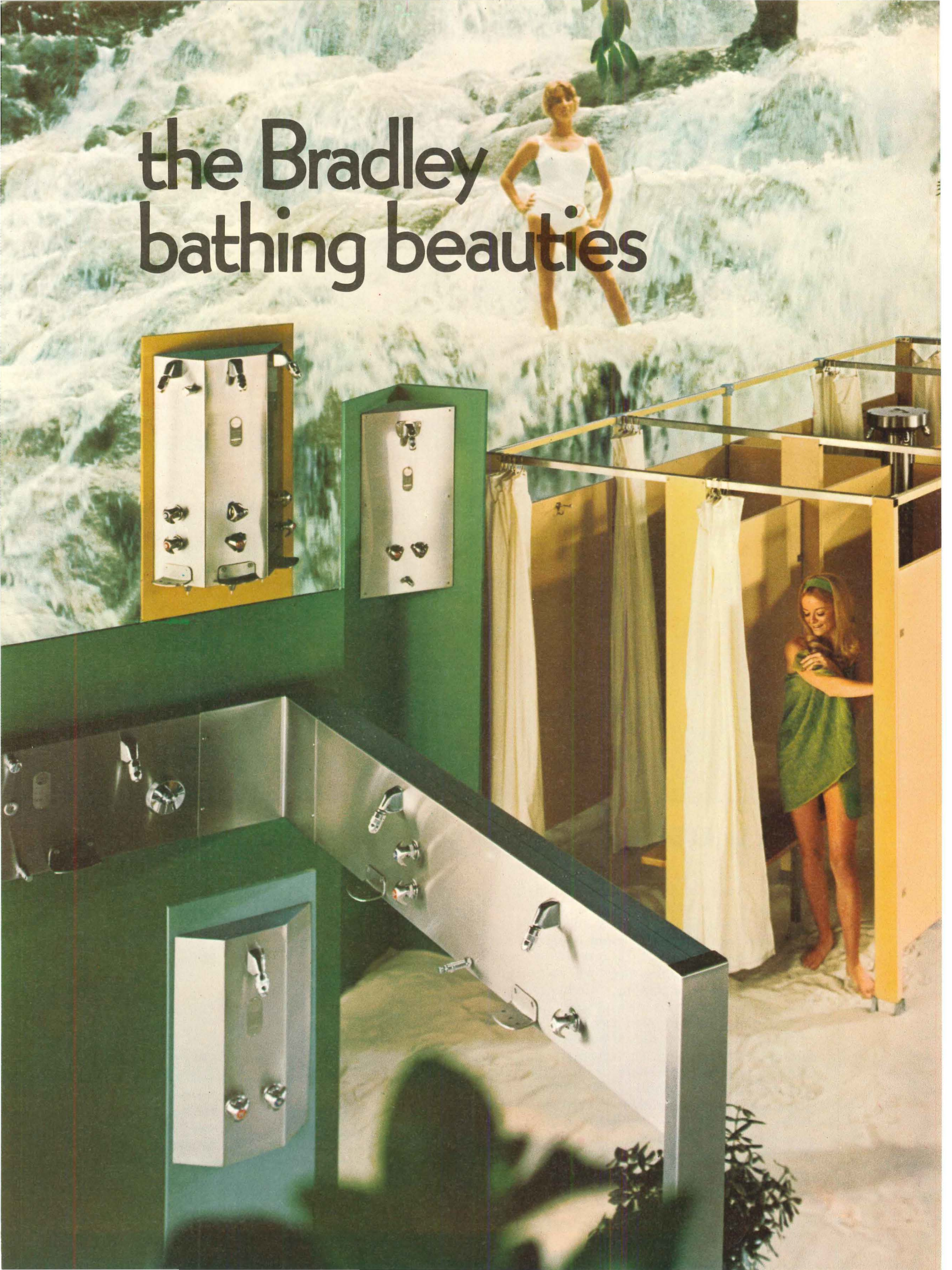



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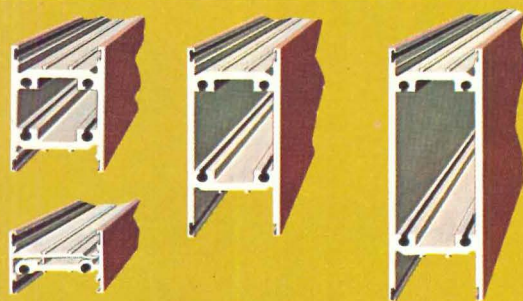


Now you can design entrance areas as individual and memorable as your buildings.

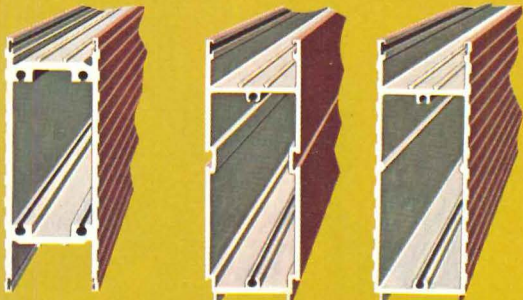
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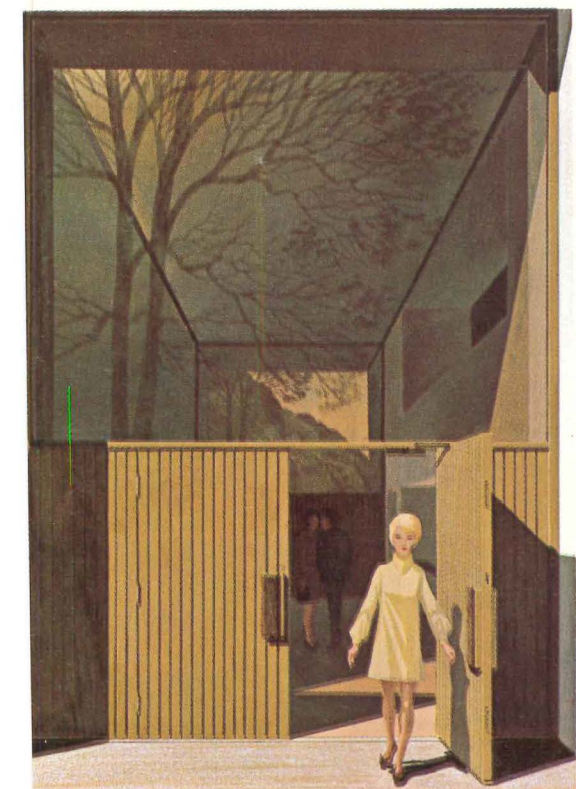
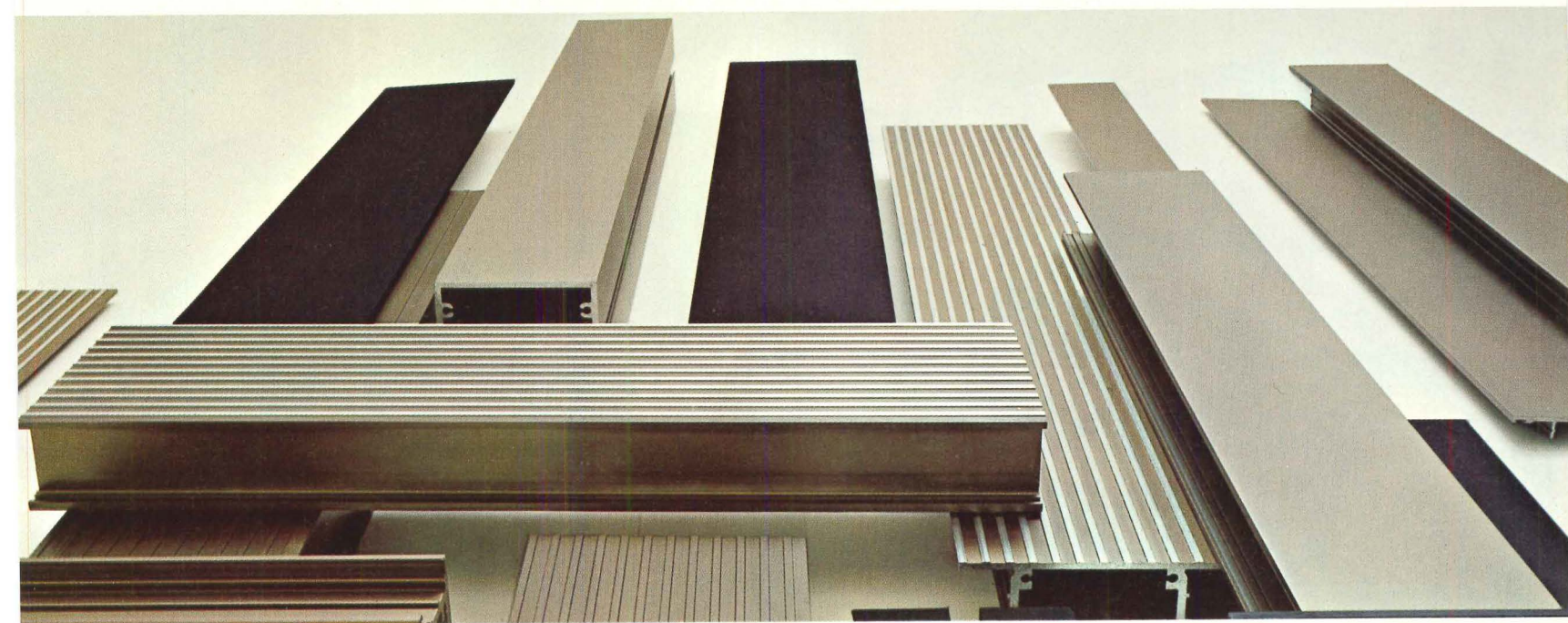
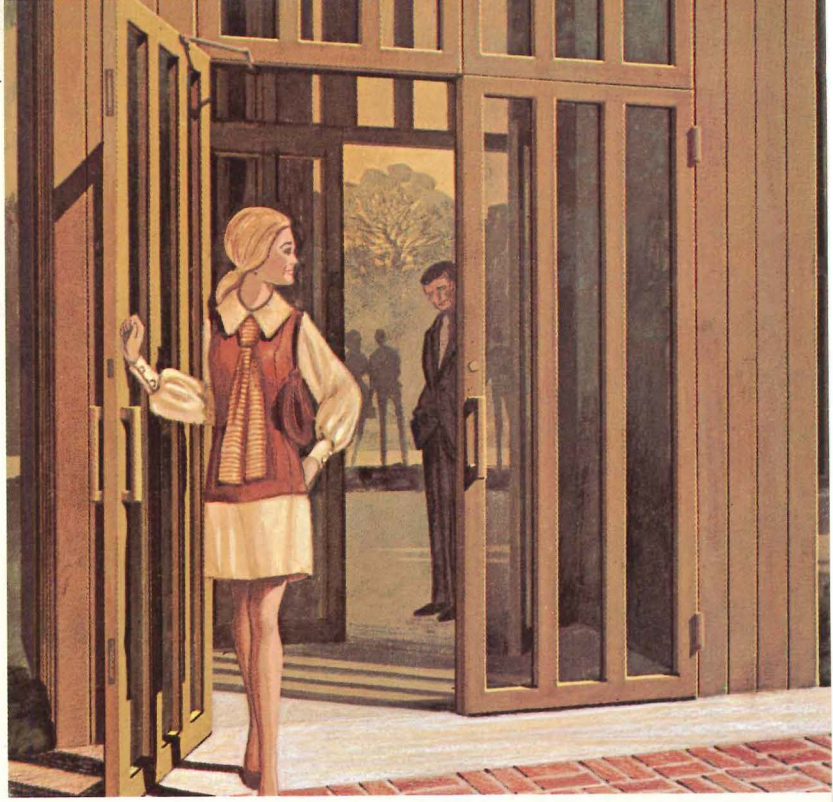
AMAX
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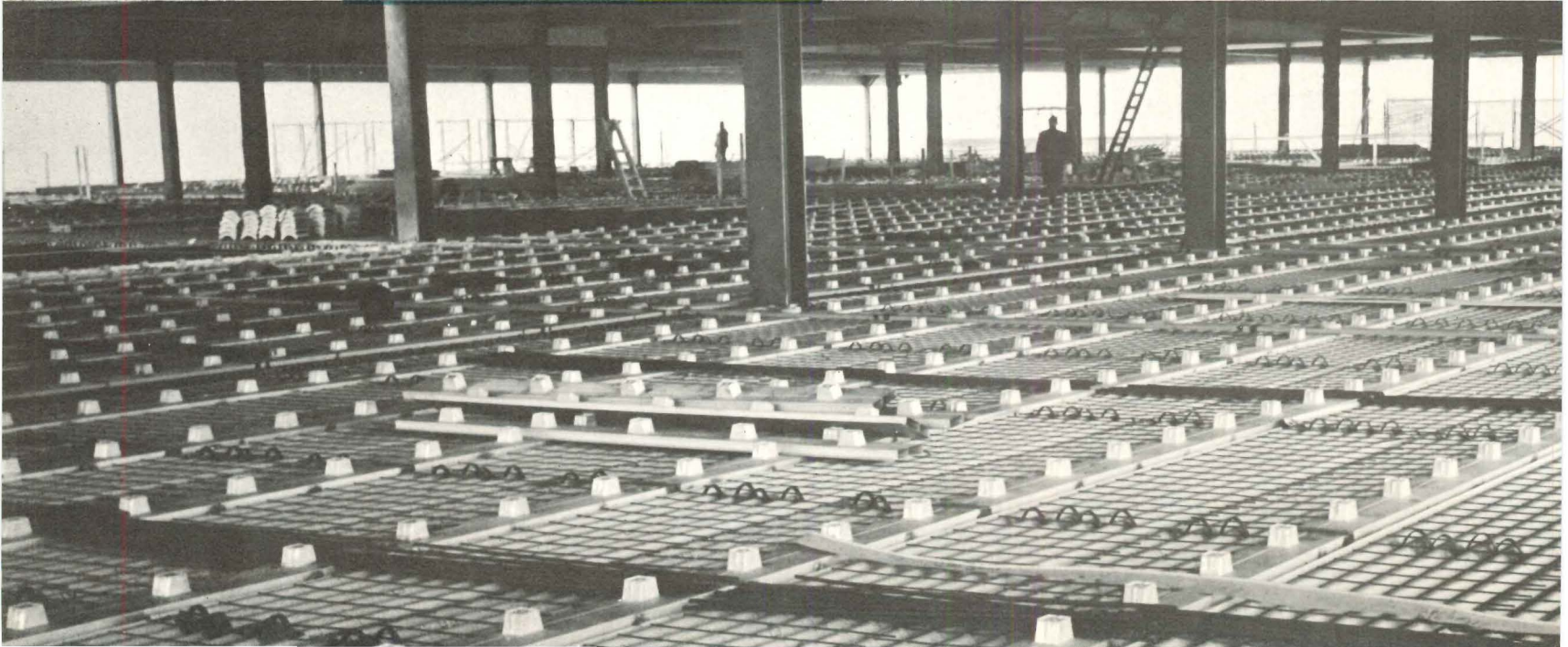
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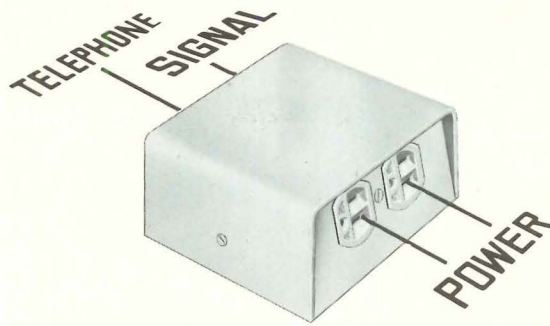
Designs and renderings by Richard P. Howard Associates,
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DEPARTMENT OF INTERIOR







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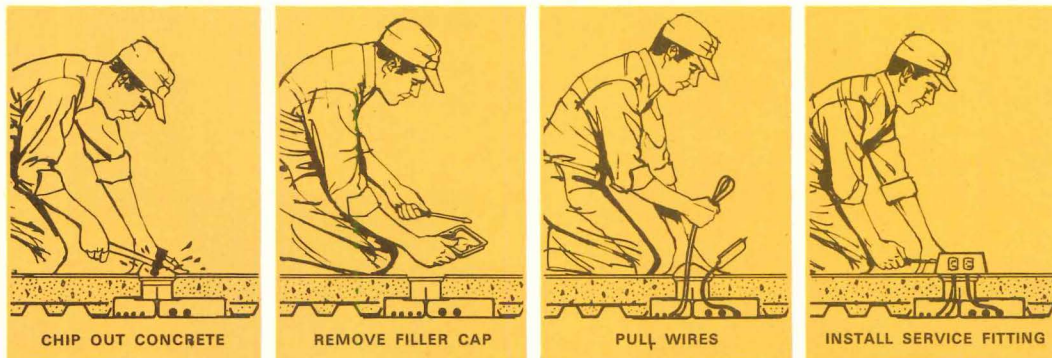
It's complete. It's the system that supplies power, telephone and signal service in the floor slab to any desired location. It includes dual or triple electrical cells, with factory-installed inserts for easy access to cells, and a variety of large capacity feeder systems. Cel-Way features compact 4" x 4" floor fittings for triple, dual or single service. Blended floor deck systems from Granco complete the package.

And now spacing between cells and factory-set inserts can be optimized. Granco's computer can help you in planning by analyzing desk layouts, desk sizes, services required, floor area, etc. This provides cell and insert spacing modules to assure efficient coverage . . . for present and future needs.

See Sweet's 16.2/Gr, or write for new design manual 99-9. Granco Steel Products Co., 6506 North Broadway, St. Louis, Mo. 63147. A subsidiary of Granite City Steel.

Makes service changes faster... and at greatly reduced cost

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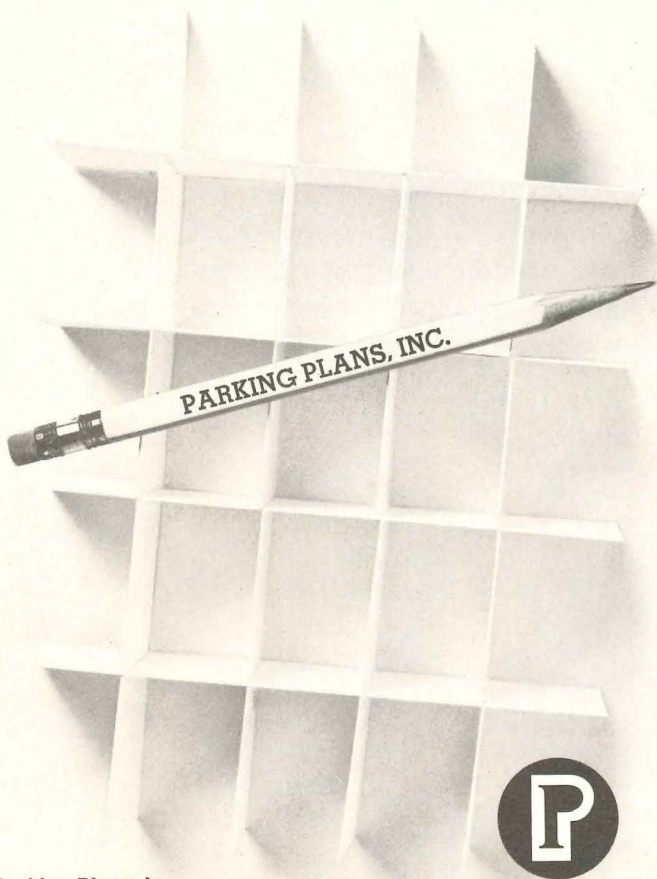
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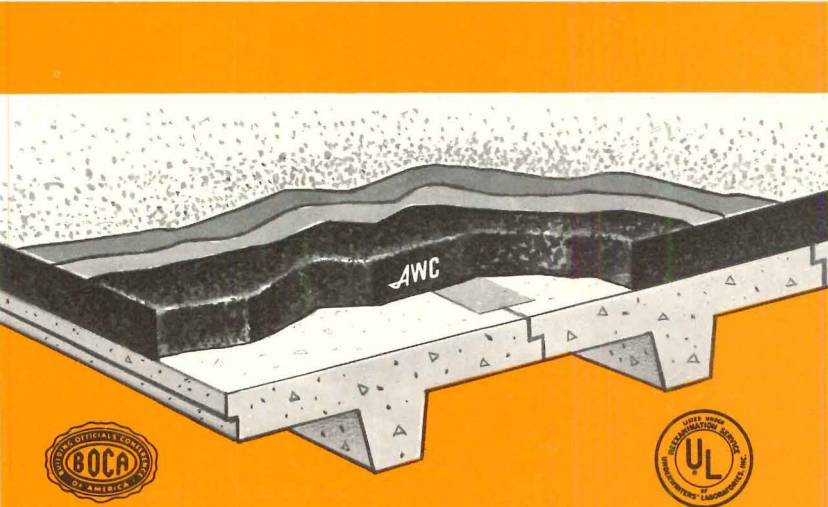
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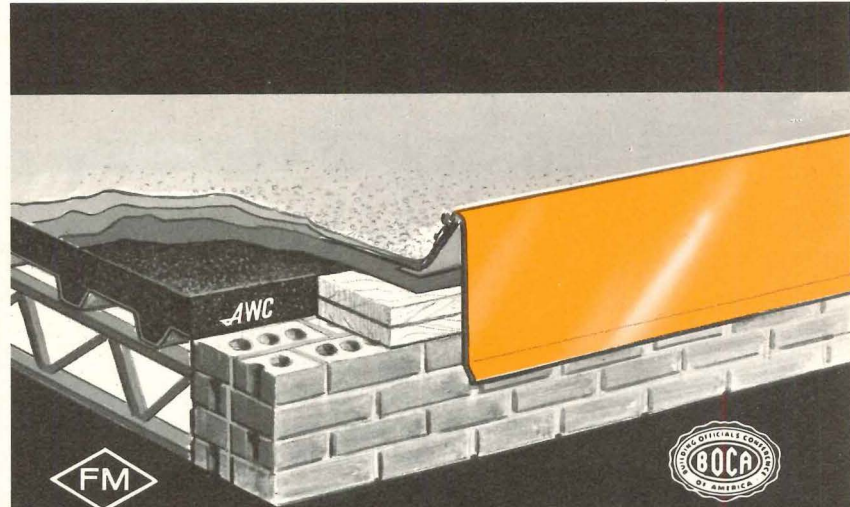
For more data, circle 42 on inquiry card

Four typical insulation systems that demonstrate All-weather Crete's multi-functional capabilities.



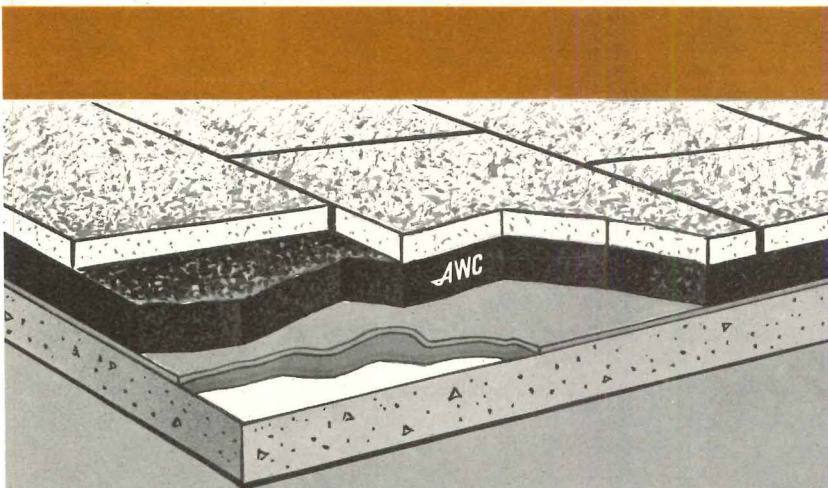
2 HOUR FIRE RATED ROOF DECK

All-weather Crete seamless insulation (K factor .40) is applied over pre-tensioned concrete units. U/L Design No. RC19. It can be sloped to drains, eliminates camber and uneven joints. This provides a smooth even surface for immediate conventional built-up roofing.



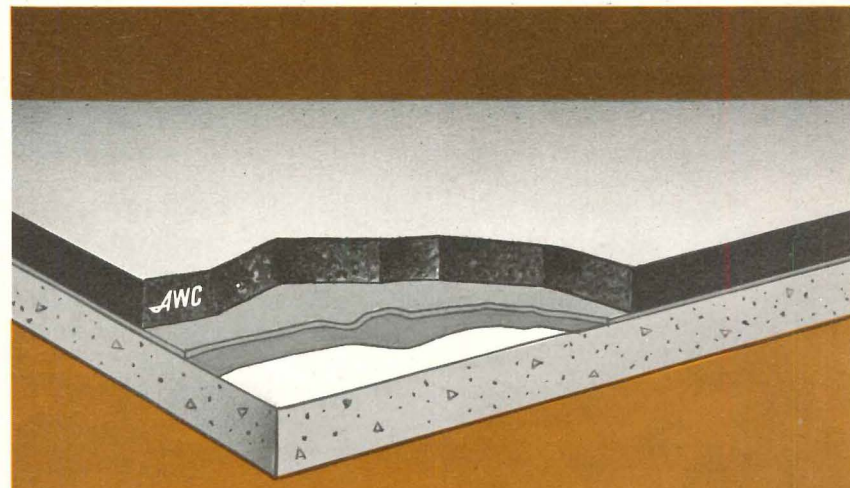
CLASS 1 METAL DECK CONSTRUCTION

This tested roof deck insulation system meets Factory Mutual requirements for fire hazard and wind resistance. With special Silbrico adhesive, it is an approved U/L deck (No. 360 R13.15). The Silbrico Fascia System shown above also meets Factory Mutual roof perimeter flashing requirements of Data Sheet 1-49 to resist wind uplift of 60/Lin. Ft. of wall. The perfect combination for maximum protection.



PLAZA DECK

There are eight widely used All-weather Crete plaza systems. Not only does AWC provide the most effective available insulation, but it protects the water proofing membrane keeping it ductile and active for the life of the system.



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 water proofing membrane protecting it from severe thermal change and climatic elements which are the major causes of roof failure. All-weather Crete insulation has the properties of being unaffected by these severe conditions. Consult Silbrico Corporation regarding this new concept.

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



For more data, circle 43 on inquiry card

Pros and cons of corporate professional practice

The professional service corporation is now a legal entity in all states except Wyoming; ever since New York's Governor Rockefeller signed the enabling law for that state last May. The New York law is similar to others that require all officers of the corporation to be licensed professionals. While there are state-to-state differences, in that and other requirements, there are also many common questions regarding taxes, liability and other matters that warrant the following review in anticipation of legal counsel for architectural and engineering firms contemplating incorporation. Indeed, it will be seen that the case for incorporation per se in these fields is not always a clear positive.

Frank Smith and Louis DeBiase, principals of the Poughkeepsie, New York, consulting firm, Probus Pension Programs, Inc., have prepared a seminar outline on the professional corporation from which the following summary of precautions and advantages is extracted.

Complications of incorporation for professional practice

Practical problems arise in the processes of formation and operation of a professional corporation. Many of these problems are general and solvable through conventional business decisions. Some are particular for the profession involved; and some arise out of the unique set of people and goals of the firm itself. Hence the following points are regarded as guidelines to alternatives rather than clear disadvantages.

1) The cost of establishing a corporation is substantially more than that of a proprietorship or partnership. But incorporating costs are tax deductible over a five-year period.

2) The professional stockholder-employee will have to pay unemployment and workman's compensation costs, and his social security taxes will be slightly higher than the self-employment tax. But the employer's portion of the social security tax is a deductible expense of the corporation.

3) Benefits such as pension, profit-sharing, group life insurance, medical plans, etc. will create additional costs—also deductible by a corporation.

4) Since 1963, self-employed individuals have been permitted by IRS to establish retirement plans—so-called Keogh plans—which enjoy some of the tax ad-

vantages of corporate plans. Under Keogh (HR-10) plans, tax-free annual contributions cannot exceed 10 per cent of earned income or \$2,500, whichever is lower.

If you already have a Keogh plan and you incorporate, you have two basic choices. You can withdraw the money in the plan and pay 110 per cent of the tax that would have been applied over five years or the number of years the plan has been in effect if less than five. Or you can simply leave the money in the Keogh plan and add it, plus accumulated interest, to your income when you retire. Under certain circumstances, it is possible to have both Keogh and a corporate pension at the same time.

5) Fixing compensation income of principals who are, in fact, employees of the corporation will probably be one of the most important problems the corporation will face. A corporation can deduct only "reasonable" compensation paid to employees. A major pitfall is the possible disallowance by IRS of part of the corporation's deduction for compensation to shareholding principals. That would result in the disallowed portion being taxed at both corporate and individual levels. The trick is to fix the compensation at a "reasonable" amount for which there is no clear-cut formula. Factors in the computation include the nature of services performed, qualifications of the employee, comparable amounts paid by others in the same profession and in the same region, etc. Even where there is no conflict of interest, and all shareholders participate in setting compensation for all (as in a father-son practice, for example), IRS may rule that some profit be left in and taxed to the corporation.

6) While the professional is considering how to split income between himself and the corporation to result in the lowest possible tax (especially where there are only one or two shareholders), he should remember that IRS might also determine that compensation is "unreasonably low" and that too much income has been left in the corporation, which then faces a shifting of the excessive amount to the shareholder-employee as personal income. IRS will require reallocation only where individual rates exceed corporate rates and where there is a legal requirement that shareholders have effective control over

the corporation—as they must in most professional service corporations.

Advantages of incorporation: less tax, limited liability, fringe benefits

The greatest advantage of incorporating is to give the professional the tax status and fringe benefits enjoyed by other corporate employees. By incorporating your practice, you become an "employee." Among some of the specific advantages are:

1) A corporate characteristic of real significance is permanent existence. The death of one of the members of the corporation will not, in itself, result in dissolution of the corporation or demise of the practice.

2) Closely related to continuity of existence is the matter of evidence of ownership. Each stockholder of the professional corporation would have stock certificates evidencing his ownership interest. When you sell your interest in a professional corporation, any profit on the transaction will ordinarily be treated as a long-term capital gain. If the practice is not incorporated, a portion of the purchase price may represent your share of accounts receivable, and as such be taxed as ordinary income. Such transfers could be made pursuant to a purchase and sale agreement entered into between the members of the corporation, with the transfer of stock back to the corporation to take place either at death or retirement. Similarly, when a member wishes to leave a professional corporation, the integrity of the practicing group can best be preserved by such a buy-sell agreement. It would seem that this agreement should run between each shareholder and the corporation rather than between the shareholders individually. In this way, the estate of a deceased shareholder could be equitably paid and the corporation would continue without interruption or harassment by heirs.

3) As employees, the professionals could participate in a wage continuation plan established by the organization. Such a plan would provide for continuing wages to an employee in the event of his disability. There is a very attractive tax climate for establishing these plans. If an individual purchased a disability income policy, he would not be entitled to deduct the cost

continued on page 68

A word to architects from Kirsch Company.

The next four consecutive right-hand pages are designed to intrigue you with ways to increase the effectiveness of your window treatments. As well as to convince you that if Kirsch can't solve your window-decorating problem, nobody can.

of the premiums. The corporation may purchase disability insurance for an employe and fully deduct the premiums, which will not be taxed to the employe. At the same time, the disability income payments which the employe receives are tax-free up to a maximum of \$100 a week. The tax-free status of these payments requires that certain conditions be met as to the length of the waiting period and the amount of the payments. In any event, significant amounts of tax-free income can be received under this type of arrangement.

4) Another attractive benefit available to corporation employes is the medical expense plan. Again, premiums paid by the corporation for medical insurance are deductible by it, but they are not included in the employe's income.

5) Group life insurance is another important benefit available to employes of professional corporations. The professional corporation could purchase group term life insurance for all its full-time employes and take a tax deduction for the premiums paid. Such premiums are not considered income to the employes, and the death proceeds received by the employe's beneficiaries are income-tax free.

In addition to group life insurance, individual life insurance protection can be provided by the corporation on a selective basis through split-dollar plans, the personal life insurance needs of a professional may be met by the corporation with only a small portion of the premiums, taxable to him as income.

6) Professionals, as employes of the corporation, could participate in a qualified pension or profit-sharing plan. Contributions made to the plan by the organization would be fully deductible.

Contributions to a profit-sharing plan for an employe can go up to 15 per cent of his compensation, to 25 per cent if combined with a pension plan, and pension plan contributions can exceed 25 per cent if actuarial computations show the necessity for such funding. Contributions within these limits are deductible by the corporation, and the employe-shareholder owes no tax until payout. This compares with the limits of Keogh plans.

7) As employes, the professionals could consider a deferred compensation agreement with the corporation. Such arrangement would defer current highly-taxed compensation until the low tax years after retirement. This could be in addition to any formal pension or profit-sharing plan. However, some professionals within the same corporation may want more cash income and others want more deferred income. Employment contracts are drawn with each employe. They can specify type and amount of compensation, as long as total compensation is reasonable.

8) In a partnership, each partner is personally liable for both his own negligent acts and for the acts of all other partners and employes when acting on behalf of

the partnership. By contrast, the stockholders of a professional corporation are not personally liable for the acts of fellow stockholders. Instead, the doctrine of limited liability requires an injured party to seek redress from personal assets of only that professional who has committed a negligent act, or from the corporation.

Liability for negligence of corporation employes other than professional principals is limited to all corporate assets plus the personal assets of the practitioners, if any, who were in direct control of the employe.

This limited liability concept also has significance in the case of dealings between the corporation and its contractors and creditors. These would be limited to recovery through the assets of the corporation and could not reach the personal assets of the individual members.

Calculating the financial incentive to incorporate

A professional firm can make a fairly simple calculation of the financial consequences of incorporation. If you are an unincorporated individual practitioner or partnership, assume your net income before taxes is about \$60,000, your net income after taxes is about \$37,700. Of this amount, if you set aside \$7,500 (20 per cent of net income after taxes) for savings and investment, and \$2,400 (4 per cent of net income before taxes) for disability, health and term life insurance protection, you have spendable income of \$27,800.

Under the same general conditions of scope and gross income, assume you incorporate. After deducting the same business expenses as you did when unincorporated, your corporation will have \$60,000 of taxable income remaining.

Of this amount, the corporation can save and invest for you \$9,600 in a qualified corporate retirement plan and contribute the same \$2,400 for disability, health, and life insurance. These sums will be deductible to the corporation and thus reduce its taxable income to \$48,000. If you draw a salary of \$48,000, the corporation will have no taxable income. You will have, after taxes, spendable income of about \$31,900.

Similar calculation of the financial incentive to incorporate at various income levels using the same assumptions as in the above example show similar gains in total benefit on the order of 10 per cent.

The fine print on tax law is worth the labor of reading

Generally, an incorporation has no immediate tax consequences. When a taxpayer transfers assets to a corporation and takes all of its stock in exchange, no tax is due on the transfer (IRC Sec. 351). The transferor's *basis* (i.e., total value, whether book or market) for the stock and the corporation's *basis* for the assets after the transfer is the same as the transferor's *basis* for the assets before the transfer (Secs. 358, 362). *Basis* is important because it will fix the share-

holder's gain or loss on the disposition of the stock and the corporation's gain or loss on the disposition of the assets as well as the corporation's depreciation deduction. But many incorporations involve more than a straightforward swap of assets for stock, and so there are qualifications to this general rule.

In one-man corporations, the classically simple situation—a straightforward swap—is most likely to occur. For example, an architect who is a sole practitioner transfers the lease on his office, office furniture, drawings, tools and library to a corporation in exchange for all its stock. No tax is due from the architect or his new corporation. The corporation's *basis* for these assets is the same as the *basis* the architect had immediately before the transfer, and the architect's *basis* for his stock is the total of the *basis* of the assets before the transfer.

Let's change one fact. Instead of a lease on an office, the architect owns the building in which the office is located, and he transfers the building subject to a mortgage. A corporation can receive property subject to a liability or assume the transferor's liability, and the transfer will still be tax-free. But the architect's *basis* for his stock must be reduced by the amount of the mortgage—(Sec. 358 (a) (1) (a) and (d)).

There is, of course, more than these pages can encompass. A few words of caution: Don't get too smart with your "pre-incorporation bailout of earnings." For example, if you mortgage your building to let the corporation pay off the debt, there is an excellent chance that a borrowing immediately before incorporation, when the incorporator uses the proceeds for his own purposes, will be considered tax avoidance.

For professional corporations with more than one shareholder, all of the rules discussed in relation to the one-man corporation will apply. But note this. In determining whether liabilities exceed *basis*, each incorporator will be considered separately. This is also true in determining whether the transfer of a liability is so tax-motivated that it will result in gain.

It will be an unusual situation where one shareholder owns more than an 80 per cent interest so that Sec. 1239 will apply. But Sec. 1239 applies if all the transferors, as a group, receive 80 per cent or more of the stock.

One possible way of circumventing the problems that arise when one shareholder contributes most of the assets would be to create two classes of stock. For example, a preferred stock with redemption price equal to the value of the fixed assets might be given to the contributor of those assets. The common stock would then be received for minimal cash contributions.

The potentials of corporate practice are substantial, but there appears to be a minimum firm income below which the costs of incorporation may exceed its benefits. The New York State Association of Architects has circulated a suggested minimum of \$30,000 a year.



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Construction in 1970: an industry in transition

Tight-money medicine killed some of the wrong bugs. Here's a look behind contract statistics in a mixed year.

■ The value of contracts for new construction in the nation totalled \$67.1 billion in 1970, one per cent less than the full-year 1969 amount.

■ On a seasonally-adjusted basis, total construction in December, 1970, was at the same level as it had been when the year began back in January.

Taken together, these two facts suggest a pretty dull year on the construction scene—there wasn't much to talk about, it seems. Except, of course, if you were in the architectural profession, and had to watch the seasonally adjusted value of new contracts for large-scale building construction drop sharply between the first and second quarters, bounce back in the third, only to fall off again during the fourth; or, if you were a homebuilder, and saw your rate of output gather momentum after mid-year, and close out 1970 at an all-time record.

1970's construction markets obviously had plenty in them to write home about—but, the kinds of words you used pretty much depended on what part of the construction business you were in.

The large-scale building types listed in the table as a group, declined five per cent during 1970. The sagging economy, and the generally restrictive credit situation that prevailed throughout most of the year, provide the "whys" of this five per cent decline. By the beginning of 1970, we had switched from a period of inflationary economic growth to an inflationary economic slowdown.

To cure the illness of inflation, we started taking our medicine in the form of tight money way back in 1969. But, by mid-1970, it became evident that, while the inflation virus was still alive and kicking for the most part, our medicine was killing off the benevolent growth germs in droves.

The tight-money dosage was reduced, and the pallid housing industry began to take on a more healthy look after midyear. By year-end, it was well on the way to full recovery. An easier money market helped some of the nonresidential building types like stores, schools, hospitals and religious

building too. And higher rates of public spending in areas like sewer and water construction also gave a second-half boost to the total. But the big-ticket items like office buildings and manufacturing plants needed something other than just less of the tight-money medicine; they needed a strong antidote, and it was not forthcoming in 1970.

1970 opened with office building still trending near the record high of 1969's fourth quarter. But, it soon became evident that the string had run out on a boom that saw contracting for this construction type more than double between 1965 and 1969. The economic slowdown that began in mid-1969 dried up many of the sources of growth in office-space demand. This was particularly true with the service sectors like finance, where the concurrent stock market collapse caused widespread staff reductions among brokerage houses and other market-related firms.

Overbuilding is a chronic problem with office construction because building on speculation is so widespread. A number of cities were rapidly approaching glut conditions compounded by the economic slowdown. The slowdown, of course,

speeded up the whole process and increased its severity.

Contracting for new office structures declined almost steadily throughout 1970, but the retreat was orderly in the nation as a whole, an indication that the underlying demand forces in a number of cities, particularly in the Northeast, were still strong, despite banner years in 1968 and 1969. The South actually showed a contracting gain in 1970.


The rate of manufacturing plant capacity utilized dropped below 80 per cent during 1970's first quarter, and remained in the 70-80 per cent range throughout the year. This was not a very conducive climate for making further additions to capacity. Regionally, the West with its heavily depressed aerospace industry was hit the hardest, but the Northeast and Midwest also reported declines in contracts for new manufacturing plants.

The proportion of public construction gained slightly relative to the private sector during the past year. Spending restrictions placed on work by the Bureau of Reclamation and the Corps of Engineers during 1969, were relaxed in 1970, and several projects moved ahead. Sharp gains were also recorded in the construction of sewer and water facilities. These construction types are moving higher up on the list of priorities during these ecological times.

F. W. DODGE SUMMARY OF CONSTRUCTION CONTRACT VALUES

	Millions of Dollars*		% Change
	1969	1970	
Stores and other Commercial	\$ 4,369	\$ 4,444	+ 2
Office Building	5,315	4,576	-14
Manufacturing	3,888	3,603	- 7
Educational	5,486	5,157	- 6
Hospital and Health	2,784	2,793	—
Public	1,140	1,006	-12
Religious	671	578	-14
Amusement	1,099	1,119	+ 2
Miscellaneous Nonresidential	889	905	+ 2
Apartment Buildings	7,671	7,736	+ 1
Hotels, Motels, Dormitories	1,522	1,309	-14
Total large-scale building	34,834	33,226	- 5
One- And Two-Family Houses	16,068	15,383	- 4
Nonbuilding Construction	16,545	18,489	+12
Total construction	\$67,447	\$67,097	- 1

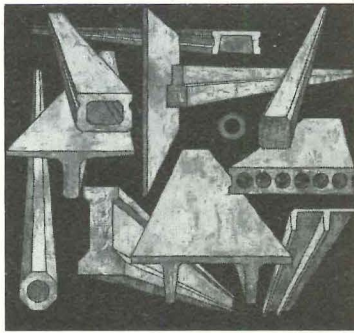
* Components may not add to totals due to rounding.



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Purpose of the PCI Annual Awards Program is to recognize excellence in design using precast and/or prestressed concrete.

Attention in judging will be given to the use of precast and/or prestressed concrete to achieve aesthetic expression, function and economy. Importance is placed on the use of the structural system as an expression of design intent and to enhance the function of the project.

Interesting methods of systems integration will also be recognized as will ingenuity in the use of materials, methods and equipment to reach an outstanding solution.

Bridges will be judged as a separate category.

Any kind or type of structure in the United States or Canada using precast and/or prestressed concrete may be entered. Structures completed within the last three years, or those that are substantially completed now, are eligible for this year's program.

Because of broad diversity in the nature of problems offered to architects and engineers, no first place Award will be made, but all Awards will express equivalent recognition of a high level of excellence.

ELIGIBILITY: The Awards Program is open to all registered archi-

itects and engineers practicing professionally, and government agencies, in the United States, its possessions, and Canada, except Directors of PCI and all Active Members and their employees.

SUBMISSION OF ENTRIES: Entries must be made by the designer of record. An entry shall consist of the following:

1. The first page of the entry will be a "fact sheet" stating the following:

- A. Type of project.
- B. Size in total square footage, or in the case of bridges—the length.
- C. Number and dimensions of precast components and prestressed components (and whether the latter are pretensioned or post-tensioned).
- D. Special design features you wish emphasized for the purposes of judging.
- E. Date structure was completed or is scheduled for completion.

2. Concise description outlining the advantages achieved by the precast or prestressed concrete, typed on 8 1/2" x 11" sheets.

These PCI Active Members will be glad to give you complete details on the PCI Annual Awards Program:

ALABAMA Riverside Prestress Concrete Products, Lincoln • Southern Prestressed Concrete, Inc., Montgomery, Huntsville

ARIZONA Arizona Sand & Rock Company, Phoenix • United-Metro Materials & Concrete Co., Inc., Phoenix

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CONNECTICUT Allied Building Systems, Inc., Manchester • Blakeslee Prestress, Div. of C. W. Blakeslee & Sons, Inc., New Haven • Omniform, Inc., Hartford

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GEORGIA Atlanta Structural Concrete Company, Atlanta, Powder Springs • Gifford-Hill & Co., Inc., Concrete Products Division, Forest Park • Macon Prestressed Concrete Co., Macon, Jonesboro • Southeast Schokbeton, Lavonia • Western Concrete Structures, Inc., Decatur

HAWAII Dillingham Precast, Honolulu • H C & D, Ltd., Honolulu • United Pacific Concrete, Div. United Concrete Pipe Corp., Honolulu

IDAHO Ready-To-Pour Concrete Co., Boise, Idaho Falls

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KANSAS Prestressed Concrete, Inc., Newton • Rocky Mountain Prestress, Inc., Kansas City • Wilson Concrete Co., Kansas City

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MARYLAND Baltimore Concrete Plank Corp., Baltimore, Odenton, White Marsh • Concrete Structures of Maryland, Inc., Davidsonville • Inland Ryerson Construction Products Co., Baltimore • Laurel Concrete Products, Inc., Laurel • Strescon Industries, Inc., Baltimore

MASSACHUSETTS Northeast Concrete Products Div., New England Concrete Pipe Corp., Newton • San-Vel Concrete Corporation, Littleton • Unistress Corp., Pittsfield • Universal Prestressed Concrete Co., Inc., Plympton

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MISSOURI Centaur Prestress Co., Chesterfield • Stites Concrete, Inc., Dexter • Wilson Concrete Company, St. Louis

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3. A minimum of two 8" x 10" photographs and two 35mm color slides of the completed or substantially completed structure. Detailed photographs, plans, perspective drawings, or large scale details if considered significant by the entrant.

4. Design computations and specifications if they show to a greater extent the design aspects of the entry.

5. Anonymity of entries will be preserved throughout the judging. A sheet giving the proper name of entry, type of structure and location, names and addresses of architect, engineer, and owner, and the date of completion shall be sealed in an envelope affixed to inside back cover of the entry.

All the above to be bound in ring or other type binder, approximately 10" x 12". **Entries to be received not later than July 1, 1971**, at the Prestressed Concrete Institute, 20 N. Wacker Drive, Chicago, Illinois 60606.

NOTIFICATION OF AWARD: Notification of Awards to entrants will be made as soon as practicable after judging is completed.

OWNERSHIP AND PUBLICATION OF ENTRIES: All entries and all material submitted with entries shall become the sole property of PCI.

Since one of the purposes of the PCI Awards Program is to encourage new and advanced architectural and engineering approaches in the use of precast or prestressed concrete, the Prestressed Concrete Institute shall have the right to make all entries and all material submitted with the entries available through publication and dissemination editorially, or in advertisements in its own or other publications. This shall include the right to publish photographs and names of any and all Award recipients without compensation.

The decision of the Jury of Awards shall be final.

By taking part in the program, the contestant agrees that he or she shall have no claim against the Jury of Awards or any member thereof, or the Prestressed Concrete Institute or its individual members.

*Address all communications
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20 North Wacker Drive, Chicago, Illinois 60606 ■

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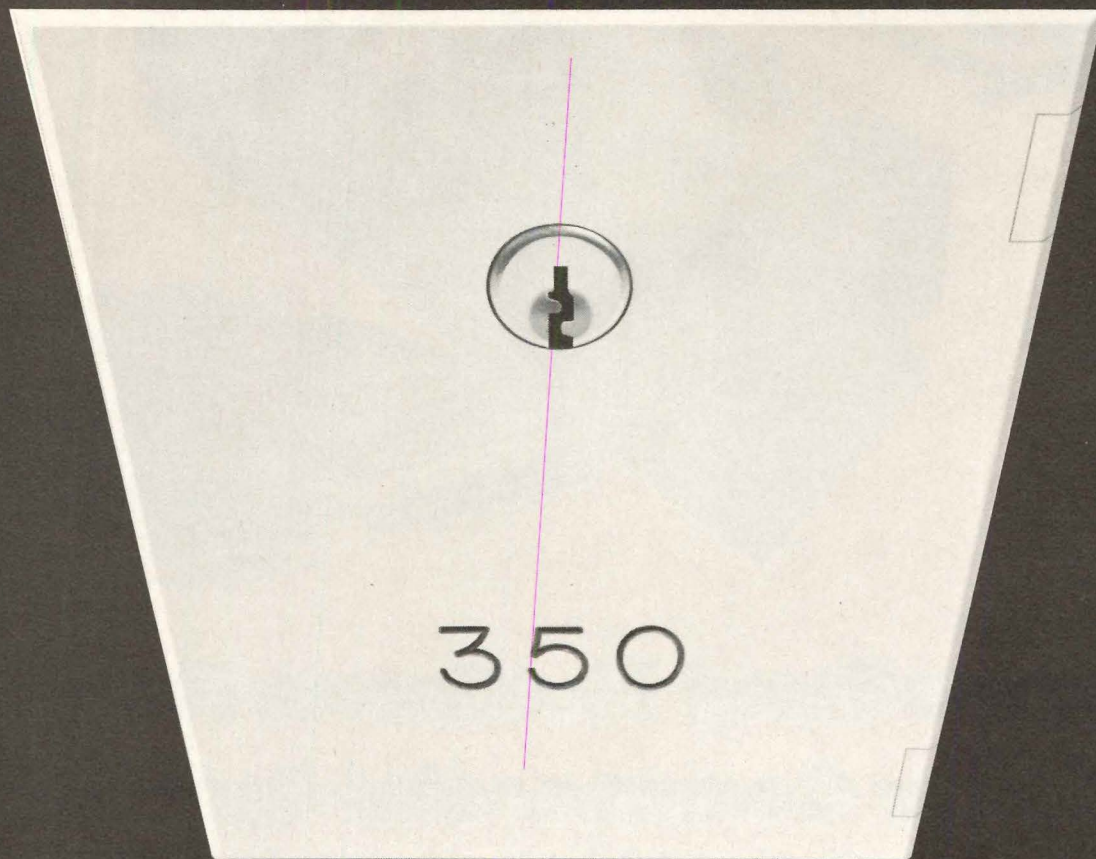
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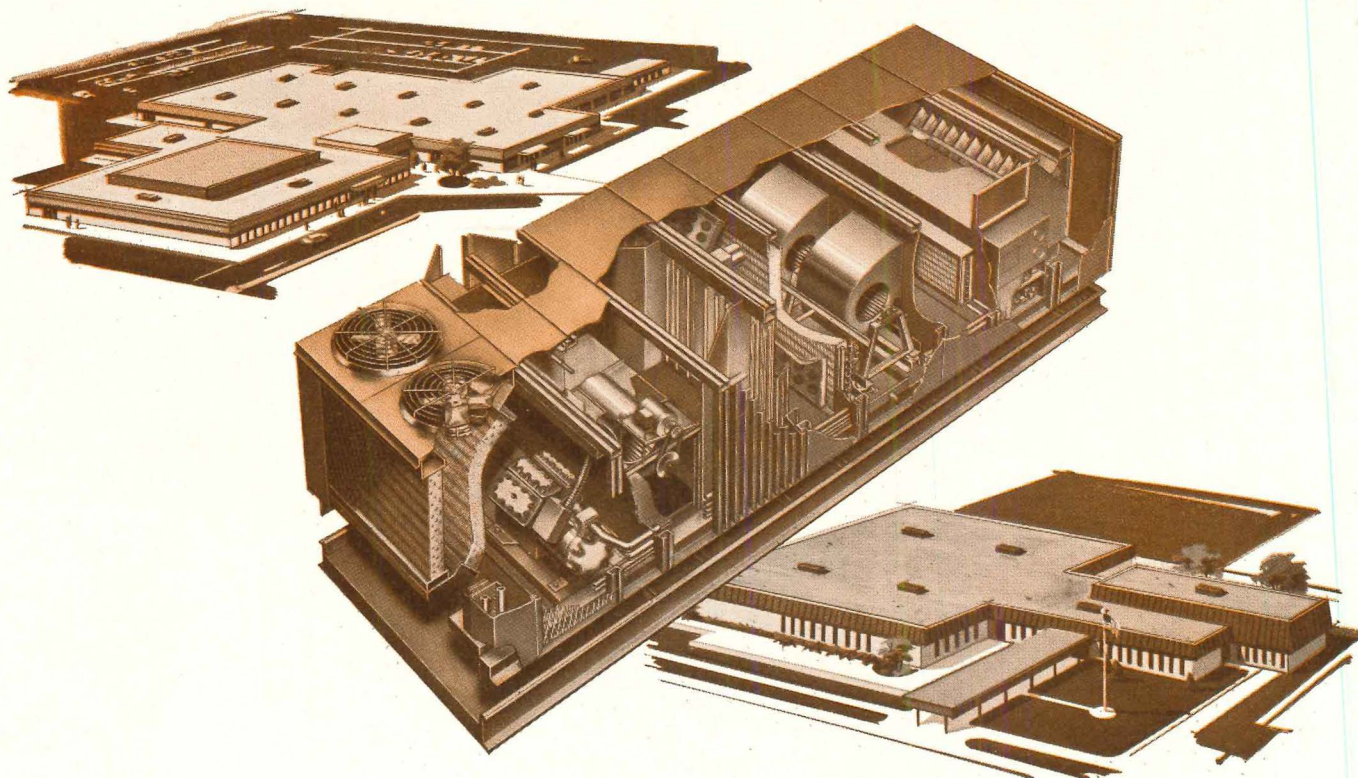
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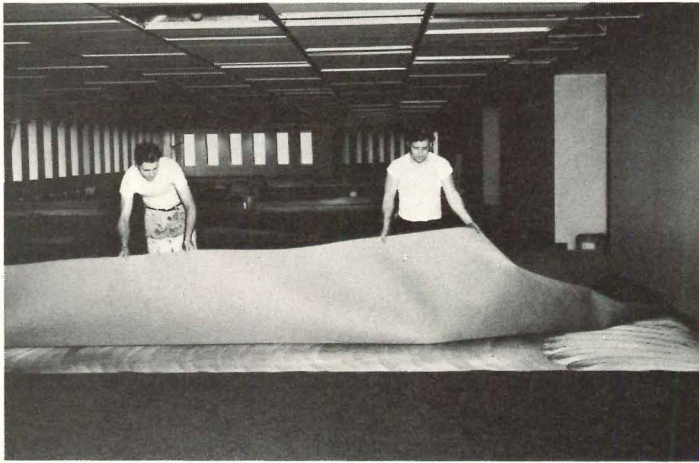
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Making headlines

Direct Jute Glue-Down Carpet Used in New U.S. Steel Building



Double jute-backed carpet being installed directly on concrete sub-floor coated with adhesive.



Installers applying adhesive to concrete sub-floor, for direct glue-down installation of double jute-backed carpets in new 64-floor U.S. Steel Building, Pittsburgh.

The fast-growing concept of direct glue-down installation of double jute-backed carpets is being utilized in the new United States Steel Building in Pittsburgh. This is reported to be one of the largest single carpet installations on record, encompassing about 130,000 sq. yds. Occupancy of floors on an individual basis began in September.

The floors to be occupied initially by U.S. Steel in the 64-floor structure are carpeted by the direct glue-down method, including elevator lobbies and 48 passenger elevators.

Maria Bergson Associates, New York, directing the buildings' interior design, and U.S. Steel officials investigated and tested the direct jute glue-down method in great depth before deciding on it

for a project of such magnitude. Based on their rigorous pre-testing, they are even utilizing it in high spillage risk locations such as "coffee break" areas, and anticipate no problems.

In addition to lower initial cost than other carpet systems and practically no strain on seams, one important benefit of this method is easy mobility for conventional wheels and casters and great pile resistance to them with carpet construction of the proper contract type. Hence U.S. Steel is able to place directly on the carpet, without underchair pads, thousands of secretarial chairs with standard casters now in service elsewhere.

Gaymar Co., Pittsburgh, is handling the installation, with the crews under the supervision of

Don McGinn. He reports: "Pre-cutting for the large floor expanses between trench headers, with separate carpet strips cut to fit the headers, is greatly increasing our productivity. We foresee no problems in pick-up with the jute when and if it becomes necessary to reach underfloor sections. The jute backing is providing a strong bond with minimum adhesive because it holds the compound and absorbs it thoroughly right on the surface. Carpet edges are consistent in height, so we can butt-seam fast, with the result practically invisible."

Architects: Harrison & Abramovitz and Abbe, New York. General contractors: Turner Construction Co., New York.

Write for
Architectural
Guide Specification
by William E. Lunt, Jr., C.S.I.
Case Histories of
Installations

Specifiers strongly favor double Jute-backed carpet glue-down

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Double jute backing makes glue-down work. Retains adhesive for strong, permanent bond to any subfloor or previously installed hard flooring. Provides the necessary dimensional stability. Specify both Jute primary and secondary backing in tufted carpets, because their compatibility protects against delamination.

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LOWER INITIAL COST—less than identical carpet plus separate underlayment, or foam or rubber backed carpet with equal pile specifications.

CLEAN PICK-UP FROM FLOOR—carpet can be lifted to reach trench headers, intact for re-installation anywhere.

EASY WHEEL, CASTER MOBILITY—with standard contract pile construction, no mushiness to bog down carts, mobile equipment, secretarial chairs.

HELP IN MEETING FIRE SAFETY CODES—provided the carpet is otherwise qualified.



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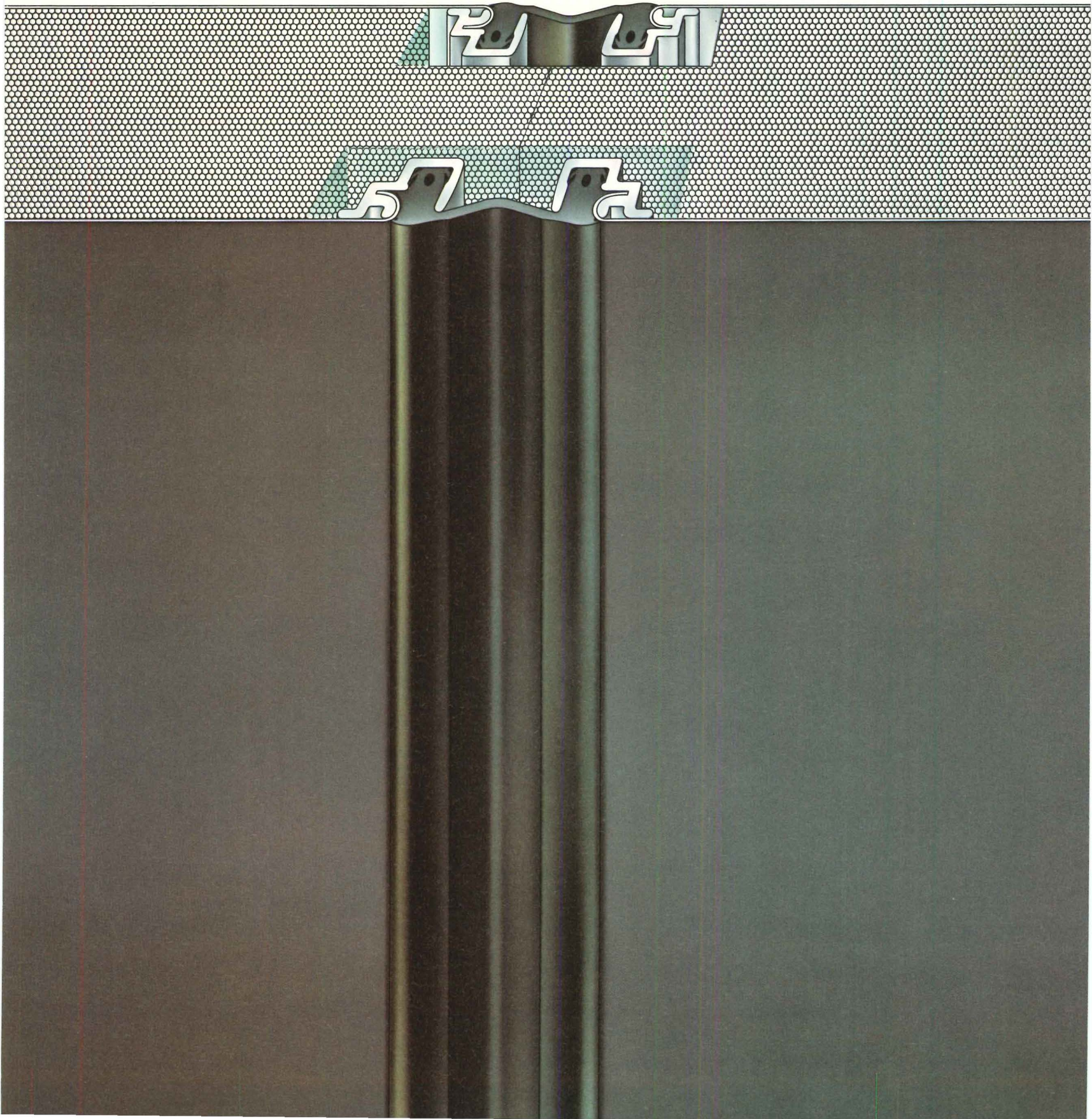
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*Let Haws solve your
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dresses up a drink of water.

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**Three building problems.
One answer.**





Problem 1. Maintain strict thermal and moisture control.

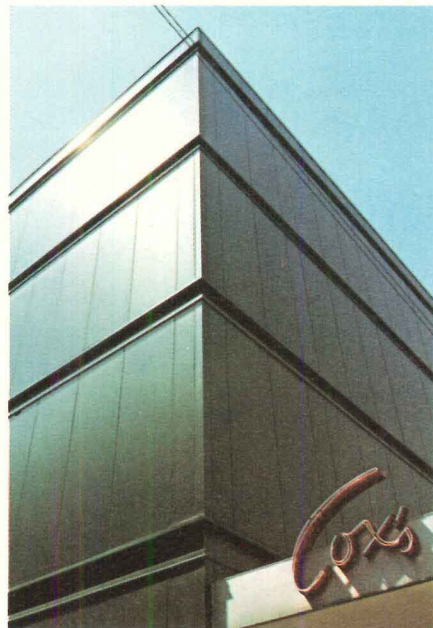
Answer: Alcoa Alply wall system.

Manufactured of a foamed plastic core, sandwiched between aluminum faces or aluminum and another material, high-quality Alcoa * Alply paneling can keep interior spaces very hot or very cold. U values range from .206 to .018, depending on type of core material and thickness. And they retain their insulating values indefinitely because they have low permeability.

Shown above:

Schmidts Brewery, Philadelphia, Pa.

Architect: William F. Koelle & Sons, Philadelphia, Pa.



Problem 2. Reduce installation costs.
Answer: Alcoa Alply wall system.

Because Alply panels are a single laminate of insulating core, exterior and interior surfaces, they reduce the most expensive building cost: site assembly. And the Alcoa Snug Seam® joining method decreases the number of framing members required. Panels are simply "zipped" tightly together with a neoprene gasket.

Shown above:

Cox Department Store, McKeesport, Pa.

Architect: Celli-Flynn and Associates, McKeesport, Pa.

Curtainwall contractor: Columbia Architectural Metals, Pittsburgh, Pa.



Problem 3. Expand design freedom.
Answer: Alcoa Alply wall system.

Architects have almost unlimited design choices with the Alply wall system. Panels come in sizes up to 5 x 18 ft, with smooth, fluted or stucco facings. And they're available in a wide range of colors: 10 vibrant Almalure® colors (baked-enamel); 7 earth-toned Duranodic† 300 tones (hard-coat electrochemical finish), mill finish, Alumilite† finish (natural color with increased weather resistance); and other Alcoa architectural color finishes.

Shown above:

Redesigned and refaced Lovemans' Department Store, Chattanooga, Tenn.

Architect: Klaus Peter Nentwig.

Builder: Hubbuch Glass Company.

For complete information on the Alply wall system, contact your nearest Alcoa sales office or write: Aluminum Company of America, 1625-C Alcoa Building, Pittsburgh, Pa. 15219.

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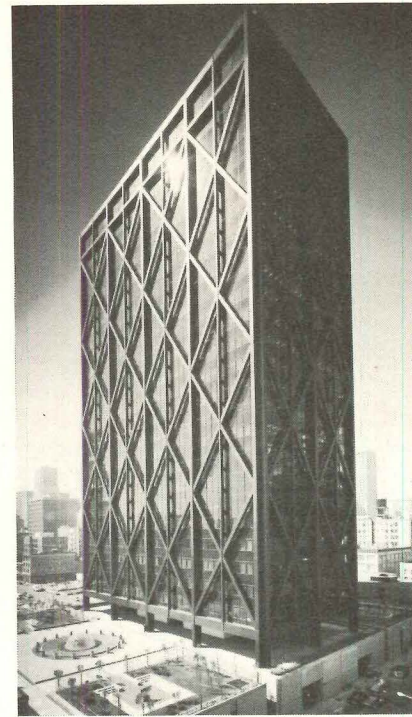
 **ALCOA**

San Francisco's skyline is introduced to a striking structural bracing system in the new Alcoa Building, earning it an AISC architectural award of excellence.

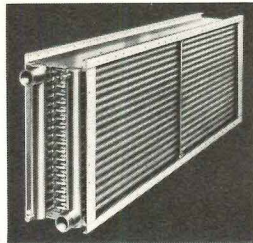
Innovations go deeper than its interesting stainless steel facade. Perimeter high velocity system (air water) air conditioning employs

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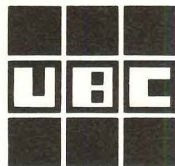
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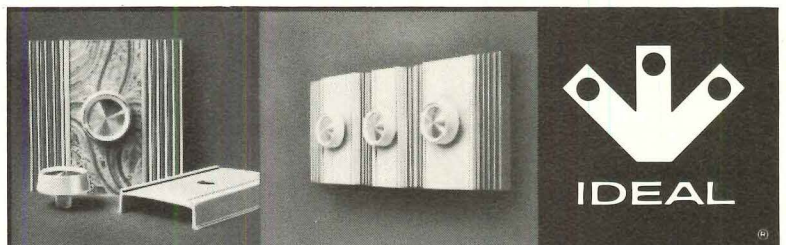


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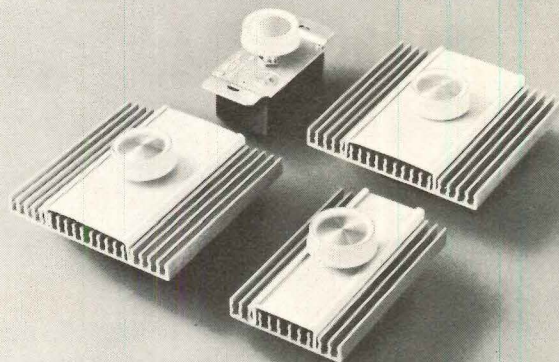
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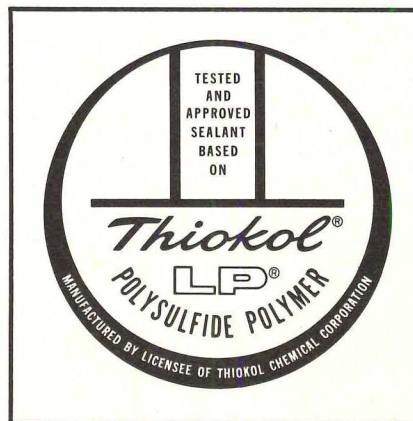
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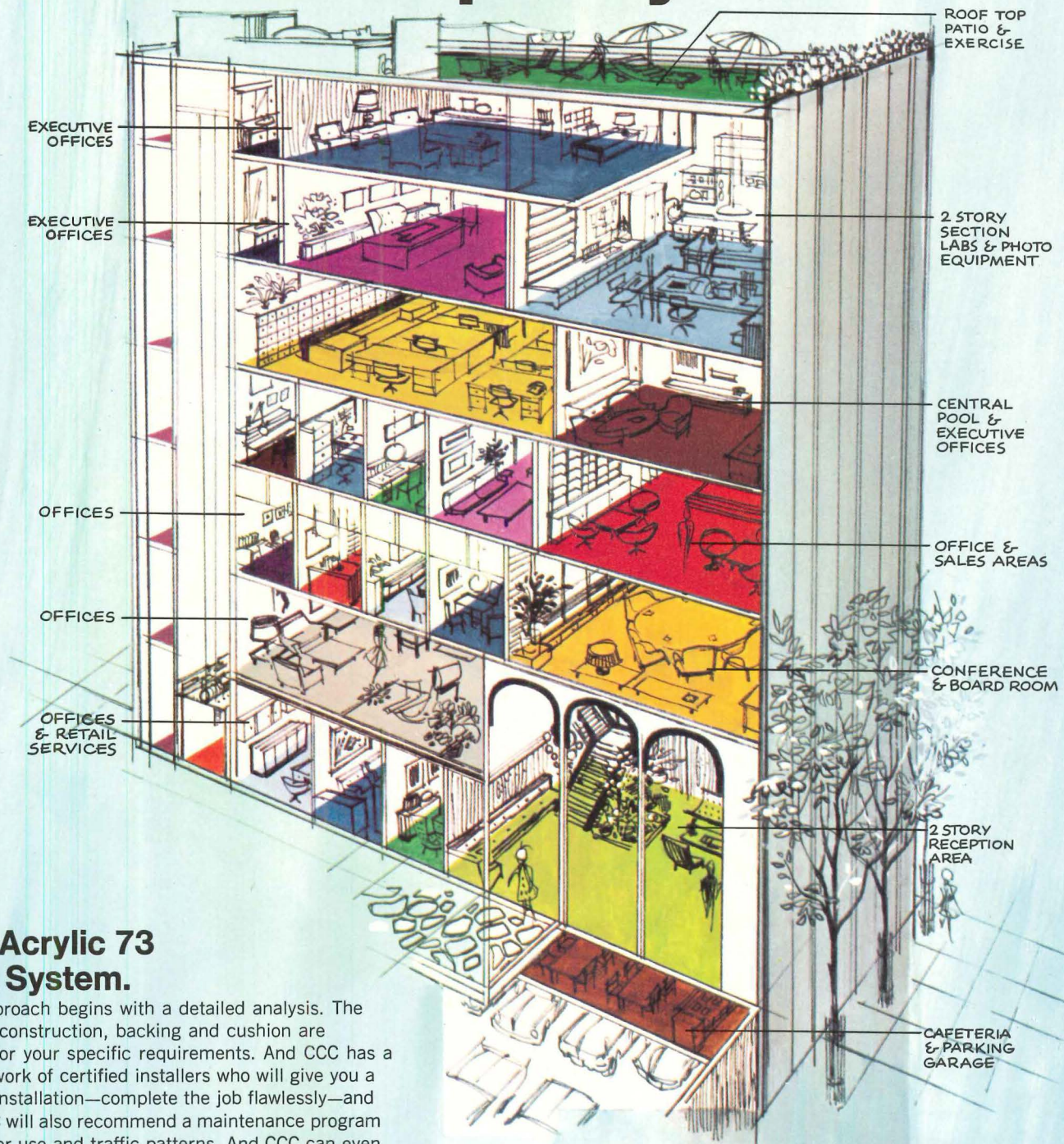
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ARCHITECTS: Barnes, Neiswander & Associates, Cleveland, Ohio
STRUCTURAL ENGINEERS: R. M. Gensert & Associates, Cleveland, Ohio

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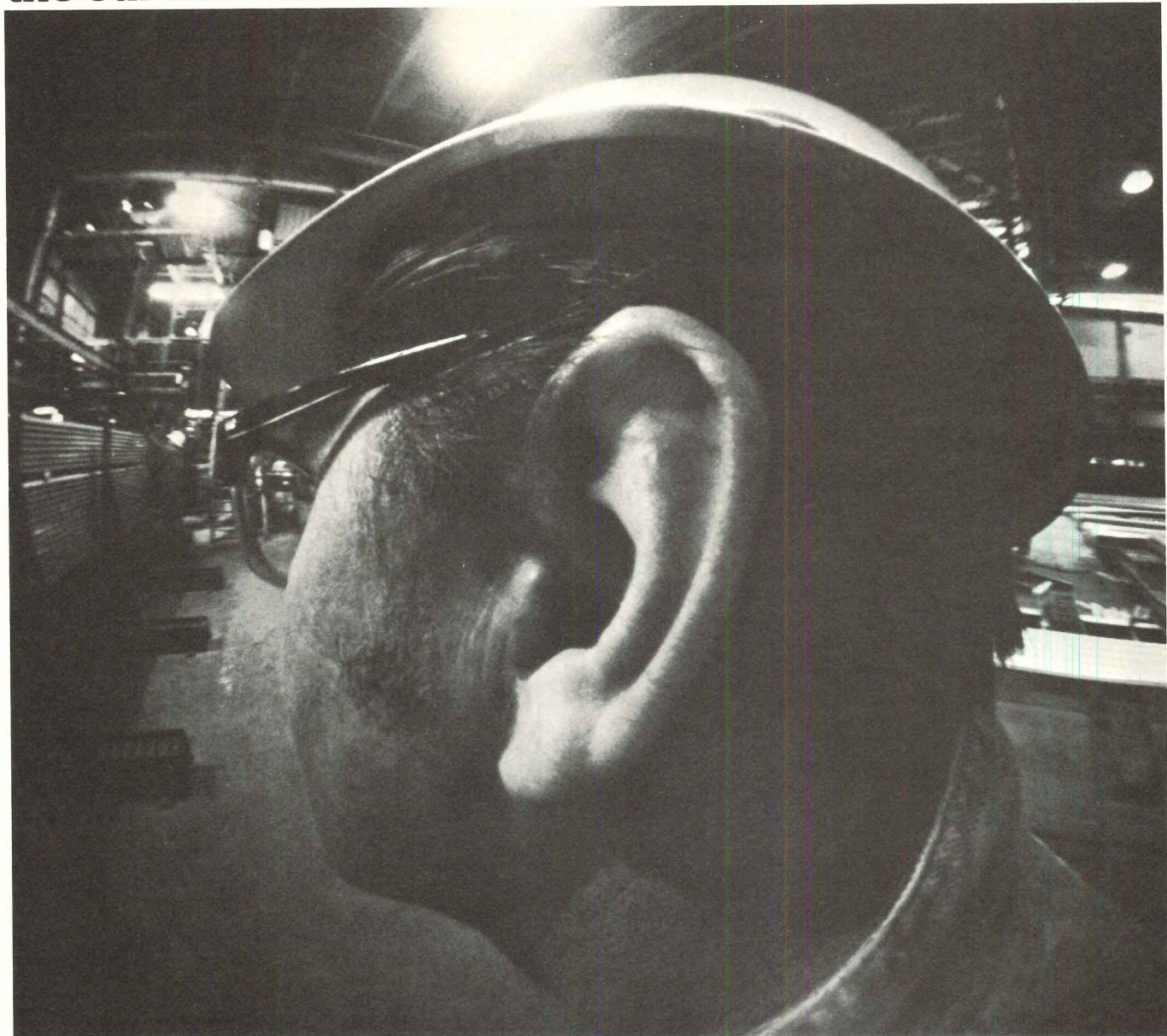
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Below: The Southern Yacht Club on Lake Pontchartrain, in New Orleans. Curtis & Davis, Architects, specified *Solarcool Bronze Glass* on a test basis two years ago. The results: an open view of the lake; greater occupant comfort; a beautiful, reflective facade.

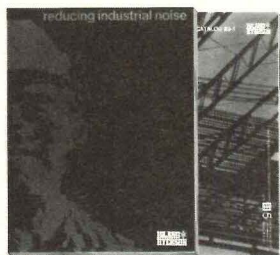


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Today, sound control has moved into the plant, where human reaction to noise is getting long overdue consideration. There is more and more proof that the welfare and productivity of industrial workers is seriously impeded by dangerous noise levels. Recent federal legislation requires specific limits to decibel levels in manufacturing plants handling federal contracts.

Inryco™ Acoustideck® and Acoustiwall™ greatly reduce sound reverberation, giving the plant

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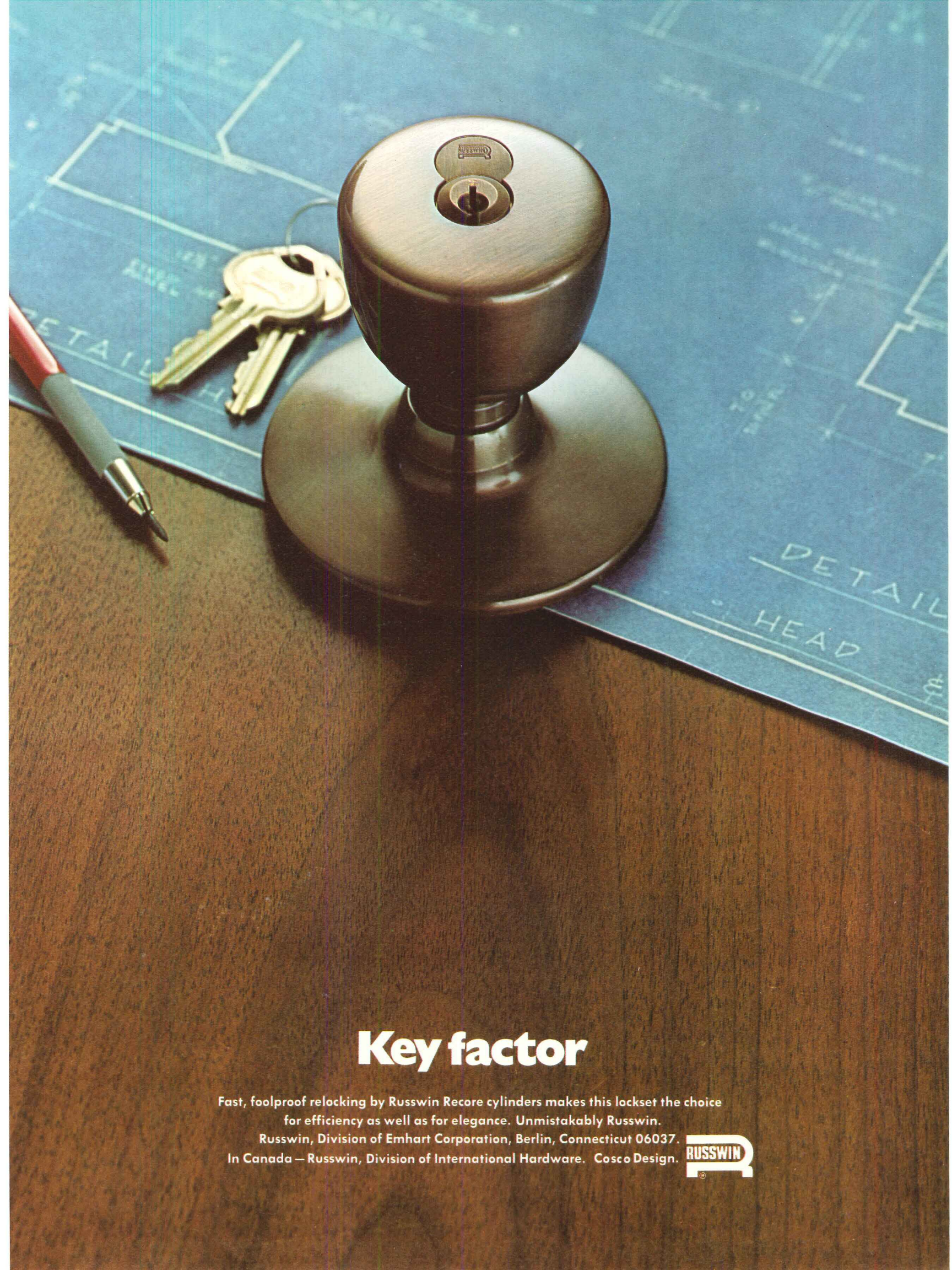
For a more complete discussion of the problem and some of the solutions, send for the free booklet "Reducing Industrial Noise." Information on Acoustideck is available in Catalog 23-1 "Inryco Roof Systems" (Sweet's Architectural File, Section 7). Write Inland-Ryerson Construction Products Company, Dept. C, 4033 W. Burnham Street, Milwaukee, Wis. 53201

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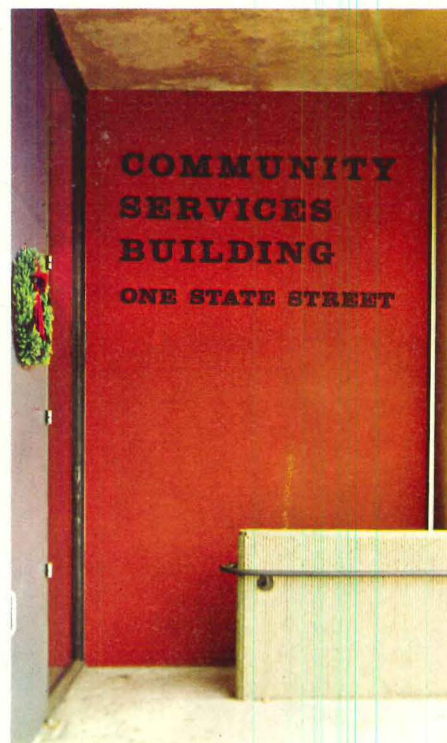
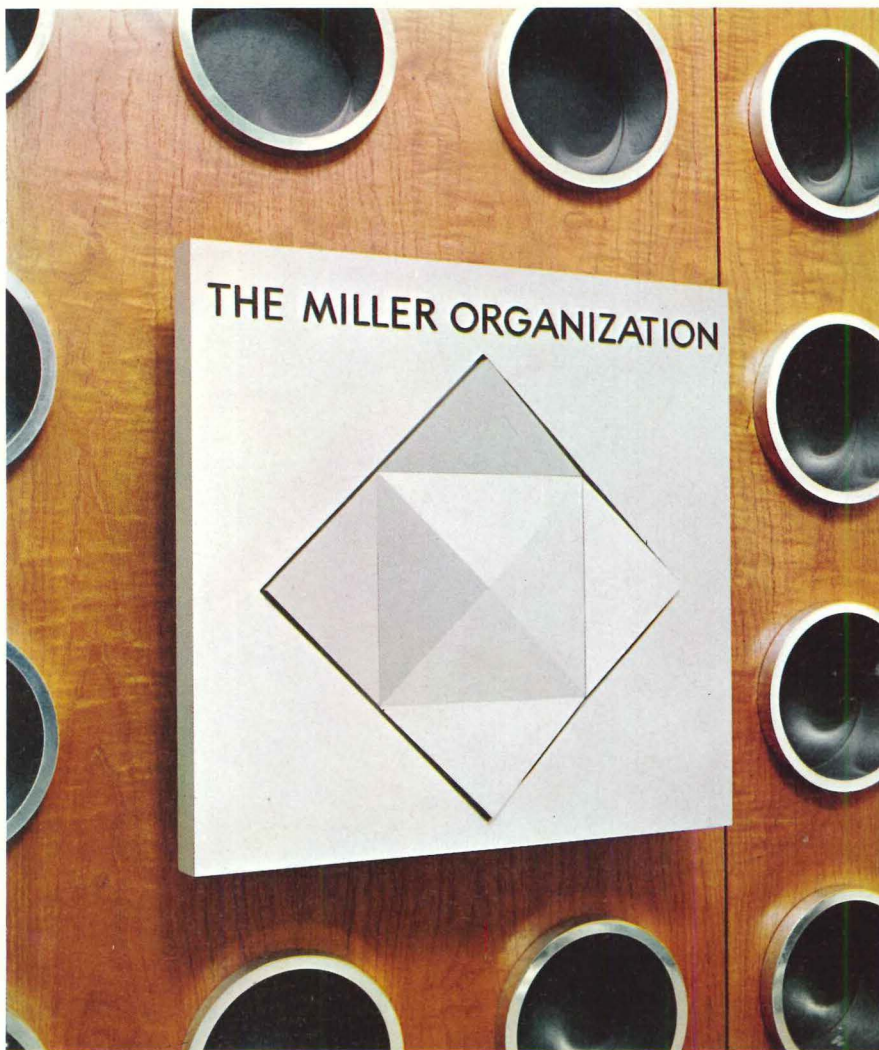
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they're also kid-proof.

Beauty doesn't have to be fragile. It can be exceptionally strong and long-lasting — as in Republic steel doors.

Made of durable steel to exacting craftsmanship standards with a sturdy honeycomb inner structure, these doors last through generations of school kids.

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For more information, contact your nearest Republic distributor. He's listed in the Yellow Pages under "Doors-Metal." And write for a free copy of our architectural product manual. Republic Steel Corporation, Manufacturing Division, Youngstown, Ohio 44505.

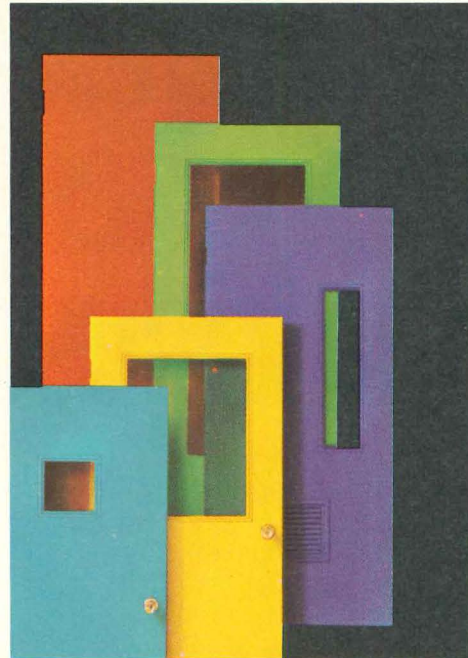
Republic doors are available in 36 standard sizes. The styling possibilities are unlimited.

LOCKERS — slam-proof hinges, rubber silencers, and kick-proof handles make Republic lockers the most durable you can buy. Available in 19 decorator colors and numerous styles.



Republicsteel
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It took time, but we have now designed an automatic flush bolt to the toughest specifications in the industry.

How tough? Well, we were told that the actuator body and face, plus the trigger bolt, as well as sill and soffit strikes, all had to be of drop forged bronze. No other device has this built-in quality.

The latch bolt had to be extruded bronze with a nylon coating to minimize friction and assure long wear. No other device has that, either.

In addition, the latch bolt guide, the latch bolt safety trip, and the ratchet all had to be cadmium-plated, case-hardened steel.

The dead lock had to be channel-shaped stainless steel.

And all springs had to be compression type, also stainless steel.

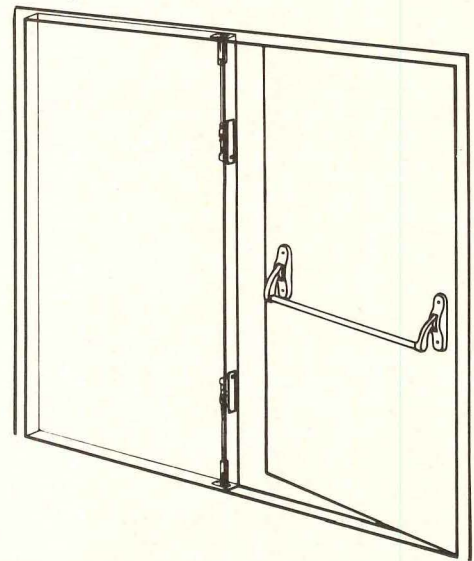
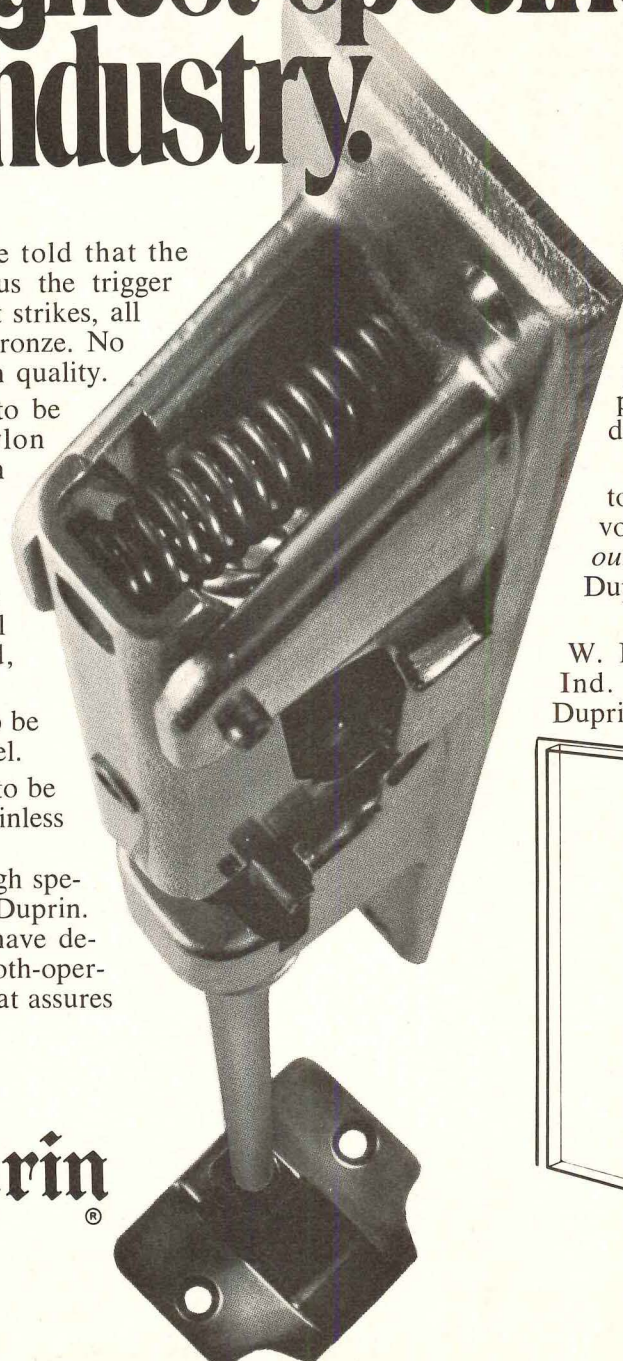
Those are pretty tough specifications, even for Von Duprin. But we met them, and we have designed a long-wearing, smooth-operating automatic flush bolt that assures

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wherever you need lighting you need Plexiglas®

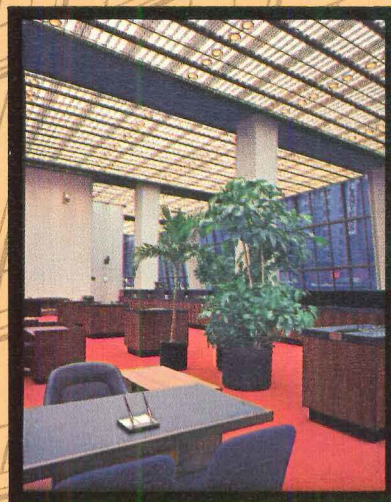
Plexiglas acrylic plastic is the only lens and diffuser material that puts it all together for quality lighting. Only Plexiglas provides the necessary combination of outstanding advantages to make its use applicable to virtually any lighting requirement.

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For assistance in planning a completely automatic, pneumatic tube system that will help speed your internal communications, call or write . . .



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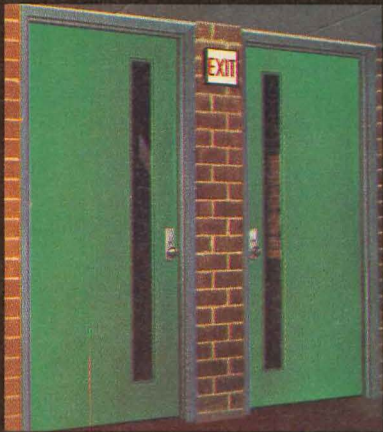
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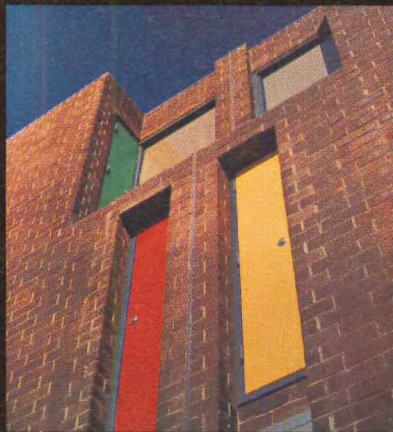
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Steel Doors in Dormitories

Attractive • Versatile application • Rugged • Fire barriers



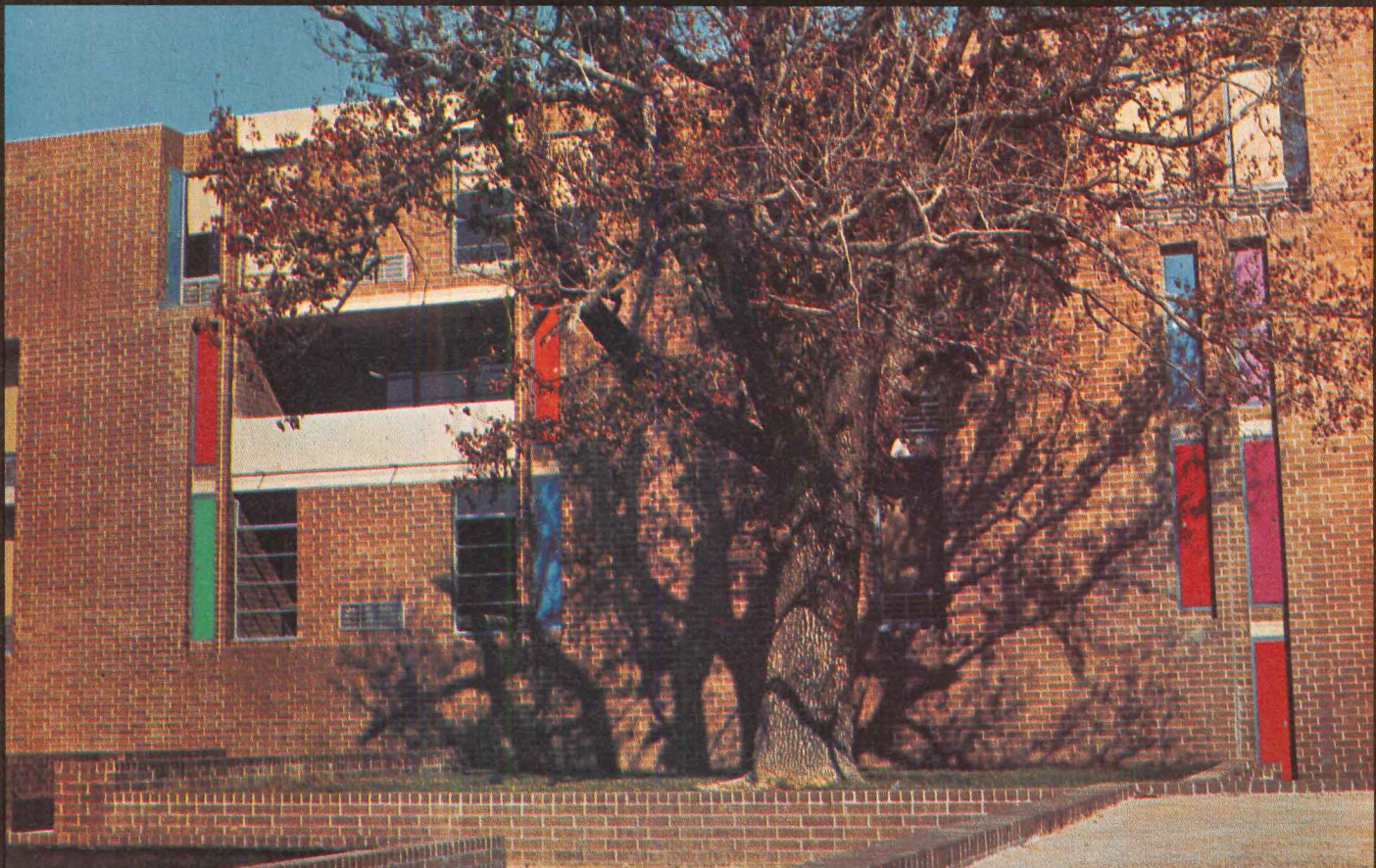
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ARCHITECTS: Bond Ryder Associates
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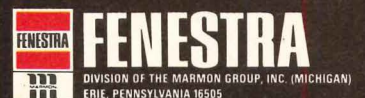
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The narrow, colorful panels on the exterior of this new dormitory complex actually are Fenestra prefinished all-steel doors. And they serve several important functions. In addition to creating bright accent colors to complement the architectural design, these doors and frames serve as easy access for window cleaning . . . and they provide fresh air ventilation during seasons of moderate temperatures. The interior also features fire-resistant, color-matching steel doors.

Architects like the design freedom permitted by Fenestra doors and frames. Contractors appreciate the local fabricating facilities of our distributors and the on-time delivery. Owners are assured high quality, safety and security because of Fenestra's unique interior all-steel grid system. Call your Fenestra distributor now. He's in the Yellow Pages under Doors-Metal. Or see us in Sweet's — 8.2/Fe.



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"Antron" meets the strict specifications U.S. Steel set up for every building material that went into their new Pittsburgh headquarters.

"Antron" has soil hiding so efficient, maintenance costs can be cut in half. Durability so great installations six years old have shown no significant wear. Cleanability so high that even extensive changes in floor plan leave no telltale tracks behind. Aesthetics that are second to none. Maria Bergson, design consultant for U.S. Steel, said only "Antron" met her standards for wearability, prac-

ticality and attractiveness, without sacrificing one for another.

Before you decide what your floors should be made of, find out more about "Antron". Write Du Pont Carpet Fibers. Contract Carpet Specialist. Centre Road Building. Wilmington, Delaware 19898. Your floors may never be floor again.

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



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CANADIANS BUILD AN OFFICE COMPLEX BY MIES VAN DER ROHE IN TORONTO

Ron Vickers Ltd. photos



The late works of Ludwig Mies van der Rohe—office towers, high-rise apartments and low pavilions—have all been designed within a stabilized system for each type. Like Doric temples which are also essentially the same, Mies' buildings of the fifties and sixties differ from one another in only the subtlest of ways. Proportions, spatial relationships, the color and texture of chosen materials vary slightly from project to project as modern architecture's most conservative genius painstakingly adjusted them, partially in response to programmatic content but essentially because he believed these elements to be endlessly perfectible in an absolute sense.

Mies' Toronto-Dominion Centre—the last great work in which he took an active part—is a structural and architectural development of ideas which have matured over four decades, and were finally crystallized in New York City's Seagram building (1955-58) and Berlin's New National Gallery (1962-68). The latter, a square pavilion, is similar to the Toronto-Dominion Bank Pavilion, the low element within the complex. The two towers at Toronto are each much larger than the Seagram building. Together they comprise approximately 3.1 million square feet of gross office space as compared to approximately 850,000 square feet in the Seagram.

Because of the size of the Toronto complex and the speed with which it was necessary to erect it (in order to get the office space onto the market and counteract rising building and labor costs), the completion of this project within a reasonable budget, and on time was a major construction management challenge for the team of Canadian architects and engineers who prepared the contract working drawings and supervised construction. (Mies van der Rohe, as consultant, designed the buildings and prepared the preliminary working drawings in collaboration with Dirk Lohan, Bruno Conterato and Joseph Fujikawa, who now head the firm, and Peter Carter, an associate. Sidney Bregman, the executive architect, coordinated the production wing of the team which included John B. Parkin Associates, his own firm of Bregman & Hamann, as well as Canadian structural, mechanical and electrical consultants.) Construction began to advance while the buildings were still in design at a rate which would not have been possible had the Miesian approach not been so steadfast, stabilized, well-tested and clear. In June 1964, six months after the architectural team began work, groundbreaking commenced. By December 1969 the entire complex was complete.

—Mildred F. Schmertz

Site, clients and program

Although downtown Toronto was laid out without thought for open spaces or focal points, the completion of Toronto-Dominion Centre marks a change for the better. The new complex is five blocks north of the shore of Lake Ontario and three blocks south of a well-known landmark and the only other focal point—the architecturally controversial new City Hall. Located in a congested area in the midst of such major establishments as the Stock Exchange, brokerage firms, banks and corporate head offices, the Centre occupies a 5½-acre site which has direct vehicular access from three main traffic arteries and is close to suburban rail and subway services.

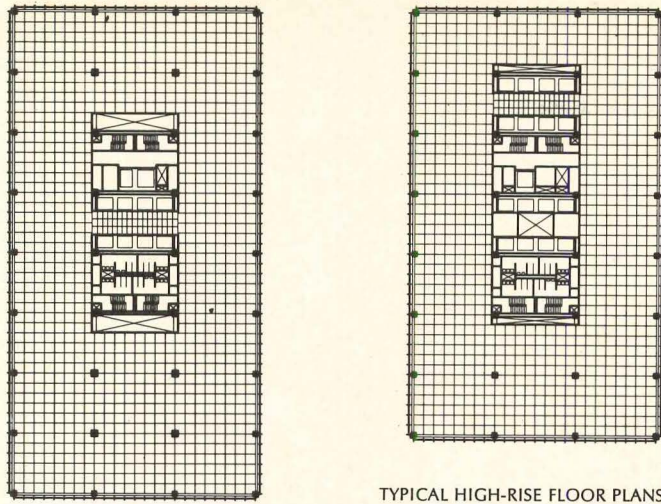
The mammoth development is a joint venture of the Toronto-Dominion Bank and Cemp Investments Limited. The Bank operates more than 625 branches throughout Canada serving more than 1.5 million Canadians. Cemp Investments Limited is a private investment company owned by trusts created for the children and grandchildren of Canadian industrialist Samuel Bronfman. The latter commissioned Mies van der Rohe and Philip Johnson to design the great Seagram building which Toronto's two new towers closely resemble in detail but not size. (Both Centre towers are considerably bigger.)

Based on a site coverage ratio of 12 to 1, the program called for 3.1 million square feet gross office space to be built in two stages based upon anticipated market demand of 1.7 million and 1.4 million square feet respectively. The program also called for a banking area of 22,500 square feet which would become the headquarters branch of The Toronto-Dominion Bank, replacing their existing premises on the site. To provide attractive downtown facilities for the general public and for the Centre's own working population of 15,000 people, it was decided that the complex should include shops, restaurants, a cinema and underground parking facilities.

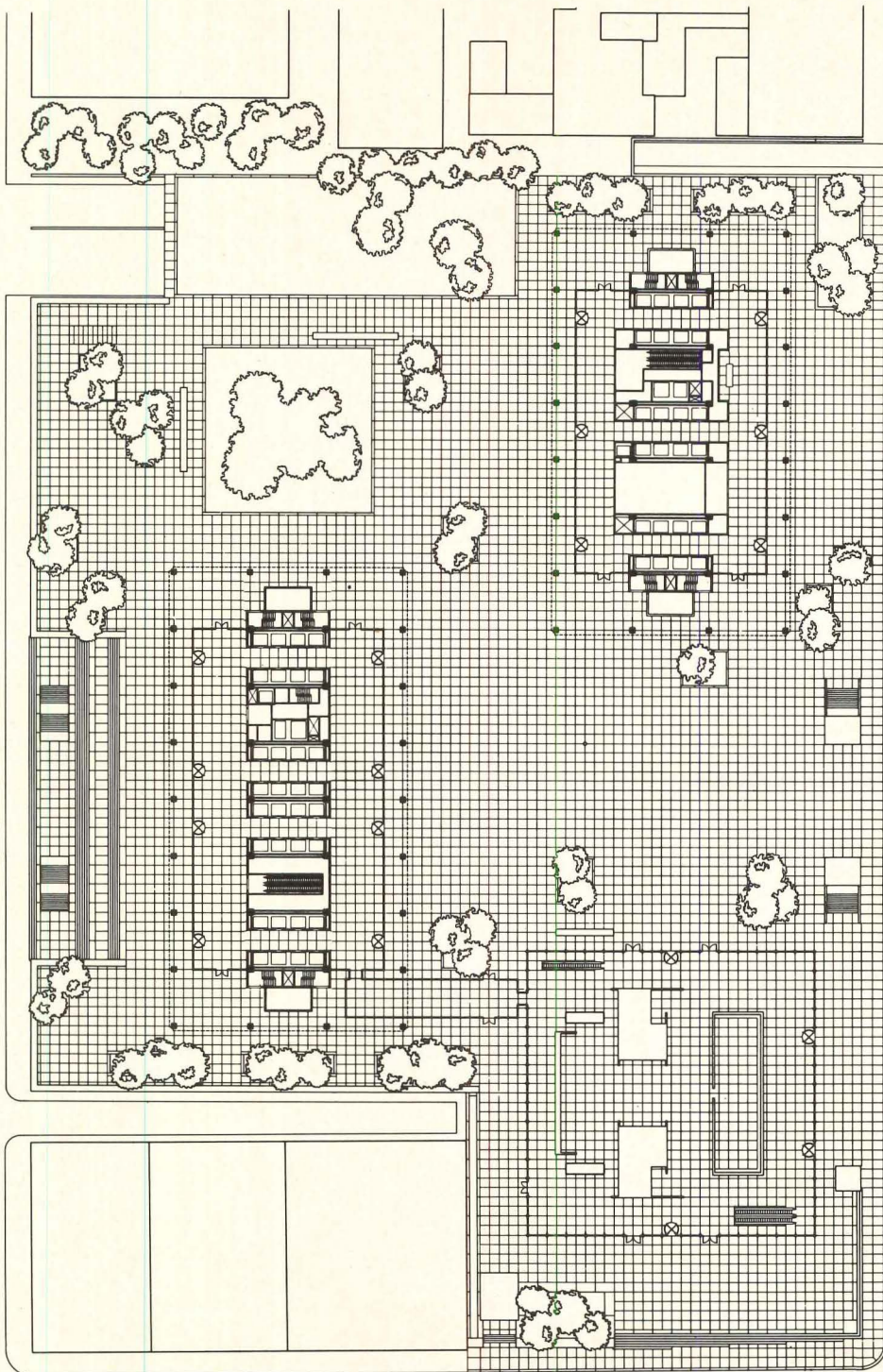
Structural and spatial concepts

Mies van der Rohe was convinced that the banking function would require a freer and more flexible type of space than could be provided through incorporating it in an office building. He therefore decided to incorporate this complex function in a separate single-story clear span building and to develop the site with this low structure and two office towers in such a way that a number of individually identifiable yet interlinked public plazas would be created at ground level. Because of Toronto's cold climate, he decided that the shopping concourse should be underground, directly beneath the plaza, and above the car parking facility.

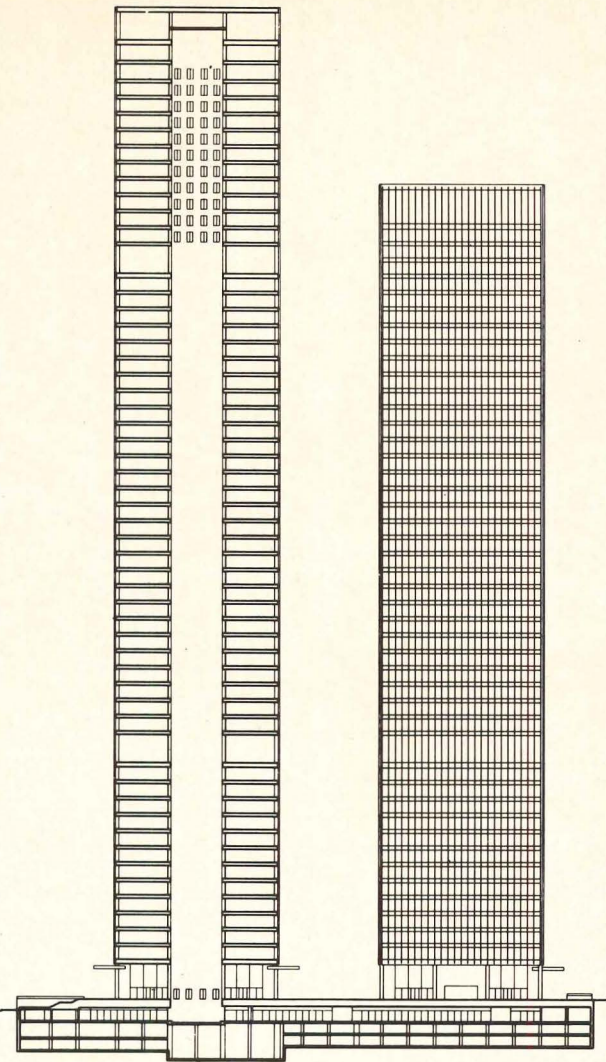




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PLAN AT PLAZA LEVEL



NORTH-SOUTH SECTION THROUGH 56-STORY OFFICE TOWER

The larger of the two towers shown on the plaza level plan is the 56-story Toronto-Dominion Bank Tower which is eight bays long. The smaller is the 46-story Royal Trust Tower which is seven bays long. Located on the corner at the intersection of two principal streets is the one-story banking pavilion for the Toronto-Dominion Bank main branch. Entrances to the underground shopping concourse adjoin each of the two parallel streets. Adjacent entrance driveways to the underground parking and to the freight dock are indicated. As the section makes clear, the 56-story tower has three mechanical floors above the plaza level. There are two parking levels below the shopping concourse. The air view (opposite page) is seen from the northeast. The Toronto-Dominion Bank Tower is on the left, the Royal Trust Tower is on the right and the roof of the Toronto-Dominion Banking Pavilion can be seen in the foreground. Between the two towers people may be seen congregating on the southwest plaza for one of the regular lunchtime concerts.

TORONTO-DOMINION CENTRE

The Toronto complex embodies to a high degree at least seven basic Miesian concepts known to all who have carefully studied his work. These concepts may be summarized as follows:

1. Better interpenetration of the spaces between buildings and building elements results from their open, as opposed to closed, placement.

2. A building's magnitude is best established and its range of scales best articulated through a clear expression of the structural system and the components of its construction.

3. The open ground floor, which adds clarification to the structural system, sets a transitional scale between exterior and interior, and by visually and physically uniting plaza and lobby opens one circulation system to another.

4. The introduction of a single-story structure into the larger plaza spaces establishes an intermediate scale gradation between the pedestrian and the bigger spaces.

5. The achievement of a scale range within which the buildings and the outside spaces may be harmoniously related to the human being is of cardinal importance.

6. Landscaping should be used with great care to supplement and complement the interpenetration of space at the pedestrian level and to provide privacy and screening where necessary.

7. The immediate visual and tactile experiences of the pedestrian are greatly enhanced by the use of fine materials and careful detailing for such elements of the plaza as benches, drinking fountains, waste containers, steps, and pools.

Where these concepts have been well realized as in the Toronto-Dominion Centre, the buildings and the spaces between contribute on equal terms towards the creation of a unified environment, restrained yet humane which is at the same time in scale with the city, its traffic and the pedestrian.

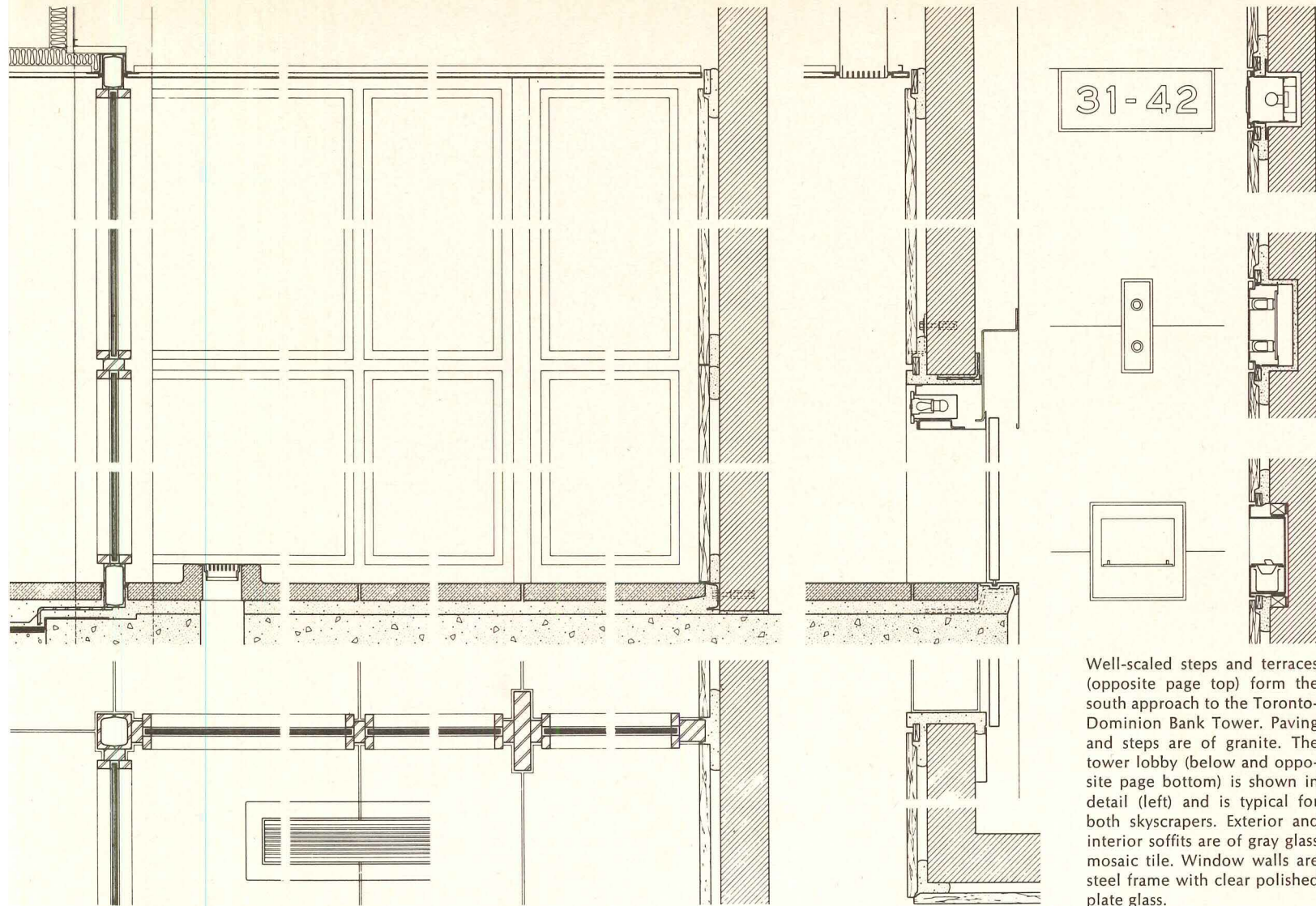
Dimensioning the office towers

The dimensions of the structural steel frame and the building module were influenced by the following factors:

1. A structural bay of 30- by 40-feet accommodates the required elevators, stairs and toilets, which together with the building's service ducts, form the central tower cores.

2. The 40-foot dimension affords column-free peripheral office space, thus permitting optimum layouts throughout the complete range of tenant space requirements. Toronto-Dominion Centre's management figures that the absence of free-standing columns in the office spaces due to the 30- by 40-foot bay provides a 15 per cent saving in office area and a 5 per cent increase in employe efficiency—a total rental





31-42

Well-scaled steps and terraces (opposite page top) form the south approach to the Toronto-Dominion Bank Tower. Paving and steps are of granite. The tower lobby (below and opposite page bottom) is shown in detail (left) and is typical for both skyscrapers. Exterior and interior soffits are of gray glass mosaic tile. Window walls are steel frame with clear polished plate glass.



saving of over \$2.00 per sq. ft.

3. The subdivision of the 30-by 40-foot structural bay into 5-foot modular increments provides the most reasonable degree of flexibility for a building of multiple tenancies. This module sets the dimensions of the ceiling elements, including the combined fluorescent light and air handling fixtures; the peripheral induction units; and the location of the vertical mullion divisions of the buildings' skin.

4. The 12-foot floor to floor height of the structural frame is determined by a clear floor to ceiling dimension of 9 feet plus a floor depth of 3 feet—the minimum needed to accommodate structural steel beams and girders, decking, floor and ceiling finishes and air conditioning, lighting and electrical services.

5. At the plaza level the clear floor to soffit height is 26-feet—a vertical dimension in proportional accord with the size of the public entrance lobby space.

Curtain wall details for towers

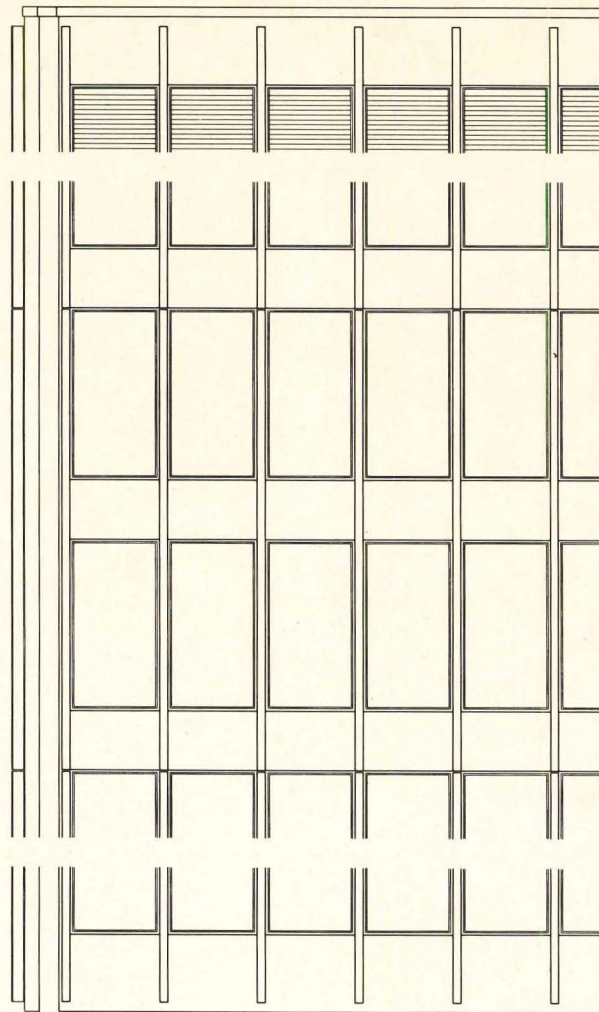
The elevation (top right) indicates the skin details for the roof, typical office floors and the second floor above the lobby level. The mullion detail (middle) shows the typical dry-wall partition to be located anywhere within the 5-foot-module, the extruded aluminum glazing frame with bronze-gray tinted heat-absorbing and glare-reducing glass, and the built-up steel mullion unit. The typical corner detail (bottom) shows the induction unit, the glass and its frame, dry-wall fire insulation around the column, the steel mullion and corner cover unit and the light-weight concrete back-up. The skin details (far right) include: a section through the roof (top) which shows the steel cap angle, the insulation and built-up roofing surfaced with black granite chips, the steel mullion and spandrel plate, the light-weight concrete and the extruded aluminum frame and louvers; a typical floor section with a vertical expansion joint which indicates the perforated metal pan ceiling and the venetian blind detail; and a section at the second floor level showing the gray glass mosaic tile soffit.

The steel mullions, spandrel plates and column covers are painted matte black. The extruded aluminum glazing frame has a matte baked finish.

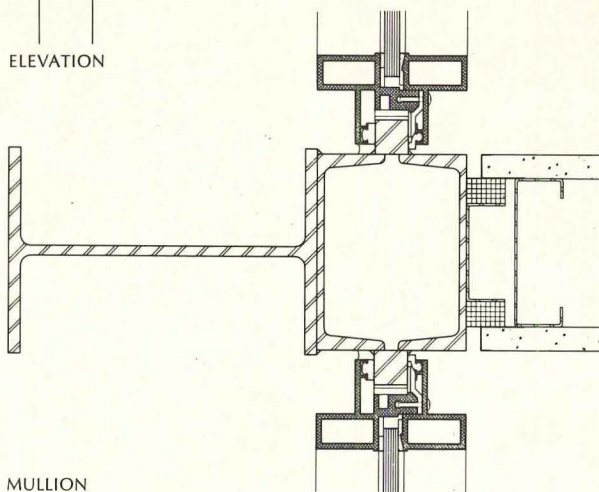
The photographs (opposite, top and below) taken in the Toronto-Dominion Bank executive suite on the 54th floor of the 56-story office tower indicate that the curtain wall proportions are as handsome on the interior as they are on the exterior.

Tower structural design, fabrication and erection

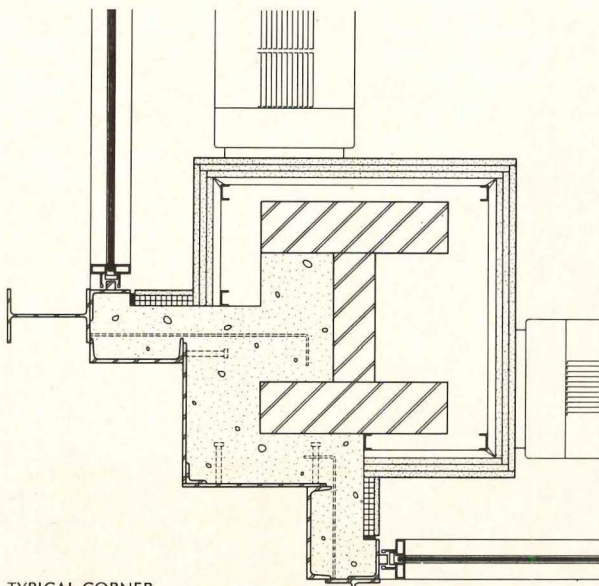
The 56-story Toronto-Dominion Bank Tower is three 40-foot bays



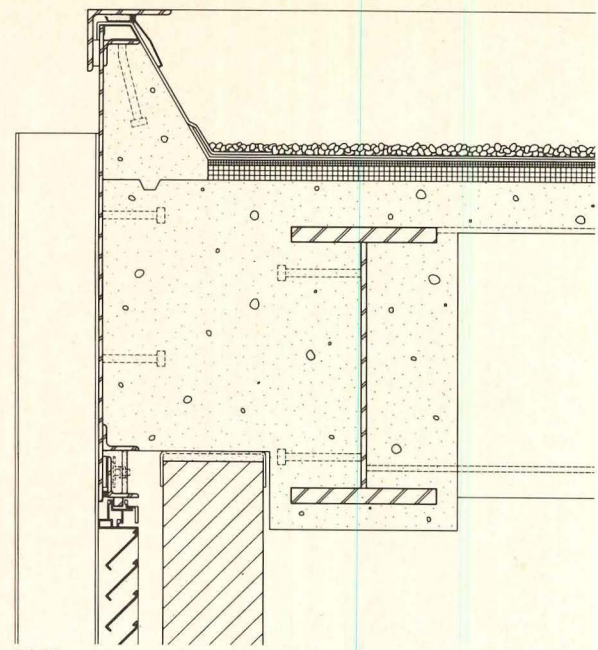
ELEVATION



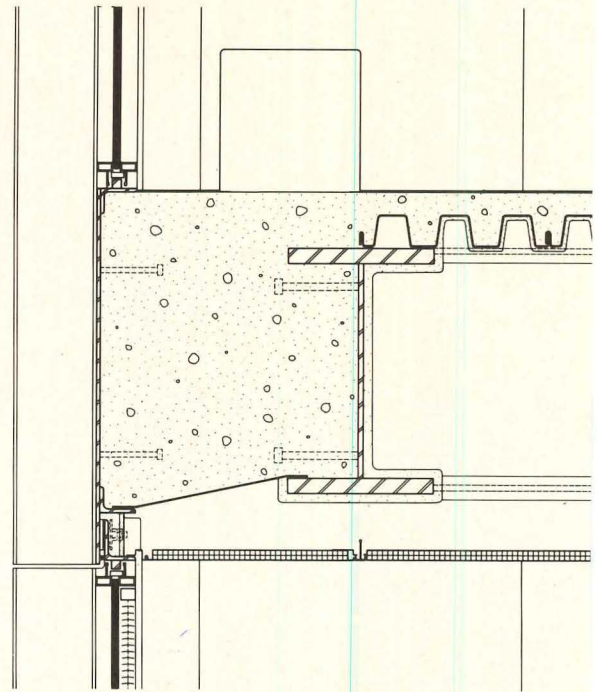
MULLION



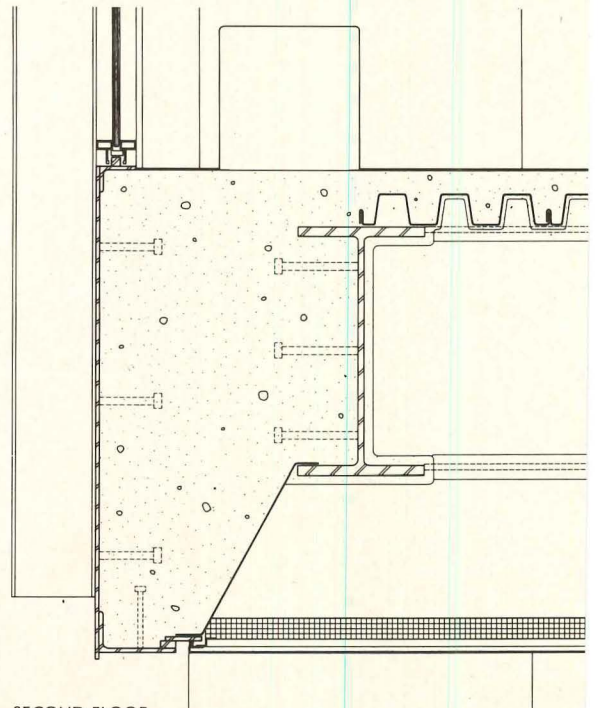
TYPICAL CORNER



ROOF



TYPICAL FLOOR WITH VERTICAL EXPANSION JOINT



SECOND FLOOR



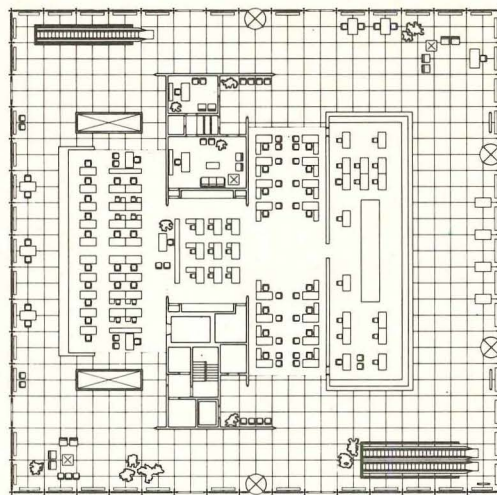
TORONTO-DOMINION CENTRE

wide by eight 30-foot bays long; the 46-story Royal Trust Tower is three 40-foot bays wide by seven 30-foot bays long. Typically, a bay consists of 40-foot long girders at 30-foot centers (spanning the transverse direction) and 30-foot long intermediate beams at 10-foot centers (spanning the longitudinal direction). The steel frame of the towers utilizes a braced core system in both the transverse and longitudinal directions. In the transverse direction, a K-bracing system extending the full tower height was developed on four interior column lines and other interior transverse bents have core bracing up to the floor where the elevator banks terminate. In the longitudinal direction the vertical rigidity of the core is developed by a combination of inverted knee braces in some bays and moment resisting beam-to-column connections in others. Since the core was still not stiff enough to satisfy the maximum sway limitations of .002 times the building height, a system of cantilever trusses was introduced at each of the towers' lower 24-foot-high mechanical floors—extending from the core to the perimeter columns—in order to make the total building width effective against overturning. The 56-story tower was designed to deflect no more than 12 inches in a steady 100-mph wind. The stiffening provided actually limits sway to between 6 and 8 inches.

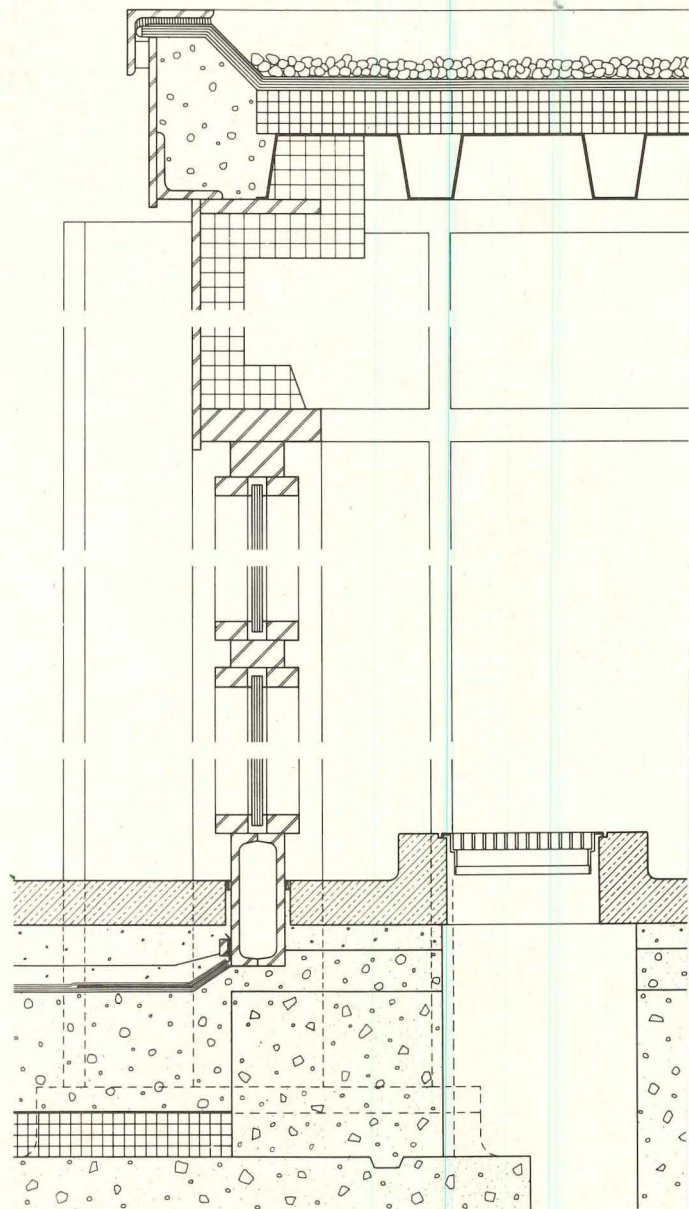
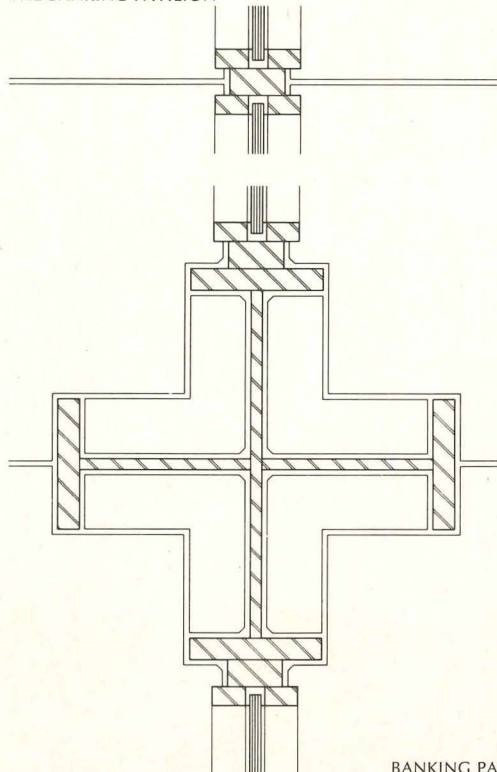
The installation of the first 43 stories of steel skin for the 56-story tower was by the "stick" method, i.e., fascia plates were attached to edge beams followed by the welding to them of individual two-story-high mullions. Because this system proved to have a number of disadvantages, a "panel" method of installation was substituted from the 44th floor up as well as for the subsequent 46-story tower. This method involved the setting up on the site of a jig capable of holding the spandrel and mullion components of a two-story (24-foot-high) steel skin panel six or eight modules wide. After welding, the unpainted areas of the panel were prime-coated while still in the jig. When panels for one complete floor had been fabricated, derricks were used to lift them into position.

The banking pavilion

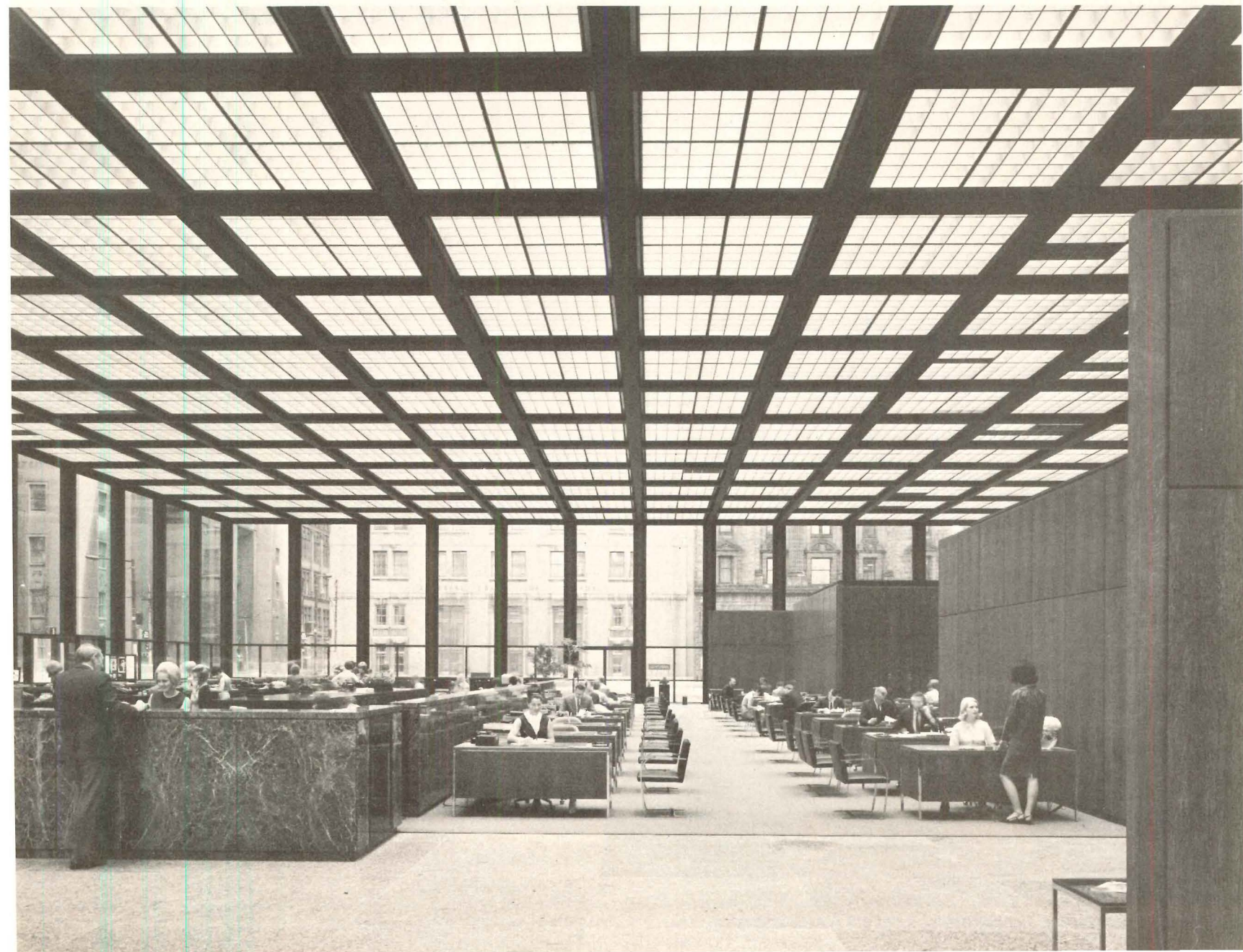
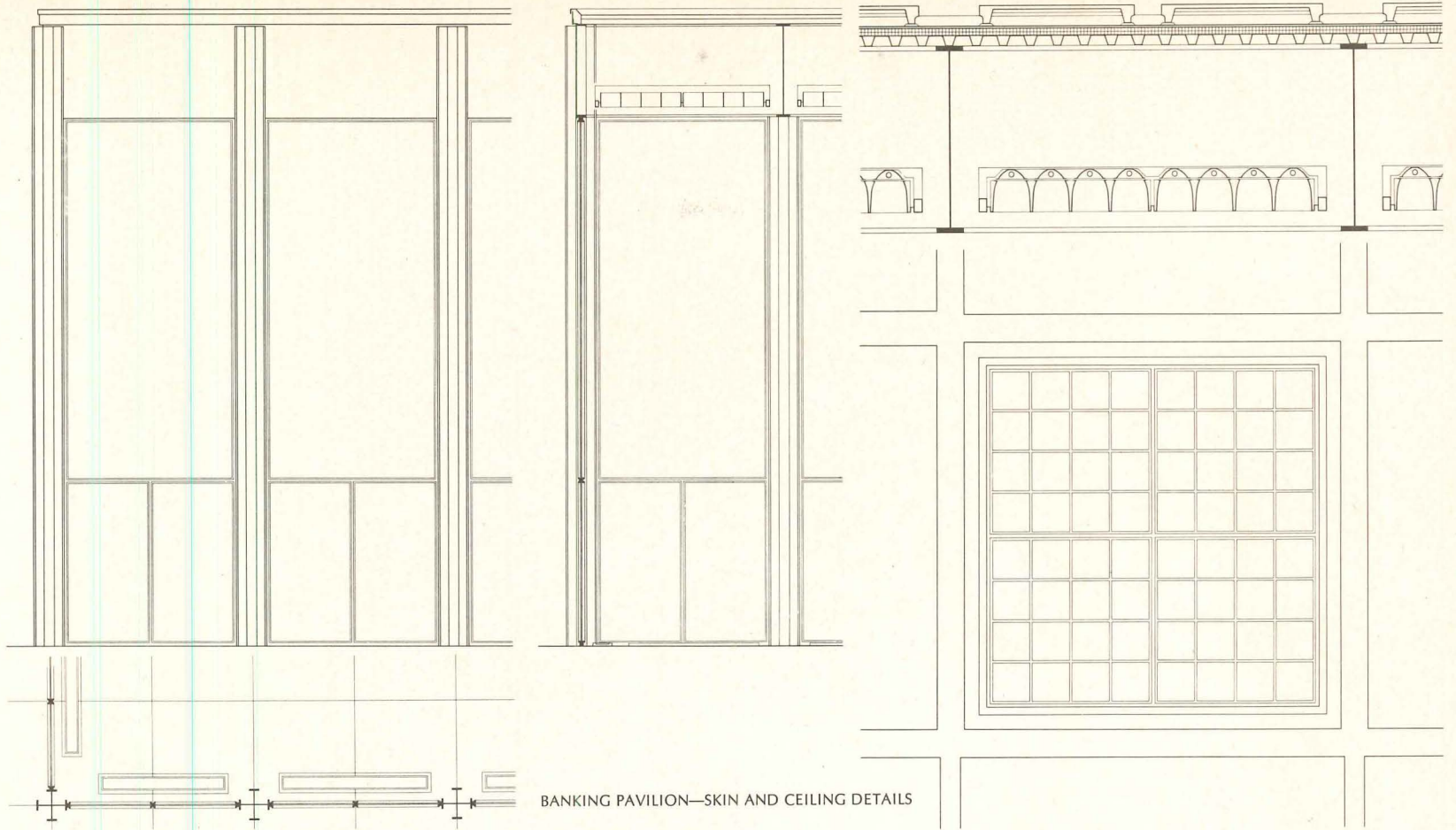
The main branch of the Toronto-Dominion Bank (shown in photos, plan and details right) is housed in the single story, 150-foot-square, clear span, steel and glass pavilion located at the principal corner of the site. This pavilion is identical in size and shape to Mies' Berlin Museum, except for the museum's overhanging roof. The principal customer services such as the teller, credit and savings departments are located at the plaza level, while securities, safety deposit and other functions are accommodated di-



THE BANKING PAVILION



BANKING PAVILION—SKIN, COLUMN AND ROOF DETAILS



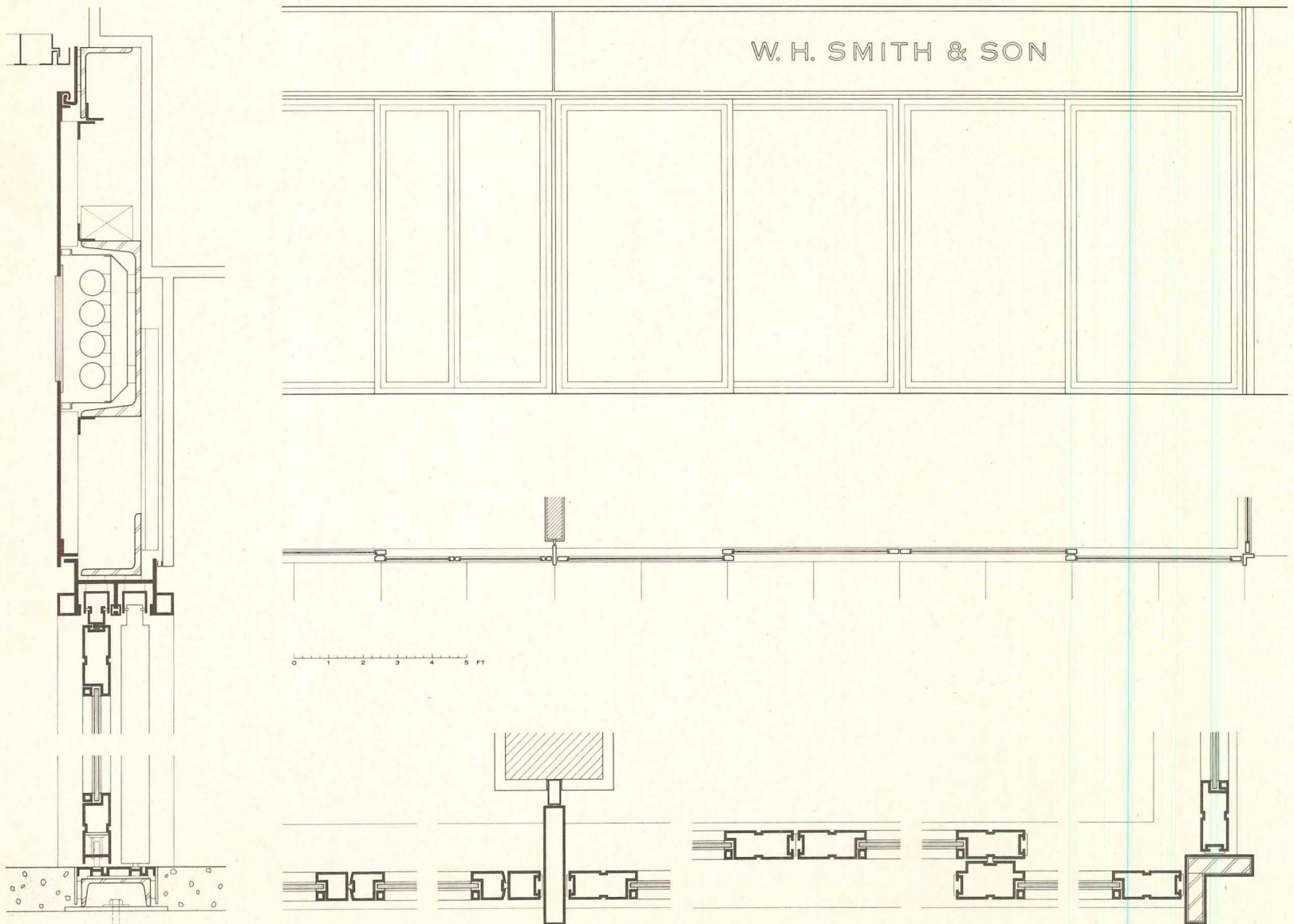
TORONTO-DOMINION CENTRE

rectly below at the concourse level.

The roof structure of the banking pavilion (see cover) consists of a two-directional system comprising 4 feet 6 inches deep steel girders and diaphragm beams at 10-foot centers, each supported at the periphery by steel columns of cruciform shape.

The air conditioning of the pavilion is accomplished by peripheral floor supply outlets working in conjunction with centrally positioned units on the top of the two wood panelled cores. Air is extracted through openings located on the south face of the two marble-faced mechanical shafts. These shafts also accommodate air intake ducts from the roof, rain water pipes and electrical services.

TORONTO-DOMINION CENTRE, Toronto, Canada. Owners: *The Toronto-Dominion Bank and Cemp Investments Ltd*; managers: *The Fairview Corporation Limited*; consultant: *Mies van der Rohe*; executive architect: *Sidney Bregman*; architects and engineers: *John B. Parkin Associates and Bregman & Hamann*; structural engineers: *C. D. Carruthers and Wallace Consultants Ltd.*; mechanical and electrical engineers: *H. H. Angus and Associates Ltd.*; lighting consultant: *Edison Price*; general contractor: *Pigott Construction Co. Ltd.*; steel contractor: *Dominion Bridge Co. and Frankel Structural Steel Ltd.*; mechanical contractor: *Crump Mechanical Contracting Ltd.*; electrical contractor: *Ainsworth Canada Ontario-T. D. Project.*



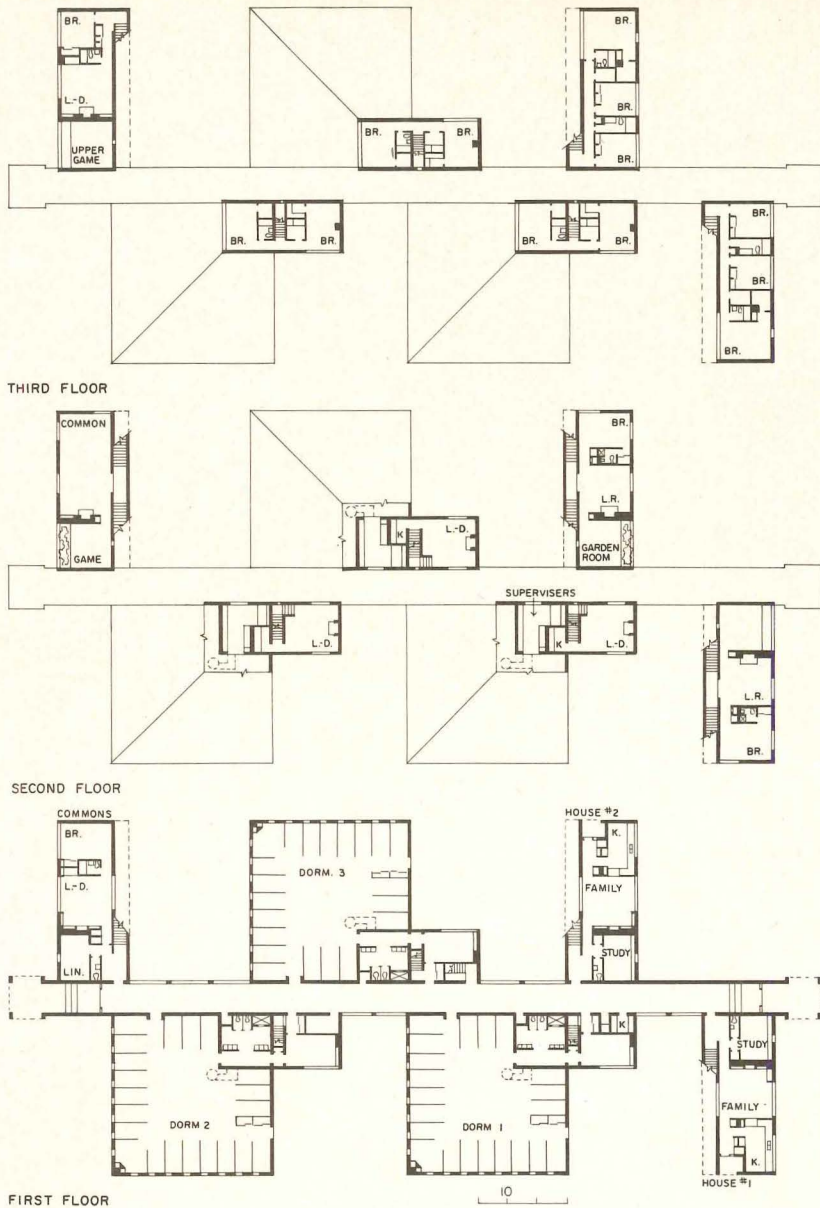
SHOPPING CONCOURSE AND DETAILS

NEW DORMITORY FOR ST. PAUL'S SCHOOL

On a placid millpond site in Concord, New Hampshire, at one of the country's oldest and best-established preparatory schools, Edward Larrabee Barnes has designed an unconventional dormitory complex that houses students, faculty and school administrators. The setting is pure New England, but Kittredge Dormitory is urban in character and carefully articulated in design. It also provides its users with some interesting and unusual educational opportunities.



ST. PAUL'S DORMITORY



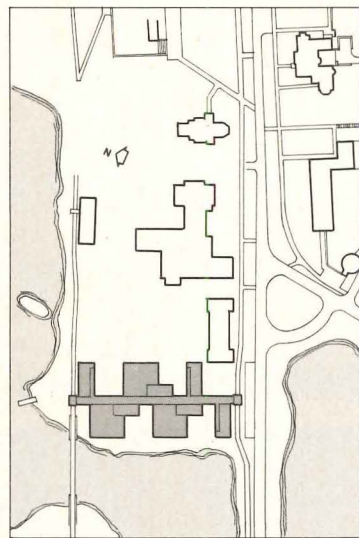
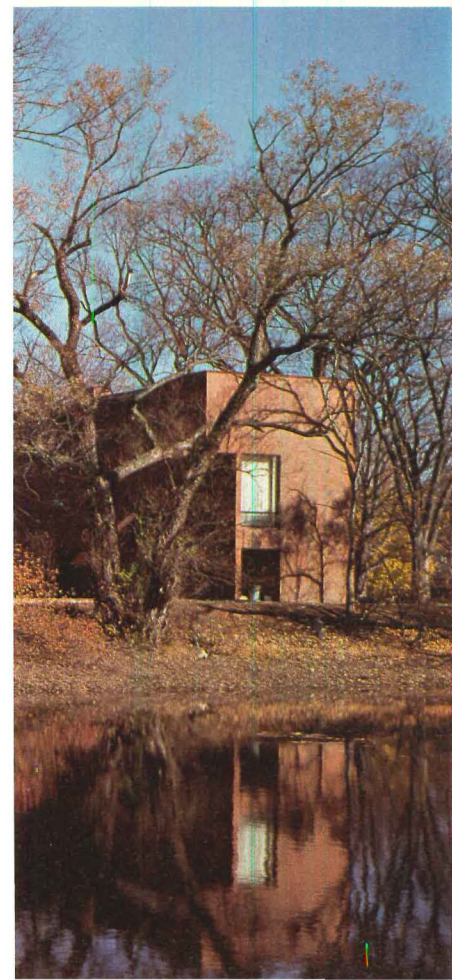
The plan is developed around a one-level circulation spine that runs unbroken through the building's entire length. Three dormitories, spaced along the spine, house 20 youngsters each, in a tight pattern of private cubicles spaced along the outside walls (see first floor plan). The remaining floor space, carpeted and skylit, is communal and used for impromptu Indian wrestling and other forms of controlled mayhem. Two upperclass supervisors, charged with maintaining this control, occupy a small duplex above, which is reached by an ornamental circular stair (photo, page 118). Each dormitory is also provided with its own washroom and its own student study lounge.

House master, assistant housemaster, bachelor teachers and a matron occupy the townhouse apartments. These various upper-level living spaces are reached from the circulation spine by enclosed stairs that the architect has used as powerful design elements. With all cross circulation cut off above the first floor, each apartment enjoys maximum privacy so that faculty members may come and go with minimum disturbance to others.

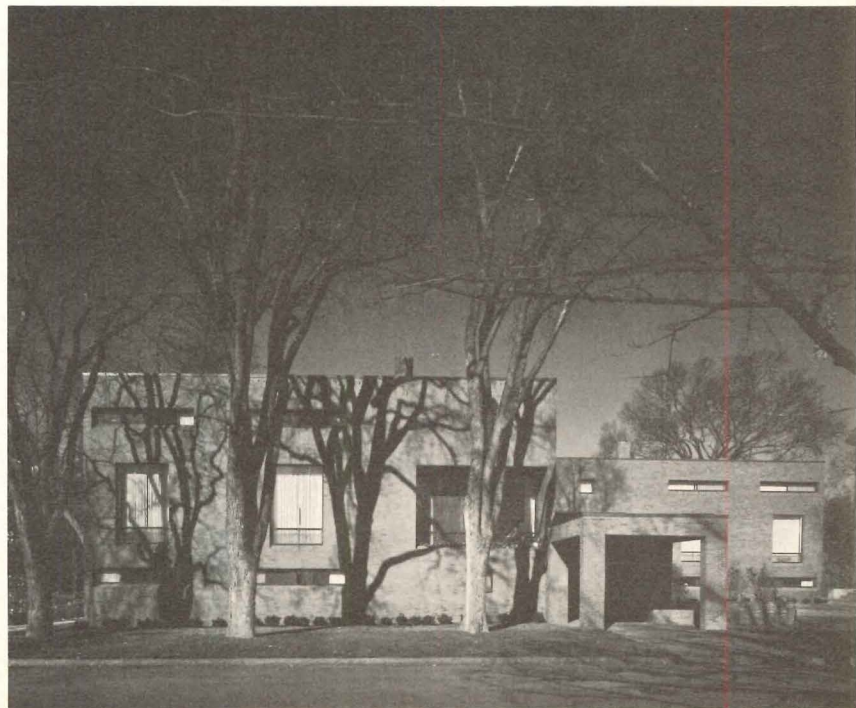
The various volumes are spaced out by landscaped courts—rather than green swards—a device that reinforces the urban character of the whole complex. The architect has been careful not to violate the scale of the existing campus and has preserved an almost domestic scale in the dormitories by dropping the eave line over the sleeping cubicles to eight feet.

These cubicles, efficiently planned and thoughtfully detailed, are a traditional part of St. Paul's lower school dormitory program. William Oates, St. Paul's rector, ex-





Its quiet millpond setting notwithstanding, the dormitory complex is animated in expression and urban in flavor. The brick esthetic, with the copper batten roof, is a campus standard. The neighboring buildings are Victorian and Georgian.



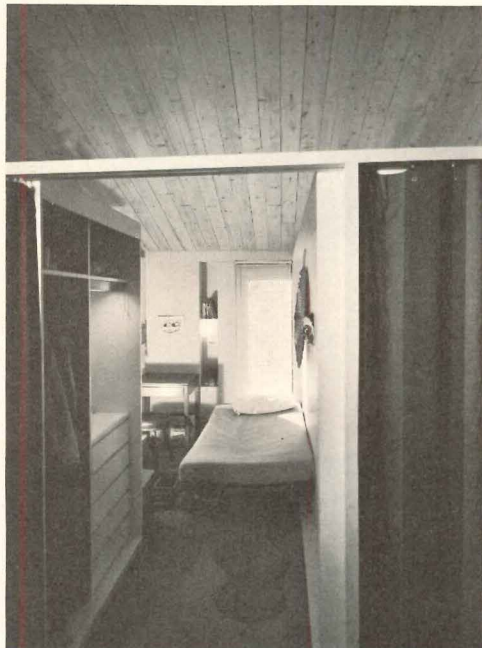
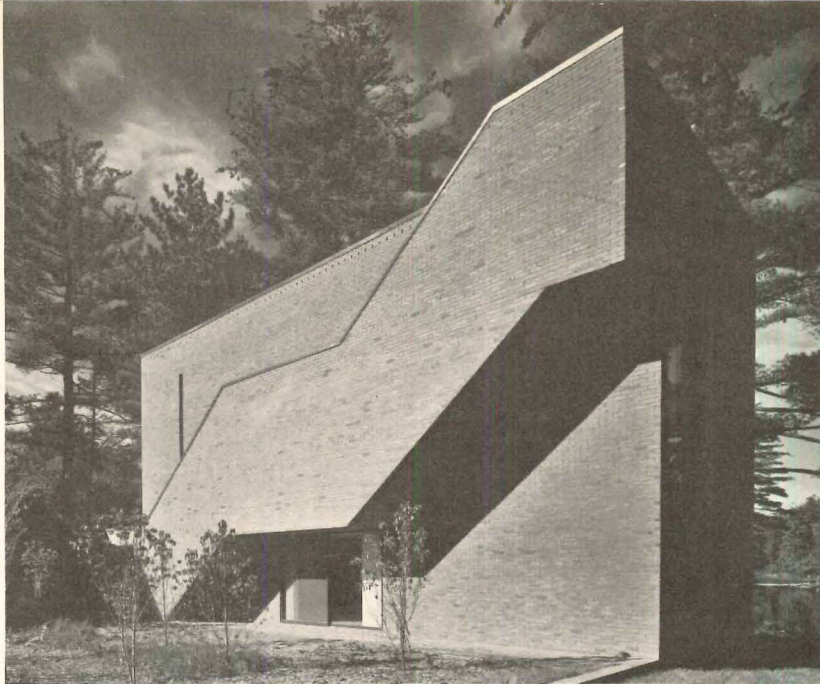
plains that "the cubicles afford each student a necessary measure of privacy while strengthening a sense of community within the dormitory. The openness of the plan acts to combat feelings of isolation that otherwise might overtake a young student away from home for the first time."

The general massing of volumes reflects the internal organization of functions quite accurately and implies a social order as well. The expression of these relationships, without patronizing either faculty or students, was one of the architect's design goals.

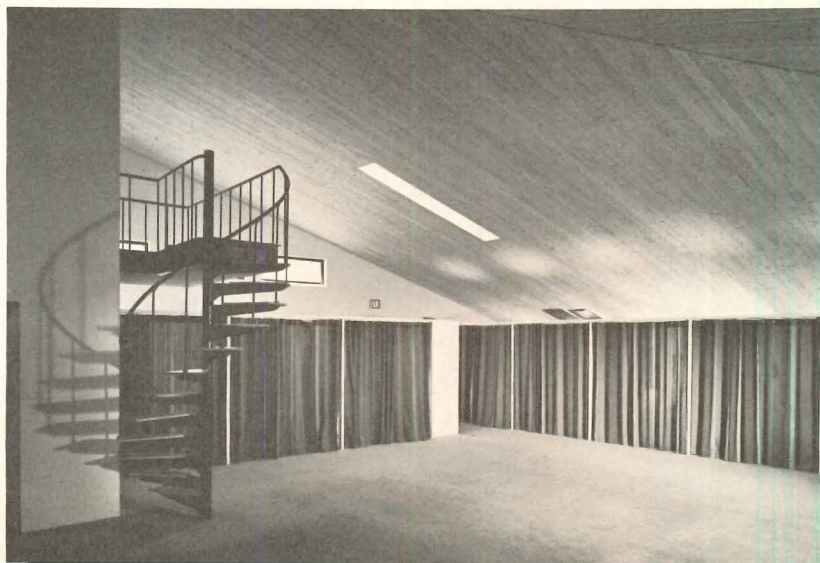
The elevations, printed with the shadows of majestic trees, show a lively planar quality and a rich variety of window openings that are reflected on the inside in pleasant and sometimes unexpected ways.

In this unusual living complex, students, faculty and administrators can meet in unplanned ways and in various informal settings. From this interaction, if it be productive, will come many of the attitudes and much of the shape and content of each student's future educational experience.

KITTREDGE DORMITORIES, ST. PAUL'S SCHOOL, Concord, New Hampshire. Architect: *Edward Larabee Barnes*; associate in charge: *Alistair Bevington*; structural engineer: *Severud Associates*; mechanical and electrical engineers: *Meyer Strong & Jones*; lighting: *Donald Bliss*; landscaping: *Dan Kiley & Partners*; contractor: *Louis E. Lee Co.*

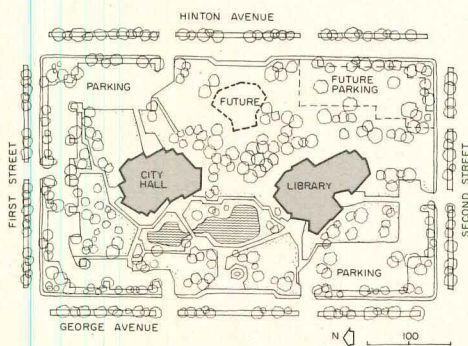


All photos by Joseph W. Molitor except on page 115 by Richard and Siglinde Stern



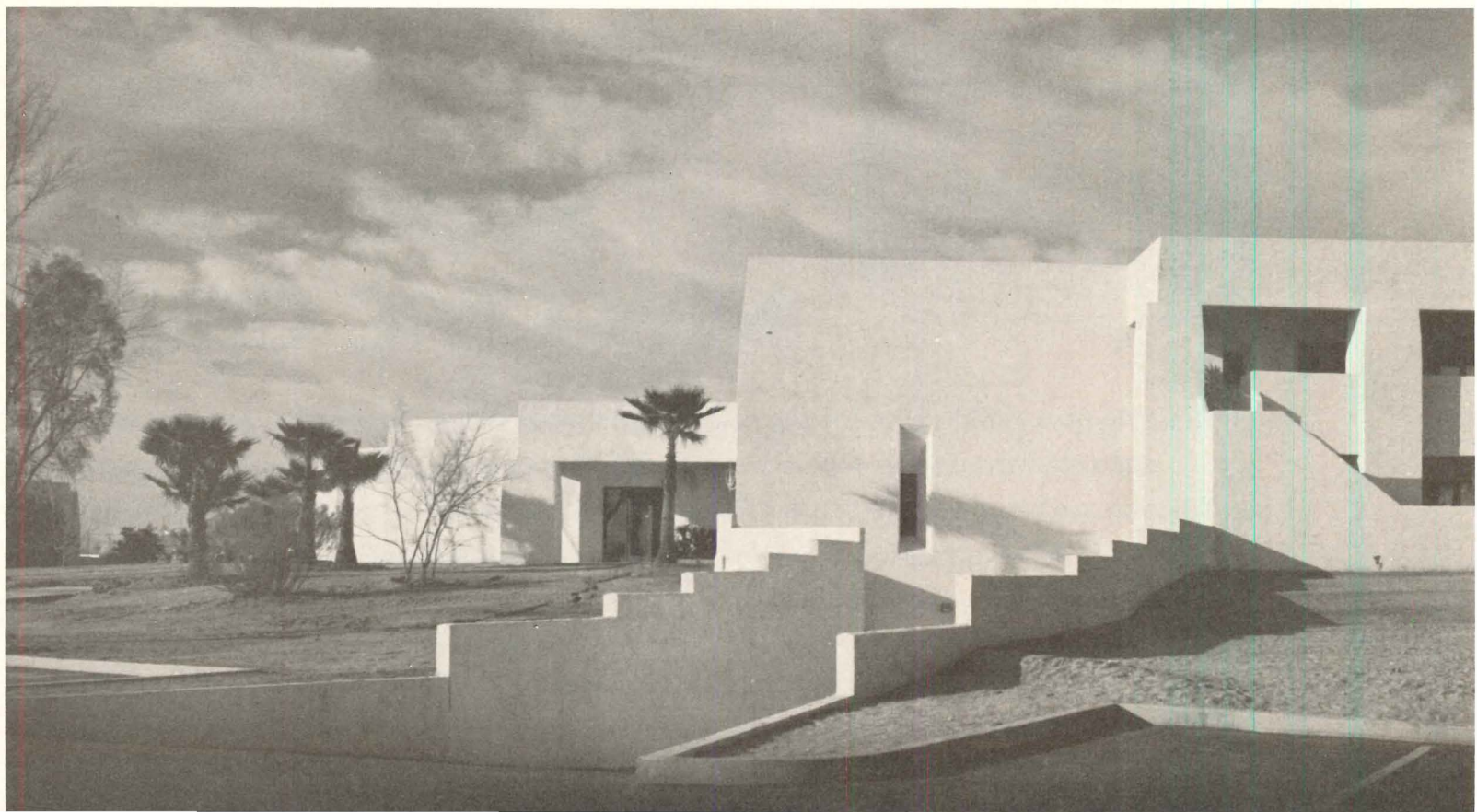


Neil Koppes



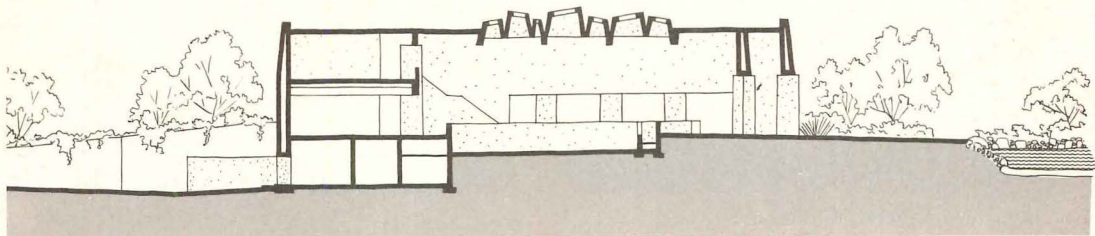
SCOTTSDALE'S NEW CIVIC CENTER

These first two buildings in the unusual and ambitious plan of Scottsdale, Arizona, for a civic and cultural complex underscore two points of special current interest: first, that citizen participation can be of a very high order in the design process and when it is, can be an important factor in achieving fine architecture; and second, that regional design influences, far from stultifying the creative process, can—in the right hands—lead to entirely individual and contemporary design of a singularly appropriate kind. Scottsdale's city hall and library belong to, and in, the Southwest desert, but their architecture is also extraordinarily suited to the dynamic sophistication and open, casual way of life of Arizona's third largest city.

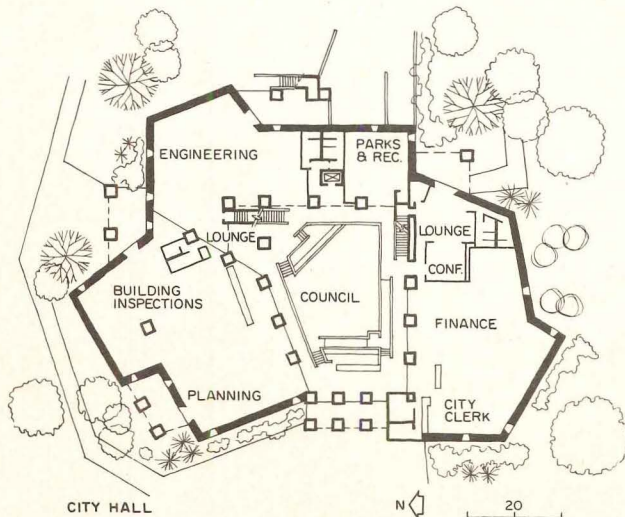


A CITY HALL THAT INVITES CITIZENS TO PARTICIPATE

The city hall is a building without interior partitions: everything and every process is open and accessible to the public. This is in keeping with the community's conviction that citizens should participate in the processes of their government and that the building which houses these processes should make it easy to do so. A remarkable procedure—the Scottsdale Town Enrichment Program (STEP)—involved some 400 residents, representing every section of the city, in providing direction for planning the center, and the buildings are, says Bennie Gonzales, the architect, a direct translation of STEP's beliefs. The heart of the concept is the use of the central lobby in each building as a community focus. In the city hall, the Council chamber occupies this space; in the library, the periodical lounge. In both buildings the space is sunk four feet below entrance level, with a low balustrade (for leaning by onlookers and overflow audience) surrounding it, and skylighting above through faceted colored glass. Departments to which the public needs ready access are on the main floor. Structure is load-bearing masonry, mortar washed. Slabs and roof beams are of prestressed concrete. Mechanical and electrical lines run in outer walls and in massive interior columns.



10 CITY HALL SECTION



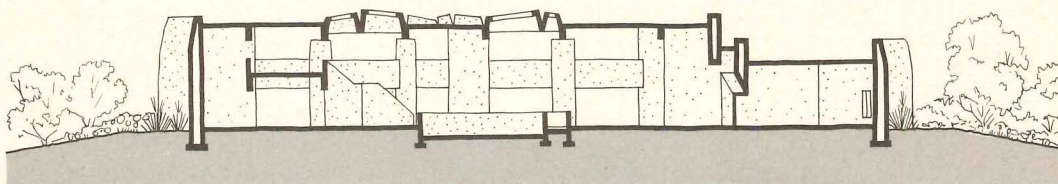
The center is located in what had become a semi-blighted section of town, thanks to a meteoric rise in population—from 12,000 to nearly 70,000—over the previous 10 years. Already, the new buildings and the park in which they are situated have revitalized the area, stimulating private as well as public development. Ultimately the master plan calls for developing the remainder of the 20-acre site assembled by the city, to provide facilities for such cultural activities as arts and crafts (an important part of Scottsdale), drama and music.



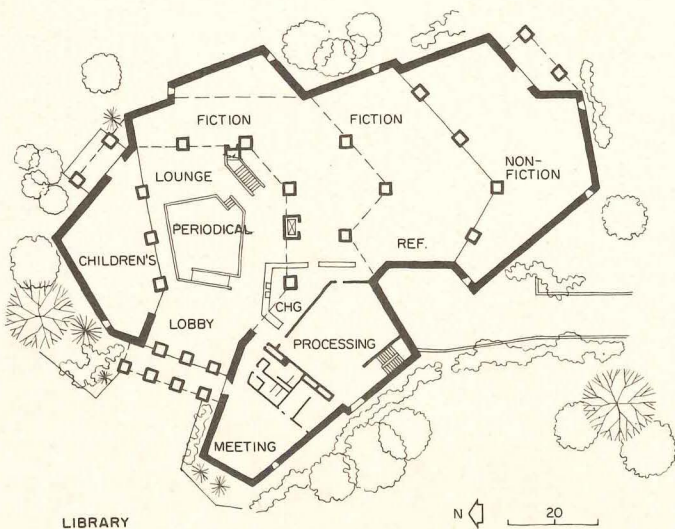
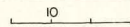
A LIBRARY WHOSE FACILITIES ARE ALL ACCESSIBLE

Similar in plan to the city hall, the library is equally open and inviting, reflecting the informal Southwestern way of life which the Council, in its brief charge to the architects, indicated was one of its criteria for the buildings' design. The central sunken space is used as a periodical lounge, with reading rooms and book shelves in the various reading rooms on the level above. The great central area has the dignity of monumental space but because of the angled direction of the massive columns, is also quite informal. All public services, as well as cataloging and processing, are located on the entrance level. Here, too, is a 100-seat auditorium, accessible from outside the building and from the lobby. On the mezzanine are administrative offices, staff lounge and board room, and a gallery currently used for art exhibitions but ready for expansion. The building was designed for a projected capacity of 125,000 volumes. The furnishings were selected by the architects and are not typical library furniture; some equipment was specially designed.

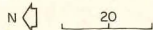
SCOTTSDALE CIVIC CENTER, Scottsdale, Arizona. Architects: *Gonzales Associates*. Engineers: *Foltz, Hamlyn & Adam, Inc.* (structural); *Richard E. Joachim & Associates* (mechanical); *William E. Meier & Associates* (electrical). Landscape architects: *Gonzales Associates*. General contractor: *Arnold Construction Company*.



LIBRARY SECTION

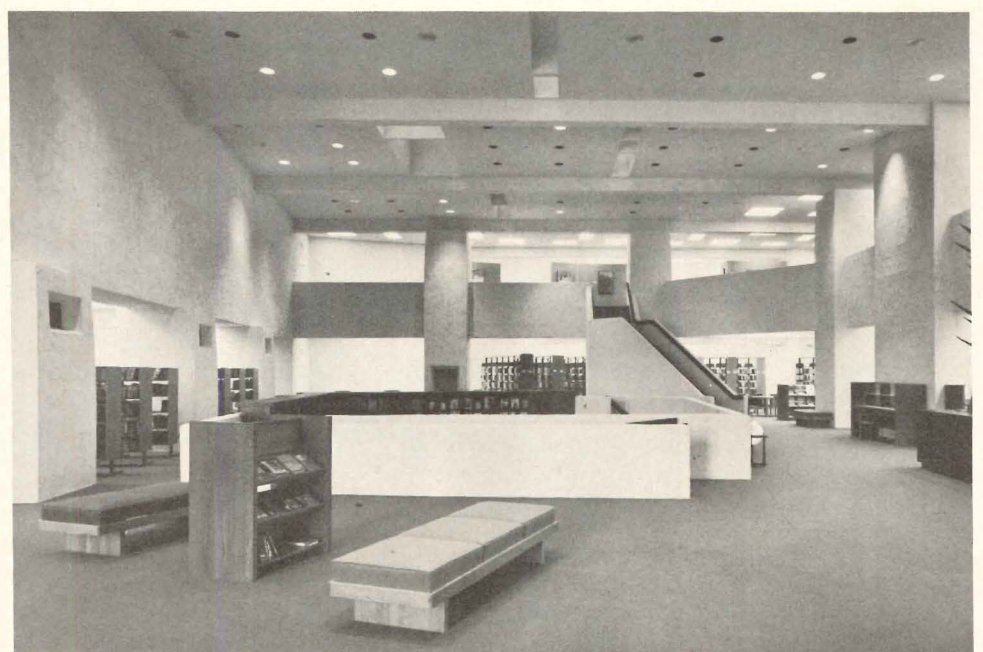


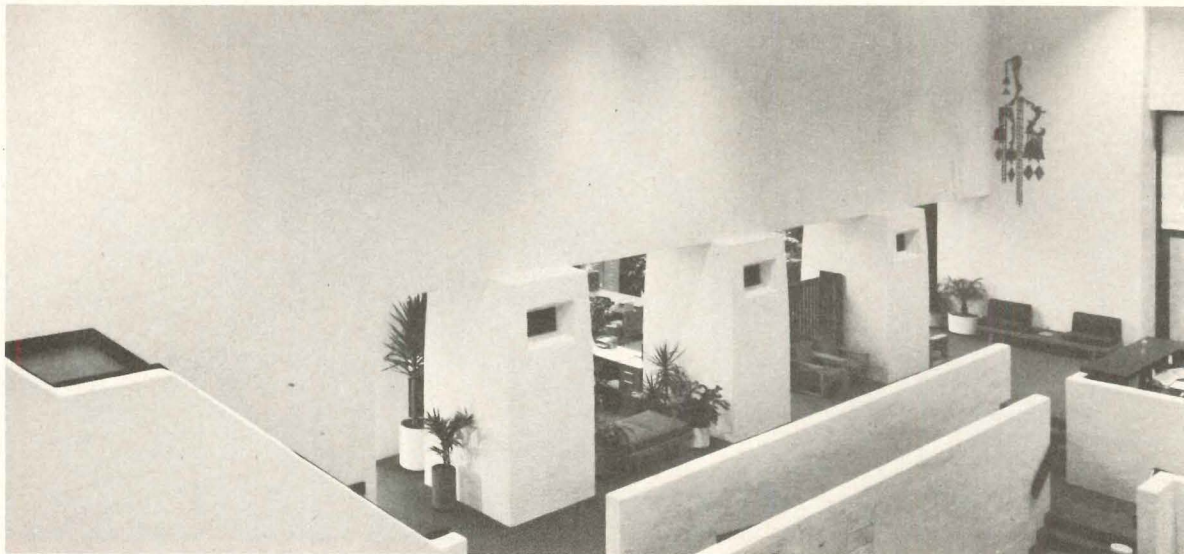
LIBRARY



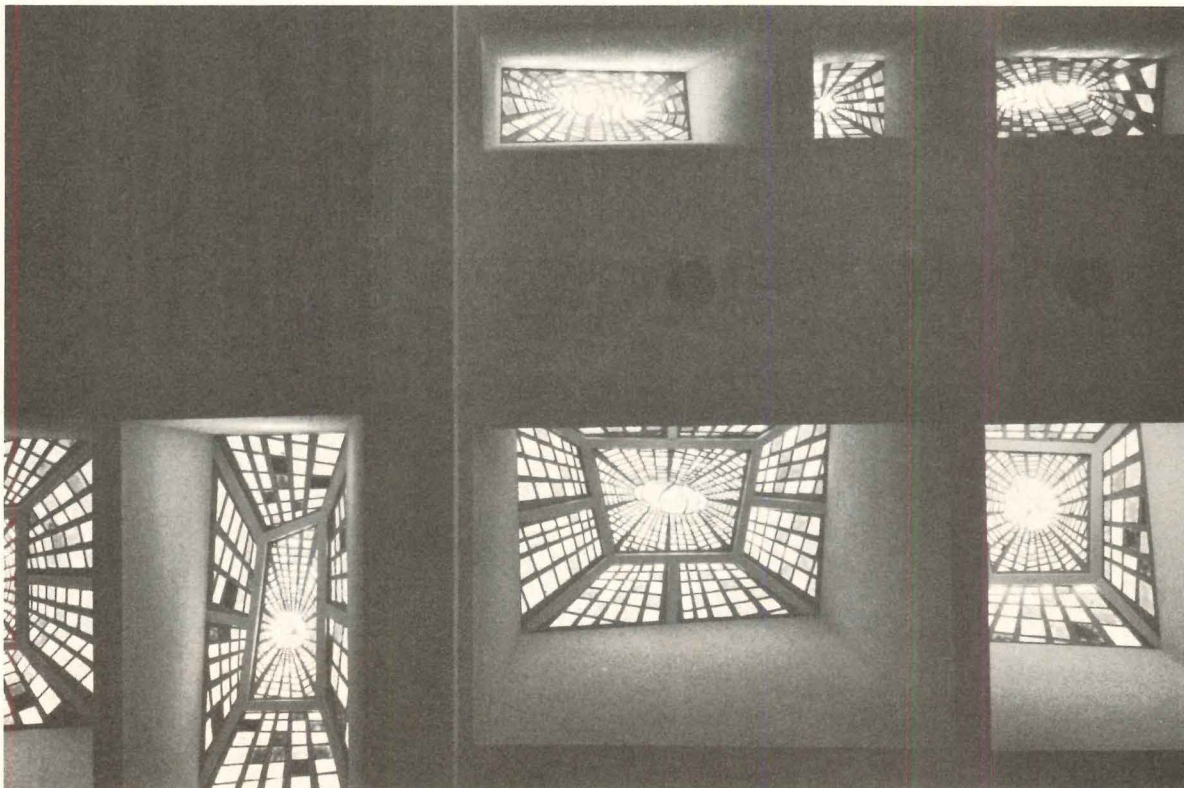
Similarity in the exterior appearance of the city hall (pages 120-121) and the library, shown on this page and the next, is balanced off by the strong individuality of each building, influenced by their very different requirements. In the ultimate development of the 20-acre civic-cultural center site, the library will be a pivotal point.







Earth colors are used in the interiors of both city hall and library. Brown carpet contrasts with white textured walls and ceilings; wood furniture and colorful upholstery fabrics are lively accents. The total effect is of hand-crafted, non-commercial quality. Faceted colored glass skylights, are placed in the ceilings of both buildings to admit more warm colors in winter than in summer. The architects designed all interiors.

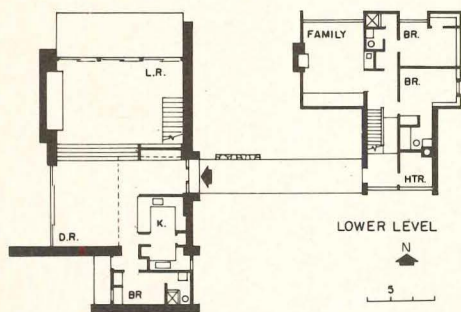
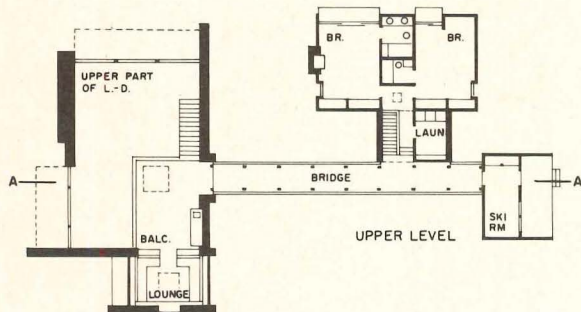
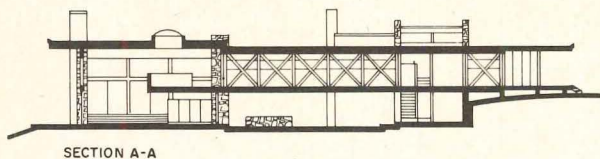


BRIDGE HOUSE FOR SKIERS BY ELIOT NOYES

Sited in a birch grove in Colorado's high country, its eaves drifted and its fireplace ablaze, the Hodgson house is the stuff of which skiers' fantasies are made. More important, it is an architectural opportunity that Eliot Noyes has realized with a special distinction.



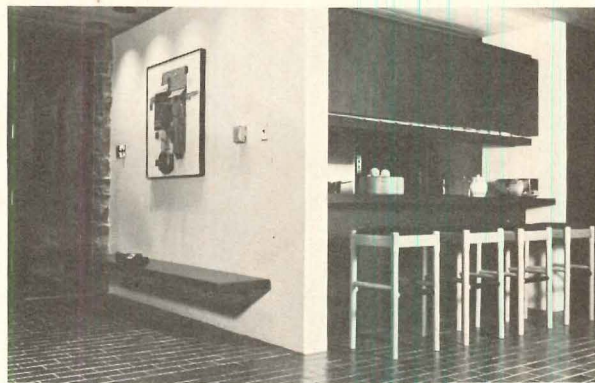
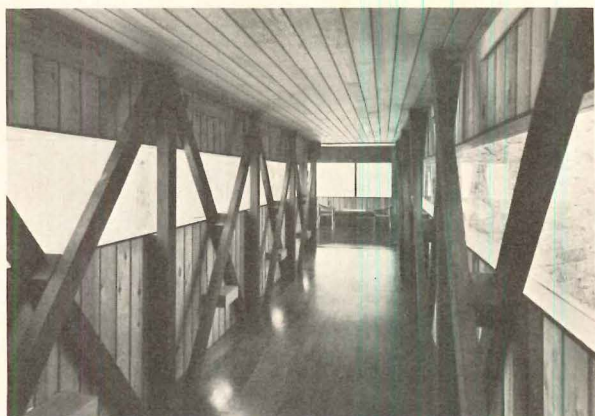
John Hill photos



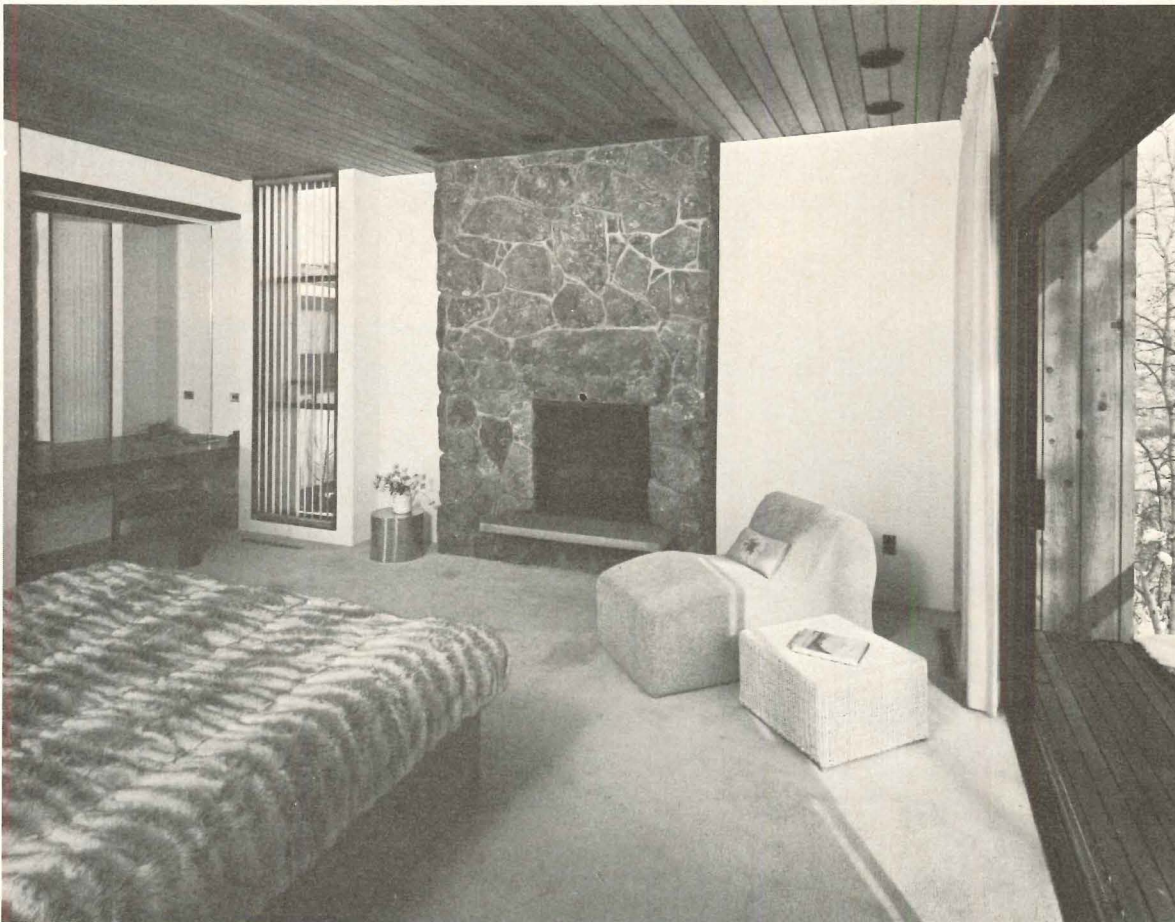
The logic of the plan derives from the sloping site and from the program requirement for individual and small-group privacy. The living and sleeping quarters are treated as separate architectural elements linked by an enclosed bridge at the upper level. The main entry, beneath the bridge, is on level with the kitchen and dining areas. The living room, five steps above, is treated as a raised platform that leads by an open stair to an intimate, balcony lounge and the bridge. Framed by a pair of timber trusses, and partially sheathed in cedar, the bridge connects to a two-story block of bedrooms.

The house is framed in laminated wood beams and tendoned with steel at the connections to the bridge. Finish materials are rough-sawn cedar or stone veneer at outside walls, cedar for ceilings and soffits, brick pavers for dining and living room floors. Detailing is elegant throughout.

Spectacular views to the north and west are framed by unusually large openings that act as foils for the heavy masonry walls. The general openness of plan and the use of partial levels contribute to a feeling of spatial liveliness—a feeling reinforced by flexible lighting and a generous scale.







View from the living room showing the dining area below and the connection to the bridge above. The door, at rear, leads to the maid's quarters. Bedroom has generous openings but maintains a strong sense of shelter.

HODGSON HOUSE, Snowmass, Colorado. Architects: *Eliot Noyes & Associates*; structural engineers: *Viggo Bonnesen & Associates*; mechanical engineers: *John Altieri*; lighting consultants: *Sylvan Schemitz & Associates*; Interiors: *Sewell and Charity*; contractor: *H. E. Anderson, Inc.*

(ARTIFICIAL, INTELLIGENT) ARCHITECTURE: Computers in Design

BY THOMAS P. MORAN

For a profession that is creative in most fields, architecture has been unimaginative in its use of the computer, which it has relegated to trivial design tasks. As a result, the present research with computers by architects has done virtually nothing to improve our design methods or to deepen our understanding of the architectural design process. There has been too little examination of the design process itself as an intelligent activity—or of the computer as an intelligent device. Artificial Intelligence (AI) is a field, mostly within computer science, which explores the mechanisms of intelligent behavior. AI ideas and techniques will have to be applied to the design process if design and the computer are to be brought together into an intelligent and productive union.¹ I believe that this can be done.

There are two recent books—one about computers and one about design methodology—which I will discuss as a vehicle for explaining how computers are now being misused and how I think they should be used in the future. The striking contrast between these books will serve to highlight several basic issues regarding the style and content and the methods and goals of design research.

I. ARTIFICIAL ARCHITECTURE

The first book is *The Architecture Machine*, by Nicholas Negroponte.² It is a significant book in that it is directed at architects, it has been well reviewed, and apparently it is now widely read. But it is for these reasons that it must be criticized, and some alternatives suggested. I believe *The Architecture Machine* presents a superficial and McLuhanesque world of architecturalized computers, which obscures rather than clarifies the critical issues, and hinders productive research.

Program Learning

The author has built a working system, called URBAN5; and the book is based on his experiences with it. URBAN5 is an interactive system which converses with a

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1. See Herbert Simon. *The Sciences of the Artificial*. M.I.T. Press, 1969.

2. Nicholas Negroponte, *The Architecture Machine*, M.I.T. Press, 1970.

designer about a spatial design project. URBAN5 keeps all the records of the design and displays them to the designer. He can request pictures from certain viewpoints, can add or delete surfaces and chunks of space, can assign properties to these elements and specify relations between them, can define new properties, and can call for calculations such as circulation distances or material accounting. URBAN5 checks for conflicts between the relations and properties the designer specifies (i.e.—his problem requirements) and the physical elements he specifies (i.e.—his attempted solution), and it reports the discrepancies to the designer. The basic idea behind URBAN5 is quite sensible. The fact that URBAN5 only works with limited design issues, such as circulation distances, can be forgiven if URBAN5 leads us toward the development of systems that can handle significant design issues.

What I would really like to know is how URBAN5 works—what makes it tick: how does it represent the design problem, the constraints, and the forms; what are the basic routines which operate on these items; how are these routines organized into the system; what are the weak spots in the system; what are the limits of its organization? But it is just these kinds of things that the book does not reveal. The important issue here is how can I, as another researcher, benefit from URBAN5—learn from its successes and shortcomings.

But the book's basic strategy is to avoid the problems of designing the mechanisms for making machines intelligent. Instead, it seems to concentrate on the interfaces between the machine and the physical world and hope that somehow intelligence will seep in. Thus the book says:

"... the design process, considered as evolutionary, can be presented to a machine, also considered as evolutionary, and a mutual training, resilience, and growth can be developed."

In other words, if you can't learn from your programs how to make better programs, then let your programs "learn" themselves. What URBAN5 lacks, the author contends, is "evolution"; and he proposes a new machine—the Architecture Machine (AM)—to be the evolutionary successor to URBAN5.

Architecture Machines

The Architecture Machine (AM) is a little computer which is dedicated solely to interacting with its own personal architect. This AM is supposed to be "intelligent" so that it can engage in an evolutionary dialogue with its architect; both man and machine will be able to respond to the other. The book contends that an AM must

not merely consist of a multiplicity of specific design services (as did URBAN5), but that it should be "adaptable," i.e., it should be a "general" machine which can convert itself into a special-purpose device in response to a given situation. Since the AM is coupled to only one designer, it may acquire a distorted picture of the world. Hence it must observe the world directly itself. "It must see, hear, and read, and it must take walks in the garden." It should be able to communicate in English as well as other symbolic languages and in sketches as well as graphic codes; it should have eyes and ears and arms and legs.

Computo-Humanism

I find rather incomprehensible the romantic notion that the computer should directly sense the environment so that it can get an "objective" view of it. Either the computer observes what we tell it to or, if it is really intelligent, it will have biases of its own; and who is to say its prejudices are preferable to ours?

This pseudo-humanism is further manifested in the book's tendency to anthropomorphize the computer. Not only are humanoid robots going to walk around analyzing the environment, but they will communicate with us at the most subtle levels of language and gesture. E.g., the book bemoans the fact that computer graphics "will not yield the same textural feeling as graphite on paper." The point, of course, is that humanism does not imply human-like machines. This is not to say that the goal of easy and fluid interaction between man and computer is not desirable. The computer is humane when it is used in a socially responsible and productive way—regardless of whether it looks like a machine or not.

Goals and Values

The book expresses the attitude (which I find strange for a text that supposedly espouses machine intelligence) that computers are only adept at handling small details. The human sees a rolling beach while the computer can only see a multitude of sand pebbles, it says. But the computer's alleged "pebble-prejudice" is really the book's own pebble prejudice, and it is a very narrow point of view. It unduly constrains what we can achieve with the computer and, even worse, it leads to grave errors.

Pebble prejudice leads the book into a disastrous confusion in goal structures—global goals and local goals. The book talks about chess-playing programs and says that the global goal of the game, to capture the opponent's king, "has little bearing on

We need to focus our attention at the deep level—
the processes behind insight, creativity, etc.—
if we are to make design more intelligent.

IF

- 1 ("B" IS (A BUILDING))
- 2 ("F" IS ((A STREET-FRONTAGE) OF B))
- 3 ("S" IS ((THE SIDEWALK) NEXT-TO F))
- 4 ("P" IS ((ANY PERSON) ON S))
- 5 ((ONE GOAL) IS (THAT (P KNOW-ABOUT ((THE ACTIVITY) OF B))))

THEN

- 6 (DEFINE "STREET-NICHE")
- 7 ((A STREET-NICHE) IS (A NICHE))
- 8 ((A STREET-NICHE) IS OPEN-TO S)
- 9 (((THE FLOOR) OF (A STREET-NICHE) IS LEVEL-WITH ((THE SURFACE) OF S))
- 10 ((THE DEPTH) OF (A STREET-NICHE) IS GREATER-THAN (5 FEET))
- 11 ((A STREET-NICHE) CONTAINS ((A DISPLAY) OF ((THE ACTIVITY) OF B)))
- 12 LET (F CONTAIN ((ONE OR MANY) (A STREET-NICHE)))

BECAUSE

- 13 (P TEND-TO MOVE)
- 14 (P TEND-TO (STOP AND (LOOK-AT F)))
- 15 (P CAN GO (INTO STREET-NICHE))
- 16 (((A PERSON) IN STREET-NICHE) NOT TEND-TO MOVE)
- 17 (((A PERSON) IN STREET-NICHE) LOOK-AT (THE DISPLAY))

Figure 2. A pattern expressed in an interface language (the surface structure).

Figure 2, it must assimilate them into its own network of concepts. What the results of this interpretation process might look like is pictured in Figure 3. Here we see a fragment of AA's own conceptual structure. The circles and boxes are concepts and the arrows relate them. The boxes are concepts AA had previously defined in its memory. The circles are the new concepts that AA created while interpreting statements 1-11. This network represents the deep structure of these statements. It is on this network of concepts that AA will do its symbolic processing. For example, when AA finishes interpreting statements 12-17, it could use standard deduction techniques to rigorously *prove* that a conflict exists, that the pattern resolves it, and that the pattern solves goal 5. Hence, AA can verify that a pattern makes sense.

A more difficult part of AA's processing is to take this interpreted pattern and relate it to the other patterns in its memory. AA will have to use *heuristic* techniques, i.e., techniques which are usually helpful but not foolproof. (Human thinking is characteristically heuristic.) AA will compare the *if* part of the new pattern

with the *if* parts of the other patterns for similarity; it will look for other patterns which deal with the same entities; and it will relate the new pattern to these. We can also advise AA about how we think the patterns are related. Using these kinds of strategies, AA will build up and maintain a complex network of relations among the patterns.

AA will also have to build up a description of your design project as you, the designer, tell AA about it. This problem should not be underestimated. Designers are not used to making explicit what's on their minds. But, like a psychoanalyst, AA needs to know if it is to be helpful. You will use the interface language, plus some graphics, to give AA a running account of your project as it evolves. For example, a building description would have to contain such items as:

- (a) the problem requirements, criteria, goals, assumptions;
- (b) the conceptual entities involved;
- (c) the activities and features of the building and its functional parts;
- (d) the relationships between (a,b,c);
- (e) the physical components of the building;
- (f) the relationships of (b,e) to the existing environment; and
- (g) any other problem constraints.

You can assume that AA will provide some clerical services, such as graphic and accounting routines, to make your task more manageable. AA will warn you if you give it conflicting information, and it will ask you for information it needs which you have not told it. AA's representation of your design project will be a network similar in form to the one in Figure 3.

Given its understanding of the patterns and a description of your problem, AA's most important task is to find patterns which apply to your problem. Designing AA's *pattern matching* processes is probably the most difficult task in this research. These processes will also have to be heuristic. AA will use the relations between patterns as a guide to which patterns are most likely to apply next. Even the matching of a specific pattern takes much care. In the street-niche pattern, for example, AA will have to examine its description of your problem and find entities there which match (have the same local structure as) the entities **B**, **F**, **S**, **P**, **g**, and **a** in figure 3. If it does make this match, it will report to you where in your problem it found the match. If you then decide to use the pattern, you will tell AA (in as much or little detail as you want) how you apply the street-niches to your building. AA will

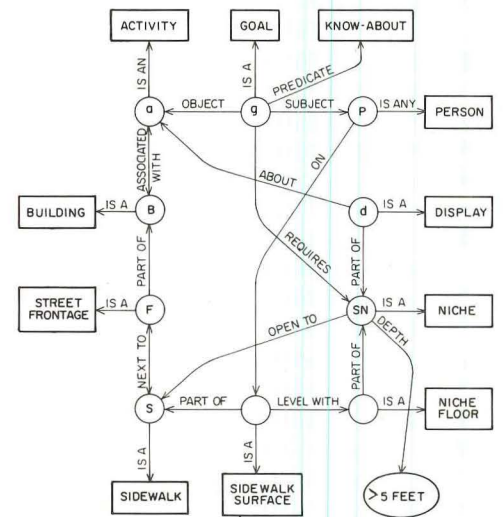


Figure 3. A pattern interpreted as a network of concepts (the deep structure).

record this by inserting entities in your problem which match the entity **SN** in Figure 3. AA will tag this new entity in your problem with a pointer to the pattern which caused its creation. If at any time in the future any of the assumptions of the street-niche pattern (or goal 5) become invalid, then AA will ask you to reconsider your decision to employ those entities matching **SN**.

Both the pattern organization and the pattern-matching-processes are difficult computational issues and are ripe for study. If effective schemes could be found for these processes, they would be real advances in the state of the AI art as well as being useful in this design method.

Language Again

Let me conclude by noting the role of language in these processes. Language has two levels—surface and deep. The surface level is the level of interfaces. The deep level is the level of concepts (either in the designer's mind or in AA's memory). The function of interfaces is to transmit concepts. English sentences, the statements in Figure 2, diagrams, and drawings are all interfaces. It is more important that concepts get accurately transmitted than which interfaces are used. We should not get hung up at the interfaces; the most interesting and important things happen at the deep level. This is where intelligence, insight, creativity, etc., all live. We should not attribute qualities to surface phenomena which actually emanate from this deeper level. Our understanding of the deep level of concepts is crude at best, and we need to focus our attention at this level if we are to make design more intelligent.

BUILDINGS FOR A BROAD SPECTRUM OF HEALTH CARE

How to deliver health care to those who need it, and how to define it, is a major political issue due, in all likelihood, to get a political answer. A National Health Insurance plan is expected to become law in the near future, with incalculable repercussions and a probable revolution in health care delivery systems.

Whatever the form NHI takes, and whatever the definition of health care, it seems clear that two new kinds of health service will be incorporated in it. One is the neighborhood health center, the other is the child care center. The first responds to the desperate health need of the very poor; the second to a growing need of most levels of the populace.

These services are controversial, though their need makes them seem obvious components in any comprehensive plan for community health. The political undertones of the neighborhood health center program may have clouded it in the past few years, but its potential for relieving the overcrowded conditions of city hospital emergency rooms—used by many people (not just the poor) as “family-doctor offices”—and bringing health care to the people instead of vice versa, suggests a reactivation of their development as soon as Hill-Burton funds become available for them.

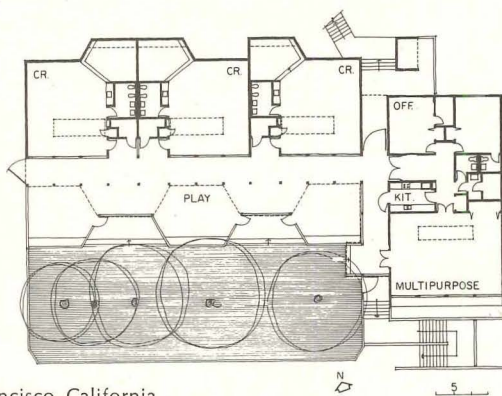
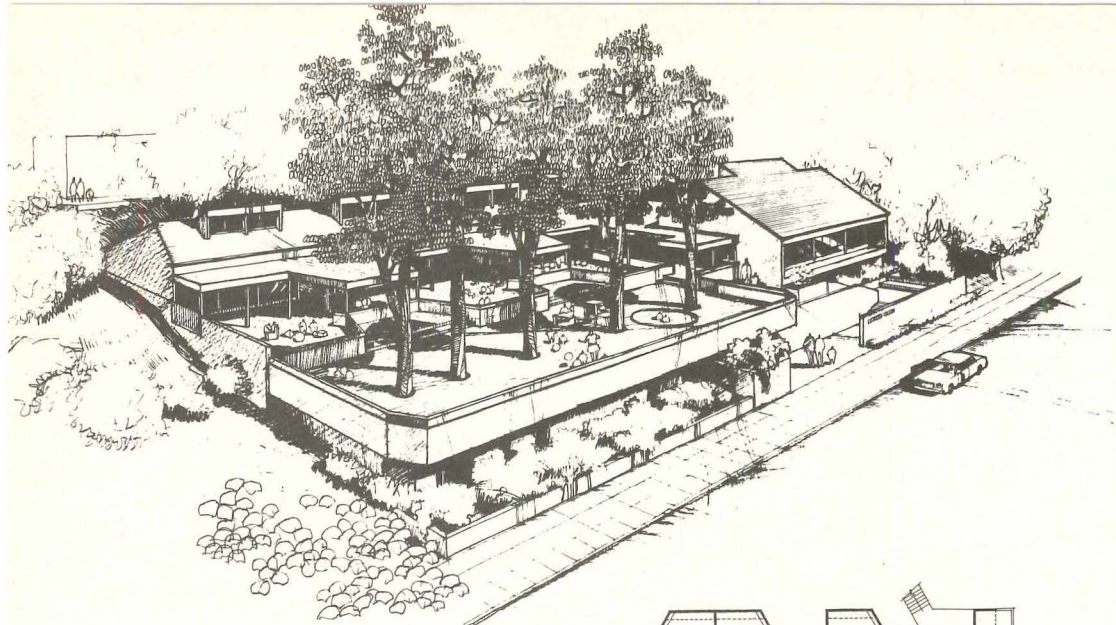
The need for child care centers—publicized, with adverse effect, as a demand of the women's liberation movement—is in fact much broader and more serious a need than that of providing baby-sitting services to mothers otherwise capable of caring for their children but eager to be free of this duty. Four and a half million mothers with children under six years of age are working mothers, and of this number a major percentage have to leave their children during working hours. About eight million working mothers have children between six and 17 years of age, and a high percentage of these, also must leave their children either unattended after school or in the care of someone else.

Where the 20 million children of working mothers are cared for, and what quality of care they get while their mothers work, is a very important aspect of the future health of this country, not to mention their health as individuals. There are 693,000 places for children in licensed day care centers and 120,000 places in family day care homes. The gap, therefore, between available facilities and real need is indeed shocking.

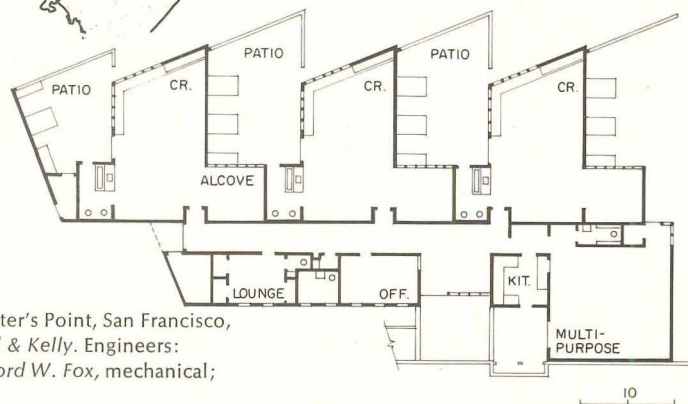
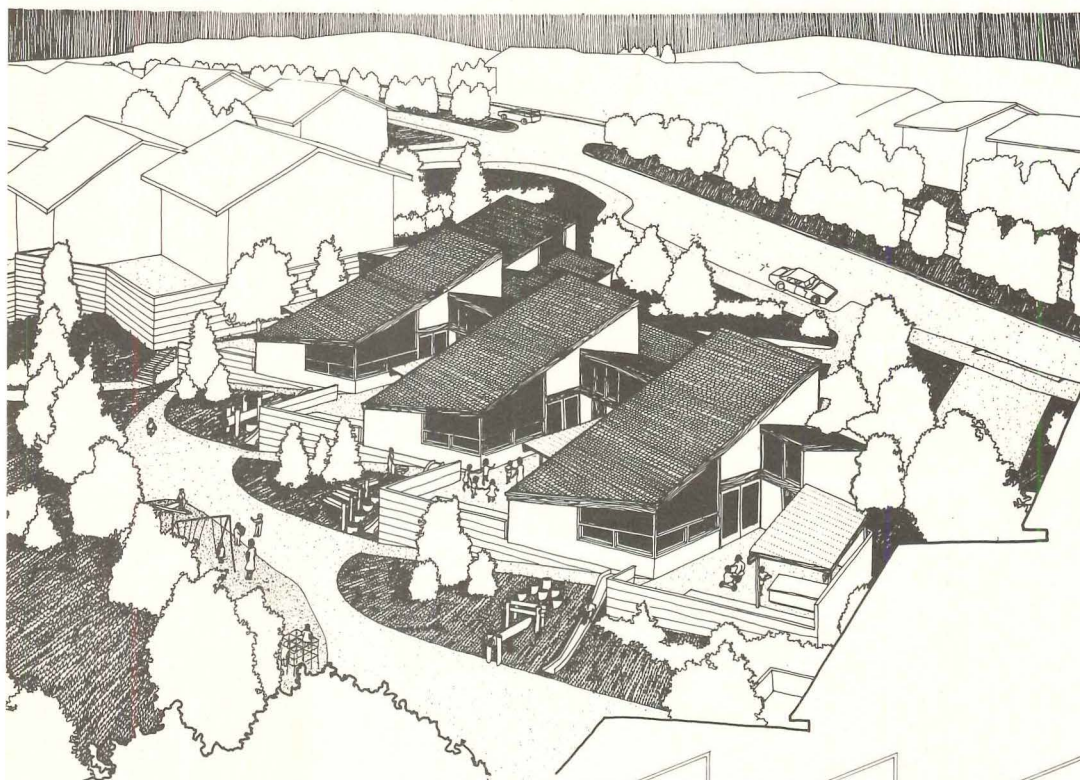
There is then little doubt that child care centers of various kinds will be provided. What they will be like, physically, what sort of activity and developmental programs they will offer, is not yet entirely clear. The need for innovative thinking and design is strong. The quality of the child's environment in the center can be a major part of his development.

Legislation to provide funds for both neighborhood Health Centers and Child Care Centers is pending before Congress. How the vote goes will determine how quickly programs for providing these facilities can be implemented. The pressures for them are great enough to assure their eventual provisions. Why not now?

In addition to the four Child Care Centers and the Neighborhood Health Center that we show on the following pages, this Building Types Study suggests the breadth which can be expected in the way of facilities for community health. Included are examples of new and well-known kinds of facilities: prepaid health care clinic, group practice offices, dental offices, a place for discharged mental patients to restore themselves for community living, a residential treatment center for delinquent boys and girls, and a remarkable building for the study, diagnosis and treatment of handicapped children.—E. K. T.



CHILD CARE CENTER #3, Hunter's Point, San Francisco, California. Architects: Marquis & Stoller. Engineers: Shapiro, Okino, Hom & Associates, structural; George Aronovsky, mechanical; Tage Hansen, electrical.



CHILD CARE CENTER #2, Hunter's Point, San Francisco, California. Architects: Ostwald & Kelly. Engineers: Hirsch & Gray, structural; Sanford W. Fox, mechanical; Beamer-Wilkinson, electrical.

Child care centers: in the next five years, innovation and design

■ Child care centers, when operated to high standards, are far from mere baby-sitting facilities. Indeed they can be essential to the healthy development of children whose mothers must work, and in fact to the general level of health in a community. For a great many of these children, the center is more of a home than their own homes are; they spend more of their waking hours in its environment than in any other.

The child (or day) care center has the opportunity to foster good health, to prevent disease (especially diseases of neglect) and, through its program and its physical environment, to give the child the kind of experiences that contribute to his development and growth. Although the most pressing need is still among poor mothers, the large number of children of working mothers—some 20 million, today—indicates the wide range of income levels where this kind of care is needed. Industries and hospitals, needing to attract employees and keep them, and to cut absenteeism, were the first to provide child care centers. Now municipal and other agencies (as at Hunter's Point near San Francisco) are beginning to assume the responsibility for such centers. Estimates for catching up with the worst of the present backlog indicate, however, that it will be necessary, over the next five years, to provide places for 2 million more than the 800,000 children who now receive care—plus those whose mothers will enter the work force for the first time during that period.

The centers so far built or being built strongly resemble nursery and primary schools—not surprisingly, since keeping a group of children occupied through the long hours of a parent's working day requires some structuring of activity inevitably reminiscent of school programs. Imaginative programs, however, emphasize informality and free activities in as homelike a way as possible.

Usually child care centers are located near the housing (low and moderate income) they are intended to serve. Since

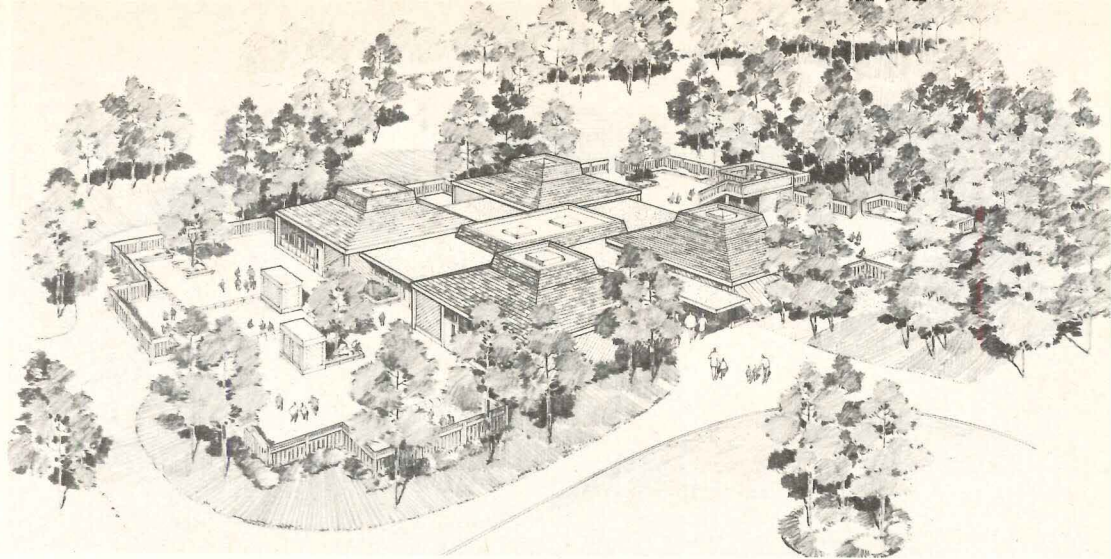
transportation from home to center can be a problem for the working mother, this is a real convenience. But it also keeps the child in familiar surroundings. Location near an elementary school is advantageous because the center can then care for school age children during after-school hours. There are obvious advantages when a center can be located near a park, with its opportunities for variety of activity and learning experience.

At left are two centers for the Hunter's Point district of San Francisco, both designed to the same program for the same age levels (2½ years to 5 and, after school hours, up to 12) but for different sites. Controlled play areas adjacent to each classroom were required, as was a multi-purpose room (also used for eating with food trucked from a central kitchen and warmed at the center). Center #3 (top left, Marquis & Stoller, architects) uses the slope of the site to provide additional play space on a deck under existing trees. Center #2 (bottom, Ostwald & Kelly, architects) is similar in facilities but different in design approach. It also provides open play space downhill from the center.

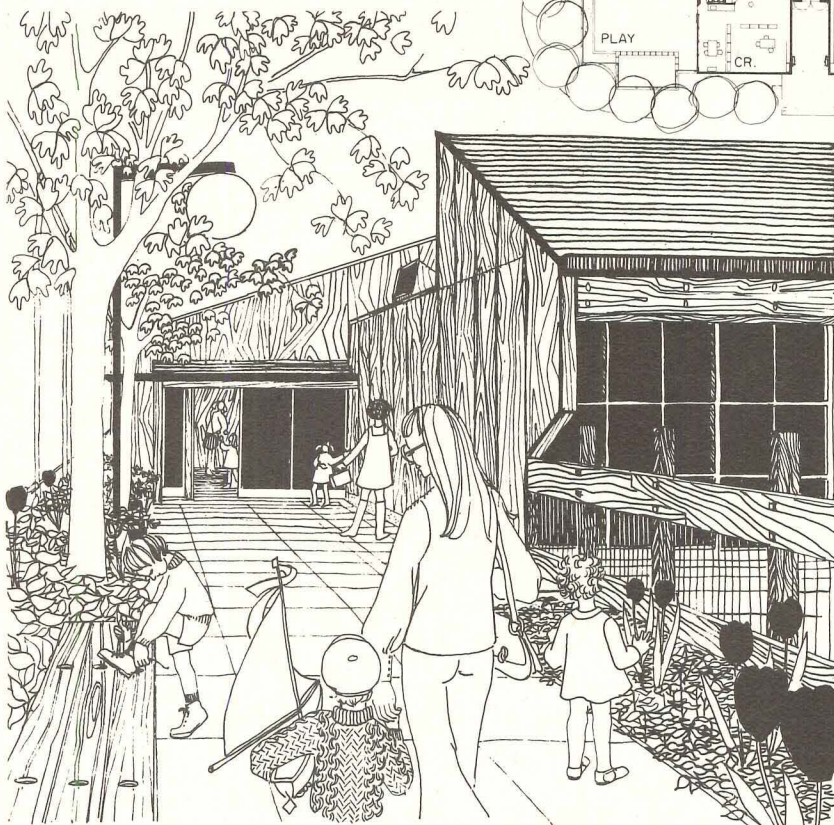
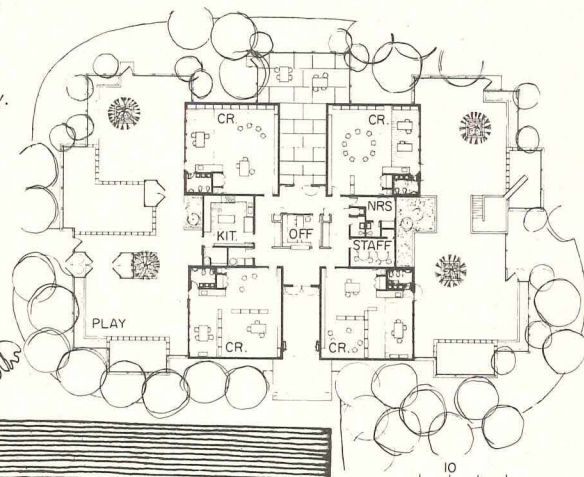
On this page, (top right), is the Crescent Park Children's Center (Hardison & Komatsu, architects) in Richmond, California, located near both a park and the low and moderate income housing whose residents it serves. The center is designed for preschoolers, who attend all day, and for older children (7 to 12 years) from a nearby elementary school who come after school hours. The centrally located office is the daily check-in point for children being left at the center. It is also close to the nurse's office, and from it there is easy supervision of in and out traffic. Behind it is a covered play area for rainy days and for outdoor eating in good weather. There are no corridors: each classroom opens onto the central area, and out to an outdoor play area. Food is prepared at the center and taken by cart to each room.

At the Piedmont Avenue Children's Center (bottom right, Jensen & Langeberg, architects), a project of the Oakland, California Unifield School District, the plan is organized as one large space with changing ceiling heights to define areas for different age groups. For younger children, spaces are smaller and more intimate; for older children, they are larger. Movable furniture in each space further modifies its scale. By varying space, volume and quality of light (from skylights as well as sliding glass walls) the environment becomes a means of stimulating interest.

In character, scale, materials and amenities, these centers draw on the child's first base of reference—his home—for precedent. They are scaled to the child's experience but also to the needs of the group. They are non-residential homes, but they are also non-institutional institutions and as such they try to provide the look and feel, as much as is possible, given the number of children served, of a residence.



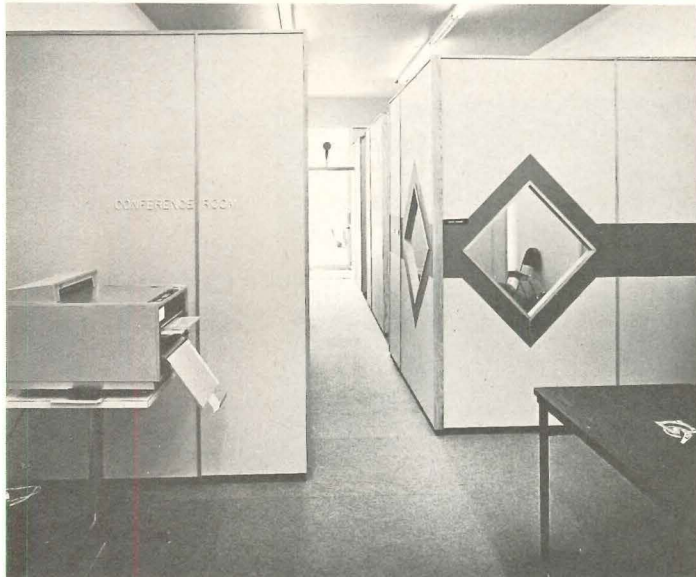
CRESCENT PARK CHILDREN'S CENTER, Richmond, California. Architects: *Hardison & Komatsu*, George Ivelich, partner in charge. Engineers: *Montgomery & Roberts*, mechanical; *Darmstad Parenti & Associates*, electrical. Landscape architects: *Royston, Hanamoto, Beck & Abey*. Contractor: *C. Overaa & Company*.



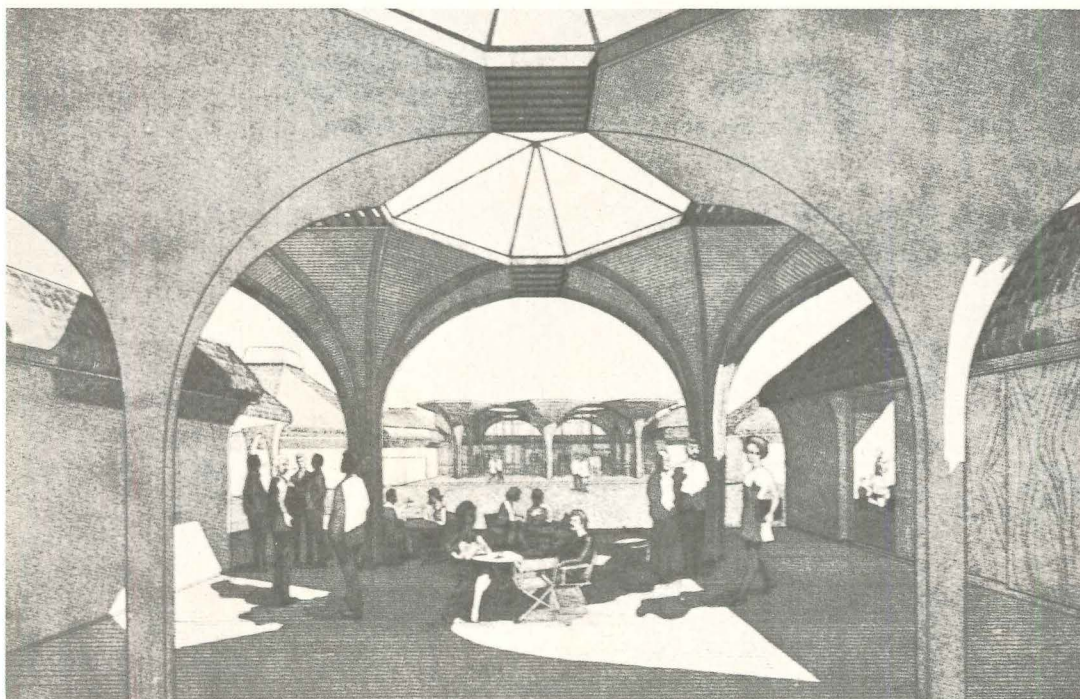
PIEDMONT AVENUE CHILDREN'S CENTER, Oakland, California. Architects: *Jensen & Langeberg*. Engineers: *McClure & Messinger*, structural; *W. Perry Baker*, mechanical; *Robert Z. Taylor*, electrical. Contractor: *G. M. Labrucherie and Associates*.



Joshua Freiwald Photos



East Palo Alto Health Center (above and left) is a temporary clinic set up to serve a community of 23,000 people, most of whom are black. The clinic (six rehabilitated space modules) was remodelled in the simplest and least expensive way. The architects gave it something few neighborhood health clinics can boast: order and organization and a unifying color. These facilities, never adequate, are to be replaced by the proposed health center, shown below and at the right, now awaiting funds to serve East Palo Alto and adjoining East Menlo Park. Architects for remodeling and proposed center: Hirshen & van der Ryn (now Hirshen & Partners); Engineers: GFDS Engineers, structural; Yanow & Bauer, electrical.



Neighborhood health centers: harbinger of the future

■ Bringing health care to people—especially poor people—is a sure way to serve their health needs—surer than getting them to the health facility. And when the health facility is large and formidable, and across town (or across county) it may not be what their particular needs require. For poor people, the pressing need in health is for the accessible, the familiar, the personal; and these spell the neighborhood health center.

There is nothing new about the neighborhood health center concept; the problem is that there are so few of them, particularly in the metropolitan areas where the need is greatest. The reasons are many, largely lack of funds for operating the centers, and lack of personnel to staff them. But also there has been a lack of funds to construct new centers, so that for the most part they have existed in empty stores, old houses, anything available and convenient to the people to be served. Almost never does the store-front clinic have the benefit of even the most modest architectural help in organizing its functions in the space it has to use.

An exception is the temporary location of the East Palo Alto/East Menlo Park Health Center, situated on a busy commercial street in a largely black community near San Francisco. With practically no budget, architects Hirshen & van der Ryn (now Hirshen & Partners) remodeled a library for administrative offices, and a one-time store building across-street for the clinic, giving the two units organization and order, and a pleasant sense of unity. Even such minimal architectural assistance and treatment is rare, however. Most clinics (or neighborhood health centers) operate with sheets to separate examining rooms and interview areas, in a general atmosphere of chaos.

Controversial though the neighborhood health center may be, its virtues probably in the long run outweigh its problems, and it seems likely that there will be funds soon—possibly by this summer—for construction of new health centers as well as for operation of existing clinics. The NHC may, when a national health insurance pro-

gram is enacted, come into its own. When it does, new facilities will be needed.

What will the neighborhood health center be like when its requirements are formalized? It will probably increasingly reflect the character of the neighborhood it serves but it may also be influenced by the customs and even the culture, as well as by the needs, of the neighborhood. Such influences can stimulate new organizational patterns and generate new forms, as in the East Palo Alto/East Menlo Park Neighborhood Health Center.

When Hirshen & van der Ryn were commissioned to design a permanent comprehensive health center for the East Palo Alto/East Menlo Park Neighborhood—the temporary clinic had become totally inadequate—they found cultural influences not only very real factors in the program but unusually provocative design stimulants. Hence the clustering of units around the Mall, the hipped roofs and the feel of a village center. But it is in plan that the major innovations occurred; out of a community desire to identify not only with the building as a center and a landmark, but with the staff as family doctors, came the medical-dental team practice concept, reflected in the grouping of the facilities for doctors and dentists. Patients return to the same physicians and dentists again and again, unlike the traditional clinic situation. The community wanted a broad range of community services, which they viewed as essential elements in a community health program, included in the Center. Accordingly there are social workers and psychologists, psychiatrists and community workers. There is a child care center to care for employees' children, and a separately entered facility for patients' children. The usual impersonal and monotonous long corridors of clinic and hospital were eliminated at community insistence, and the waiting rooms are small and scattered, located near the doctor-dentist teams. As an alternate waiting place, there is a "health theater".

This Center, now waiting for funds, was designed for construction in simple materials and was based on an estimated cost of \$27 per square foot, minus equipment but including air conditioning. Its size was based on the number of staff needed to serve a community of 43,000 people as worked out with local officials of the Office of Economic Opportunity.

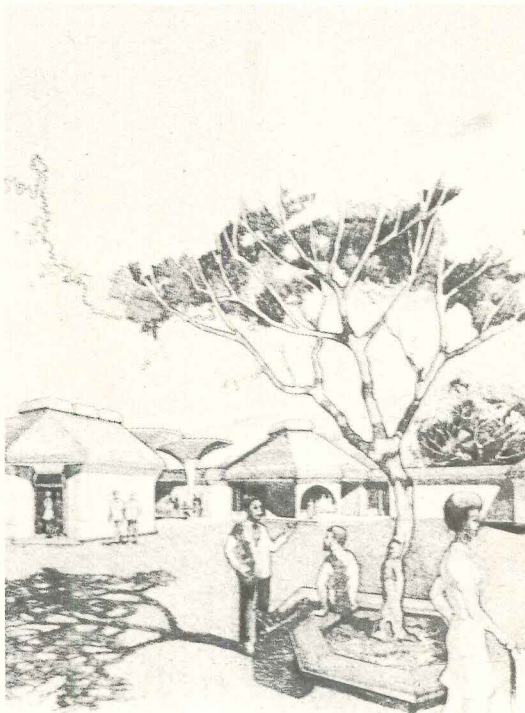
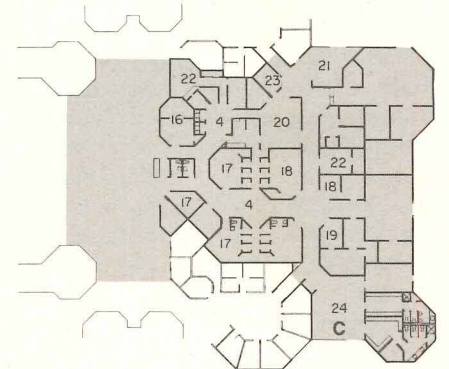
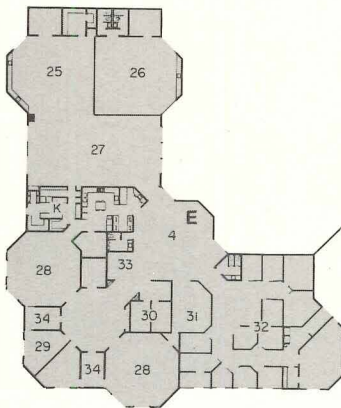
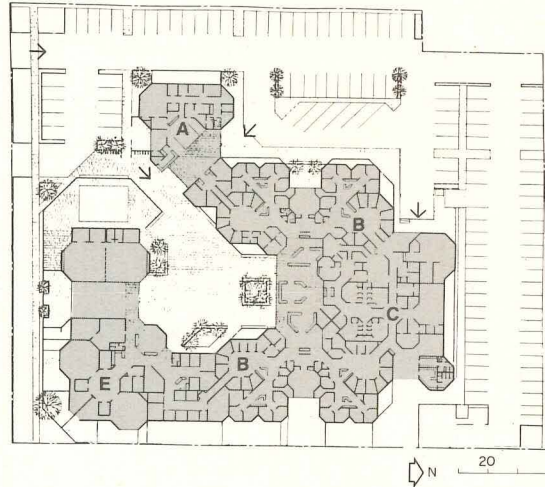
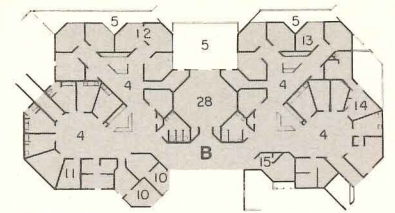
Of prime importance in planning a neighborhood health center, according to John Trumbo, partner in charge of the Center project for Hirshen & Partners, are:

Utilization data: how many people will use the facility, how many medical and paramedical staff are needed;

Description of demographic needs, and funds for obtaining this information;

Guideline for the sound business operation of any local organization (Board of Directors) controlling the Center;

Determination of breadth of services to be offered, and agreement to this and to doctor/space ratios, by all parties.

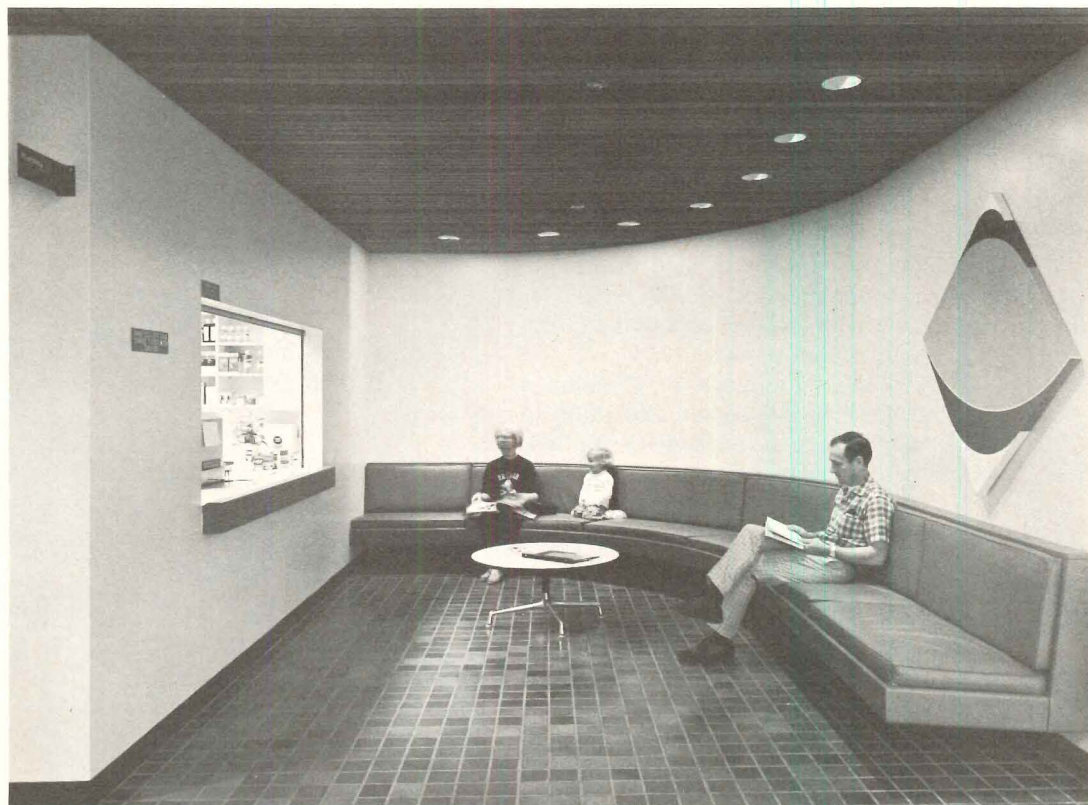
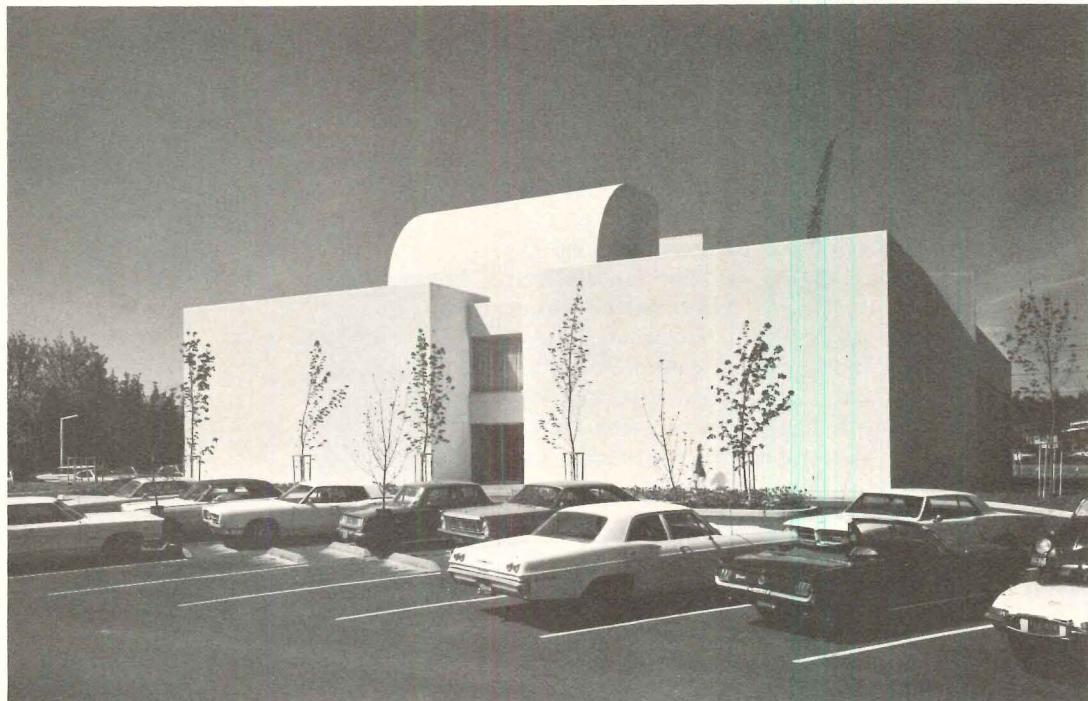
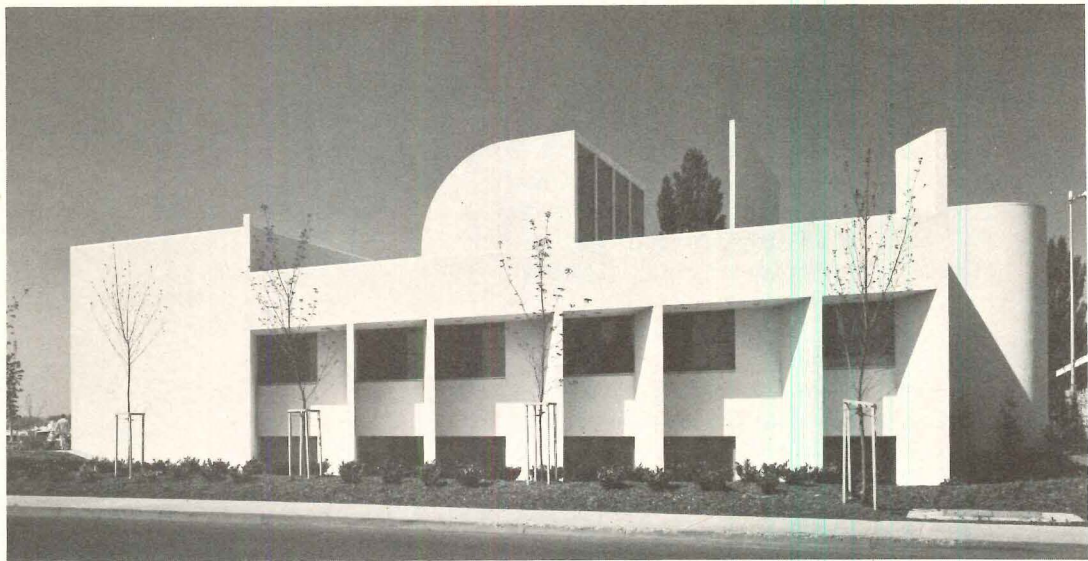


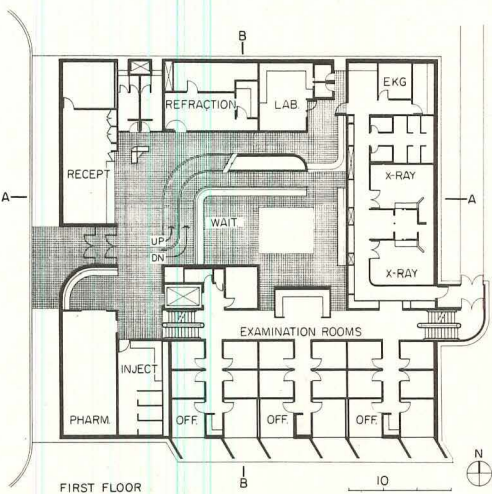
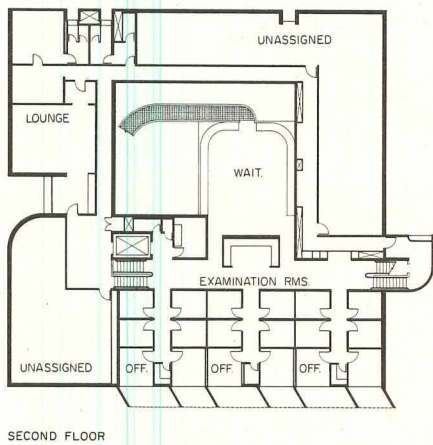
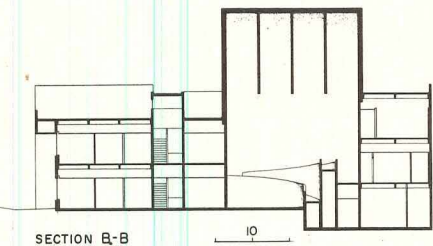
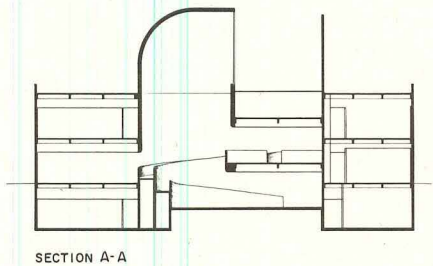
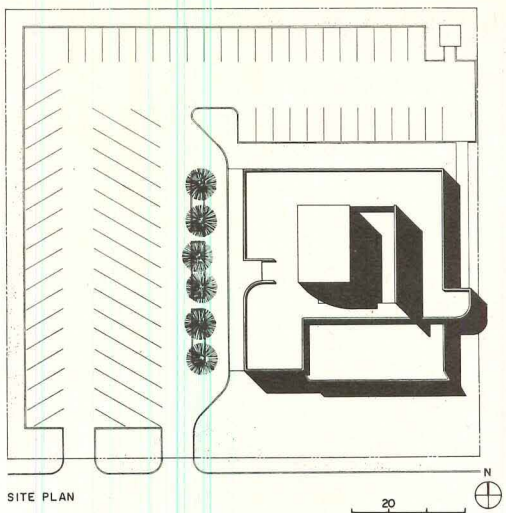
- A. Administration
- B. Medical Teams & Specialities
- C. Central Support
- E. Community and Health Development
- 1. Lobby
- 2. Administration Waiting Room
- 3. Director & Co-Director
- 4. Waiting
- 5. Court
- 6. Dental director
- 7. Conference
- 8. Community store
- 9. Clerical staff
- 10. Family Health Aids & Public Health Nurse
- 11. Medical Examination & Treatment
- 12. Dental Operatories
- 13. Dental Hygiene & Operatories
- 14. Ophthalmology
- 15. Optometrist
- 16. Pharmacist
- 17. X-Ray & Fluoroscopy
- 18. Radiology offices
- 19. Film viewing
- 20. Central Preparation
- 21. Emergency Waiting
- 22. Laboratory
- 23. Clinic nurse
- 24. Employee Lounge
- 25. Child Care (Employees)
- 26. Child Care (Patients)
- 27. Dining-Multi-Purpose
- 28. Group Therapy
- 29. Family & Small Group Therapy
- 30. Offices: Psychologist, Psychiatrist
- 31. Health Theater
- 32. Health Director; Social Service Admin. & Training
- 33. Psychiatric Social Worker
- 34. Community Health Aides

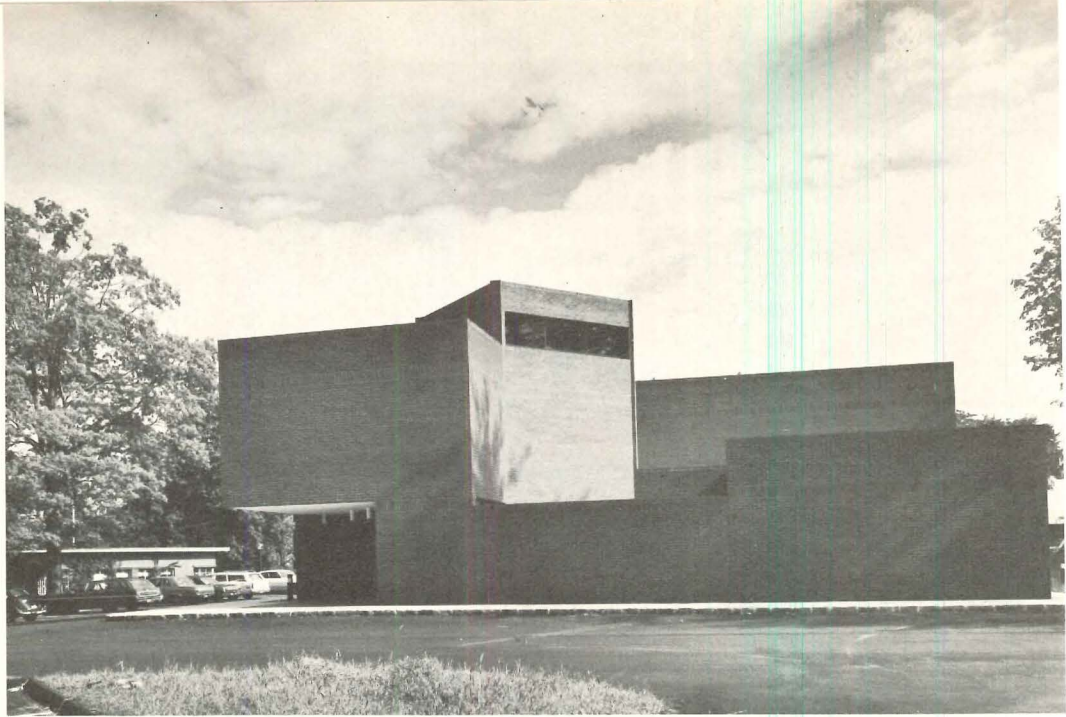
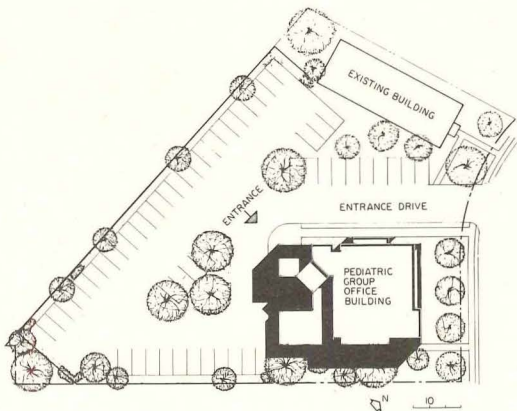
Clinic for prepaid health care

■ The concept of prepaid health care, especially when the plan is hospital-connected, has become increasingly attractive in the search for means to improve health care at reasonable cost. In California, Oregon and Hawaii, the Kaiser Foundation Health Plan operates a number of outpatient clinics of which this clinic in Beaverton, Oregon, is one. In connection with its clinics, though not necessarily adjacent to them, it also operates hospitals. Membership in the prepaid plan provides normal hospital care, with clinic visits and laboratory work at moderate additional charges. The Beaverton clinic serves a large suburban clientele and is connected with the Portland Kaiser Hospital. The clinic site is in a noisy, busy commercial area, and the building is designed to cut out as much of this hurly-burly as possible. The interior is designed around a large court, sky-lighted by a large half-dome which is a strong and dominant feature of the exterior. The resulting environment is both a pleasant and restful place for the clientele, and an efficient working environment for the staff. The organization of spaces and functions is based on prototype plans worked out by the architects and the client for similar facilities elsewhere. Examining rooms and doctors' offices are on two levels, with the entrance and certain support facilities at mid-level. The main circulation system for the public, both ambulatory and non-ambulatory, is the pair of ramps (one leading up to the second level, the other down to the lower level) which wind from mid-level through the interior court. Two sets of stairs and an elevator are also provided. The structure consists of reinforced concrete bearing walls, beams and slabs. The half-dome is post-tensioned. The interiors were designed by the architects.

THE PERMANENTE CLINIC, Beaverton, Oregon. Architects: *Wolff Zimmer Gunsul Frasca Ritter*. Engineers: *Stanley V. Carlson*, structural; *J. Donald Kroeker & Associates*, mechanical; *Grant Kelley & Associates*, electrical. Landscape architect: *Robert P. Perron*. General Contractor: *Henry M. Mason*.



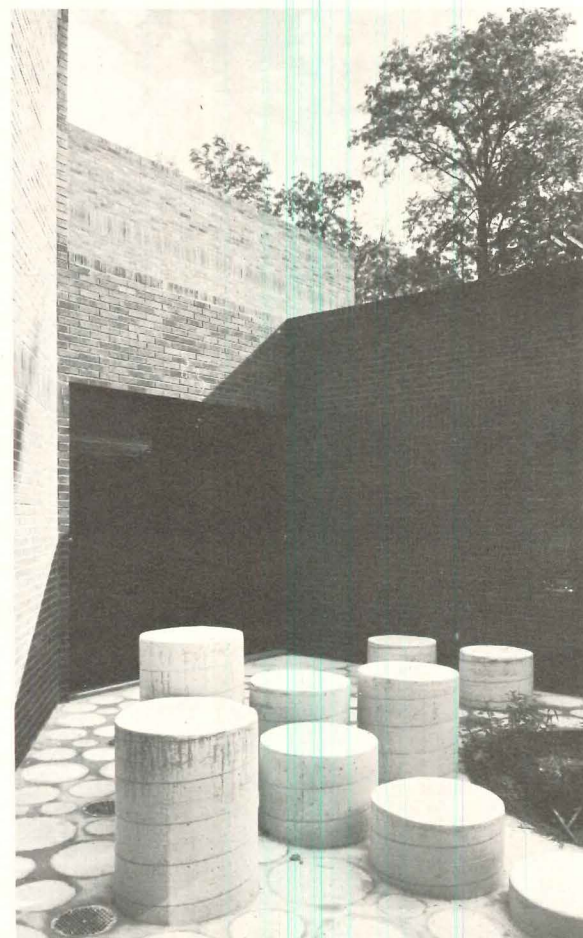
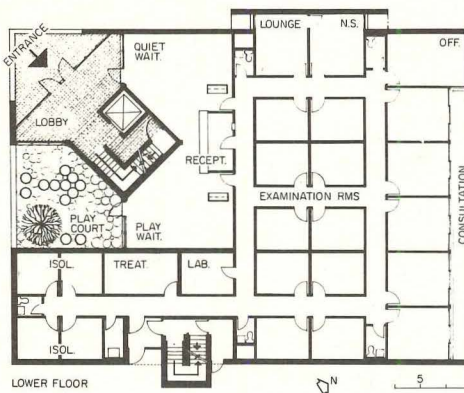
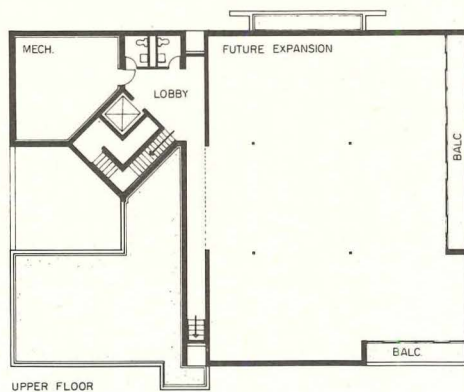




Offices for group practice

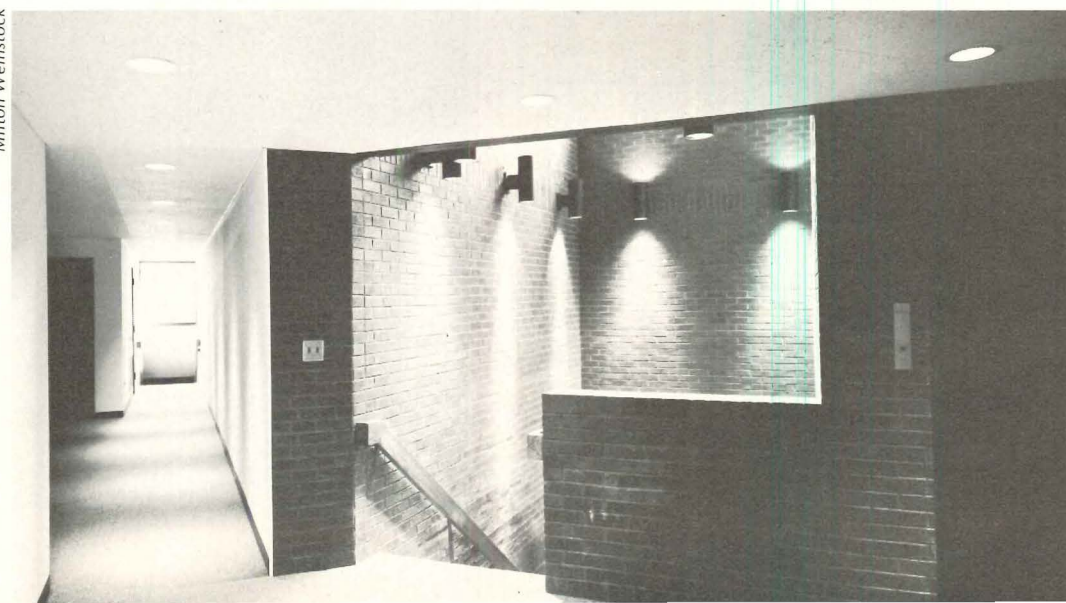
■ Group practice of medicine is definitely on the increase, despite opposition to it from various segments of the medical profession. The buildings which house group practices are not so different from those which house individual practitioners, but the joint use of diagnostic equipment and some personnel does give the plan a different configuration. In this handsome brick building, four pediatricians currently share the first floor space. Above and below them is occupiable space which eventually will be rented to other tenants. Since this is a group of pediatricians, the clientele has a spread in ages, from infancy to adolescence. Several waiting spaces permit segregation of age groups: adolescents can wait apart from mothers and noisy, active children, and children can play in the landscaped court with its concrete pavers and "trees" adjacent to the "play-waiting" room. The building is virtually windowless, a factor in reducing air conditioning load. The stair tower gets daylight from clerestory windows near the top. The exterior is faced with warm brown brick which is also used on the interior stairwell.

DAYTON MEDICAL CENTER, Greenwich, Connecticut. Architects: *The SMS Partnership; Gray Taylor*, partner in charge; *Richard E. Kaeyer*, project architect. Engineers: *Paul J. Pantano*, structural; *Smith and Hess*, mechanical. Landscape planner: *S. E. Minor and George Cushine*. Builder: *R. T. Ericson*.



Milton Weinstock

Milton Weinstock



Center for child development and rehabilitation

■ Highly specialized though this study-diagnostic-treatment center is, its design, and the medical premises on which it is based, have broad implications for other such facilities. The Center, a part of the Crippled Children's Division of the University of Oregon Medical Center, is a complex of three buildings in whose carefully controlled environment the physical, mental and emotional needs of handicapped children can be evaluated, and where multi-discipline teams can be trained to treat the "whole child." Each structure has a different function—administration and recreation; research, diagnosis and treatment; residence for out-of-town patients, special-observation patients and a few parents—but all structures have in common the fact that the first two floors are basically patient areas, with the third floor for staff and students.

Essential to the Center's program is the process of unseen observation, by doctors and students, of children in real-life situations. A mezzanine "spine" or viewing corridor solves this difficult three-dimensional problem: from the mezzanine there is a view down to the "holding areas" and from the "alleys" on the first floor there is direct observation of the patient work areas on that level. Intricate electrical and electronic connections make possible a variety of communication systems, including lecturing a distant class during observation, video and audio tape recordings, etc. As many as 200 doctors, professors, and students can observe more than 50 rooms without being seen by those they observe.

The Center cost \$3.7 million, of which the Public Health Service contributed 75 per cent, the State of Oregon 25 per cent. Per square foot cost, including equipment and furnishings, was \$25.80, an amazingly low figure possible, the architects say, through orientation of the buildings to north and south which eliminated the locally difficult east and west exposures and greatly reduced the cooling load, and through use of brick bearing walls and poured pan joists.

CHILD DEVELOPMENT AND REHABILITATION CENTER, Portland, Oregon. Architects: Campbell-Yost & Partners. Engineers: R. R. Bradshaw Consulting Engineers of Oregon, Inc., structural; Keith Kruckeck, Inc., mechanical; Klawa-Mehlig & Associates, electrical; Robin M. Towne & Associates, acoustical. Laboratory program consultants: Earl L. Walls & Associates. Interiors: Campbell-Yost & Associates. Contractors: Todd Building Company, general; Imperial Plumbing & Heating, Inc., Portland; Bohm Electric Company, electrical.



Edmund Y. Lee

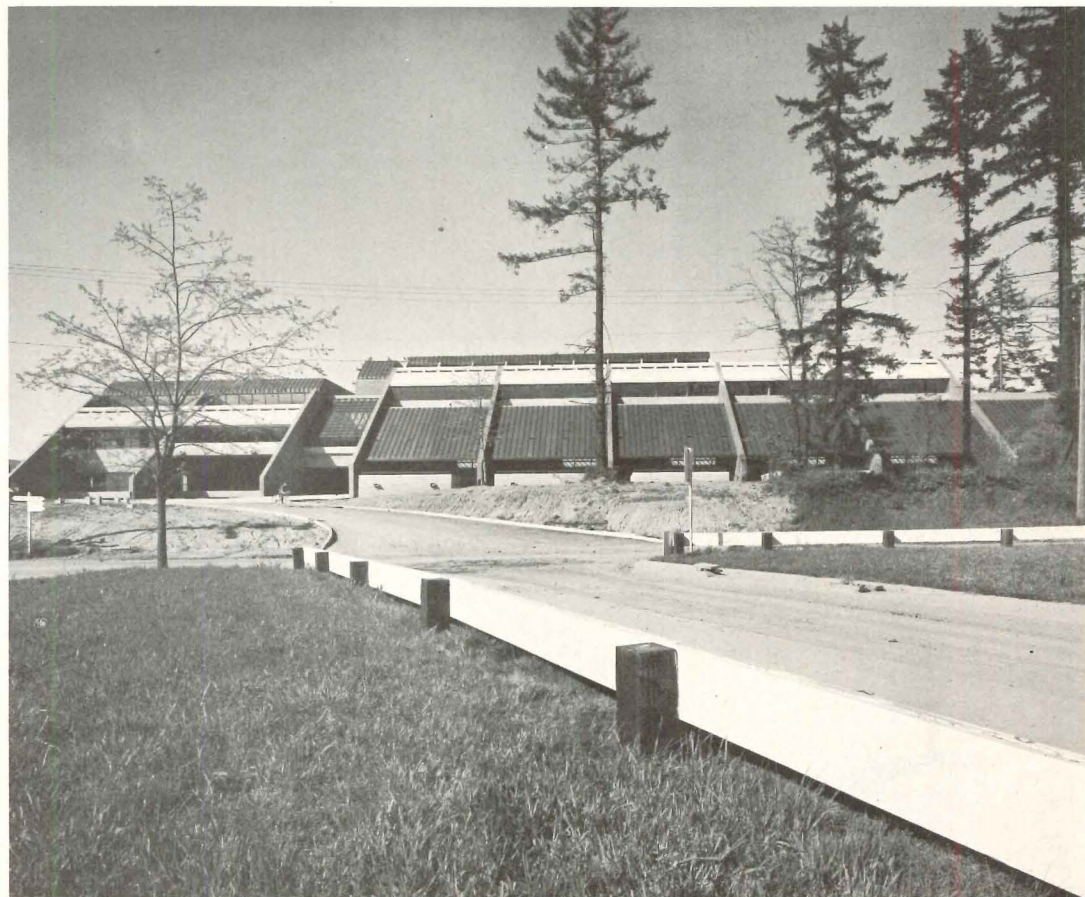
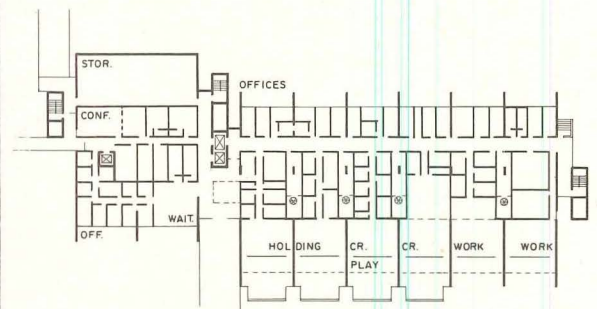
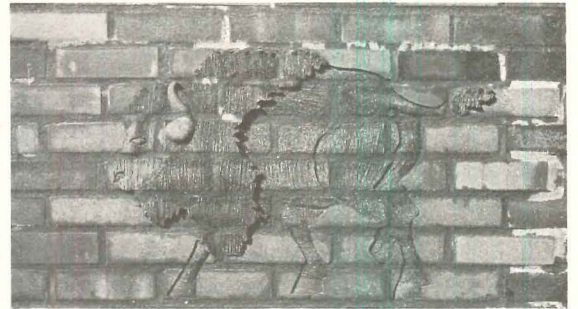
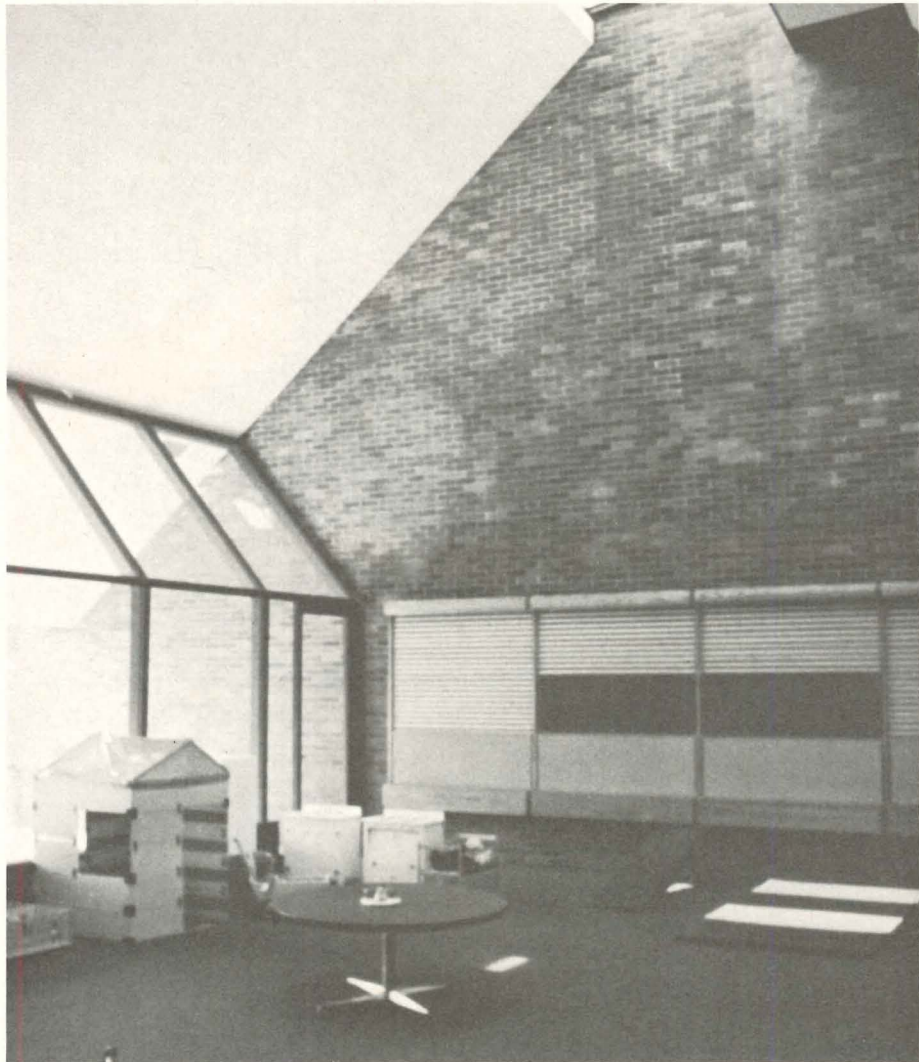
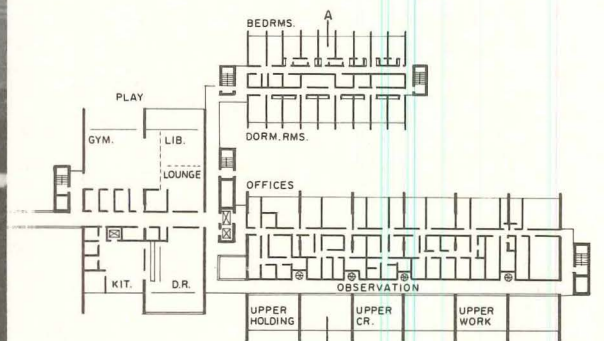


Photo Art Commercial Studio

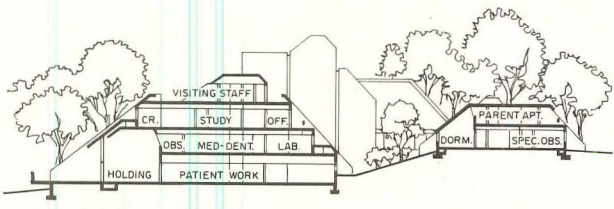




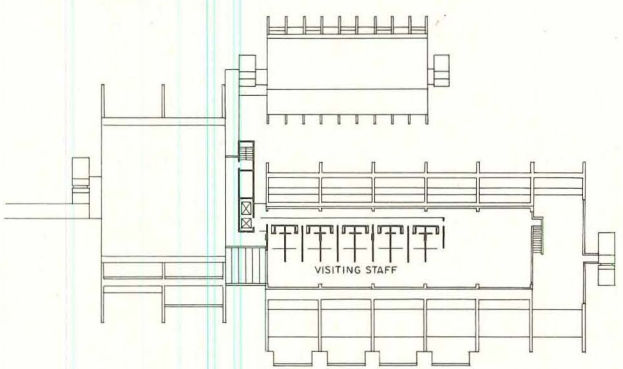
FIRST FLOOR



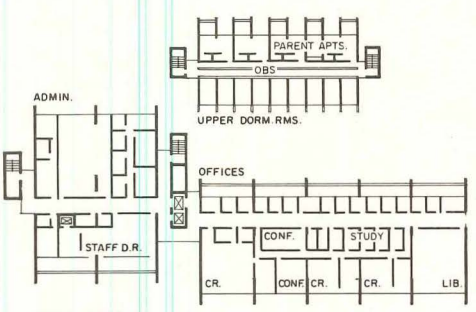
SECOND FLOOR



SECTION A-A



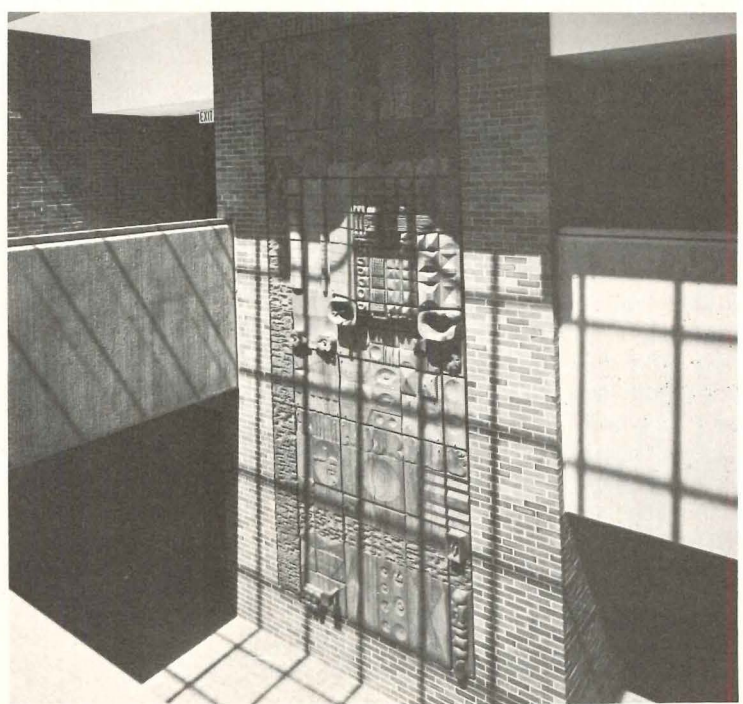
FOURTH FLOOR & ROOF

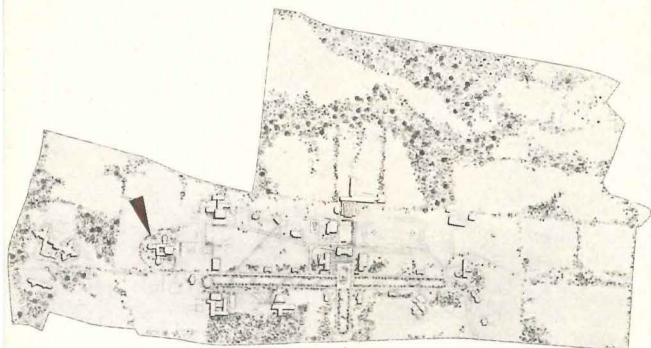
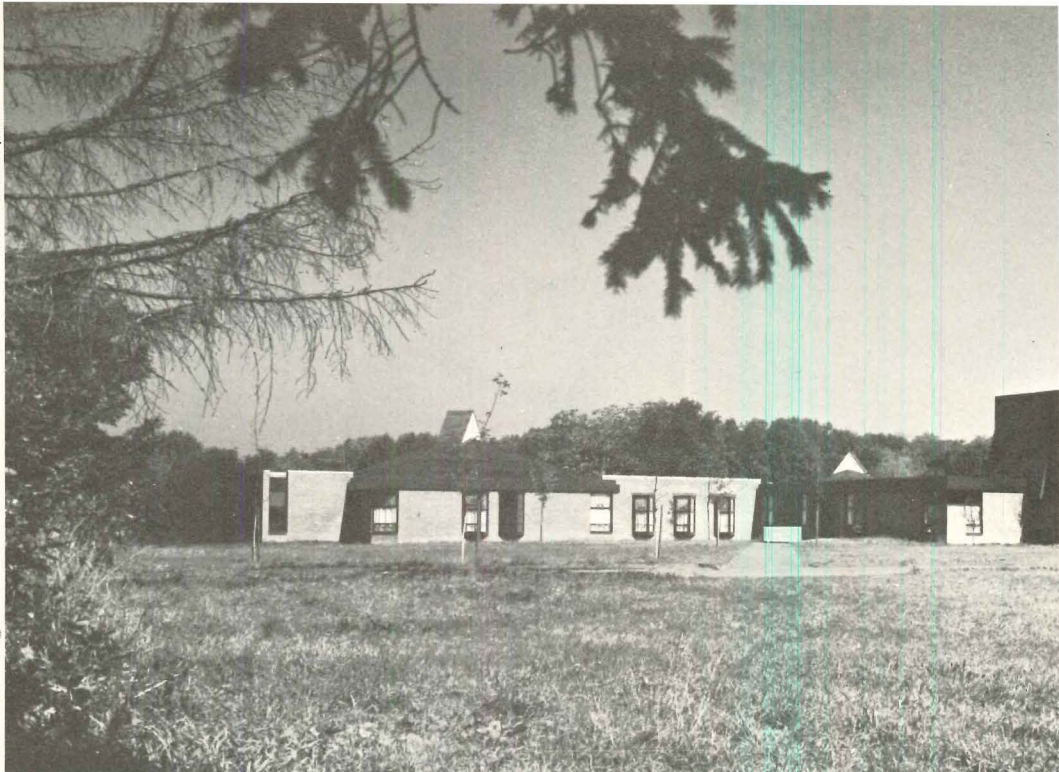


THIRD FLOOR

The sloping brick bearing walls are not only strong visual elements and a means of breaking up the mass of what is a sizable building, thus mitigating its institutional look and humanizing its scale; they also act as acoustical buffers between the holding rooms and outdoor play spaces. (The angle of slope evolved from the angle needed for photographing the holding areas from the "spine" observation corridor.) The architects commissioned a wood

relief by LeRoy Setziol (below) and a tapestry (not shown). In addition, designs in the brick along the patient corridors were conceived and carved by the architects' staff (opposite page). The broad scope of the Center's work resulted from the success of a demonstration clinic based on the hypothesis that "children with mental retardation must be in as near normal a state of health as possible for learning at maximum potential."

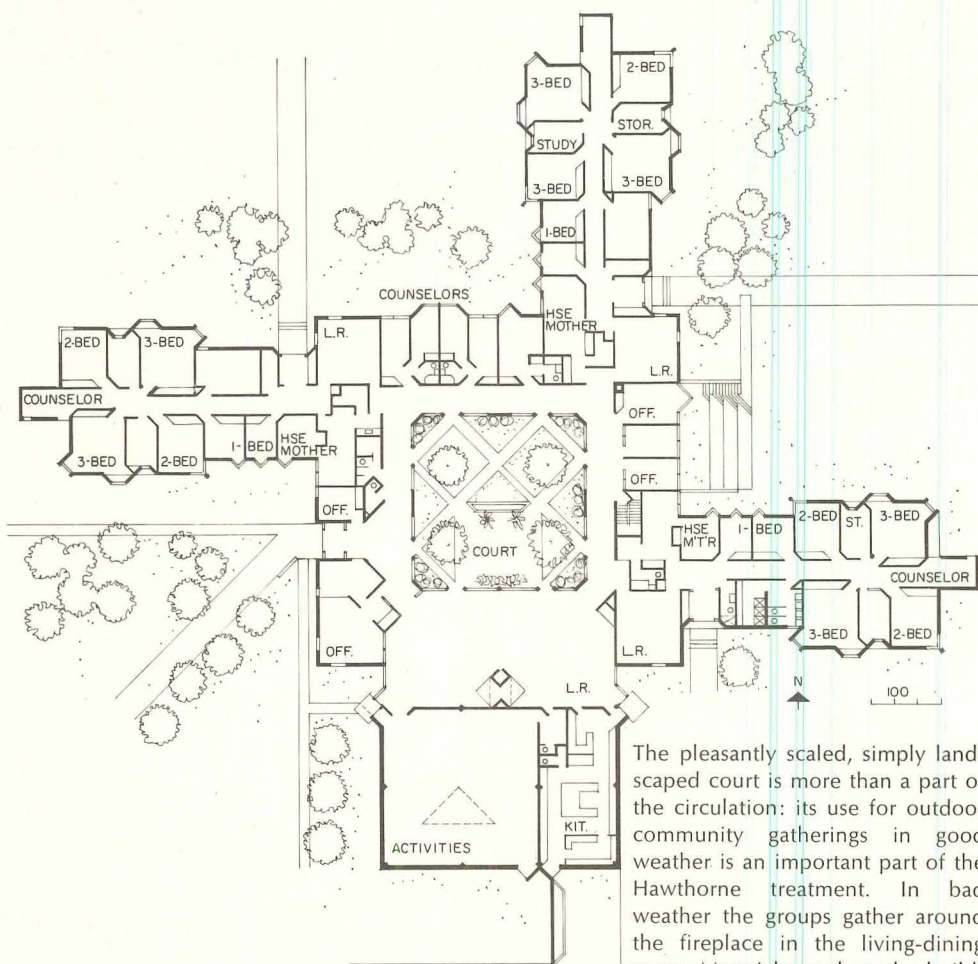




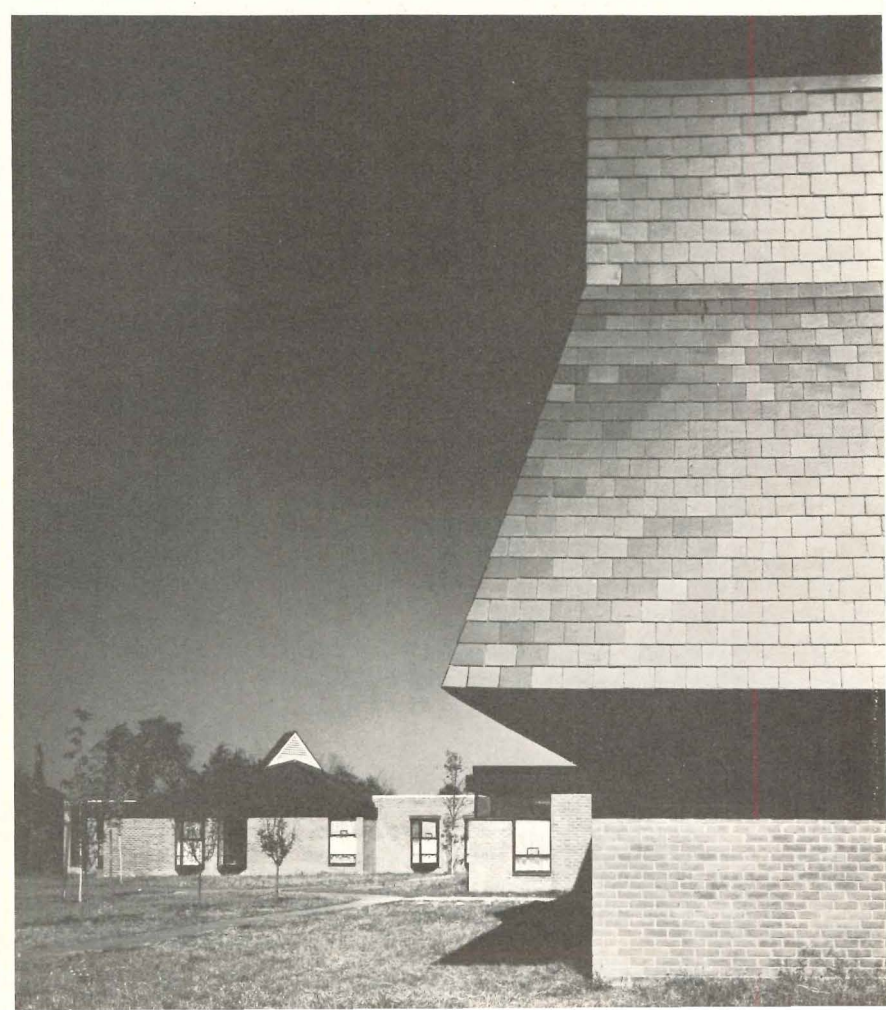
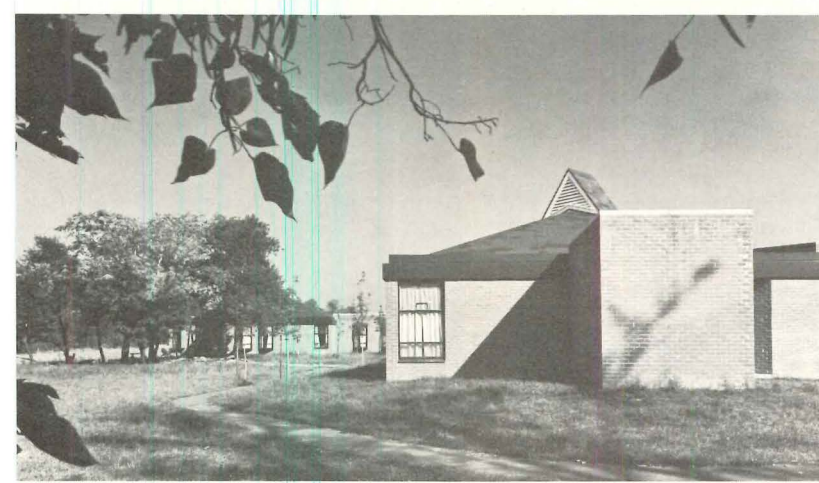
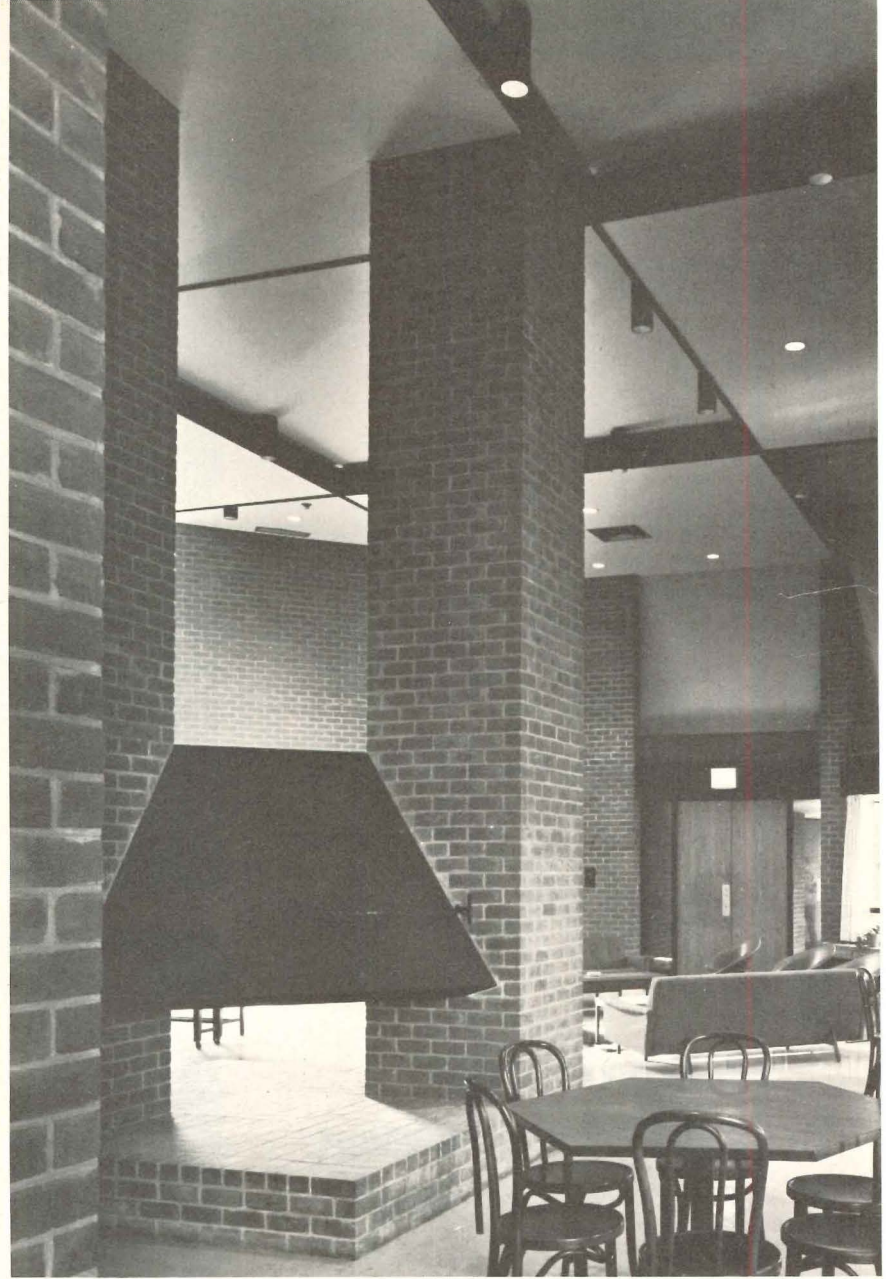
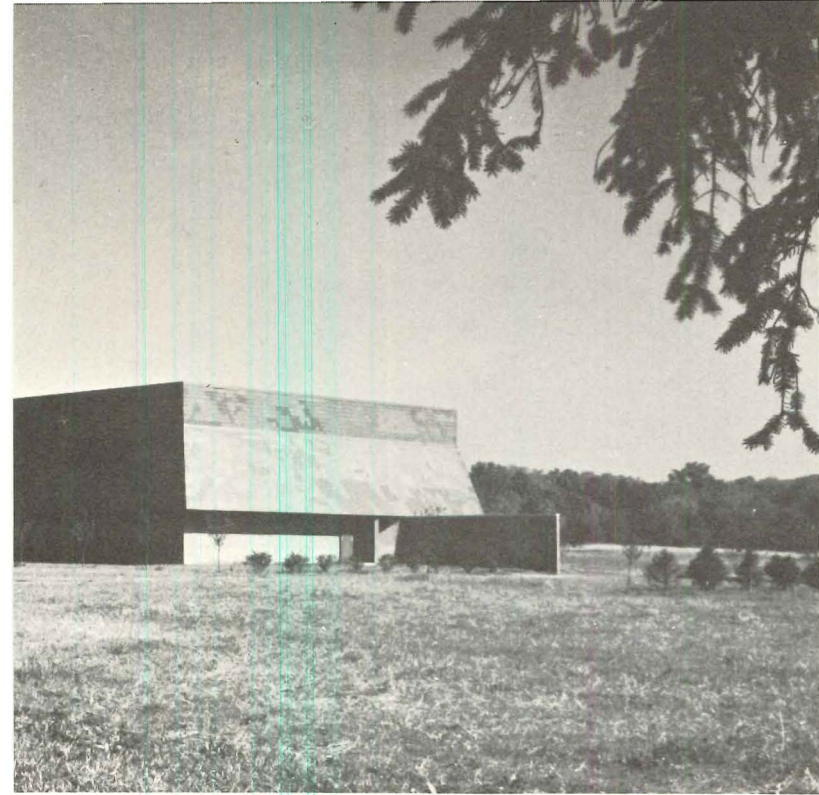
Residential treatment unit for delinquent youths

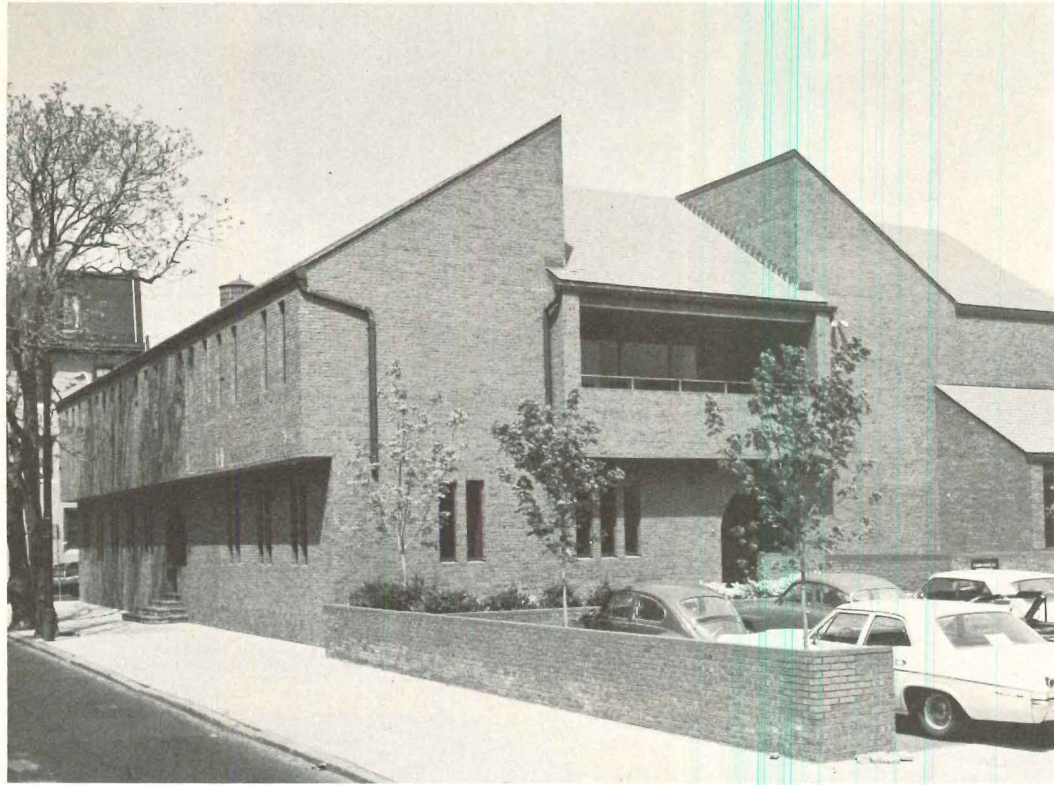
■ This building is an experimental unit in a building program to augment and modify existing facilities in line with advanced techniques for treatment of delinquent boys and girls. Essential to the treatment—and determinants of the design—are a non-institutional environment and an absence of challenge from security measures. This first of the new buildings (existing buildings were taken over from a former private school) houses 32 boys in three groups of 12 each. Each group lives in its own wing of the building, has its own housemother and is buffered from the other groups by supporting facilities (offices for psychiatrists and residential rooms for counselors). There are no bars on windows and no uniformed guards. To increase the non-institutional character of the place, primarily conveyed by the almost entirely domestic scale of the building, the bedrooms vary in size and shape and corridors are relatively short and have varying ceiling heights. Bay windows and window-seats in the bedrooms further contribute to the residential environment. The largest element in the complex is the dining-living area which adjoins and opens onto the activities room. Even here, however, a residential feeling is provided in the open-hearth fireplace around which gatherings of all three groups can take place.

HAWTHORNE CEDAR KNOLLS RESIDENTIAL TREATMENT CENTER, Hawthorne, New York. Architects: *Kramer, Kramer & Gordon*. Engineers: *Lev Zetlin Associates*, structural; *Herbert Klein*, mechanical. Landscape design: *Peter Roland*. Contractor: *E. W. Howell Inc.*



The pleasantly scaled, simply landscaped court is more than a part of the circulation: its use for outdoor community gatherings in good weather is an important part of the Hawthorne treatment. In bad weather the groups gather around the fireplace in the living-dining room. Materials used on the buildings were chosen for durability (damage resistance is essential), ease of maintenance and appropriateness to the desired residential character of the unit. Brick cavity walls, exposed on both sides, continue the character of existing buildings as do the slate shingle roofs. Weathering steel fascias add warmth to the exterior. Floors are concrete slab, covered with either brick or vinyl. The master plan calls for eventual replacement of the present small-group cottages with large-group (36 boys or girls) units, and provision of a new high school.

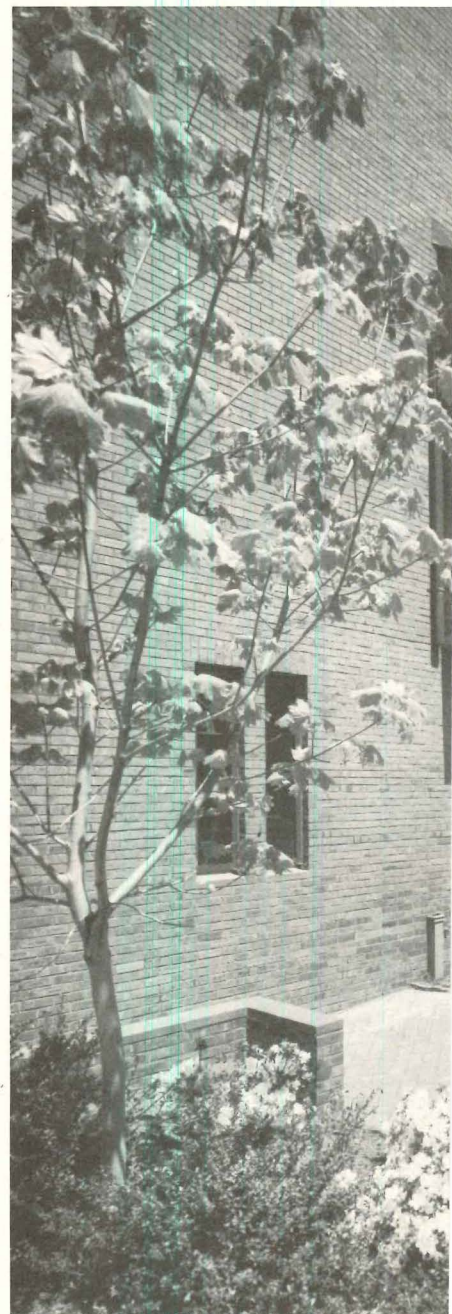
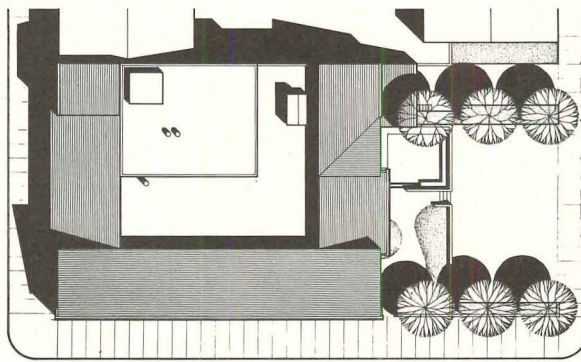
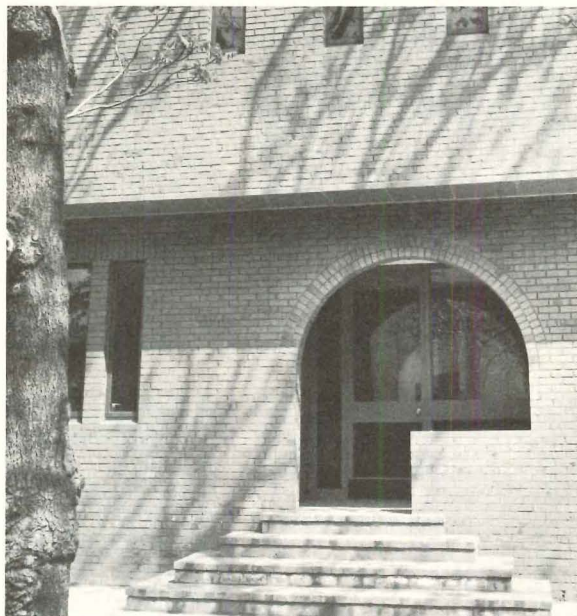


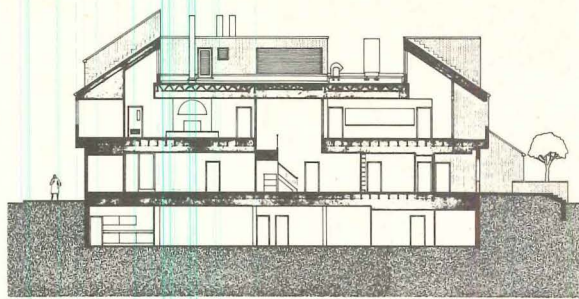


Horizon House, a place for readjusting to community living

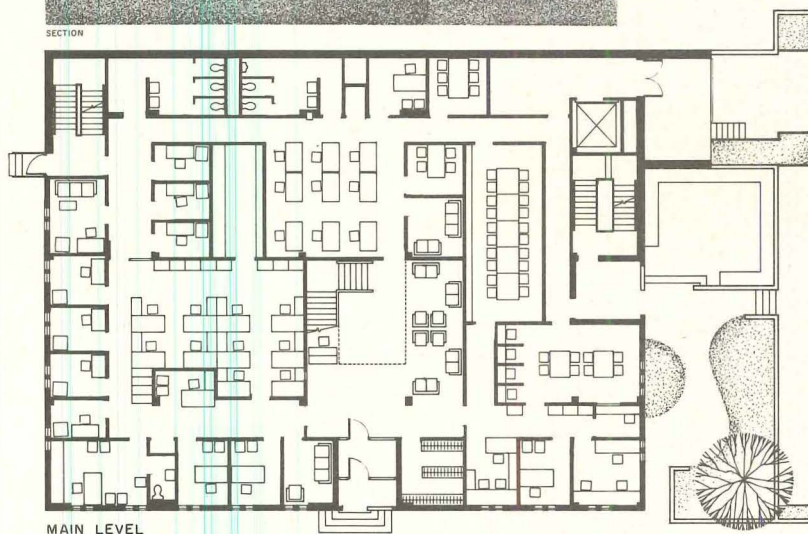
■ A place in which to readjust to life in the community is an essential part of mental health programs. Horizon House in Philadelphia, a non-profit voluntary social agency, provides for this in-between program in a three-story building designed for the four aspects of the program: administration, research, case and social program, vocational counselling. Zoning restrictions limited building height to three stories (35 feet), and lot coverage to 80 per cent of the site, but these restrictions actually played into the design solution. The area on which the building is located is a single-family redevelopment area, with new and rehabilitated houses and residential facilities and since the intent of the design was to fit the building into its neighborhood in scale, character and materials, the limitations implied what was actually desired: a non-institutional building. Built to the property lines, like its neighbors, the building was "purposely underplayed," say the architects, to "prevent it from being a discordant element in the area. We wanted the people who use the building to feel like people—not patients."

HORIZON HOUSE, Philadelphia, Pennsylvania. Architects: Francis Cauffman Wilkinson & Pepper, D. Hughes Cauffman, partner in charge, John R. Caulk III, project design. Engineers: Rothbaum & Davis, structural; Sharpless & Whiting, mechanical; Louis Moxey, electrical. Contractor: McCullough-Howard.

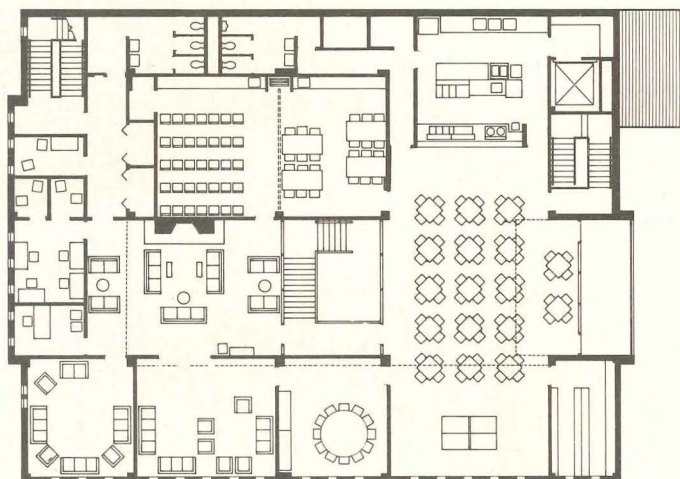




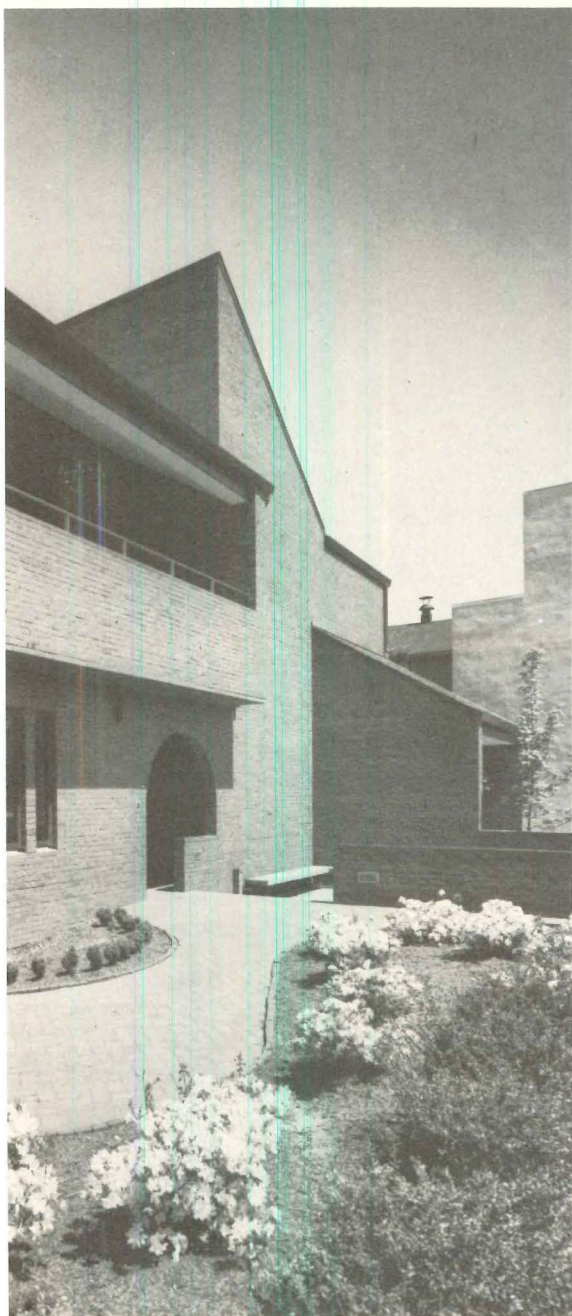
SECTION



MAIN LEVEL

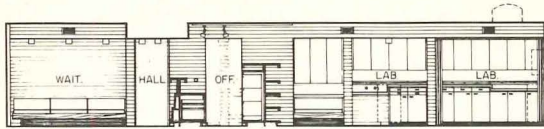


SECOND LEVEL

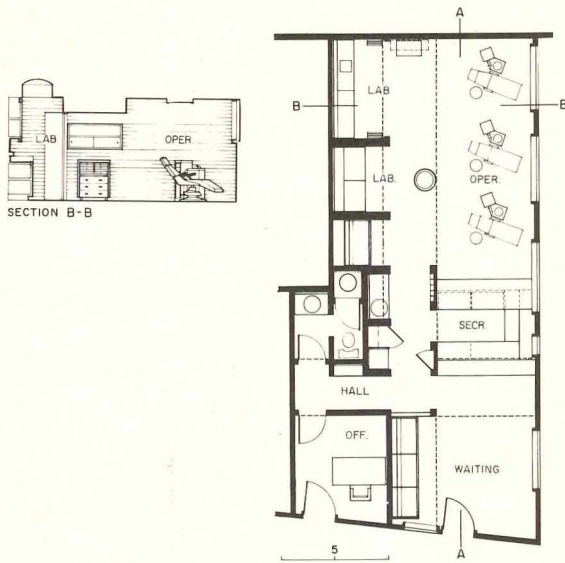


The role of the building is, in effect, to "substitute for the home, the club, the workshop," and its facilities reflect these needs. In the basement are the restorative vocational activities—a clerical workshop, pre-vocational evaluation rooms, the transitional and terminal shops. On the first floor are administrative and research offices, meeting rooms and library. Social areas are on the second floor, and include meeting rooms of various sizes, for classes, film showings, etc.; lounges; and a kitchen-laundry which is actually part of the vocational program. The pleasantly landscaped garden court adjoins the on-site parking.

COMMUNITY HEALTH FACILITIES



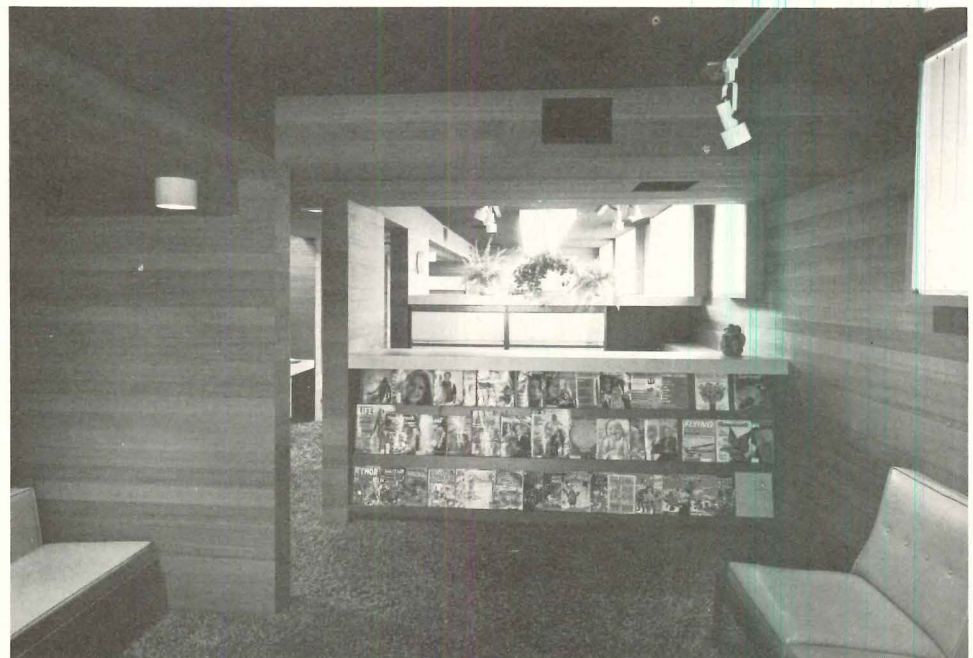
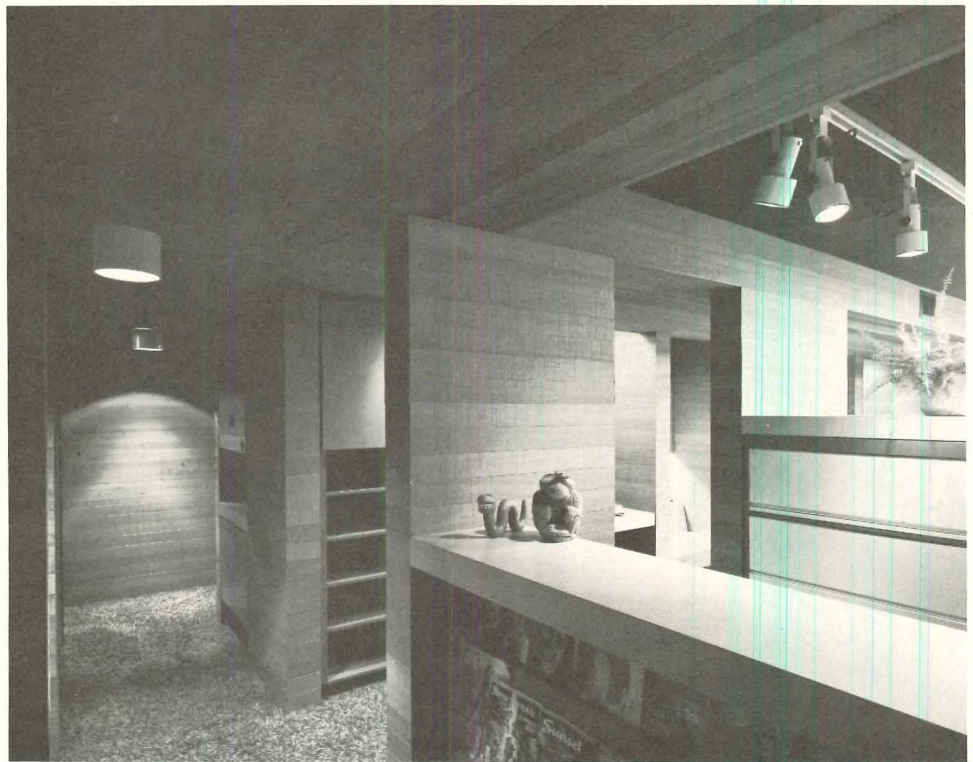
SECTION A-A



Wayne Thom photos

Remodelled offices for an orthodontist

■ The clear-span operator in these offices provides open, lounge-like space for the three dental chairs ranged along one wall facing a window, and the built-in cabinets and work counter along the opposite wall. This individualized plan provides the orthodontist-tenant with free and flexible space, in which he and his assistant can work, and a pleasant, almost residential environment for the patients, most of whom are children and young adolescents, for whom the warm redwood walls, the bright colors of the cabinets and equipment, and the general lighting are reassuring. The informality of the open operator, with no screens or partitions between dental chairs, is an added form of reassurance. General, rather than local, lighting was the client's choice and a combination of artificial (ceiling mounted fluorescent strip fixtures above the dental chairs) and natural (from the high window, louvered for control) provides the desired amount of light. The architects designed all the built-in furnishings (reception desk and magazine rack, instrument and supply cabinets, "equipment module" by each chair).



ORTHODONTIST'S OFFICE for Dr. Edward D. Givins, Redondo Beach, California. Architects: Black, Pagliuso, Kikuchi and O'Dowd; Peter C. Boccato, job captain. Contractor: Joe Baune.

Engines do double duty: refrigeration or standby power

Clarkson hospital complex in Omaha has a total of 650,000 square feet of air-conditioned space, and the critical electrical circuits are protected mainly by a gas-engine driven system that switches from air conditioning to power generation immediately in case of utility outage.



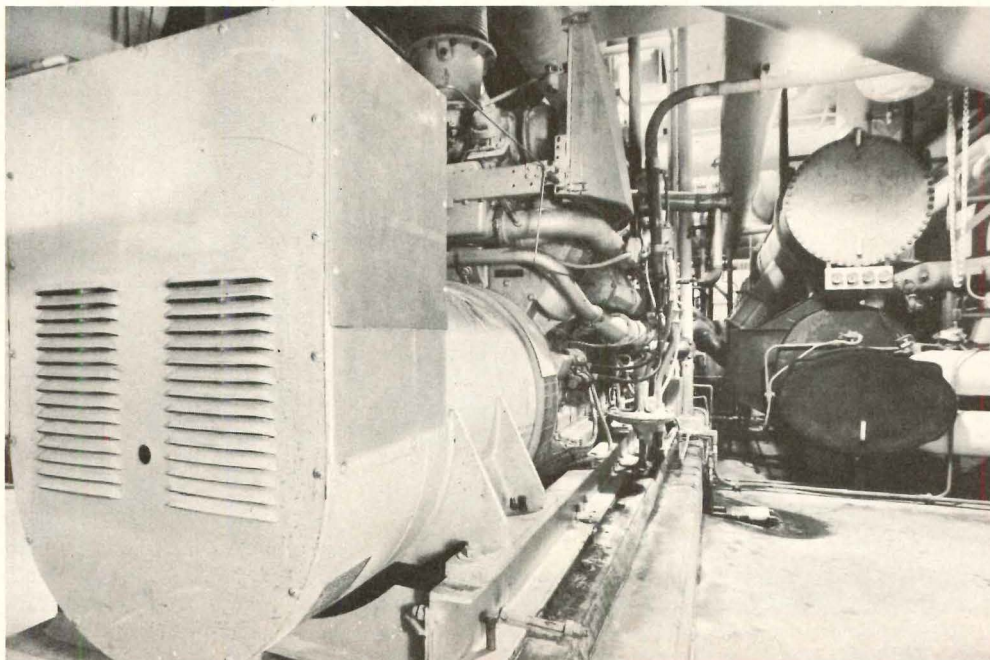
Standby power generation is a must for hospitals these days because there are far too many critical loads to risk the consequences of unforeseen power interruption. Certain life-sustaining functions must not be cut off, even momentarily.

The 550-bed Bishop Clarkson Memorial Hospital in Omaha, Nebraska has a fairly high emergency load of over 1500 kw. When a new wing was being added recently, with 2,000 tons of air conditioning being installed, prime mover for both standby power and air conditioning had to be considered. Rather than proposing engines for the sole purpose of driving standby generation equipment, Leo A. Daly Company, the architects and engineers for the project, recommended that a dual-service system be used: gas engines normally drive refrigeration chillers, but shift to standby power generation in the event of power outage.

Omaha lies near the center of a tornado belt in which exposed transmission lines and substations are subject to storm damage. Added to this is the complication of severe winter weather. The hospital's system has been called on for emergency power generation several times since it went on line in January 1969. Outages have ranged from minutes to hours, and on one occasion lasted nearly seven days. Further, as with many regions of the country these days, capacity of local electric utilities is often strained, and the power companies have been forced to reduce voltage to stave off failures that could cause widespread blackouts.

Gas engines provide economy along with fail-safe protection

Whenever outdoor temperature exceeds 50 degrees, the engines normally drive 1,000-ton centrifugal chillers. The two 930-hp engines are double-ended, i.e., equipped with output shafts at both ends. One shaft of each engine is connected to a chiller; the other to a standby electric generator. In the event of utility power failure, both engines immediately disengage their clutches and speed increaser which drive the refrigeration compressors at 3,600 rpm, and switch to power generation, driving 600 kw electric generators at 1,200 rpm until incoming





Typical floor area protected by emergency lighting circuits shows one passenger elevator operating; every third fluorescent fixture is lighted.



Service corridor during emergency has one freight elevator operating plus center row of incandescent fixtures and all exit and stairwell signs.

utility power is restored. But as long as power supply through either of the hospital's two separate underground services from the utility remains available, the engines are programmed to start in response to demand by the chiller controls to provide air conditioning throughout the complex. During the air-conditioning-only operation, the generator fields are not energized, and their rotors "free wheel" without building voltage. Adding to the economy of the system is the recovery of heat from engine exhaust and from jacket cooling water. The rejected heat can generate up to 15 per cent of the hospital's steam requirement for building air handling systems.

The system has sufficient capacity for emergency lighting, ventilation, power

The 1,200-kw capacity of the two engine-generator sets is more than adequate to maintain essential services and equipment powered by the two largest emergency buses. The hospital's first wing, begun in 1956, has a diesel electric set of 315-kw capacity; thus the original emergency circuits represent less than one-fourth of the present total load served by standby power.

Engine-generator No. 1 serves mechanical equipment exclusively. Applications include air-supply fans for the laboratory area; patient floor corridors and rooms; surgery, recovery and examining rooms, plus labor and delivery rooms; nursery; and central services areas where sterile supplies are stored. Additionally, this generator powers essential pumps (feed pumps, hot-water circulating pumps, etc.), exhaust-fan motors, and an auxiliary air-conditioning compressor for the hospital's computer room.

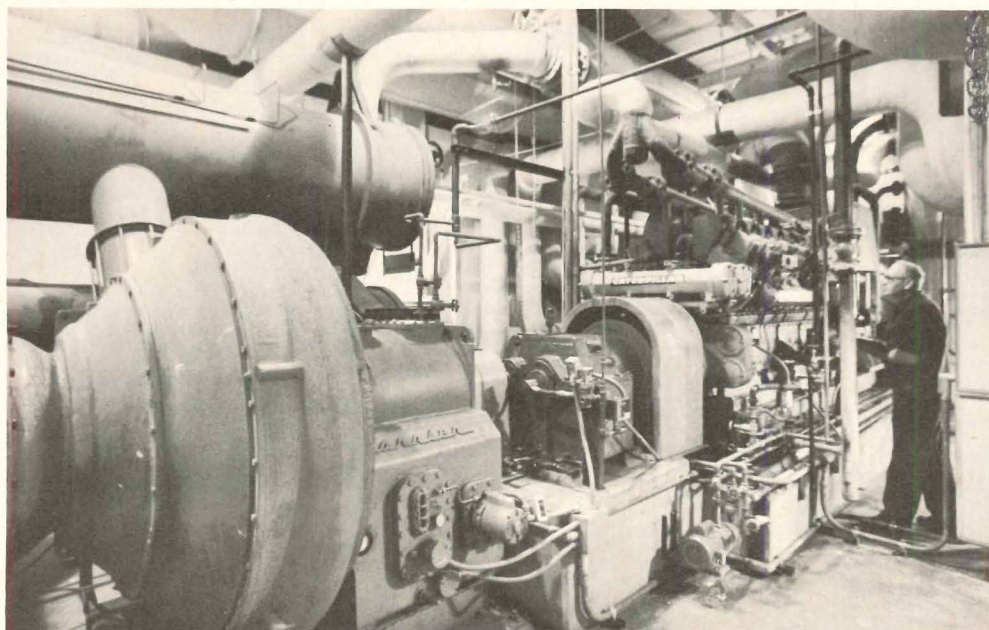
Engine-generator No. 2, which is activated simultaneously with No. 1, primarily serves lighting loads, with the addition of power loads for two 3,000-lb elevators (one passenger and one service), and electronic equipment in the computer room. The emergency lighting includes 277-volt fluorescent lighting for the north and south tower corridors and 120-volt incandescent lighting in the corridors of the basement, ground and first floors. The 120-volt circuits also serve emergency lighting and outlets in the X-ray room and pre- and post-operative rooms, critical kitchen appliances, all loads in the laboratory, and all tele-

phone circuits throughout the hospital.

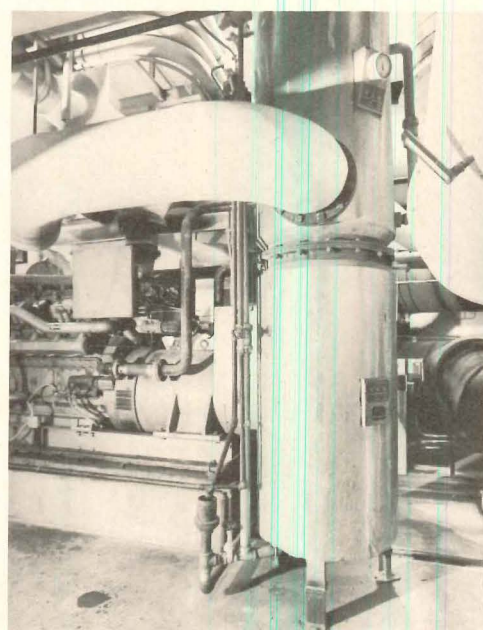
Some details on how the continuous duty-standby system works.

If a power outage occurs when the chillers are not operating, the engines are cranked and immediately run up to the required 1,200 rpm speed. If, however, the call to run comes from the chiller controls, the engine runs at idling speed until 10 seconds after the clutch is engaged to turn the compressor of the chiller; this low-speed engagement helps prolong clutch life. The automatic transfer switch has a built-in five-minute overrun time delay for cooling down the engine in standby power generation mode, during which it will ignore any call to run from the chiller controls.

When engines and generator rotors are already spinning, the switchover from utility service to emergency power takes place almost instantaneously, with only a slight flicker of lights, and no measurable interruption of vital services. But even from a "cold" start (i.e., when the engines are not running on air-conditioning duty) full emergency power has been on line within a maximum of from 8 to 10 seconds.



Double-ended natural gas engines combine economy with fail-safe protection of vital circuits for both power and lighting loads. A 600-kw generator is driven off one end of engine, chiller off the other.

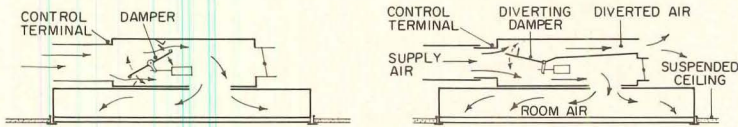
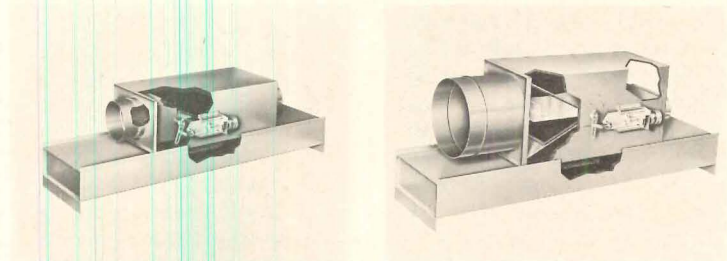


Two-stage heat-recovery boiler recaptures heat from engine exhaust and jacket water as steam.

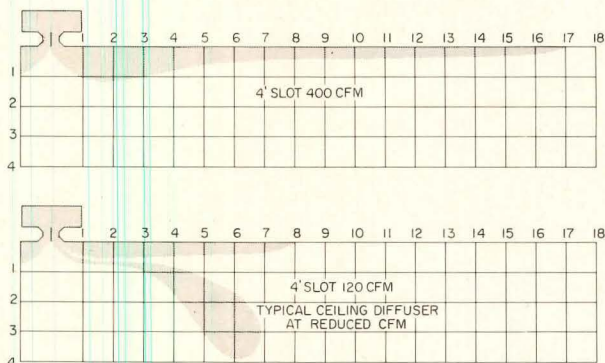
THREE NEW VARIABLE AIR VOLUME SYSTEMS: COMFORT, ECONOMY

Engineers have long known that variable air volume systems make sense from the standpoint of initial and operating costs. The trends obvious from these three systems are that v.a.v. systems are available for a broader spectrum of building types and range of costs, and, further, that manufacturers are taking a closer look at the practical design and installation requirements.

1. High-capacity terminals feature easy installation and low noise levels



Room thermostat actuates damper motors of v.a.v. terminals. With high-velocity unit damper restricts air flow; low-velocity unit damper diverts it.



Air stream from linear slot of terminal stays at ceiling, though cfm varies.

The *VariTrane* variable air volume system differs from previously available central system types in a number of respects: 1) control terminals and control units operate at much higher cfm's, which cuts down on the total number required; 2) thermostatic control for a space is via a wall-mounted thermostat actuating 24-volt synchronous motors that either open or close the damper at a terminal (integral diffuser) or control unit (serving satellite diffusers); 3) control terminals and units are designed for simple lay-in installation for T-bar ceilings; no attachment is required.

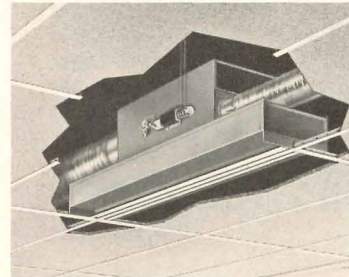
Control terminals, control units and satellite terminals developed by The Trane Company are available for both high-velocity and low-velocity systems in capacities up to 1600 cfm. Control terminals are available in 400 and 800 cfm sizes. Control units for the high-velocity

system range from 400 cfm to 1600 cfm in four models, and for the low-velocity system, control units have 1200 and 1600 cfm capacities.

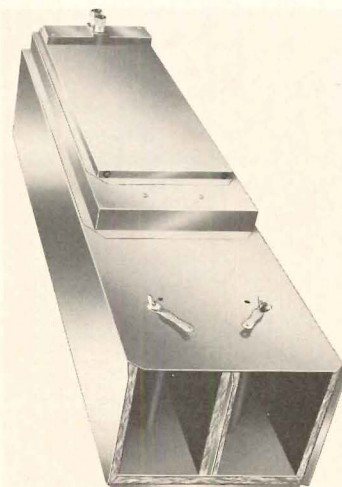
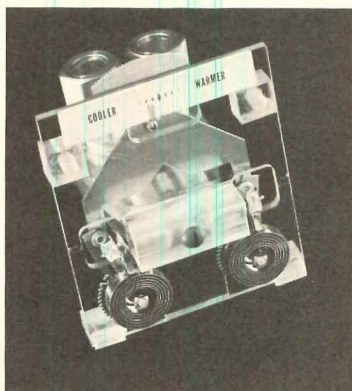
The linear slot diffusers of the terminal units are designed to take advantage of the Coanda effect to obtain good air distribution over the entire range of air flow. Because of its velocity, the air stream emanating from the diffuser has a lower static pressure than room air; so room air tends to push the air stream up against the ceiling.

The low-velocity system is intended for small commercial and school applications, generally under 30,000 cfm. It is a constant-volume system as far as the fan system is concerned because control terminals and units have a by-pass feature—air diverted by the damper is picked up by the return air system to the fan.

The high-velocity system, utilizing static regain duct design, is intended mainly for larger, multi-story buildings. Because of the time-consuming trial-and-error procedure involved in static regain, Trane has developed a computerized duct design program that not only optimizes duct design, but also permits selection of noise level and determines the selection of fittings and terminal units.



2. Fluidic-control v.a.v. system for roof-top equipment has no moving parts



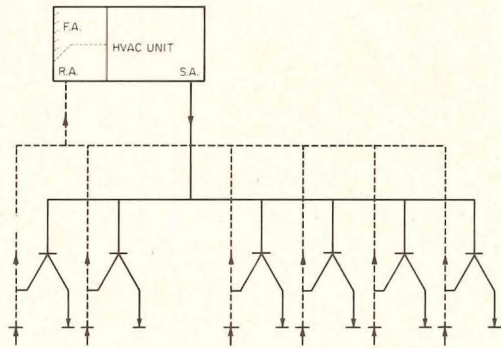
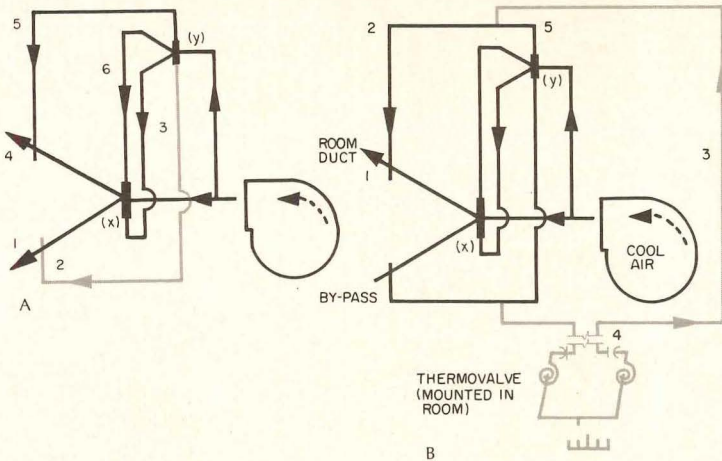
The two components of the fluidic system are the terminal unit, fitted with a "Y" duct for supply and by-pass and an aspirating type of thermostat.

Variable air volume for rooftop heating and air-conditioning units is achieved in a unique way in a newly developed terminal unit by drawing upon the "space-age" art of fluidic control, which requires no moving parts.

The fluidic-control terminal unit introduced by Mammoth Division/Lear Siegler, Inc. switches the supply air stream alternately between the supply side and the by-pass side of a "Y" duct at a modulated rate depending upon the temperature control demands of the space. The supply side is connected to a room outlet and the by-pass side sends air back to the fan. As far as the fan is concerned it is operating at constant cfm, so

complex and expensive static pressure controls and variable inlet vanes are not required.

Called the *Frequency Modulation Terminal Unit*, the device accomplishes its objectives by varying the length of time it lets the supply air from the rooftop unit flow through the supply side of the "Y" duct and through the by-pass side. When maximum heating or cooling are called for by the space, all air flows through the supply side of the "Y". If the demand is completely satisfied, it all flows through the return side. When, however, there is an intermediate demand for a certain rate of heating or cooling effect, the air stream switches back and forth between the legs of



The system achieves volume control by switching the main supply airstream from supply to by-pass at a modulated rate depending upon the heating or cooling demands of the space. The two diagrams at top show how the fluidic controls work. Basically, air bled off from the main airstream to a fluidic switch acts in response to the thermostat to move the main airstream alternately between the room duct and the by-pass.

the "Y," at a rate and total time for cycle dependent upon the rate of supply of heating or cooling effect needed to satisfy the demand. In other words, the heating or cooling requirements are accomplished by matching air volume to room load by modulating the frequency of the air stream.

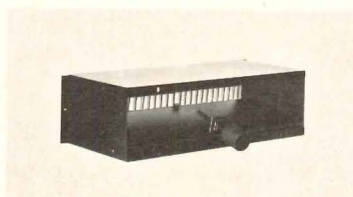
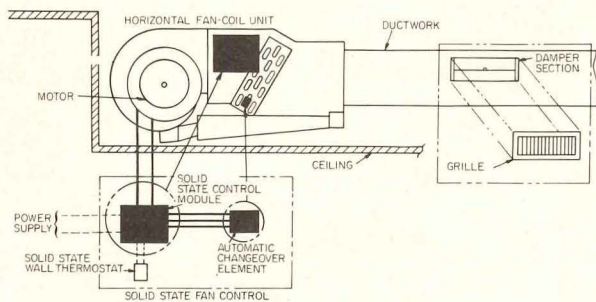
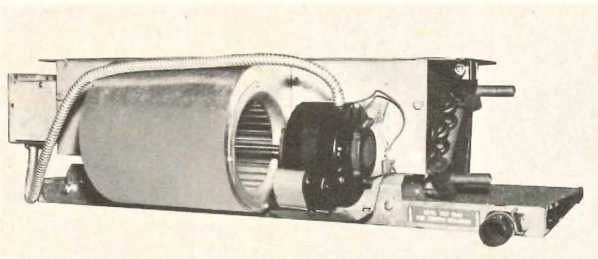
How can the air stream be switched from one side of the "Y" to the other when there are no moving parts? This is where fluidic control comes into play. Fluidic control devices are based upon the Coanda effect phenomenon, which is the tendency of an air jet blowing along the sides of a wall to continue following that wall, even if it curves away from the original plane of flow. The jet can be moved from one side of a channel (or a duct) to the other by increasing the pressure on the wall side of the stream, or reducing it on the opposite side. This can be accomplished by placing control ports on the side of the channel for introducing positive or negative pressures.

The control process works like this (see two diagrams above): In diagram A, there are two fluidic switches, one at (x) and one at (y). The main air stream flows through fluidic switch (x), while there is a

bleed-off of air from the main air stream to fluidic switch (y). Assume that the main air stream is first flowing through leg (1); this results in a negative pressure in the signal tube (2). This negative pressure causes the air stream which is bled off from the fan to flow through leg (3), causing the main air stream to switch to leg (4). Now there is negative pressure in signal tube (5), which causes the main air stream to switch back to leg (1). In this situation the main airstream would switch alternately between legs (1) and (4), allowing equal air flow.

Now in diagram B we have added the room thermostat. The thermostat consists of a bimetal blade which varies the relative positioning of devices that open or close aspirating ports in the thermostat. Assume that the main air stream has been flowing through leg (1). Air is drawn from the signal tube (2). Because the port of the thermostat is fully open (4), the fluidic switch (y) cannot switch the main airstream to the bypass because of no draw at point (5). As the room becomes satisfied, the port at (4) will begin to close and fluidic switch (x) will move the main airstream back and forth from room duct to bypass.

3. Solid-state control varies fan-coil speed in response to thermal demands



More often than not these days, fan-coil units in apartment buildings and motels-hotels have only on-off control, resulting in marginal comfort conditions, particularly in the winter. The fan of this v.a.v. fan-coil system runs continuously, the speed varying with the relative demand for heating or cooling. Weighted damper varies grille opening as fan speed changes.

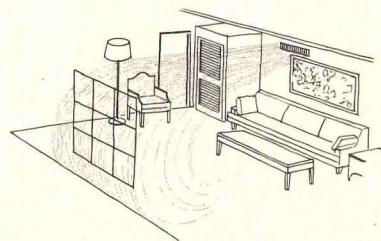
With the objective of upgrading the quality of air conditioning for apartment buildings, motels and hotels while still offering a competitively-priced system, Carrier Corporation has introduced a variable-volume fan-coil system called *Volumaster* comprising three basic components: 1) a horizontal fan-coil unit with a variable-speed motor; 2) a solid-state fan-control system incorporating a solid-state control module, a solid state wall thermostat, and an automatic changeover element; 3) a combination discharge grille and counterbalanced damper.

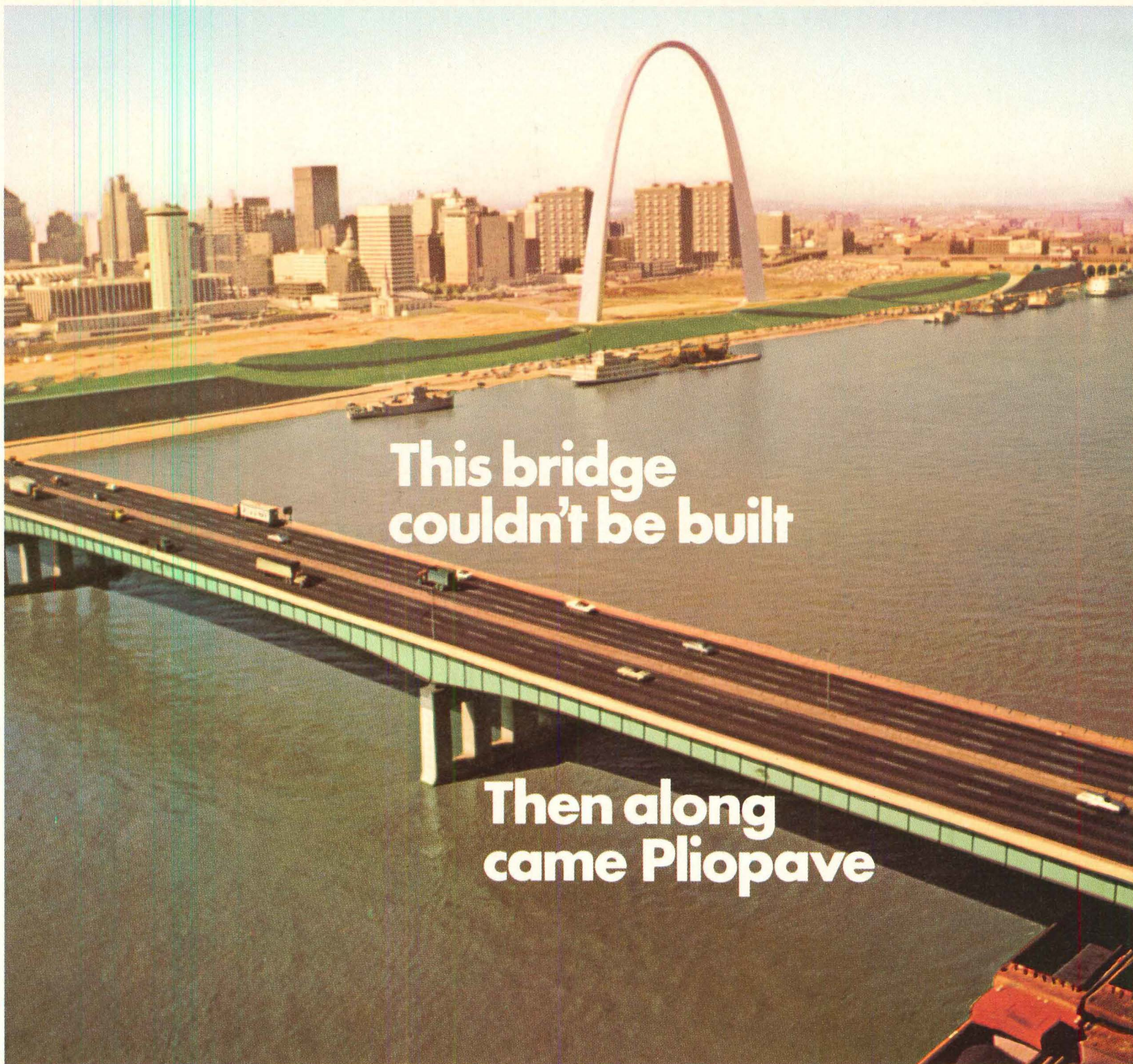
The solid-state fan-control unit provides automatic control of room temperature by modulating the speed of the fan from zero rpm to 1050 rpm, depending upon the room load and the temperature setting. A solid-state temperature sensor within the thermostat is de-

signed to prevent temperature overshoot and wide temperature swings by yielding rapid response to room changes. The changeover element senses the temperature of the coil and automatically sets the control for either heating or cooling, eliminating the need for thermostat switching or set-point changing.

The system is designed to work without the need for perimeter under-the-window heating in winter. The novel combination discharge grille and counterbalanced damper were developed to maintain a constant outlet air velocity from the grille, plus or minus 10 per cent, to ensure proper air motion regardless of whether the system is heating or cooling. As fan speed decreases, causing less system air flow, the counterweight on the damper closes the assembly opening in proportion to the air flow. Conventional side-wall discharge type of grilles allow severe room temperature stratification during the heating period and cause dumping of cold air during the cooling period.

The fan-coil units operate on hot or chilled water from whatever source is most economical for the project. Because of the variable speed of the fan, these units are not designed for direct-expansion refrigeration.





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There's a new way to incorporate sculpture and textural relief in building design. It can be done with Facad.[®]

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Sturdy, but lightweight (2 pounds/square foot), Facad is easy to handle. It comes in sizes up to 4' x 10'. No special skills or extra structures are required. Installation is within the competence of carpenters or glazers.

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Carpet by Roxbury

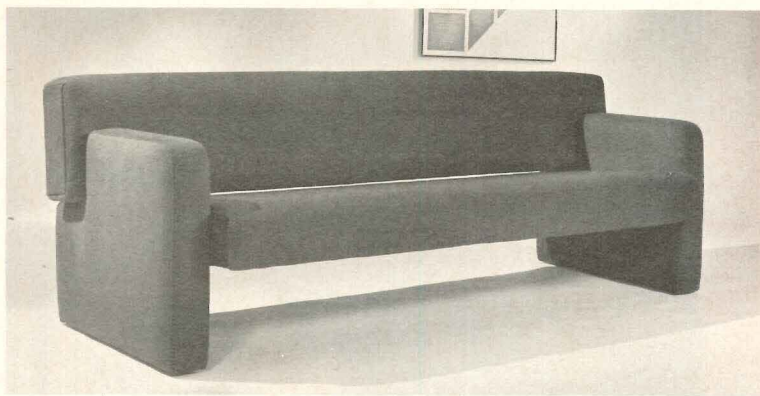
Framingham, Massachusetts

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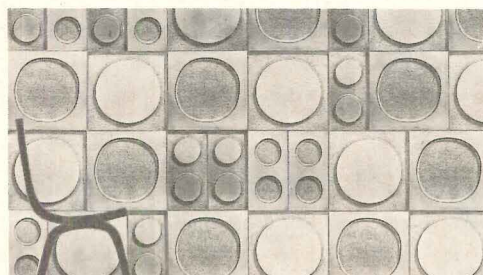
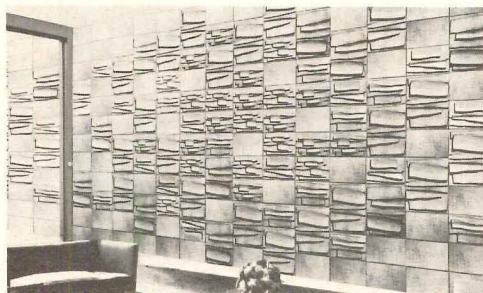
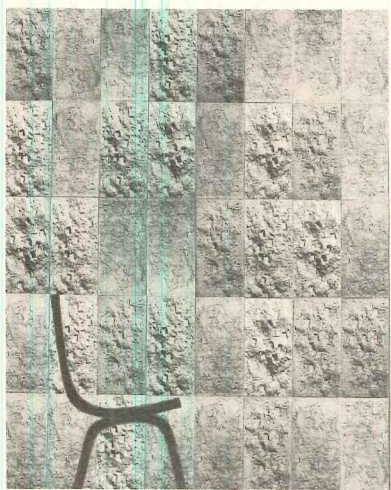
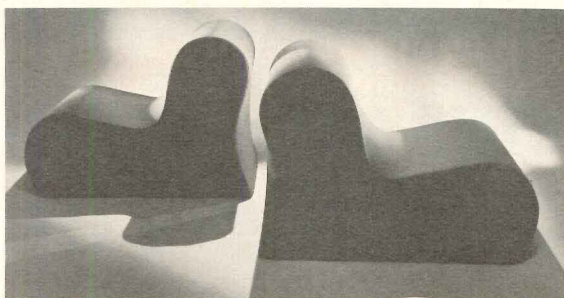
For more information circle item numbers on Readers Service Inquiry Card, pages 229-230



FURNITURE / This collection includes a wall system (above) featuring polished stainless steel with 7/16 in.-glass shelves. Variations are available in cabinet design. The armless chairs are made of molded polyurethane with a choice of stretch fabric or patent vinyl. Single chair and sofa are of polyurethane with rubber webbing. The table/desk piece has a 3/4-in. plate glass top placed on a sculptured polished chrome base.

■ The Pace Collection Inc., New York City.

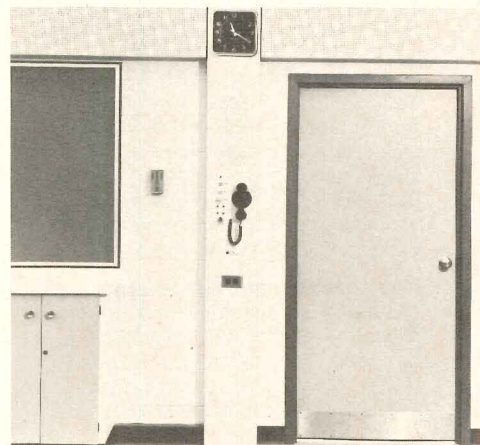
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CERAMIC WALLS / These walls, composed of ceramic units installed like tiles in modules of 6 to 18 in., represent a collection of 17 new designs. "Impressions" displays rough clay surfaces in four degrees of relief. In "Sinuate," leaves of

clay are overlapped for sculptural effect. "Circling" shows raised and inlaid shapes set against smooth and textured surfaces. ■ Design-Technics Ceramics Inc., New York City.

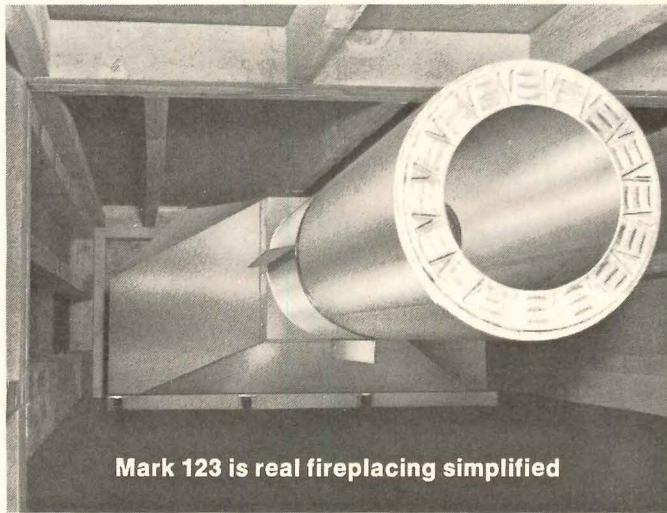
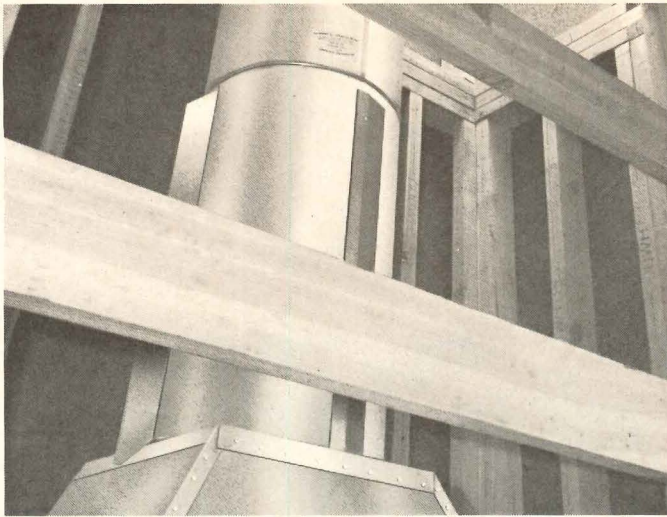
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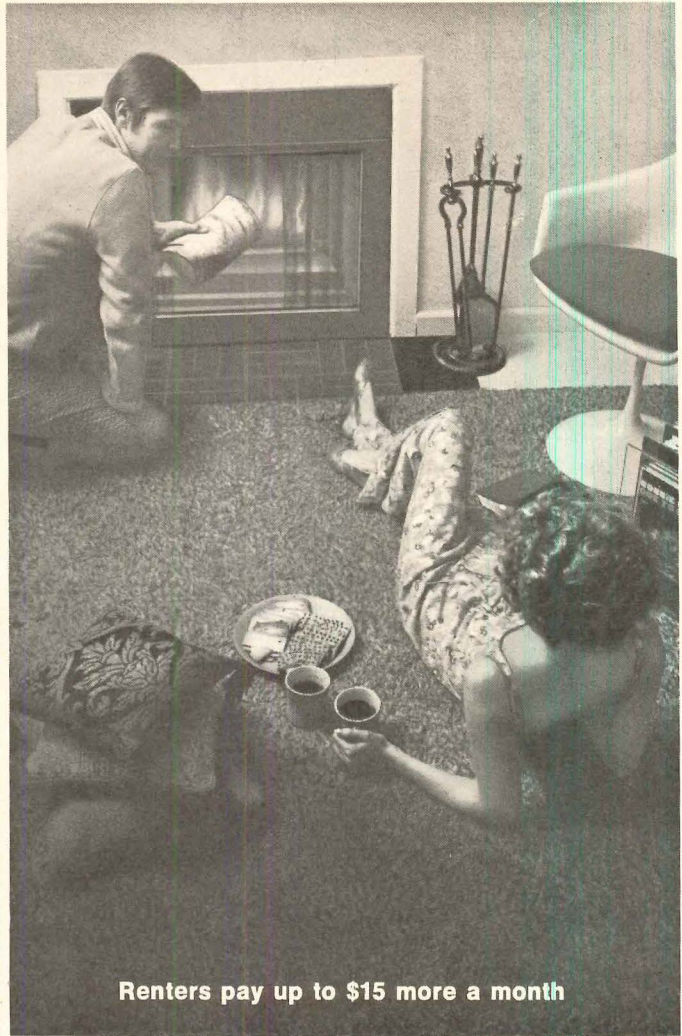
WALL SERVICE CHANNEL / Containing electric and electronic service facilities, this unit, designed for educational facilities, contains a secondary clock, public address speakers and amplifier with jack panel, light switching, P.A.X., duplex outlet, television outlet, and provision for other use devices. ■ Electro-Link Systems, Ltd., Downsview, Ontario, Canada.

Circle 302 on inquiry card

more products on page 164



Mark 123 is real fireplacing simplified



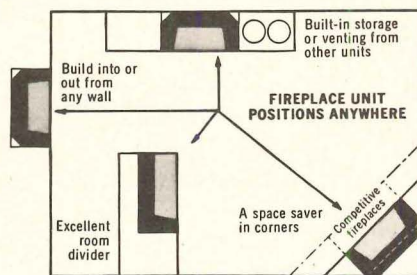
Renters pay up to \$15 more a month

Your clients save and earn more with a Heatilator fireplace

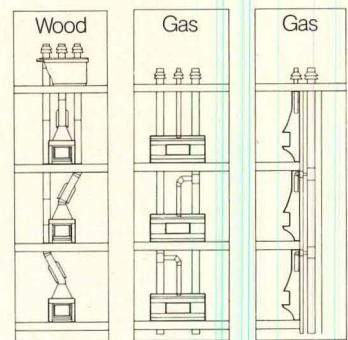
The Mark 123 is so simplified that you save in a combination of unmatched ways.

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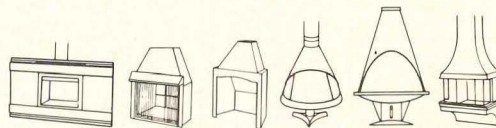


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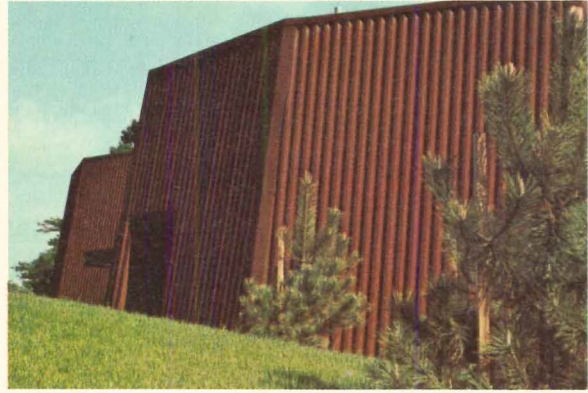
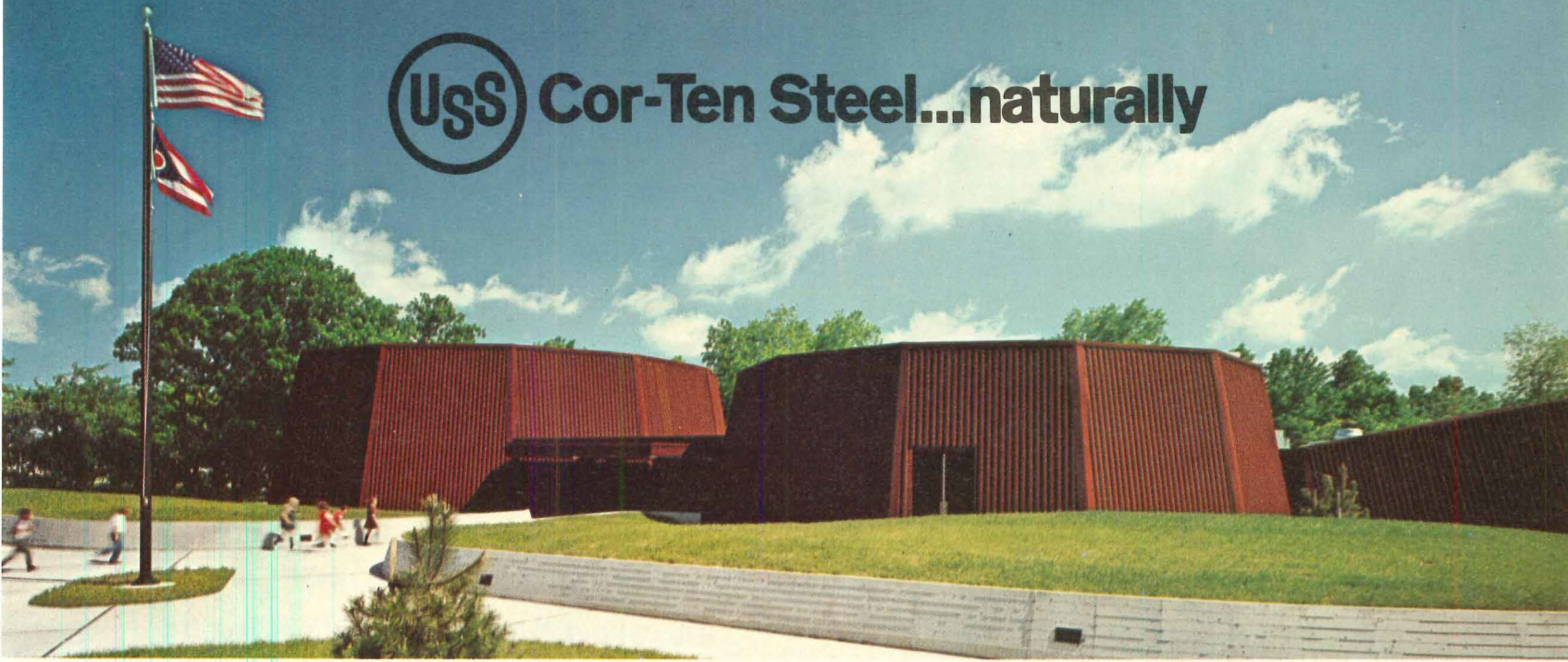


Built-in/Free-standing/Wall-hung

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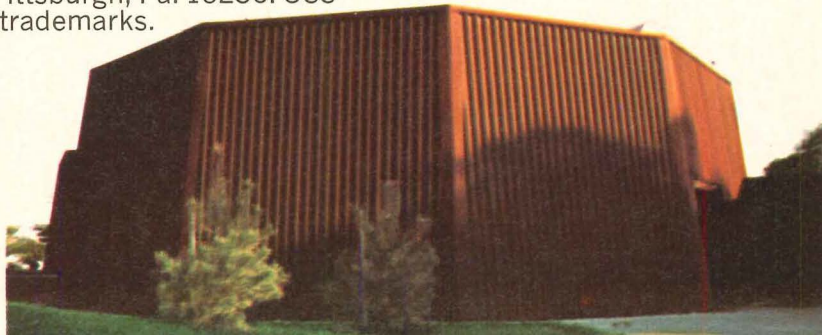


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continued from page 159



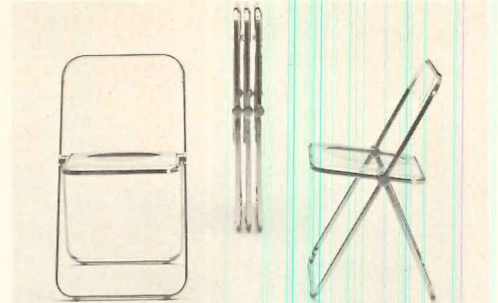
LOBBY SYSTEM / Designed for small lobbies in apartments and townhouses, these mail box/magazine receptacles are available in units of 3 to 10 compartments with the magazine receptacle a standard part of the unit. ■ NuTone, Div. of Scovill, Cincinnati.

Circle 303 on inquiry card



LIGHTING SYSTEM / Consisting of a continuous row of fluorescent lights recessed into concrete rails on each side of the road, this system provides more than twice as much light in a uniform pattern than conventional lighting systems, according to the manufacturer. Also, the system is said to virtually eliminate pools of light that create contrasts of light and dark. ■ Wellmade Metal Products Co., Oakland, Calif.

Circle 304 on inquiry card



CHAIRS / Designed for indoor and outdoor use, these auxiliary chairs feature a chromium steel frame and translucent plastic seat and backrest. Molded indentations in seat and backrest give added comfort. The chairs are stackable both vertically and horizontally. ■ Krueger Metal Products, Inc., Green Bay, Wis.

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FLOORING SYSTEM / This floor has the appearance of terrazzo without its weight. The new system weighs only 1.5 lbs per sq ft compared to up to 30 lbs per sq ft for terrazzo that is several inches thick, the manufacturer reports. Abrasion resistance is reported to be twice that of marble, with synthetic color control of the aggregate, which is not possible with terrazzo. The process uses procedures similar to thin-set terrazzo installation. The system is expected to provide new flooring concepts for architectural designs formerly limited by stress and weight limitations. ■ 3M Company, St. Paul, Minn.

Circle 306 on inquiry card



STADIUM CHAIR / Featuring a sleek, molded back and seat made of polyethylene plastic to provide comfort and durability, this seat rises automatically to a three-quarter fold position and may be pushed back to a vertical position to provide passing room in the row. The chairs are available in a range of colors. ■ American Seating, Grand Rapids, Mich.

Circle 307 on inquiry card

more products on page 178

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University Center of George Washington University. Unusual ceiling beam lighting fixtures custom-engineered by Keene Sechrist Lighting, working closely with Syska & Hennessy, Inc., the project engineering firm. Architect: Mills, Peticord & Mills.

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Keene's Sechrist Lighting operation custom-engineered it for the new University Center at George Washington University. It's the latest example of how we sit down with engineers, architects and owners—and come up with successful solutions to one-of-a-kind lighting problems.

Here, the challenge was to convert the architects' and engineers' concept of ceiling beam lights for major

open areas of the building into reality. Working closely with them, our custom lighting experts soon had the answer: specially designed mass-produced beam lights that focus downward for dramatic effect.

The concept became reality... Sechrist produced the fixtures in the shortest possible time...and large-area lighting was installed that's as excitingly different as the Center itself!

When you have an unusual lighting need in search of a special solution, call Keene Sechrist Lighting—(303) 534-0141—and we'll send an expert to help. Keene Corporation, Sechrist Lighting, 4990 Acoma St., Denver, Colo. 80216.

KEENE
CORPORATION

SECHRIST LIGHTING

We've just begun to grow.

For more data, circle 75 on inquiry card



Terrazzo shows its true colors when it's made with ATLAS White.

This terrazzo in the illustration is composed of 80 per cent Georgia White and 20 per cent Cardiff Green marble aggregate with ATLAS White cement in the matrix. It is showing its true colors in the concourse areas of Ohio's newest and largest enclosed shopping center, the Dayton Mall. In a monolithic installation, 155,000 square feet of terrazzo was placed in 30-foot squares. Developed, built, owned and now managed by The Edward J. DeBartolo Corporation, Youngstown, Ohio, Dayton Mall's 107 stores cater to over 100,000 shoppers per week. Edward J. DeBartolo & Associates was the Engineer. The Terrazzo Contractor was C. Quinlan & Son, Dayton, Ohio. ATLAS White is only one of the many cements produced by Universal Atlas Cement Division of United States Steel.

ATLAS is a registered trademark.



Atlas
WHITE CEMENT


Conwed



DESIGN
VERSATILITY
 **Conwed**[®]
FIVE PLUS FIVE
CEILING
SYSTEMS

more.....



FIVE PLUS FIVE CEILING SYSTEMS

FIVE PLUS FIVE MEETS YOUR REQUIREMENTS FOR DESIGN FLEXIBILITY, AESTHETICS AND BUDGET . . .

- **Lighting** — Five-foot modular light sources.
- **Air Supply** — Relocatable air supply devices.
- **Partitioning** — Modular partition-accepting grids.
- **Air Return** — Inconspicuous, compatible returns.
- **Acoustical** — Effective acoustical options.

No single ceiling system can meet every project's requirements. That's why Conwed created Five Plus Five . . . a truly total systems concept encompassing many ceiling system options. Five Plus Five gives you:

- **Lighting** — not one but FIVE options.
- **Suspension** — not one but SIX choices.
- **Air Supply** — not one but FIVE methods.
- **Air Return** — not one but EIGHT options.
- **Acoustical** — not one but SEVEN choices.

Let the knowledgeable Conwed professional field service team help you with ceiling plans and problems. For further information on Five Plus Five Ceiling Systems, see the Conwed section in Sweets Architectural File (No. $\frac{9.1}{Co}$) or write: **Conwed Corporation, Dept. C 5+5, 332 Minnesota Street, St. Paul, Minnesota 55101.**

For information on flexible Conwed 7000 Series Partition system (shown on front) write Conwed Department C/P Partitions.



High quality (top right) . . . illustrated by this striking application of one Five Plus Five System. Unique ceiling design provides integrated air supply and high, non-glare light levels.

Higher quality (bottom right) . . . represented in this office remodeling project with well illuminated employee work area. Five Plus Five compatibility with partitioning is apparent.

Highest quality (left) . . . dramatically demonstrated by this customer service area in a newly-remodeled bank. Ceilings created by your imagination can very likely be supplied by Conwed.



Front Page Photo

PRODUCT: 7000 Series partitions combined with Five Plus Five Ceiling System.

Left

PROJECT: East Lansing State Bank, East Lansing, Mich.
PRODUCT: Conwed 5+5, bays of 60"x60" regressed splays (perforated) 3'x3' fixtures.
ACOUSTICAL CONTRACTOR: Larry Brooks & Associates

Top Right

PROJECT: Western State Bank, St. Paul, Minnesota
PRODUCTS: Conwed 5+5, 30"x60" vaulted fixtures, ventilating grid and semi-concealed lay-in panels.
ACOUSTICAL CONTRACTOR: Hauenstein Burmeister

Bottom Right

PROJECT: Barber-Colman Corp., Rockford, Illinois
PRODUCT: Conwed 5+5, 30"x60" air delivery fixtures, low profile air fittings, 30"x60" fissura panels.
ACOUSTICAL CONTRACTOR: Continental of Rockford

For more data, circle 99 on inquiry card

NO BRAGA!

Just facts!

hlm[®]

is the superior protection that stops the lateral movement of water.

hlm hydrocide liquid membrane is the seamless elastomeric, **competitively priced** waterproofing membrane system that cuts time while slashing labor costs.

hlm goes on quickly with speedy one-step application . . . by spray, trowel or squeegee. **hlm** is applied directly to concrete . . . then it cures chemically, forming a flexible, continuous waterproofing membrane on any configuration of vertical or horizontal surfaces.

hlm requires but two men to apply (similar applications require four or five) . . . and they do it without heavy equipment or heating units. Faster! Better! Cheaper! There's no cutting or

seaming, or use of multiple layers of preformed or premolded pieces.

What are your costs for labor these days? Now, compare these typical application rates for various waterproofing methods. It makes a difference to you!

Type	Application	No. of Men	Daily Rate
PVC	Roll goods plus adhesive	3-4	5-8,000 sq. ft.
Butyl	Roll goods plus adhesive	3-4	5-8,000 sq. ft.
Bitumens & Felt	Roll goods plus adhesive	5	5-10,000 sq. ft.
hlm hydrocide liquid membrane	By Spray	2	10-12,000 sq. ft.
	By Squeegee	1-2	6-8,000 sq. ft.

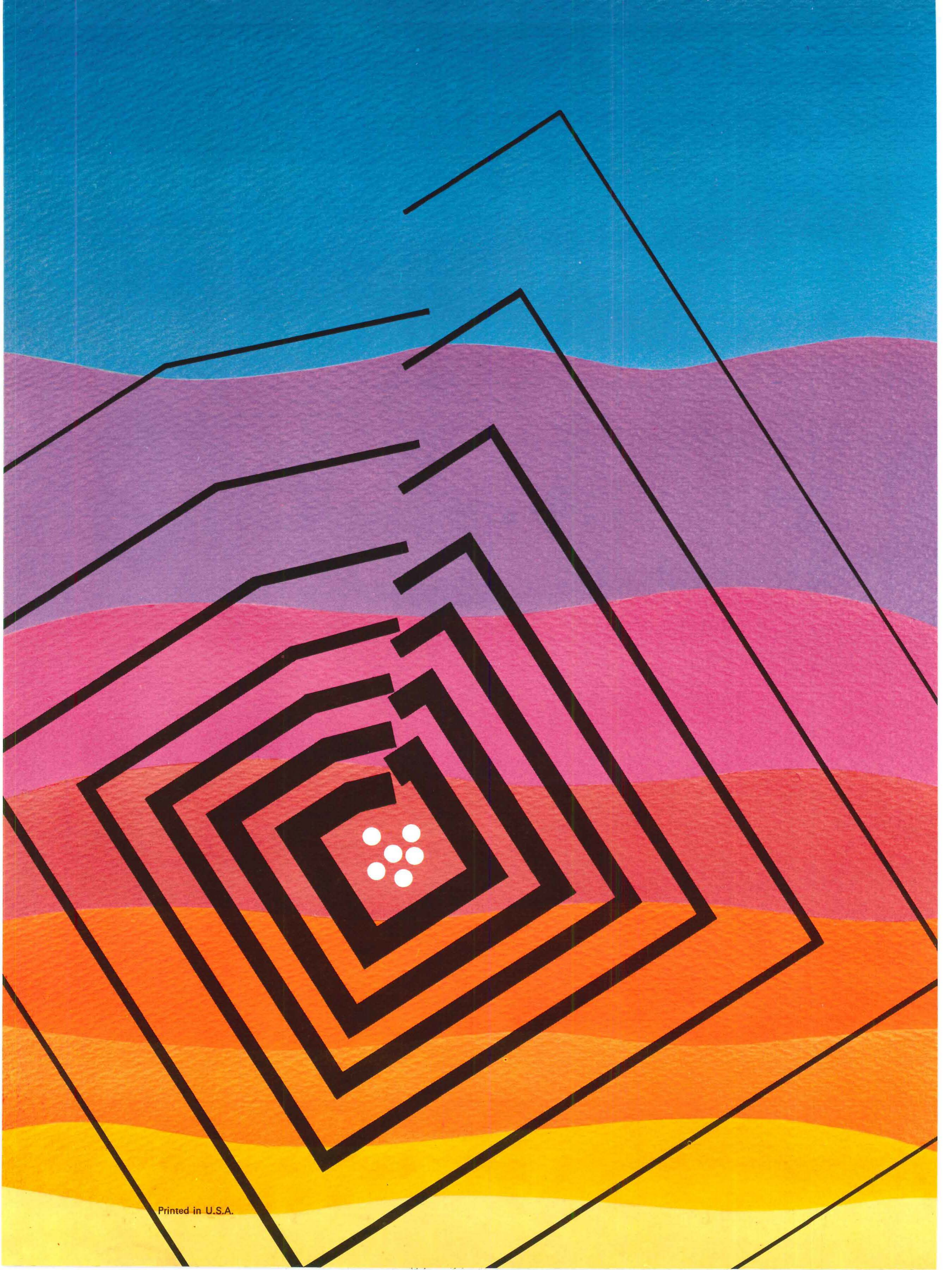
Doesn't it make good business sense to specify **hlm**?

For more good reasons on why you should specify **hlm** on your next job, write:



Sonneborn • DeSoto

Sonneborn Building Products Div. • DeSoto, Inc.
1700 South Mt. Prospect Road/Des Plaines, Illinois 60018



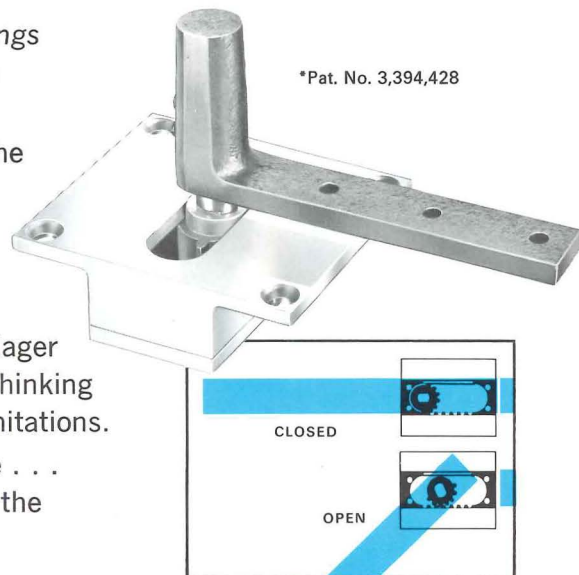
FRONTIERS IN SPACE CONTROL

RACONTEUR by HAGER

Talk about things that open up new territory for *openings* concepts and you're bound to bring Raconteur into the conversation as a significant discovery.

Door technology advances many moons forward with the introduction of Raconteur.* This rack and pinion pivot swings silently as a moccasined glide . . . moves laterally almost unnoticed as it opens, and conceals itself completely when the door is closed.

Raconteur is but one of several boldly-conceived new Hager products inviting architects and planners to unshackle thinking that may have been hampered by conventional hinge limitations. There's a new world . . . new challenges to contemplate . . . in these trail blazing marks of leadership that advance the frontiers in space control.



HAGER HINGE COMPANY

139 Victor St., St. Louis, Mo. 63104

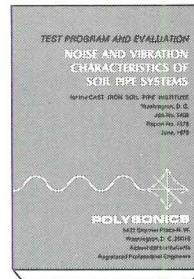
In Canada: HAGER HINGE CANADA, LTD.

"Everything Hinges on Hager!"

For Watergate Complex,
they hired an acoustical
engineer to design
a quiet plumbing system.

The first thing he specified
was Cast Iron Soil Pipe
joined with neoprene gaskets.

The owners of this luxury high-rise cooperative wanted to make certain that tenants wouldn't be harassed by a noisy plumbing system. Wisely, they employed an acoustical engineer, and of course he specified permanent Cast Iron Soil Pipe—"the quiet pipe"—joined with gaskets of Du Pont neoprene. A two year research study proved it the quietest DWV system.



FREE! Complete details of this study are compiled in this 30-page engineering report. Request it on your letterhead.

 **CAST IRON
SOIL PIPE
INSTITUTE**
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WASHINGTON, D.C. 20006



Watergate Complex, Washington, D.C. Architects: Luigi Moretti—Elmore & Fischer. Owner-Developer: Watergate Improvement Associates. General Contractor: Watergate Construction Corporation. Acoustical Consultants: Polysonics Acoustical Engineers.

For more data, circle 79 on inquiry card

◆ For more data, circle 78 on inquiry card

For more data, circle 80 on inquiry card ◆

The vinyl wall meets the painted wall.



Presenting the first fully coordinated walls in Color, Design and Texture.

On the right, Devoe Green Brass, in paint. On the left, color-coordinated Corbu Roca, from the new Devoe line of contract vinyl wallcoverings. A new, easier way to coordinate all the colors of a commercial interior.

These new Devoe CDT[®] vinyl wallcov-






erings are all cross-referenced to Devoe Paint's new collection of fashion colors of the 70's. And they're available in a full assortment of designs and textures, in the complete commercial weight range. So if you want a Burnt Orange wallcovering in a 25-ounce grass cloth — and the same

shade in an enamel trim or a vinyl wall paint — you can order both at once . . . from one supplier.

A note on your letterhead will bring samples. Write: Mr. H. J. Smith, Devoe Paint, 224 East Broadway, Louisville, Kentucky 40202.

CDT[®] Vinyl Wallcoverings by **Devoe**[®] A Division of Celanese Coatings Co.

Hey Nor-Lake:

"Doesn't anybody make refrigeration equipment with all-copper tubing  and an Automatic Defrost-Vaporizer  and heater wire strips and triple-seal gasketing  and 5 standard finishes  and self-supporting insulation  and adjustable legs?"

We do.

With 275 models, and orders shipped in 48 hours, we can get you whatever you want whenever you want it.



What else should I know about Nor-Lake Refrigeration equipment?

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

I need Refrigeration Equipment for _____



NOR-LAKE INC.

Second and Elm, Hudson, Wisconsin 54016

Phone: 715-386-2323 Dept. 3167

The only thing we won't change is the quality.

For more data, circle 112 on inquiry card

Unatap: Turns water into money.



Come in low with a hand washing system that offers important operating savings in the bargain.

A system incorporating the Unatap spray mixing faucet.

This clever flow-governing faucet maintains an economical yet hygienic spray of water, while allowing personal control over temperature. Actually saves on hot water to the tune of two-thirds (in an independently-supervised test).

Which means a slimmed-down hot water system. Which means a lower installation cost. And lower running cost too.

Specify Unatap. You'll come in low.

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1140 Broadway, New York, N.Y. 10001

Phone: (212) 683-0745

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UNMISTAKABLE VALUE. A rare and beautiful Stradivarius violin crafted many years ago in Cremona, Italy. There's a history of value behind every new Jamison door, too . . . in quality construction, performance, and Jamison service.

Architects who value Value specify Jamison every time

Whenever you select a Jamison cold storage door you get the extra value and extra benefit of Jamison's published technical information and engineering services. Comprehensive reference material such as Architects' Data Sheets and a unique publication, "How to Select and Specify Doors for Cold Storage Warehouses and Food Processing Plants" give you useful, practical

data covering every aspect of cold storage door construction, insulation, installation, and operation. Remember those special services when you want to save valuable time in solving a cold storage door problem, or when you need dependable assistance in writing specifications.

Look to Jamison for finest quality, the most complete line of doors, the most modern designs.

That's why Jamison means value . . . through and through, year after year. Call your nearby Jamison service office for a free copy of "How to Select . . ." or write to Jamison Door Company, Hagerstown, Md. 21740.

COLD STORAGE DOORS BY
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JAMISON DOOR COMPANY • HAGERSTOWN, MD.

continued from page 164



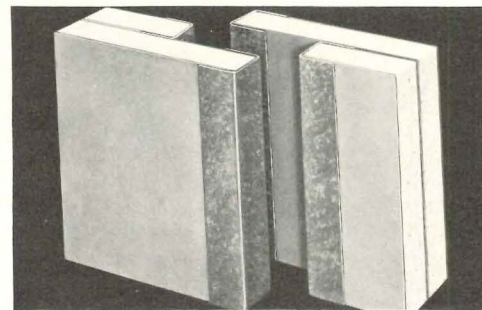
LIBRARY FURNITURE / In this atlas case, a narrow reveal line on the outside corner of the legs and around the base accentuates its clean lines and sturdy construction. ■ Myrtle Desk Co., High Point, N.C.

Circle 308 on inquiry card



ROOF DECK / This system, composed of bonded, long wood fibers with urethane insulation penetrating 1/4-in. into the wood fibers, comprises a totally integrated single unit construction. The exterior skin of the insulation surface protects the deck while built-up roofing is applied. The product is available in a wide range of sizes and thicknesses. ■ National Gypsum Co., Buffalo.

Circle 309 on inquiry card



PANEL SYSTEM / Designed to enclose elevator shafts, stairwells and other vertical chases in high-rise structures, this non-load bearing system consists of hot-dip galvanized steel channel edges which are factory-applied to two laminated thicknesses of gypsum coreboard. The system, weighing 10 1/2 lbs per sq ft of completed wall, reduces framing and foundation costs when specified in place of heavier materials, the manufacturer reports. Panels feature an offset edge design, shortening installation time. Panel width is 24 in., with steel channels providing wall heights up to 16 ft. Panels are vertically installed. ■ National Gypsum Co., Buffalo.

Circle 310 on inquiry card



Goodbye, Mrs. X— and about \$1300 worth of merchandise.

She's going out a side door.

She's plausible and charming. Nobody's looking. The door is unattended.

Say goodbye to your \$1300.

Part of the tragedy is that Mrs. X (or whoever) may well be a favorite employee.

The other part of the tragedy is that it all might have been avoided with Trim-Gard™ on duty.

Trim-Gard is a simple (but sophisticated) door alarm for commercial premises. Put Trim-Gard on any door (either in- or out-swinging) and turn it on with a key.

It won't reach out and grab anyone by the collar, but it will alert you whenever the door is opened.

It will protect you against Mrs. X. It may well protect Mrs. X against herself.

Consider two unfortunate facts. By far the largest single category of crime in the country today is employees stealing from their employers.

And right after that category, comes shoplifting. Employees, obviously, aren't your only concern; Mrs. X may just be a visitor. Trim-Gard is concise, efficient,

business-like. It's narrow surface-applied profile (1 3/4" X 12") even allows unobtrusive installation on narrow stile doors. This unique feature combined with heavy duty construction and solid-state circuitry makes Trim-Gard a practical answer to your security problems.

Count the number of unattended doors in any commercial establishment. Consider what may be going out those doors. Money. Inventory. Profits.

Now you know what to do.

Install Trim-Gard.

It does the job.

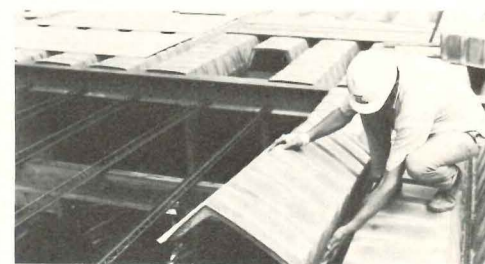


Trim-Gard by

Continental Instruments Corp.

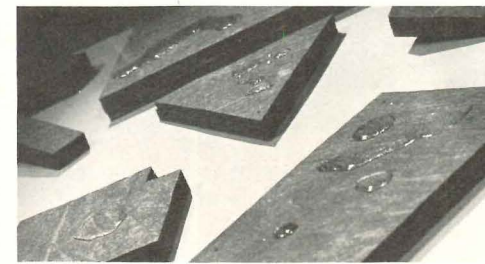
3327 Royal Avenue, Oceanside, New York 11572

For more data, circle 84 on inquiry card



FLOOR SYSTEM / Designed for low-rise apartments and single-family homes, this system's three basic components include cast-in-place concrete, steel purlins, and fiberboard forms. The steel purlins provide total reinforcement for the entire system and support the forms, which carry electrical conduit and plumbing pipes. Floor-to-ceiling depth of the concrete system is 12 in. ■ Portland Cement Assoc., Skokie, Ill.

Circle 311 on inquiry card



WATER-RESISTANT INSULATION / Designed specifically for equipment which is under constant exposure to moisture, this product is composed of Fiberglas mat bonded to fine-fibered Fiberglas insulation for use in commercial and room air-conditioning units and heavy-duty air handling systems. Beads of condensation will form on the insulation (photo above), but will not be absorbed, the manufacturer reports. Other advantages include thermal and acoustical insulation performance. The product is easily fabricated into various shapes and sizes. ■ Owens-Corning Fiberglas Corp., Toledo, Ohio.

Circle 312 on inquiry card

more products on page 184



flooring tip:

The trouble with most 1/16" gauge vinyl asbestos chip designs is that the chips wear off. But not with VIVA. VIVA is a 1/16" thick thru-chip vinyl asbestos tile. *The only one.* VIVA's chips go all the way through the tile. That's why we recommend it for high traffic areas on light commercial jobs where superior wearing qualities and appearance are required, but for reasons of budget heavy gauge tiles just can't be used.

We make VIVA by an exclusive method which makes it the best value, square foot for square foot, of any light gauge vinyl asbestos tile on the market. For instance, VIVA is compression moulded. The high quality vinyl compound is pressed under heat and pressure into a dense,

wear resistant mass. Then we pre-shrink and cut it into perfectly square 12" x 12" tiles that keep their dimensional accuracy. VIVA tiles will not shrink. We guarantee it.

The VIVA chip pattern is completely non-directional. So, expensive installation labor isn't wasted arranging tiles to avoid objectionable directional patterns.

For samples of the 18 handsome VIVA color choices and a catalog of other flooring tips, see your Nafco flooring distributor or mail the coupon below to us.

NATIONAL FLOOR PRODUCTS COMPANY, INC.
Florence, Alabama

For more data, circle 85 on inquiry card

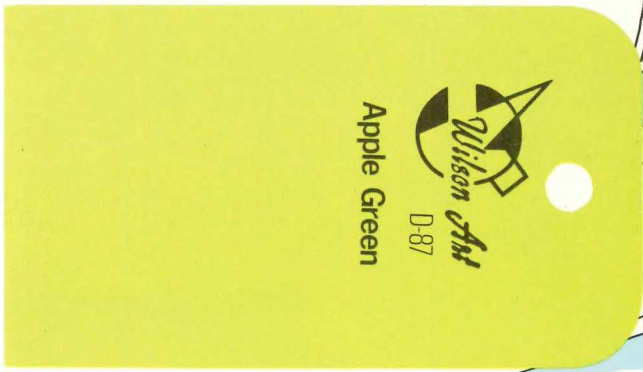
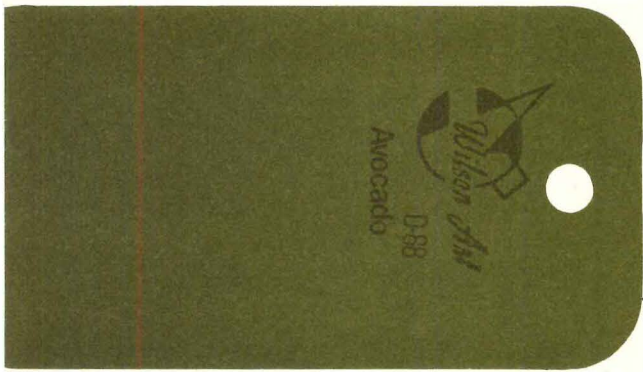
When the traffic load is heavy and the flooring budget is light . . . specify **VIVA** VINYL ASBESTOS TILE



NATIONAL FLOOR PRODUCTS CO., INC.
P. O. Box 354, Florence, Alabama 35630
Please send samples of VIVA and descriptive color catalog.

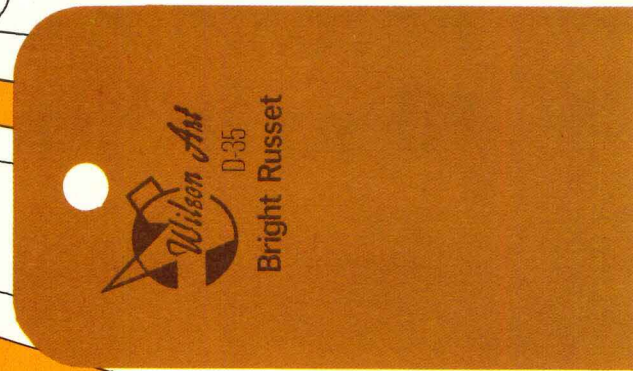
Name _____
Address _____
City _____ State _____ Zip _____

Wilson-Art



A simple change in color schemes turns sweet and pretty to rugged and masculine — both with the same basic design. Wilson-Art is tough enough to take it, and pretty enough to make it. Simplify. Specify. Wilson-Art laminated plastic.

the one laminated plastic to specify
when you are concerned with the *total* interior.



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



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

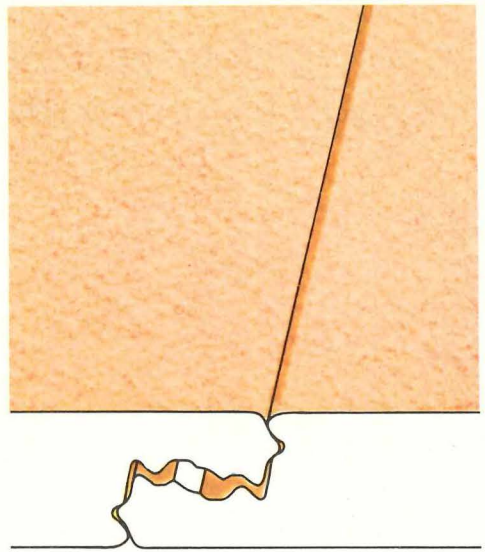
For more data, circle 86 on inquiry card

Foam-Line walls

Urethane insulation

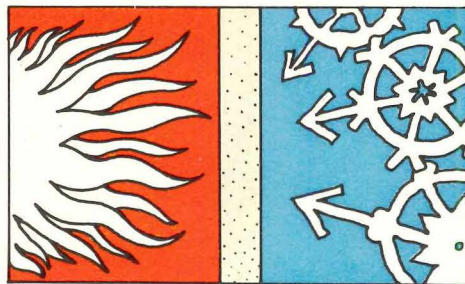
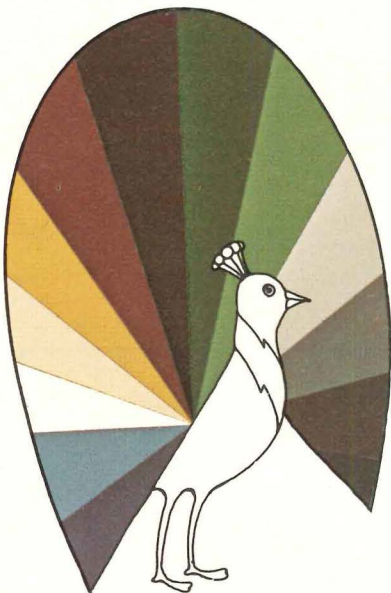
Porcelain enamel finish

\$3 sq ft installed

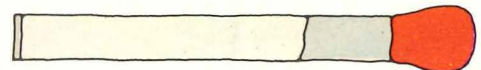


FOAM-LINE: An architectural wall system with urethane insulation plus porcelain enamel at a cost within range of an ordinary insulated and painted panel.

Foam-Line's low cost is possible because of a brand-new, continuous, in-line foaming, bonding and finishing process Robertson developed. This new process, plus Foam-Line's low installation costs, account for the tremendous savings. But there's more, including:



THERMAL PERFORMANCE: Heat transmission through Foam-Line is three times lower than conventional masonry. The U factor: .08. The secret: the 2" thick urethane core and the non-conductive side joints.



U.L. LISTED FOAM-LINE is the first panel to qualify for listing in a new category established by Underwriters' Laboratories, "Insulated Wall Panels." File R-5541.

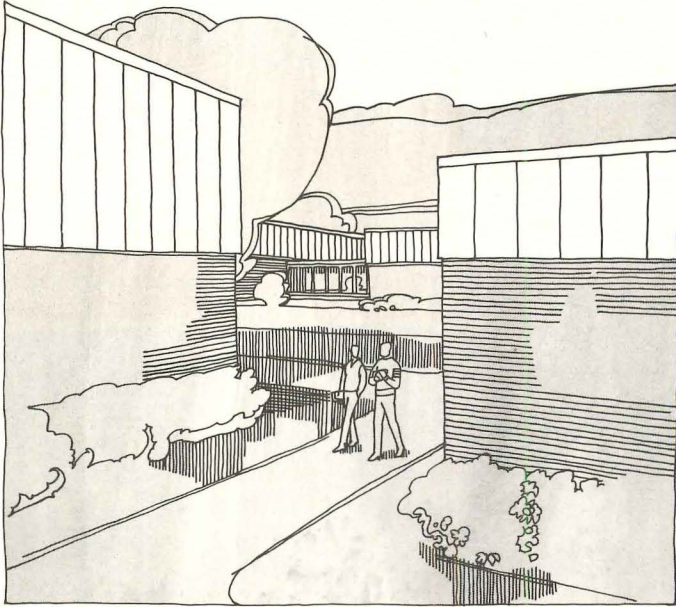
FLAT, MASSIVE APPEARANCE: The hairline Foam-Line joints are so flush and tight they're hard to see from a few feet away. And the bonded urethane prevents "oil-canning," preserves a billiard table flatness. Long lengths (up to 30 ft) eliminate end joints for most applications.

VITRALUME® FINISH: When we say permanent, we mean permanent. Robertson's Vitralume—porcelain enamel on aluminized steel—is permanent, will not chalk and it's available in a spectrum of handsome colors.

ALL THIS FOR \$3 SQ FT* INSTALLED: To find out what Foam-Line will cost on your building, write H. H. Robertson Company, Room 1113, Two Gateway Center, Pittsburgh, Pa. 15222.

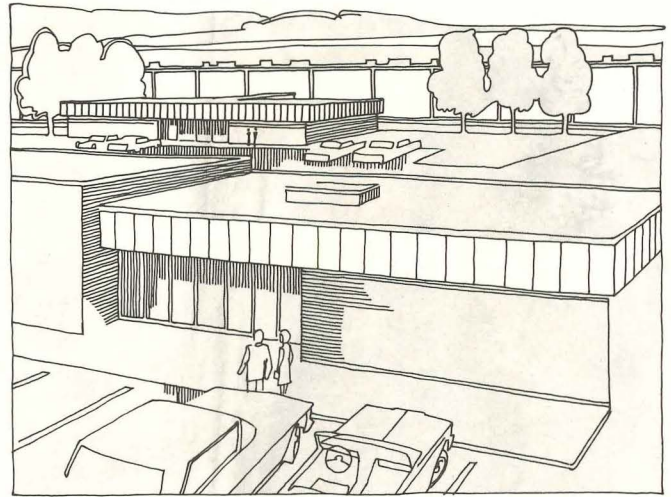
* Costs shown are based on average material area, complexity and installation. For a quotation on a specific project, contact your local Robertson representative.

Austin Vocational Technical School, Austin, Minnesota.
 Architect: Wick, Stansfield, Kagermeier / Architects, Inc.
 This building in the cold country takes advantage of Foam-Line's insulating performance. The installed cost of the basic wall was increased slightly by special extruded trim, but still a bargain in insulated wall systems with Vitralume® surface.

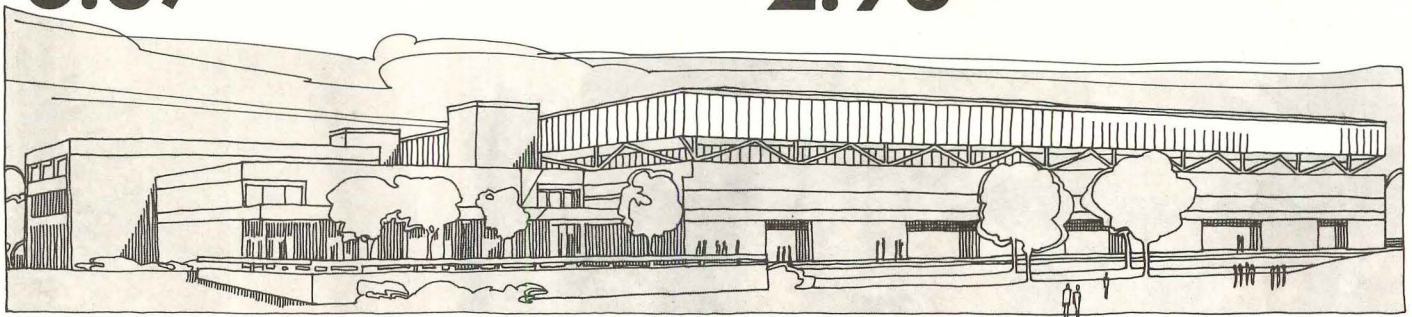


\$3.07

Rainbo Bread Company, Aurora, Ill.
 Architect: Engineering Department
 Campbell Taggart Inc.
 27,500 square feet of Foam-Line walls, Vitralume® finish, installed by Robertson for \$2.98 P.S.F. Foam-Line delivers its optimum efficiency in such long-run, long-span applications.

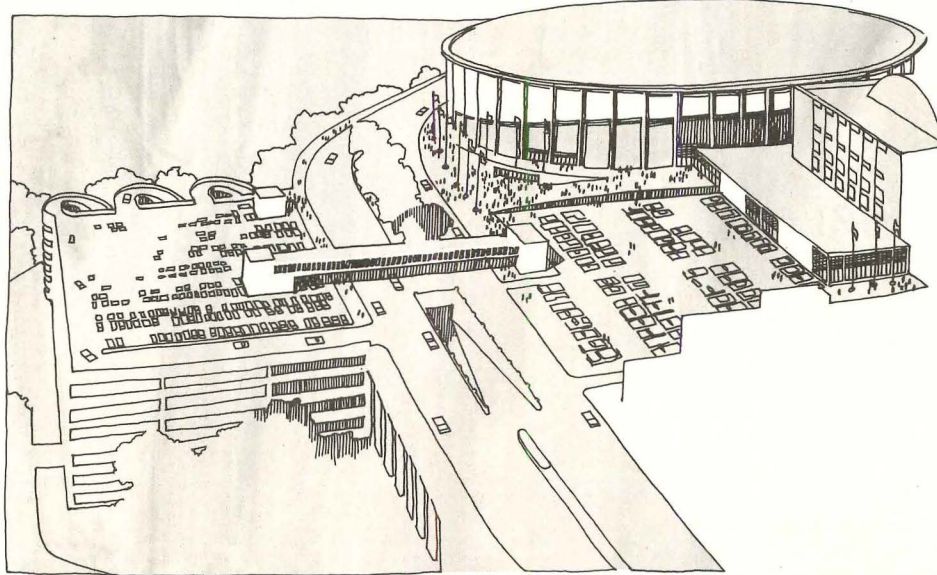


\$2.98



\$3.54

Rockland Community College, Suffern, N.Y. Architect: Schofield & Colgan.
 Here Foam-Line is used as a fascia band. These short panel lengths increase the proportion of erection cost, compared to a more typical long-span wall. Even in this limited application the cost compares favorably with other fascia materials offering long term maintenance economy. Cost \$3.54 P.S.F., installed by Robertson; Vitralume® finish.



\$2.65

St. Paul Convention Center, St. Paul, Minn.
 Architects: Haarstick, Lundgren & Associates;
 The Cerny Associates;
 Grover Dimond Associates;
 Brooks Cavin, Architect.
 The main arena is clad in 57,000 square feet of Foam-Line wall system, with Durasil® finish. Installed by Robertson for \$2.65 P.S.F.

ROBERTSON

WHAT SHOULD YOU DO ABOUT MALICIOUS MISCHIEF?



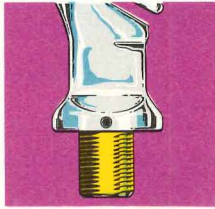
SPECIFY VANDAL-RESISTANT WATER COOLERS



SW SERIES MINI-COOLER
Only 20½ inches from top to bottom.



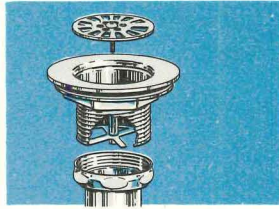
SQUIRT-PROOF
Exclusive 2-stream projector thwarts pranksters. Placing finger over outlets diverts water through slotted openings without squirting.



ALLEN-HEAD SET SCREW
Screw in base of projector locks square nipple in place to prevent turning and unauthorized removal of projector.



SQUARE OPENING
Squared nipple fits into square hole in fountain top to prevent twisting and possible internal damage to cooler.



SECURED DRAIN
Strainer is secured with a special vandal-resistant Allen-head screw, which can be removed by authorized personnel if necessary.

In addition to the features shown above, Halsey Taylor vandal-resistant design includes sturdy, steel cabinets, and all-welded construction that stoutly resists careless use or deliberate abuse. Heavy gauge stainless steel receptor tops will not chip or stain. Removable front panels are available with concealed vandal-resistant fasteners. Automatic stream height regulator and valve is located *inside* the cabinet to prevent possible tampering.

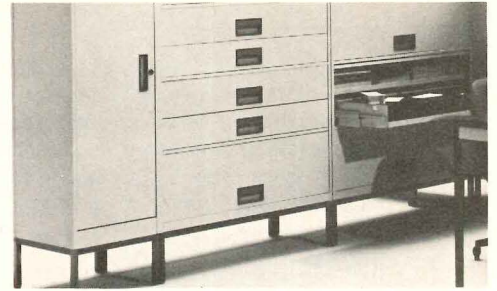
Write for complete information about Halsey Taylor vandal-resistant water coolers, drinking fountains, and classroom sinks.

THE HALSEY W. TAYLOR COMPANY • 1560 Thomas Rd., Warren, Ohio 44481

SUBSIDIARY • KING-SEELEY **KST** THERMOS CO.

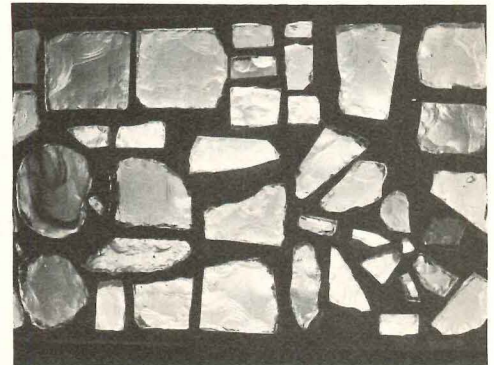
Halsey Taylor®

For more data, circle 89 on inquiry card



WARDROBE CABINET / Available in three heights, the largest model, 64½ in. high, is furnished with coat rod and hat shelf. The smaller models are equipped with coat rod only. When combined with storage cabinets (above), a work center is created. ■ Steelcase, Inc., Grand Rapids, Mich.

Circle 313 on inquiry card



FACETED GLASS/EPOXY PANELS / These panels, composed of thick glass pieces embedded in a ½-in. epoxy matrix, are available in large sizes and need no protective glass. Before hardening, the matrix is treated to remove all air and gases that cause cracking. The manufacturer reports the panels will not crack when exposed to severe climatic changes or moisture, and that their fillers will not settle while offering maximum strength. ■ Ars Liturgica, Morris Plains, N.J.

Circle 314 on inquiry card



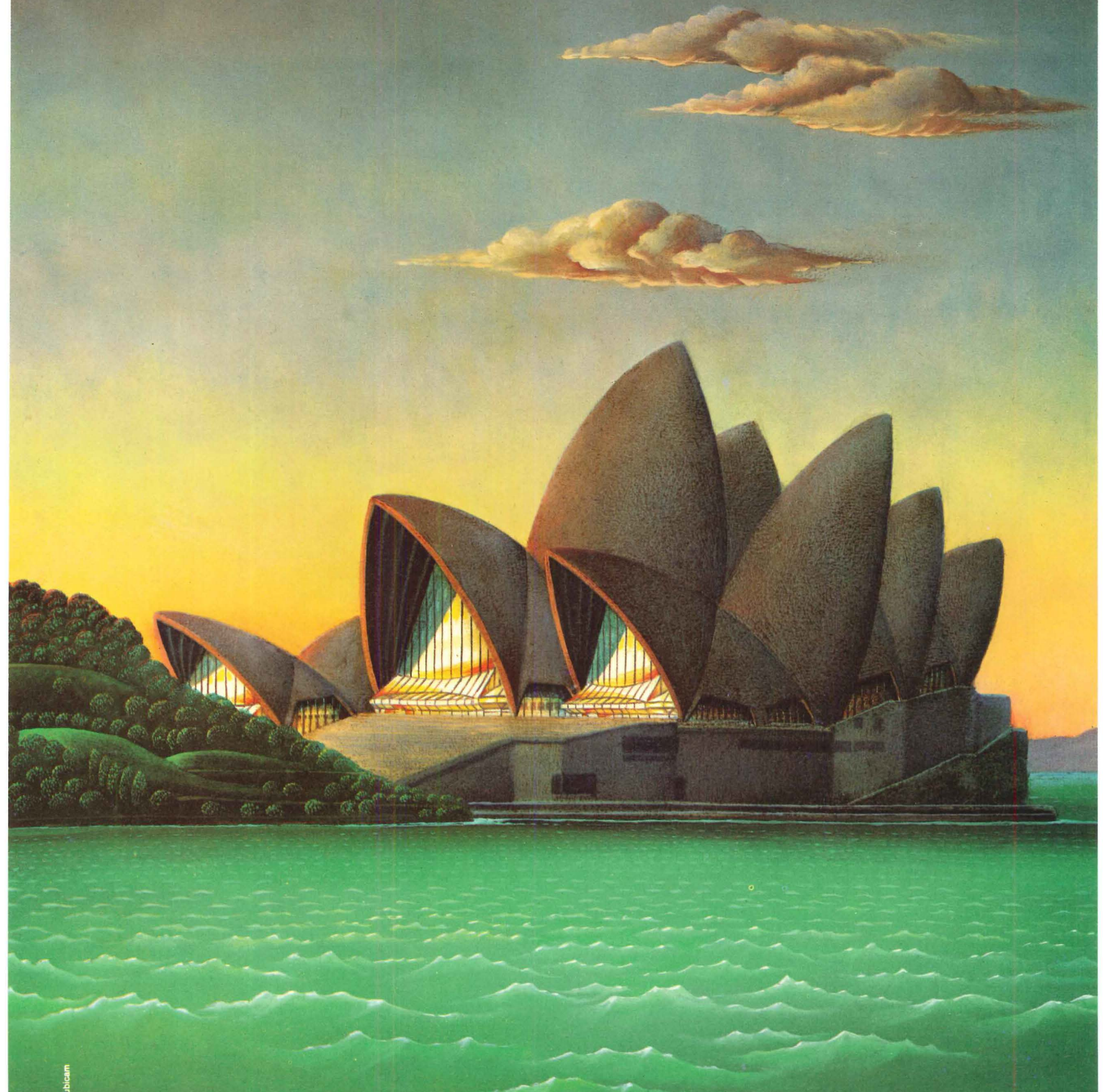
BATH SYSTEM / Now in development, the system is designed to provide a method of quickly plumbing and completing a 5 ft by 8 ft bathroom with three basic modules of fiberglass reinforced plastic. The units, when installed, complete two walls of the room with all plumbing concealed within the units, thus eliminating the need to pierce the wall or studs to install piping. Conventional vitreous china water closets and lavatory bowls are used with the system. ■ Wallace-Murray Corp., Eljer Plumbingware Div., Pittsburgh.

Circle 315 on inquiry card

BSN promises to make perfectly standard, perfectly colourless, perfectly bubblefree plate glass.

But if you insist we'll make it as thick as you like, whatever colour you like, and with as many bubbles as you want.

The "Halle à Pots" is the only place left in the world where architects can escape from traditional glass architecture. The architect of the Sydney Opera House insisted on having a light topaz glass. So we made it.



The Architect's Guide to Blinds.

In this chapter: Introduction; how to cut costs on air conditioning; surfaces that reflect heat; how to keep heating bills down; surfaces that absorb; color; what to do to learn more.

Introduction.

There are as many different blinds as there are windows. A busy architect can't be expected to know about all of them. This convenient guide should serve as an aid to specifying more creative window coverings. Reprints of this guide and additional information are available from Levolor on request.

How to Cut Costs on Air Conditioning.

We get quite a few letters every month asking about the problem. And the answer is quite simple: blinds are the best window covering for this purpose and the correct *choice* of blind can make a substantial difference in the air-conditioning load of a building. And contrary to what a lot of our correspondents seem to think, white is no longer the best color you can specify to keep air-conditioning bills down.

Surfaces that Reflect Heat.

Levolor has done a lot of research in this area. And we've come up with a bright silver blind with a shading coefficient of .14 thru 1/4" clear plate (plain white blinds have a coefficient of .27). What this silver blind can do to an air-conditioning load depends, of course, on the climate, the exposure, etc. But it can make a substantial difference.

HOW LEVOLOR RIVIERAS REDUCE HEAT LOAD

Comparative Shading Coefficients

Coating of Slat	Thru 1/4" Clear Plate		Thru 1/4" HA Plate		Reflect.	Absorpt.
	Open	Closed	Open	Closed		
White	.49	.27	.42	.29	.70	.30
Sand	.52	.38	.45	.28	.53	.47
Raw Umber	.67	.65	.49	.48	.08	.92
Polished Alum.	.45	.22	.34	.27	.76	.24
Brushed Alum.	.50	.25	.41	.28	.73	.27
Polished Brass	.52	.36	.42	.30	.55	.45
High Gloss Alum. Mirror Finish	.37	.15	.34	.23	.89	.11
Low Gloss on Mirror Finish	.40	.19	.36	.25	.81	.19

And don't think that, just because the side of the slats toward the outside of the building is silver, you're limited to silver for the inside. The other side of the blind can be any color you like; you'd choose it to go with the rest of the interior decor. If you wonder how the correct color is maintained for the outside, we've solved that problem with our "tiltone tilter."

How to Keep Heating Bills Down.

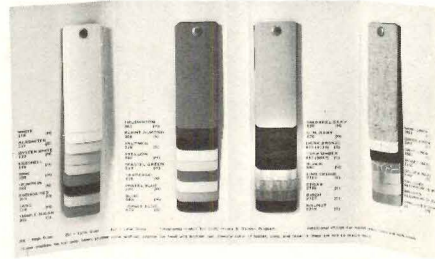
Just as you can cut air-conditioning costs with a reflecting blind, you can cut heating bills with an absorbing blind. And you don't have to pick a dull or uninteresting color, either.

Surfaces that Absorb.

Levolor has come up with a raw-umber colored blind with an absorptance coefficient of .92. Which means that your heating system gets a tremendous boost from the absorbed light and heat during the daytime hours.

Color.

People used to think of blinds as dull, drab, bulky window coverings. But that kind of thinking is outmoded. Levolor Rivieras come in a tremendous variety of colors (50 are in stock), from bright silver



and polished aluminum all the way to raw umber and black. And they fit comfortably into areas that other window coverings just can't make use of. No other window covering can do as much.

What to Do to Learn More.

Our whole life is blinds, the way your life is designing. If you ever want to know anything at all about blinds, from the basics to very special modifications, our staff is at your disposal. Just write us or give us a call.

Levolor Blinds

WE MAKE YOUR WINDOWS LOOK GOOD.

Levolor Lorentzen, Inc., 720 Monroe Street
Hoboken, New Jersey 07030

Gentlemen of Levolor:

I want to know more, please send me

- Architectural Bulletins.
- Window Magic, a booklet about creative window coverings.
- Color chips.

Name _____

Title _____

Firm _____

Address _____ City _____

State _____ Zip _____

A-3

New Delta 2000 lets you scale down specs now... and scale up later...without costly rework. Brings in building automation on a tight budget.

You know what can happen with ordinary building automation systems when the total construction bid comes in too high. Back to the drawing board!... redesigning the whole job.

But *not* with Delta 2000! It has *downward* capability...lets you drop out modules cut back functions, with

no tedious rework of your initial plans.

And it can grow later...all the way to a full computer-based system, without ever scrapping a single piece of original hardware!

Only Delta lets you scale up/down this easily, economically. Contact Honeywell, G2118, Minneapolis, Minn. 55408.

Honeywell

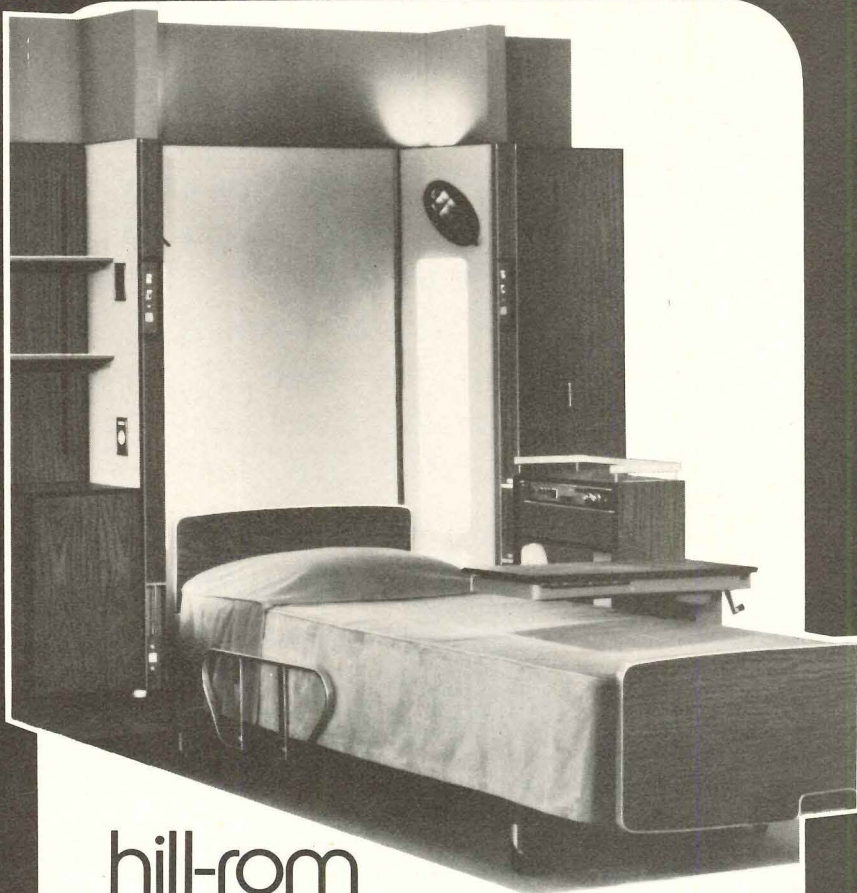
The Automation Company



The tight-budget machine.



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- Spiraling Construction Costs . . .
- Increasing Elapsed Construction Time . . .
- Difficulties in Mechanically Servicing Patient Room Areas . . .
- Providing Mechanical Flexibility in Patient Rooms . . .
- Planning a Functioning Patient Room Lighting System . . .
- Insuring a Safe Electrical System for Patients . . .
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Years of research and nearly a half a century of patient room experience backed Hill-Rom's introduction of the ENVIRO-CARE SYSTEM . . . a modular system of cabinetry, lighting and mechanical services designed to give architects solid answers to the problems listed above.

If you are facing these problems in planning a new hospital or renovating an existing facility, write for further detailed information and specifications to the Hill-Rom Company . . . the world's largest manufacturer of patient room furniture.



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A Division of Hillenbrand Industries, Inc.

For more data, circle 93 on inquiry card

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 233-234

LIGHTING / "Indoor Lighting Systems—Designer's and Buyer's Guide," a 56-page catalog, features a complete line of indoor luminaires for HID lamps. Sample lighting problems and solutions, distribution and layout information, I.E.S. recommended illumination levels, and ballast performance characteristics are included. ■ General Electric Co., Lighting Systems Dept., Hendersonville, N.C.

Circle 400 on inquiry card

FURNACES / A line of direct gas-fired duct furnaces for industrial and commercial applications is described in a six-page bulletin. All 26 models available are designed to provide fresh air heating in existing make-up air systems already equipped with blower sections. Lists of standard and optional features are given. ■ Hastings Industries, Inc., Omaha, Neb.

Circle 401 on inquiry card

FINISH SYSTEM / An acrylic, color finish system for tennis courts, play areas, sidewalks and other areas requiring a paved surface of asphalt or concrete is described in a 4-page brochure. The manufacturer claims that the system retains its surface smoothness and original color for 5 to 8 years without need for resurfacing. ■ California Products Corp., Cambridge, Mass.

Circle 402 on inquiry card

INTERIOR SYSTEMS / The most recent developments in a line of ceiling systems are illustrated in a 64-page catalog which also features products related to acoustical, ventilating, suspension, lighting and partition systems. Specifications are included. ■ Conwed Corp., St. Paul, Minn.

Circle 403 on inquiry card

SECURITY SYSTEM / Descriptive literature introduces a modular system designed for larger commercial and financial institutions which gathers alarm data and provides a visual, audible and printed status report. Any number of sensing points may be checked quickly, while indicator lights display the condition of each point monitored. When a monitored point changes status, a printed message noting time and date is received at the rate of 10 characters per second. ■ Diebold, Inc., Canton, Ohio.

Circle 404 on inquiry card

OUTDOOR LIGHTING / A line of area lights designed for large-area, high-illumination level applications is described in a brochure showing parking lot and other applications. ■ Wide-Lite Corp., Houston.

Circle 405 on inquiry card

FURNITURE / A series of general office and executive furniture, the Davis Allen Collection, is described in a 12-page brochure. The desks feature a turn-around top and removable panels, making it possible to conceal telephone lines and electrical wire within the desk itself and position telephones and office machines on either side of the desk. The line is available in oiled teak and walnut, oak, and in 28 metal colors. ■ The General Fireproofing Co., Youngstown, Ohio.*

Circle 406 on inquiry card

* Additional product information in Sweet's Architectural File.

more literature on page 208



*Edison Plaza Building. Owners: Toledo Edison Company.
Engineers • Architects • Planners • Samborn, Stekettee, Otis and Evans, Toledo, Ohio.*

The glass that cuts building costs.

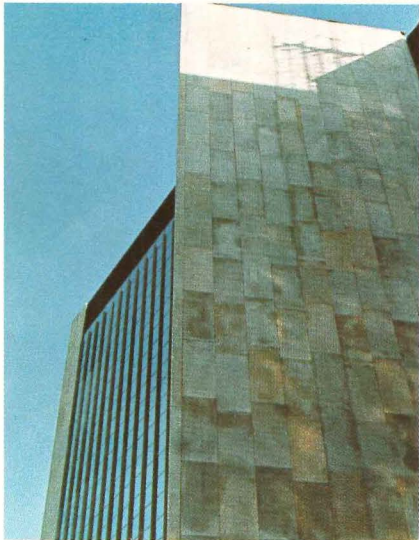


**Here, L-O-F's most expensive glass
reduced construction costs, will save
in annual operating costs.**



Vari-Tran® reflective insulating glass by L-O-F. Now you may justify it on construction cost savings alone.

The engineering • architectural • planning firm of Samborn, Stekettee, Otis and Evans made a computerized cost analysis of their glazing alternatives while the building was still on their boards. They compared various types of glass in terms of year-around heat loss and gain, initial glass costs, total building cost, effects on taxes and insurance, annual operating costs, etc. (See summary in box.)



What came out, loud and clear, was that Thermopane with Vari-Tran 108 coated glass as the outer pane would save the owners money. Less expensive to build. Less expensive to operate.

This was not just because Vari-Tran's superior heat-reflecting qualities require less air conditioning tonnage. Since height of cavities between floors is less because smaller ducts are adequate, the same space is achieved in a shorter building at lower construction cost. And Vari-Tran permitted a simple radiation system 6" deep around the perimeter of the building. An average of 500 sq. ft. of usable space



was gained per floor. The other glasses considered would have required an expensive induction system 18" deep.

As to aesthetics, the silvery Vari-Tran 108 blends with the limestone columns and spandrels of Tuf-flex® tempered glass, also Vari-Tran coated. (Vari-Tran is available in golden as well as silvery coatings in reflectivities of 8, 14 and 20 percent.)

If you would like a computerized cost analysis of the glass wall of a building you're planning, contact your L-O-F Architectural Repre-

sentative, or Architectural Dept., Libbey-Owens-Ford Co., Toledo, Ohio 43624. It could surely help you solve your budget problem.

ECONOMIC GLASS COST ANALYSIS

by Samborn, Stekettee, Otis and Evans, Toledo, Ohio

Uniform annual costs for the glass were based on an anticipated useful life of 40 years for the building, 20 years for the air conditioning equipment. Both costs are for borrowed money at 8% interest.

The initial cost of Thermopane with Vari-Tran and the air conditioning equipment it requires is less than for 1/4" plate and the increased air conditioning it would require. And the total annual cost of owning and operating the building will be substantially less and will result in reductions as follows as compared with 1/4" plate.

64.7% reduction in capacity of central refrigeration equipment

67.9% reduction in capacity of distribution system

53.2% reduction in capacity of central heating equipment

19.2% reduction in comparative initial costs

24.4% reduction in comparative uniform annual cost

33.7% in total annual operating costs

29.5% savings in comparative annual operating costs

There are also incalculable benefits from glazing with Vari-Tran/ Thermopane: greater humidity control in offices and the computer room located on an outside wall; sharp reduction of roomside condensation and down drafts near windows in winter, increasing comfort.

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



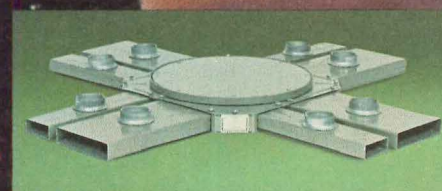
Be prepared for the explosion in communications.

The communications explosion is already hitting buildings in some towns. Tenants are expanding. Phones are being changed around, more brought in. Sophisticated, new equipment is being employed. So be

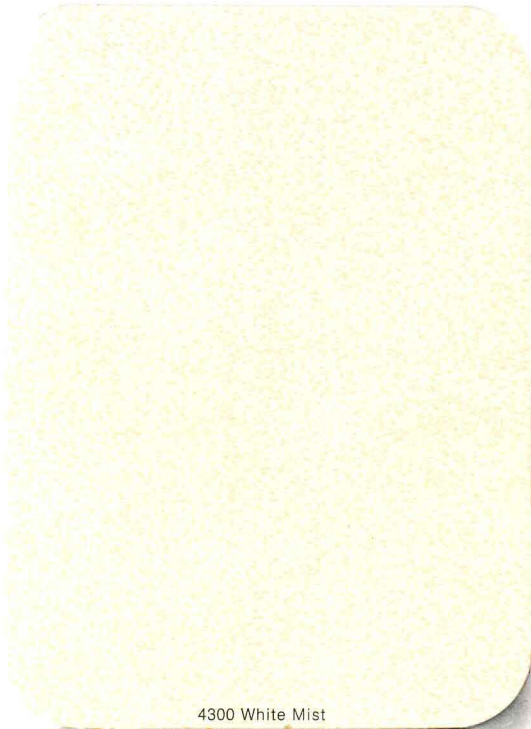
prepared. Put a Walkerduct Underfloor System in your building specs. It will help keep the building from being a dud.

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.



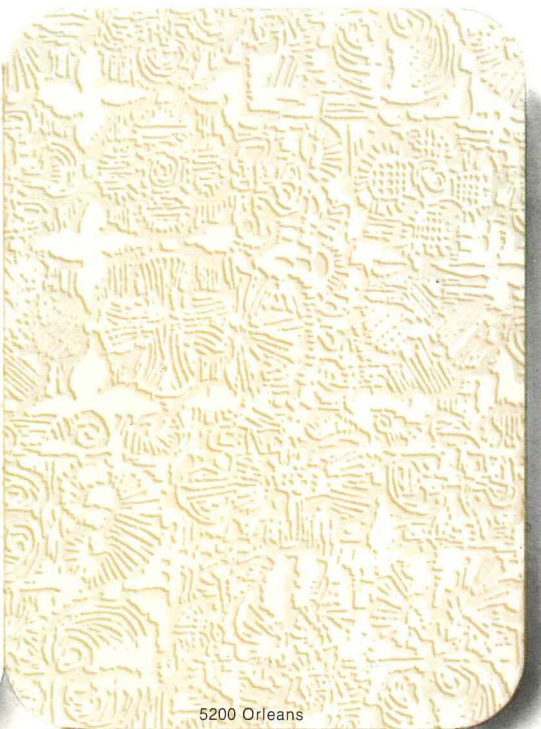
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WALKER/
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4300 White Mist



5300 Antique Laurel



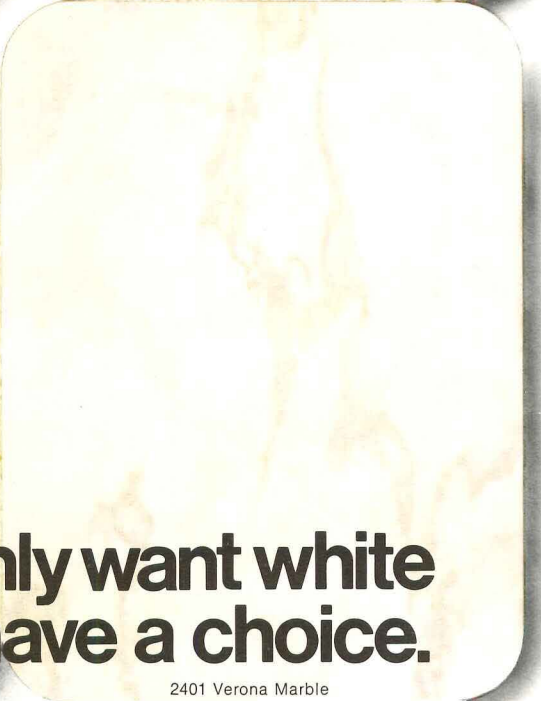
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4560 White Celeste



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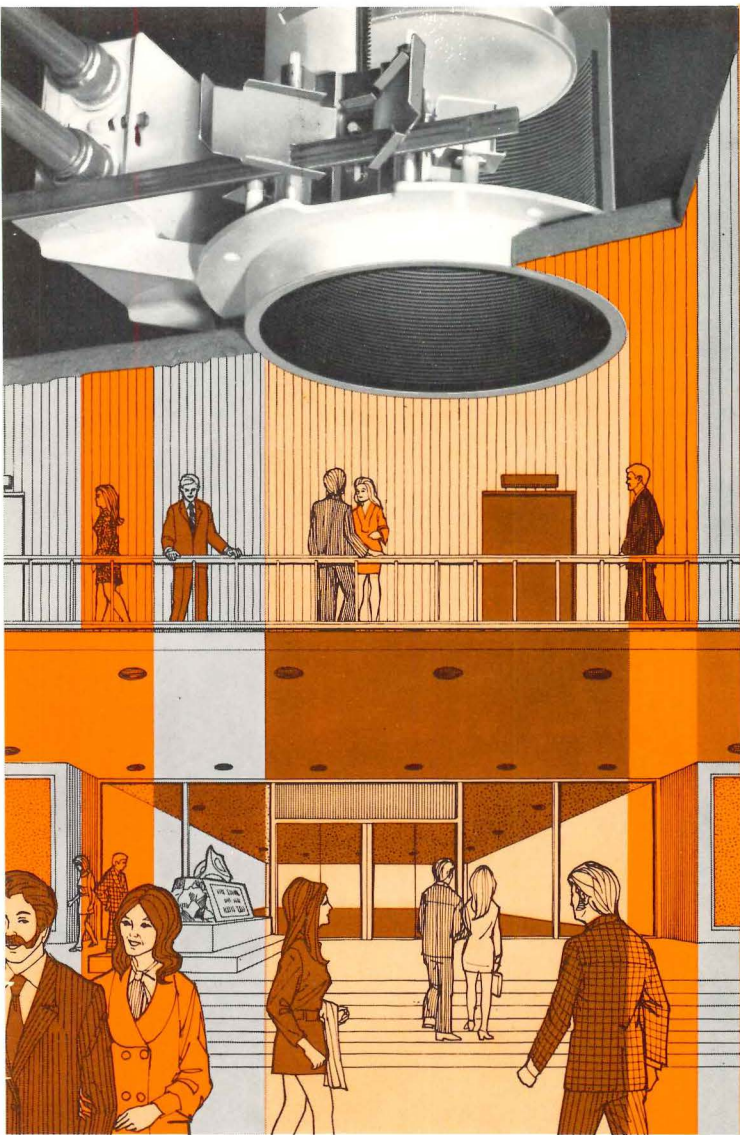


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AR-1



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ARE UP TO
NEW TRICKS**

Air King Lighting's enlightened designers present a brilliant new line of contemporary, recessed, incandescent lighting fixtures, offering faster, easier, more precise installation for an incomparable finished appearance. Highlights of the exclusive new features:

- Rigid one-piece die-cast aluminum plaster frame and J-Box Mount.
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- Spring control bracket locks housing into position on bar hangers.
- Snap-in housing removable from above or below.
- Snap-in Lexan finish ring adjusts perfectly to fit flush to ceiling.

Choose from eight versatile basic models, featuring mini baffles, multipliers, and ellipsoidal downlights, in sizes from 50 to 500 watts. Also available in surface and semi-recessed series. All units prewired and U.L. approved for thru-branch circuit wiring. Write for new catalog for full information.

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A subsidiary of Air King Corporation



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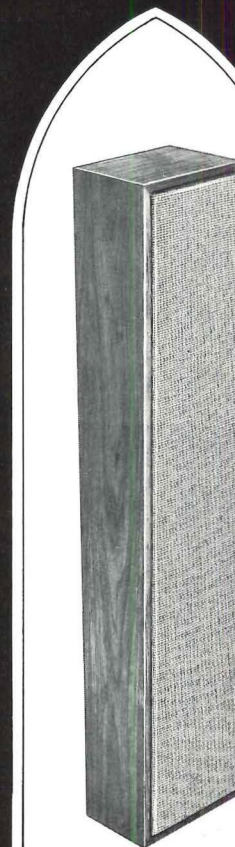
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**Every architect
should read
our 12-page sermon
on sound columns.**

It's an ear opener.

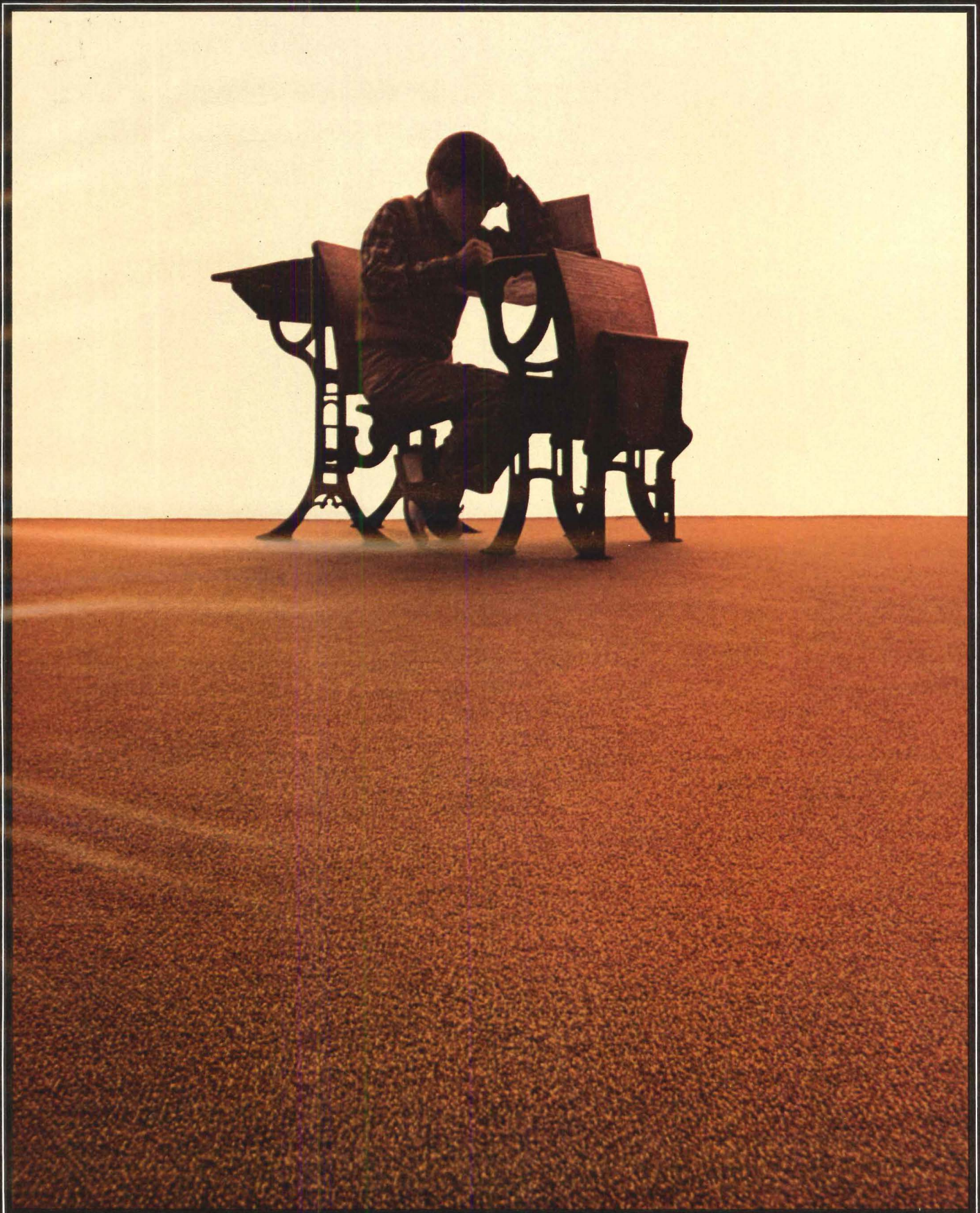
Free illustrated booklet tells all about sound columns... how they can increase effective power of sound reproduction by 75% or more... even in most difficult structures. Write today!

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PRODUCTS COMPANY

600 So. Sycamore, Genoa, Illinois 60135

For more data, circle 102 on inquiry card

Columbus Mills makes "Manifesto" with Super Stuff.* Why?



*the 2nd generation polyester fiber made especially for contract carpet.

Performance.

When you talk about designing educational facilities, you're talking about a very special kind of designer. And about a very special kind of carpeting. Versatile, beautiful, warm, yet tough.

At Columbus Mills, we figure a carpet that can handle the challenge of a classroom can handle any problem in the world. So we designed "Manifesto" to take on the whole class.

How? Tight, dense construction; tufted @ 1/10 gauge. The toughest backing available: a combination of Typar primary backing with jute or high-density foam secondary backing. And the

TUNNEL TEST FOR SURFACE BURNING CHARACTERISTICS (ASTM-E84) All samples comparable construction, jute backing.

Olefin (staple fiber)	70
Acrylic* (staple fiber)	64
Nylon (soil-hiding)	64
Nylon (continuous filament) ...	59
Olefin (cont., filament)	55
Acrylic* (staple fiber)	55
Super Stuff.....	45

*Identical listings indicate similar fiber from different fiber producers.

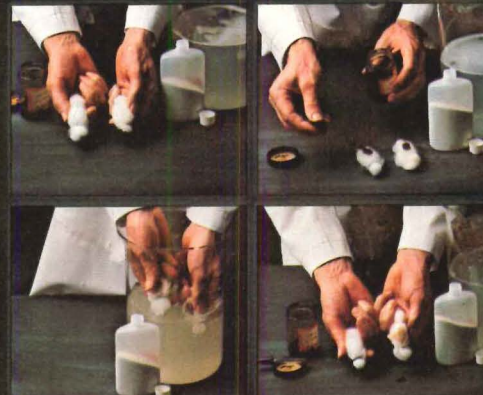
fiber made specifically for contract use: Beaulit Super Stuff®. The 2nd generation polyester; unlike anything on the market.

Why Super Stuff? Look at the facts. The same tests. At the same time. Under the same conditions.

We think when you add up the results, you'll reach the same conclusion we did.

And we think you deserve the opportunity to reach an honest decision.

STAIN RELEASE: Raw white fiber, stained with motor oil, rinsed in a mild detergent. Super Stuff, the fiber on the left, released the stain completely. Competitive fiber, on the right, allowed stain to be redeposited. (See chart below.)



The chart below represents tests of various fibers. The carpet used to represent each was virtually identical in construction: 1/10 gauge tufted carpet with .218" pile. Comparisons of carpets with different construction characteristics would result in different numerical results, but their relationship to each other would remain the same.

TEST ↓	FIBER →	Acrylic (staple fiber)	Olefin (staple)	Polyester (ordinary polyester)	Super Stuff (2nd generation polyester)	Olefin (Continuous filament)	Nylon (Continuous filament)	Nylon (Soil hiding continuous filament)
FLAME SPREAD: A hellish ten minutes with a four ft. rocket of fire chewing at a 25 ft. strip of rug. The Hill-Burton Act says any rating above 75 is unacceptable. (See chart above.)		55	70	75	45	55	59	64
ABRASION: Carpet samples are whirled to complete destruction on the Taber Abraser, a gritty, weighted grinding device. The more cycles it takes to wear through to the carpet backing, the tougher the carpet.		17,200	42,000	22,700	70,000	70,000	70,000	70,000
STAIN RELEASE: Laboratory tests with carpet of Super Stuff and carpet of other leading fibers. Lipstick, coffee, mustard, mineral oil, furacin and silver nitrate are used to stain them. "Yes" means stains were fully released. "No" means stains were redeposited, not released.		no	partial	partial	yes	partial	partial	partial
OVERALL APPEARANCE: Carpet samples at an airport entrance. ¼ million people walk on it. Each sample cleaned identically: one pass with a vacuum cleaner; one pass with a rotary wet shampoo machine; another pass with a vacuum cleaner. 25 examiners rate the cleaned carpets by comparison with fresh, unworn samples. They look for soiling, matting, fuzzing, pilling, and wear. They rate the carpets 1 (very poor) to 5 (excellent).		2.90	1.60	2.80	3.05	2.60	1.90	3.25
CRUSH RESISTANCE: All carpet samples are mashed for 24 hours under a table leg bearing 250 lbs. Complete recovery (impression completely gone, pile back to original height) in only 3 cases.		within 16 hrs.	not recovered after 24 hrs.	within 4 hrs.	within 4 hrs.	not recovered after 24 hrs.	within 4 hrs.	within 16 hrs.
FADE RESISTANCE: All samples clamped in front of a high intensity carbon-arc fadeometer for 120 hours. Equivalent to more than eight years in front of window.		no fade	no fade	no fade	no fade	no fade	severe dye break @ 80 hrs.	severe dye break @ 80 hrs.
STATIC RESISTANCE: All samples put through standard voltmeter tests. Under normal conditions, human sensitivity begins at approximately 2400 static volts.		1,000	1,600	6,500	1,000	1,000	6,500	6,500
NOISE REDUCTION: All carpets given standard test for sound absorption in a reverberation room. .45 is the poorest score recorded, .65 is the highest.		.45	.55	.65	.60	.55	.60	.60

Columbus Mills Inc., Columbus, Georgia 31902, (404) 324-0111. ®Super Stuff is a registered trademark of Beaulit Fibers.

Manifesto, by Columbus Mills.

The carpet we made for contract, with Super Stuff, the 2nd generation polyester.

Make a grand entrance with G-P Curtis[®] doors



You take such pains with the rest of the building, why take chances with the doors? For years, Georgia-Pacific's Curtis[®] doors have been famous for quality. They're sturdy doors. Tough. With a look and feel that says fine craftsmanship. What's more, all Curtis doors are color matched and can be ordered in specific colors. So they add to the decor of a building. Curtis doors are pre-machined and pre-fitted, cutting labor costs at the site. And they come with harmonizing or matching edge strips, practically eliminating on-site finishing. In addition, most Curtis doors have hardwood cores which means greater stability and longer life. Today, ask your G-P representative about Curtis doors—the grand entrance.

For more data, circle 85 on inquiry card.



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In unit-molded fiberglass for extra strength and durability. High gloss finish. Graceful designs . . . built to inspire, impress, endure.



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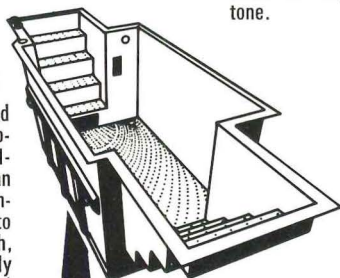


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Aluminum church lighting in five styles, to compliment any style of architecture. Available in natural aluminum or anodized in gold, brass or copper tone.

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55-472

For more data, circle 107 on inquiry card

First, Wade wrote the book on DWV system Carriers. Then, we added some new chapters.

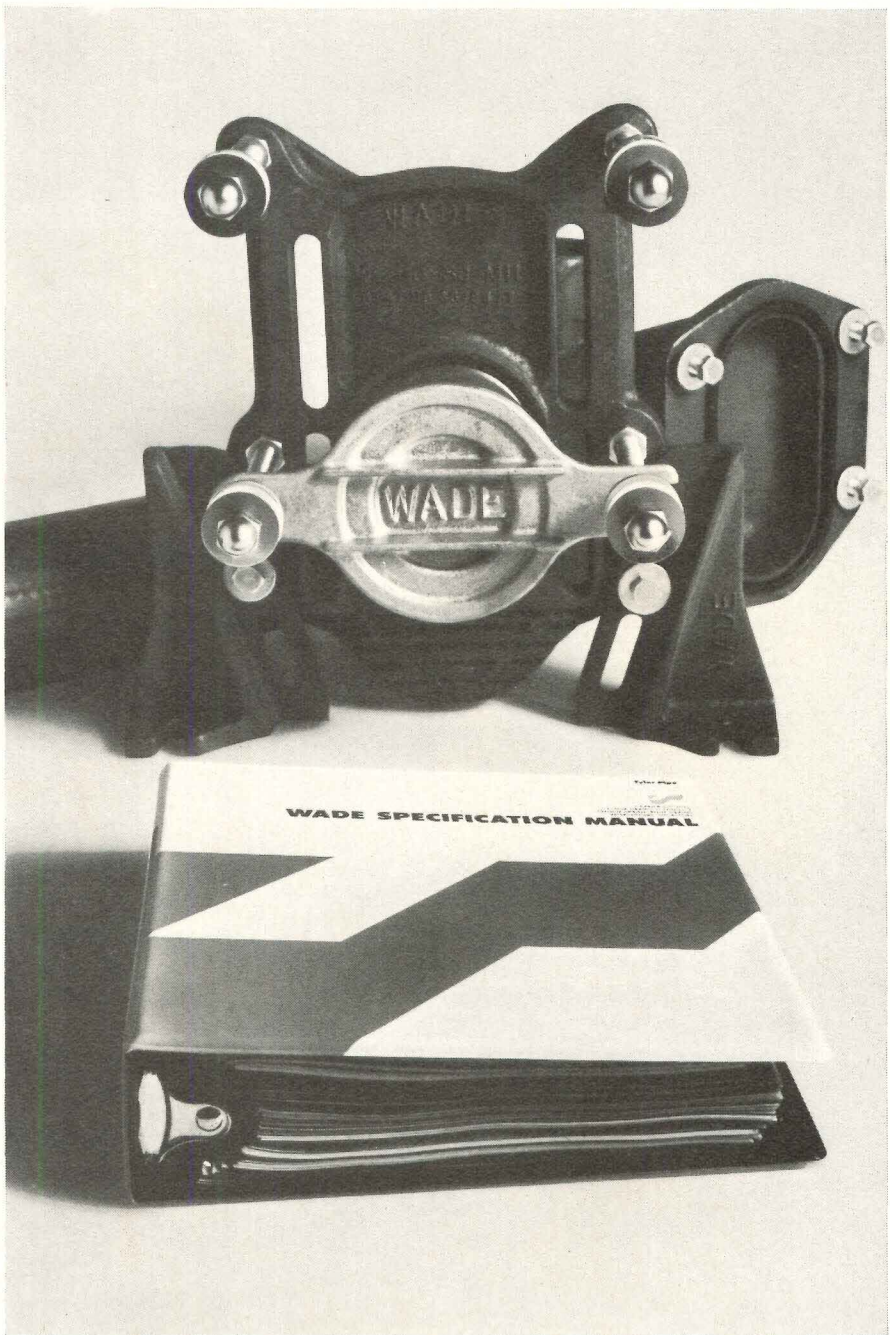
The book is our Wade Specification Manual and it was good as far as it went.

But then we expanded the carrier-fitting line to include all kinds of new ones for all kinds of materials and applications.

So we added new chapters to include the specs, the types, everything you need to know about the expanded line. Now you can specify Wade carriers for cast iron, plastic, copper and lead. Wade has eight new carriers for No-Hub systems plus new ones for hub and spigot SV pipe.

Next time, specify from our "new book," the Carrier Catalog section of the Wade Specification Manual. For your free, registered copy, simply write us on your letterhead. P. O. Box 2027, Tyler, Texas 75701.

If it goes into a DWV system, Tyler makes it.



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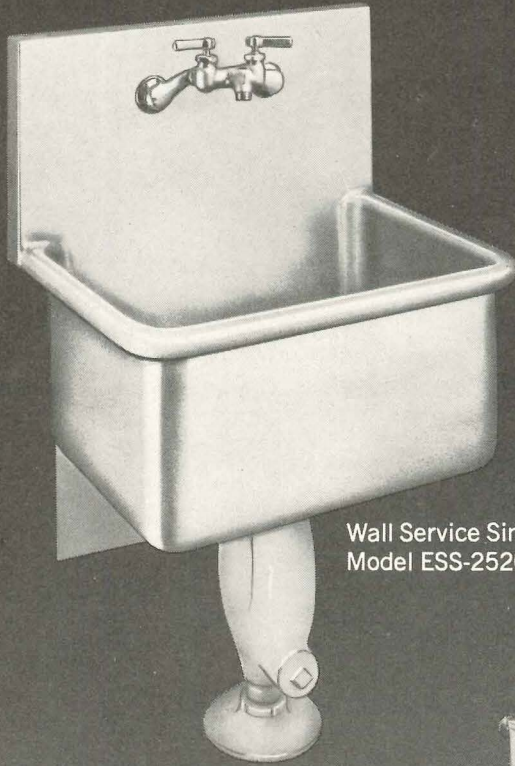
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The Elkay institutional sink line reflects long experience in designing and building leadership products of stainless steel. Innovative features that improve function, appearance and service are part of every Elkay institutional product.

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SERVICE SINKS

A full line of floor and wall mounted service and mop sinks. All of stainless steel and designed for today's applications. A flushing rim model service sink is also available and offers unusual convenience and sanitation.



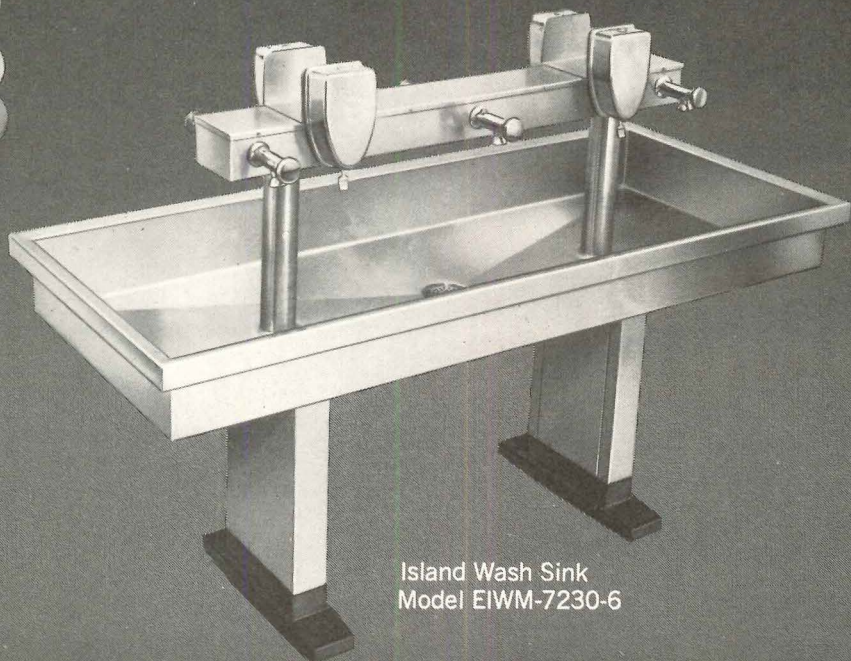
Wall Service Sink
Model ESS-2520



Floor Service Sink
Model EFS-2523

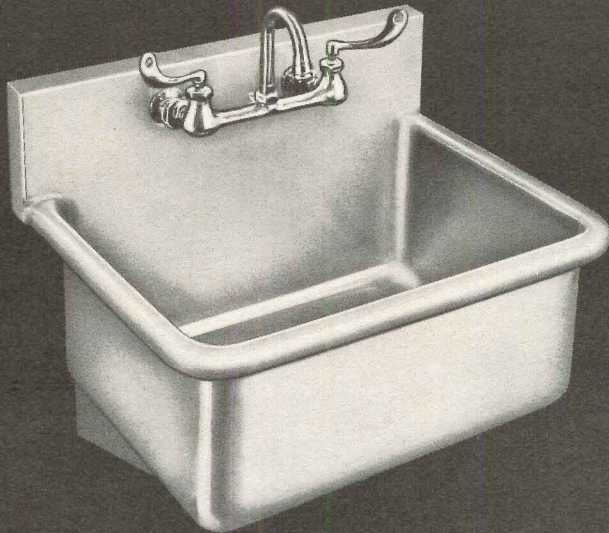
WASH-UP SINKS

A complete line of multiple station wash-up sinks featuring individual station controls, automatic shut-off, positive temperature regulators, soap dispensers. No-drip channel rim design prevents dripping on floors. Made in island and wall multi-station types.



Island Wash Sink
Model EIWM-7230-6

see our catalog in Sweet's 



SURGEON'S WASH-UP SINK

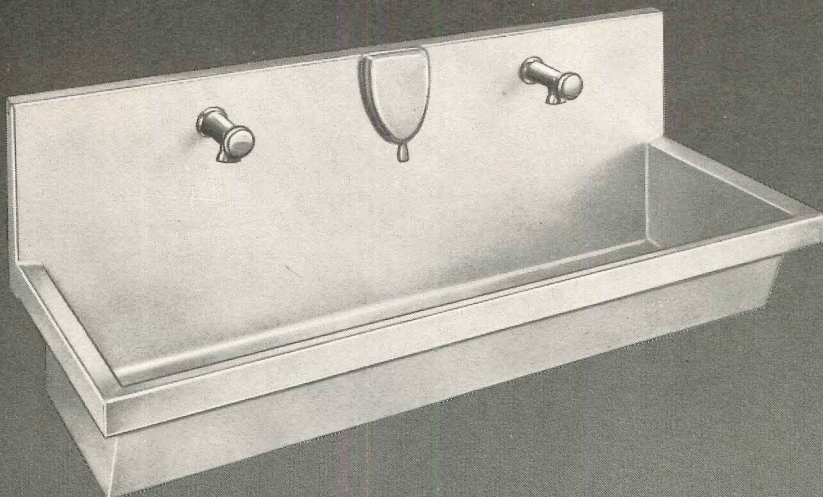
Fine Elkay lustrous finish stainless steel wash-up sink with stainless steel brackets. Equipped with blade type, wrist operated faucet handles. Also available are knee and floor control models and automatic temperature control models.

Model EWS-2520-W

SURGEON'S LAVATORY WITH INSTRUMENT TRAY

Furnished with built-in instrument trays which drain into center compartment. Equipped with knee action, floor or wrist controlled mixing valves and goose-neck aerator spout as selected.

Model ESLV-2820-F



Wall Wash Sink
Model ETWM-4820-F



For complete information write for Catalog No. IPC-2 or call Customer Service Dept., Area Code 312-681-1880. ELKAY MANUFACTURING COMPANY, 2700 S. Seventeenth Ave., Broadview, Ill. 60153

For more data, circle 110 on inquiry card

Everything you
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know about
sprinklers*

*BUT WERE AFRAID TO ASK

Our new, 32-page SPRINKLER SYSTEM GUIDE lays it all out. Building codes . . . insurance considerations . . . fire protection costs . . . and much more we can't tell here. Dozens of explicit illustrations. It's free. Send for it . . . before you get burned!



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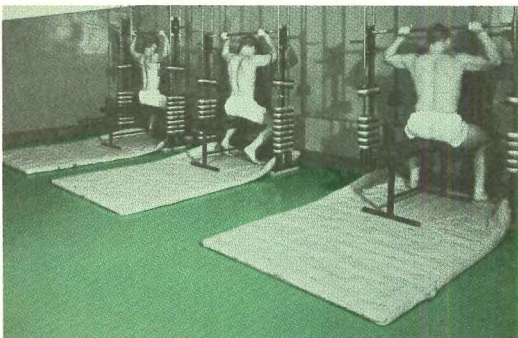
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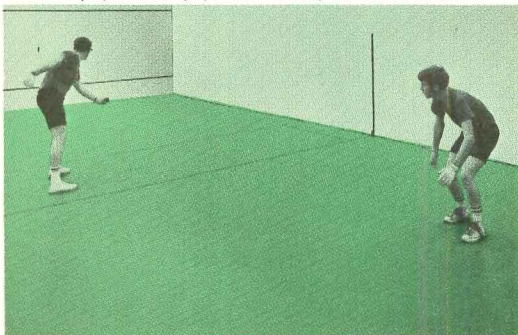
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You were right to wait for Robbins **SPORT-TRED**



Also ideal for tennis, track, baseball, soccer, lacrosse; and ramps, walkways, roof decks, locker rooms.



Robbins' new indoor/outdoor synthetic floor can be customized to your own unique specifications for color, length, thickness and formulation. What's more, Robbins has solved many of the problems plaguing other synthetics. As the leader in athletic floors of all types, Robbins was determined to have the best synthetic, too. It takes a little longer to bring out the best, but the wait was worth it. New Robbins SPORT-TRED is solid vinyl. Unlike laminated vinyls and filled urethanes, it won't fade, change color, shrink, absorb stains or show undue wear patterns under normal use. Specially compounded paints stay on without scuffing or smearing.

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Please send me full information on new Robbins SPORT-TRED customized synthetic indoor/outdoor athletic floors for . . . () immediate consideration () future reference.

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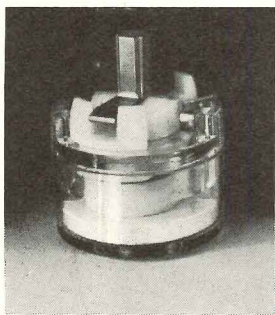
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World Leaders in Athletic Floors **ci** Division of Cook Industries, Inc.

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Aquarian. We put the CeRamix cartridge in and left the washers and service problems out.



Our new CeRamix™ cartridge makes the Aquarian™ line the most trouble-free fittings you can install.

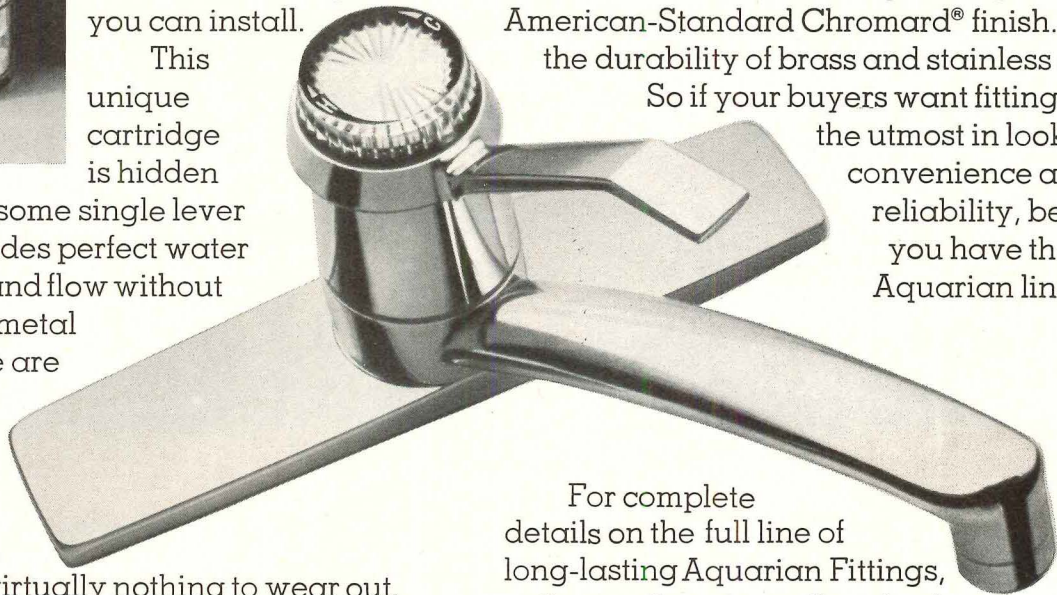
This unique cartridge is hidden

inside a handsome single lever fitting. It provides perfect water temperature and flow without any metal-to-metal contact. There are no washers. And there's never a need for any kind of lubrication.

There is virtually nothing to wear out.

The remarkable CeRamix cartridge with its jewel-hard ceramic discs is immune to sand, silt, grease and other impurities that cause wear and dripping. And if service ever is required, the entire cartridge can be slipped out and replaced in seconds.

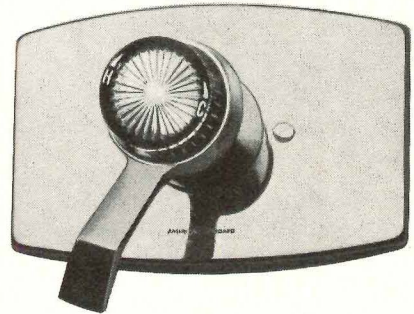
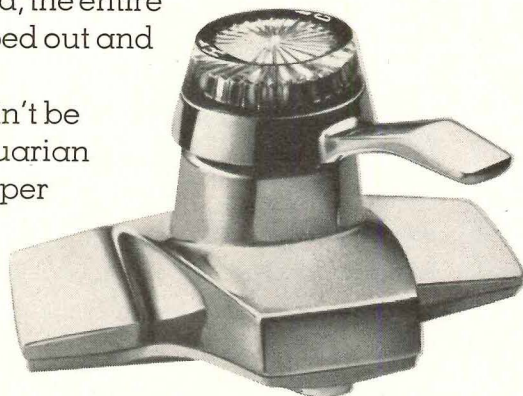
Installation couldn't be simpler either. All Aquarian fittings come with copper tubing that installs easily in any piping system.



And if you think the Aquarian line looks good on this page wait till you actually see it. These are design classics that fit in anywhere. With the everlasting beauty of the American-Standard Chromard® finish. Plus the durability of brass and stainless steel.

So if your buyers want fittings with the utmost in looks, convenience and reliability, be sure you have the Aquarian line.

For complete details on the full line of long-lasting Aquarian Fittings, call your American-Standard plumbing contractor. Or write American-Standard, P.O. Box 2003, New Brunswick, N.J. 08903.



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just a doggone millisecond!



It takes the instantaneous response of integrated circuit logic—to set a new pace for passenger service. That's the secret of Haughton's new 1092-IC elevator control system.

Passenger Destination Time—from corridor call to arrival at destination—involves factors that conventional systems have to ignore. But 1092-IC applies a new technology. Integrated circuitry supplies the unlimited logic to break away from inflexible operating patterns. Passengers now

can arrive at destinations sooner.

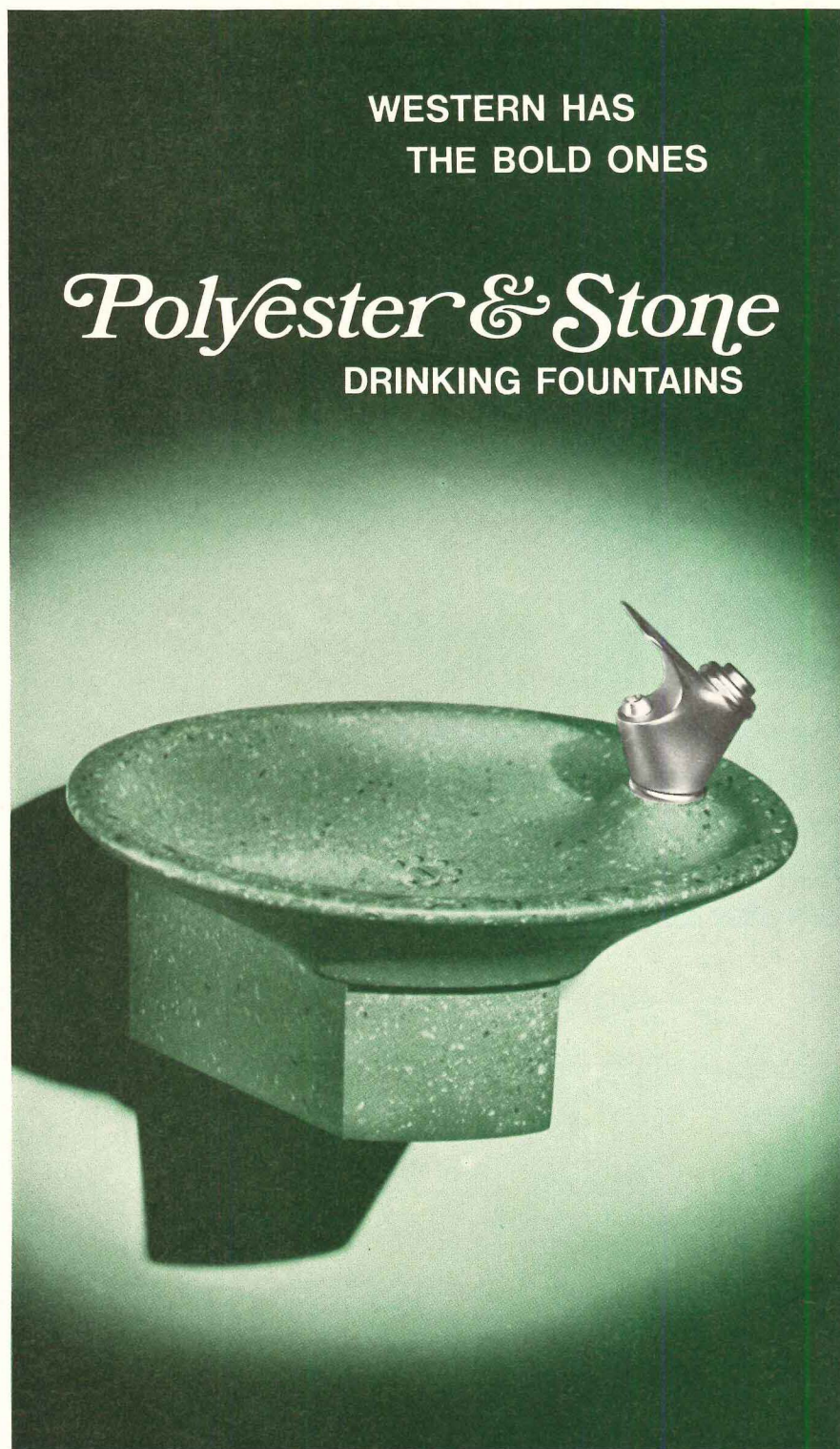
Alert to *every* existing and changing factor that affects the response and transit time of every elevator, 1092-IC deals with each instantaneously: allots and reallots calls to cars best able to handle them right through to destination *in the shortest time*.

There must be a lot more to it than this—and there is, otherwise we wouldn't be able to claim that the 1092-IC system produces the shortest passenger Destination Time ever achieved.

Write us for your copy of the HAUGHTON 1092-IC BROCHURE. It explains things you should know.

RELIANCE  **HAUGHTON ELEVATORS**
ELECTRIC COMPANY
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WESTERN HAS
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Polyester & Stone

DRINKING FOUNTAINS

This attractive, lightweight, and durable polyester and stone drinking fountain is available in your choice of five glorious colors—grey, green, charcoal, white, and beige. Western also has nine other Bold Ones that go perfectly in any building.

Write for our complete catalog and see for yourself why the Bold Ones are your best bet.



WESTERN DRINKING FOUNTAINS, INC.

A subsidiary of Sunroc Corporation
14487 Griffith St., San Leandro, California 94577

For more data, circle 115 on inquiry card

OFFICE LITERATURE

continued from page 188

WALL/FLOOR SURFACES / Two brochures describe a group of exposed aggregate wall surfaces for exterior wall construction such as block, tilt-up walls or exterior grade plywood and a line of corrosion-resistant floor surfaces for applications where corrosion and wear resistance are required. ■ Kalman Floor Co., White Plains, N.Y.*

Circle 407 on inquiry card

EDUCATIONAL EQUIPMENT / A revolving surface chalkboard said to provide up to three times more writing surface per linear foot is described in a 4-page bulletin. The chalkboard's continuous surface revolves around steel rollers to provide new writing space. The line includes wall-mounted and portable models. ■ Educational Aides Inc., West Conshohocken, Pa.

Circle 408 on inquiry card

PLANTS AND SERVICES / A service supplying live plants, plant maintenance, and pottery to the architectural and interior design market is described in a catalog. A collection of artificial plants is also available. ■ Parker Interior Planting Services, Scotch Plains, N.J.

Circle 409 on inquiry card

PLASTIC FINISHES / A 16-page brochure describes a line of finishes based on Kynar 500, a resin used in formulating durable exterior coatings for aluminum and galvanized steel. The brochure reports test results indicating a life expectancy of over 20 years of maintenance-free performance. ■ Pennwalt Corp., Plastics Dept., Philadelphia.

Circle 410 on inquiry card

DOOR HEATERS / A bulletin describes a line of direct-fired gas units, each with a full set of safety controls. The units are self-contained, and require only gas and electrical connections. ■ The New York Blower Co., Chicago.

Circle 411 on inquiry card

PAVING PROCESS / A method of imprinting patterns in colored concrete to produce a textured effect is described in a bulletin. A range of patterns including brick, tile and cobblestone is available. Most applications are for interior and exterior horizontal surfaces. ■ Bomanite Corp., Palo Alto, Calif.

Circle 412 on inquiry card

COATING SYSTEMS / A line of intumescent fire-retardant coatings based on *Pliolite* resins is described in a 4-page booklet. Tables on formulations and a description of test results are included. ■ The Goodyear Tire & Rubber Co., Akron, Ohio.

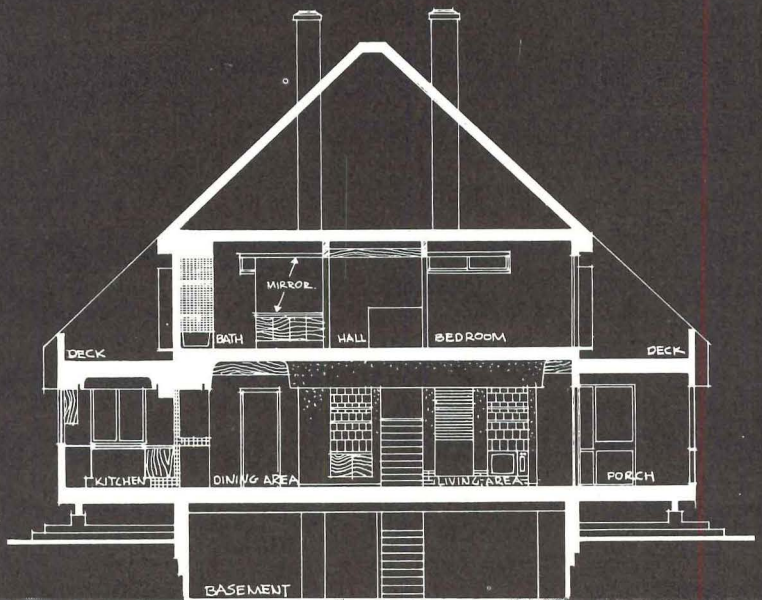
Circle 413 on inquiry card

FLOORING / A line of solid vinyl floor tile for commercial use is described in a 12-page catalog showing patterned and solid-color tile, and feature strips. A line of accessories is shown including cove and straight wall base, wall corner guard, static-conductive flooring, ceiling and wall covering for shielding electronic equipment and a surface producing an "ice-less" ice-skating rink. ■ Vinyl Plastics, Inc., Sheboygan, Wis.

Circle 414 on inquiry card

* Additional product information in Sweet's Architectural File.

more literature on page 212



Residence at Gardner, Kansas. Certigrade Shingles No. 1 Grade: roof, 24" Royals; walls, 16" Fivex. Architects: Seligson/Eggen. Owner-contractor: Henry McGrew.



Red cedar shingles restore some great planes to the Great Plains.

Owner Henry McGrew decided some rural renewal was in order after he bought this farmhouse near Kansas City. The building was structurally sound, so minimum cost turned the trick. Red cedar shingles for the expansive plane surfaces of the outside. New wall surfaces and a double-sided fireplace for the inside. New doors and windows for in-between.

Red cedar shingles were selected for

several reasons. Their natural beauty looks inviting from a distance — something that Kansas has lots of. Their rich texture complements a rustic environment. And their inherent warmth projects a sense of informality.

Red cedar is also practical. It is naturally insulative against the coldest Great Plains winter, the hottest summer. It withstands even hurricane

force winds. And it requires no maintenance for decades.

For your next remodeling project, specify the enduring beauty of red cedar Certigrade shingles or Certi-Split handsplit shakes. For details and money-saving application tips, write: 5510 White Building, Seattle, Wa. 98101. (In Canada: Suite 1500, 1055 West Hastings St., Vancouver 1, B.C.)

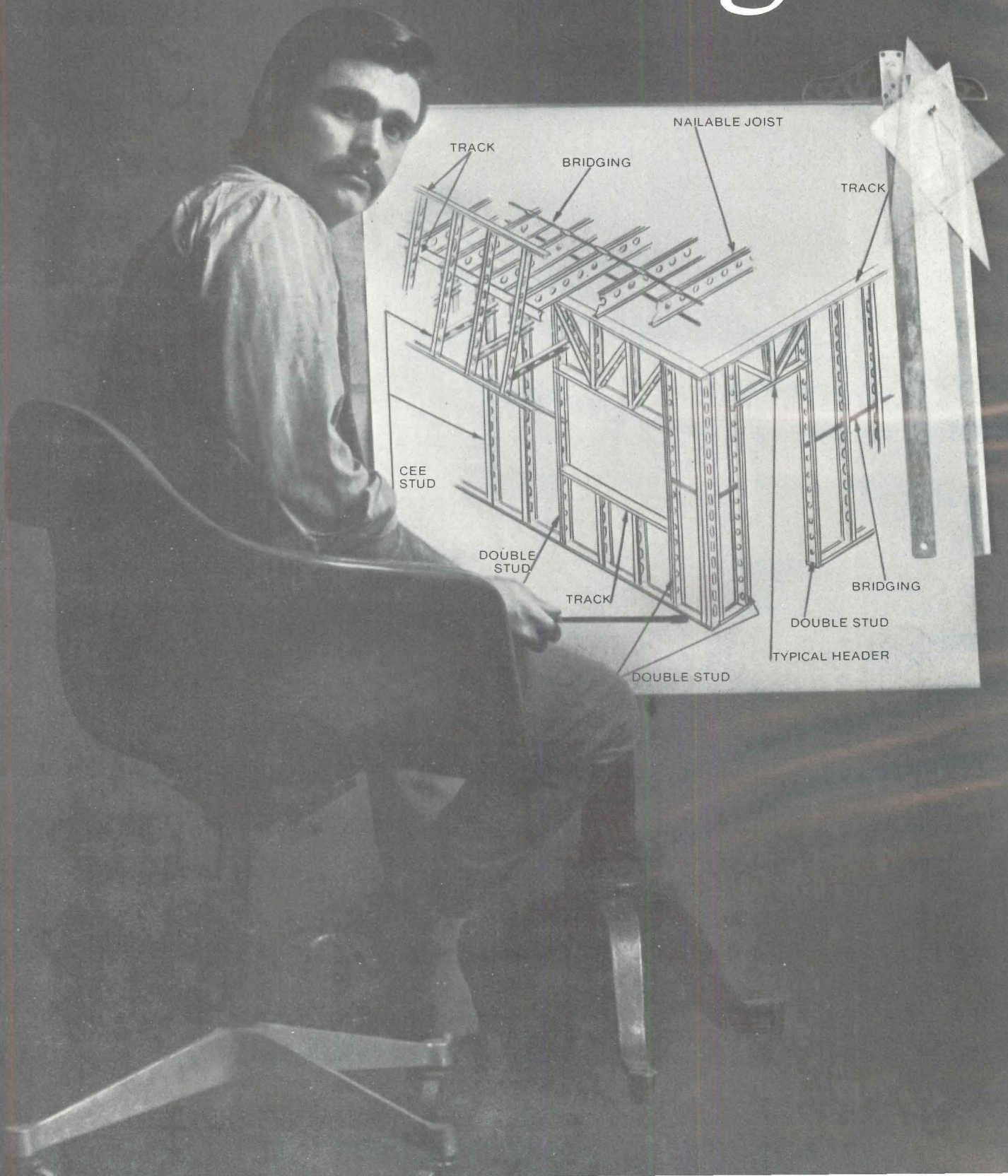


Red Cedar Shingle & Handsplit Shake Bureau

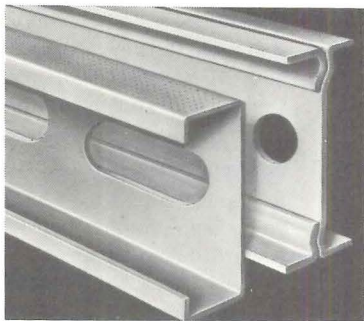
One of a series presented by members of the American Wood Council.

For more data, circle 116 on inquiry card

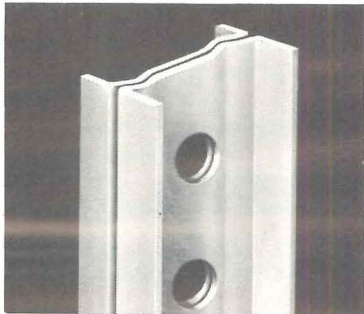
This revolutionary can change the way next building.



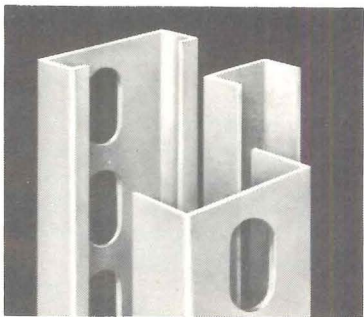
structural system you design your



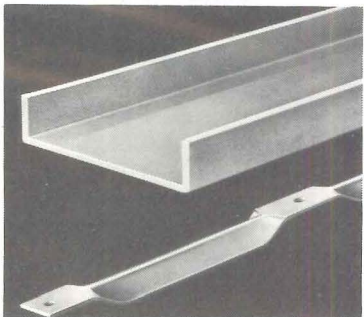
Cee & Nailable Joists



Nailable Studs



Channel & Cee Studs



Track & Bridging

At last there's a framing system that's going to help you beat today's "cost squeeze"—the increasing cost of labor, money, and the wildly fluctuating cost of lumber.

It's Wheeling's new Steel Framing System. It's the most complete light weight structural system ever introduced. And pound for pound it carries more load than any other framing material.

Our system's made up of a full line of load-bearing steel studs, track, bridging, and joists. And all the joists and studs are pre-punched to speed installation of mechanical service lines.

In addition, it gives you complete design freedom. Because it accommodates any exterior or interior surface material—masonry, steel, wood, gypsum, etc.

There are numerous other advantages our system has over conventional methods.

For example, it's quick to install. It can be prefabricated off site as well as on—which saves on labor and financing.

It's half the weight of wood—which saves on materials and foundation.

The studs form a hollow wall which conceals mechanical and electrical equipment.

And because it's made from high tensile steel, it's incombustible. It won't shrink, swell, rot, or warp and is termite and vermin proof.

It comes in two finishes (red oxide zinc chromate and weldable galvanized). Both take 100% weld.

All of which means our new Steel Framing System is ideal for the construction of schools, nursing homes, garden apartments, specialty stores, and other similar structures.

So now that you know a little about our system, we'd like you to learn a lot more. The best way is to send for our complete brochure WC 455, which has all the physical and structural properties and load tables that'll interest you. Write now. And start designing your own revolution.

For more data, circle 117 on inquiry card



Wheeling Corrugating Company

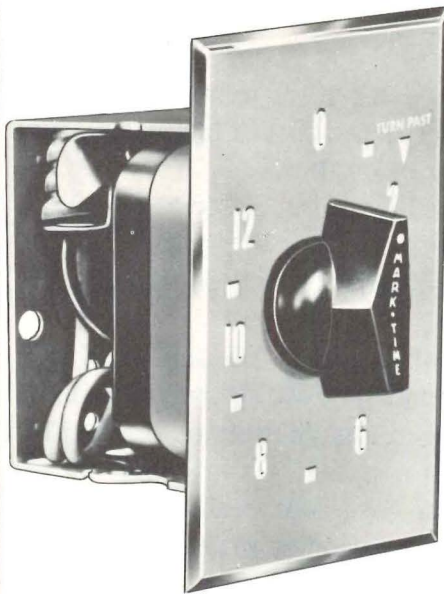
A DIVISION OF WHEELING PITTSBURGH STEEL CORP., WHEELING, W. VA.

96% of what we make builds highways, buildings and reputations.



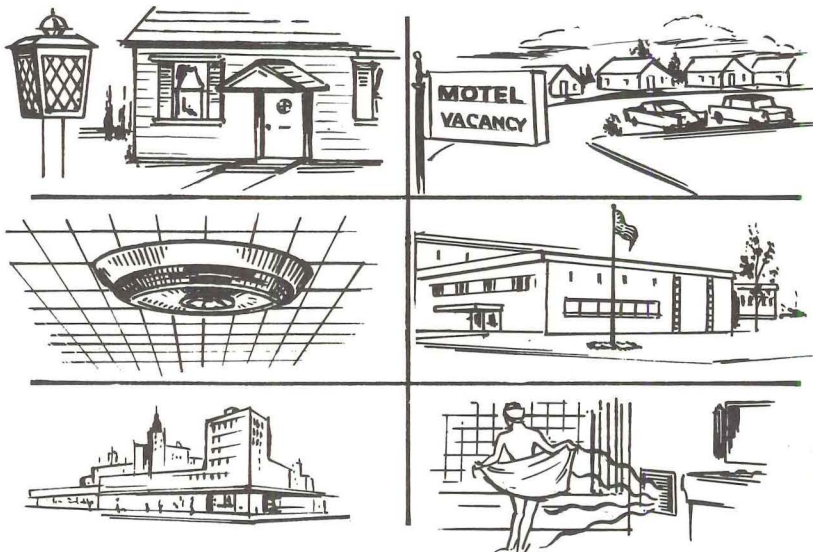
Wall Box Time Switch

**THE ONLY TIMER WITH DIAL FACE PLATE
THAT MOUNTS FLUSH TO THE WALL!**



**Turns Off Lights,
Fans, Heaters
AUTOMATICALLY
In Timings
From 3 Minutes
to 12 HOURS!**

Save electricity, add comfort and convenience, extend life of equipment. Easily installed in standard wall boxes. Recommended for hotels, motels, homes, apartment houses, public buildings. Available through wholesalers everywhere. Send for literature.



M. H. RHODES, Inc.

Hartford, Conn. 06101

In^o Canada—M. H. Rhodes (Canada) Ltd., Ottawa 5, Ontario

SIDING / A hardboard siding designed for the mass-housing market is described in a brochure. Available in three colors plus white, the siding is initially available in 12-in. by 16-ft horizontal size with color-matched corners, nails and other accessories. ■ Boise Cascade, Wood Products Div., Boise, Idaho.

Circle 415 on inquiry card

SPRINKLER SYSTEMS / A 32-page guide describes a complete line and includes information on fire protection costs, insurance requirements, building codes, water supplies, hydraulic calculations, hazard evaluation, and sprinkler system design. ■ The Viking Corp., Hastings, Mich.

Circle 416 on inquiry card

ROOF CONSTRUCTION SYSTEM / A space-frame assembly using standardized parts that can be bolted together to form roofs of varying modular configurations, widths and lengths, is described in a 24-page booklet. Technical data for both four and five-ft modules are given. ■ Unistrut Corp., Wayne, Mich.*

Circle 417 on inquiry card

DOORS / "Protective Doors," a 12-page catalog, lists specifications for acoustical, shielding, low-yield, high-performance blast, sliding fire, and hollow metal doors. Included are test performance data for acoustical doors, and detailed design sketches. ■ Overly Manufacturing Co., Greensburg, Pa.*

Circle 418 on inquiry card

PARTITIONS / Three basic combinations described in a folder include a basic working office unit, basic working art gallery and working drafting station. All three use panels and accessories to provide functional work space that can be rearranged or used in combination with other units. ■ Conwed Corp., St. Paul, Minn.*

Circle 419 on inquiry card

STEEL DRY WALL COMPONENTS / A complete line is described in a 16-page catalog including studs, track, channel and corner trim. Information on design of partitions, heights and allowable wind loads is given. ■ Niles Expanded Metals Corp., Building Products Div., Niles, Ohio.

Circle 420 on inquiry card

WATER COOLERS / A complete line of the bottle-water variety for commercial, industrial and home use is described in a 6-page brochure. Features include baked enamel or wood grain cabinet finishes, push-button faucets which dispense hot and cold water, adjustable water-temperature controls, and removable drip receptacles. ■ General Electric Co., Commercial Equipment Dept., Chicago Heights, Ill.

Circle 421 on inquiry card

GLASS / A reflective environmental control glass glazed on the outdoor surface with a durable metallic coating is described in a 16-page performance data brochure. The glass is designed to reduce solar heat build-up in buildings. ■ PPG Industries, Inc., Pittsburgh.*

Circle 422 on inquiry card

COATINGS / A line of coating systems used to waterproof vehicular decks, pedestrian decks, roofs and membranes is described in a 4-page catalog. Application methods are described. ■ 3M Company, St. Paul, Minn.*

Circle 423 on inquiry card

* Additional product information in Sweet's Architectural File.

For more data, circle 118 on inquiry card

PPG offers the first "25-rated" spray foam insulation

Now with an Underwriters' Laboratories flame spread rating of only 25, PPG's SELECTROFOAM® spray foam lets you spray on insulation for roofing and re-roofing quickly and economically while meeting the stringent building codes of most major cities. It's the first spray urethane foam awarded this UL rating.

Easily applied by one man, SELECTROFOAM spray foam covers any shape or surface after only minimal surface

preparation. SELECTROFOAM spray foam forms a strong, lightweight, monolithic surface with nearly twice the insulation value of the same thickness in the next best materials.

Its adhesion is excellent. Used as recommended in roofing systems having adequate drainage, it's an enduring, fire-retardant insulating material.

Offer your customers all the advantages of spray-on insulation with this low flame spread material. Get details from your PPG SELECTROFOAM Spray Foam Distributor, or write Resins Manager, PPG INDUSTRIES, Inc., Dept. 16W, One Gateway Center, Pittsburgh, Pa. 15222.

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Perham, Minn. 56573
218/346-3500

1011 Hill St.
Hopkins, Minn. 55343
612/938-5544

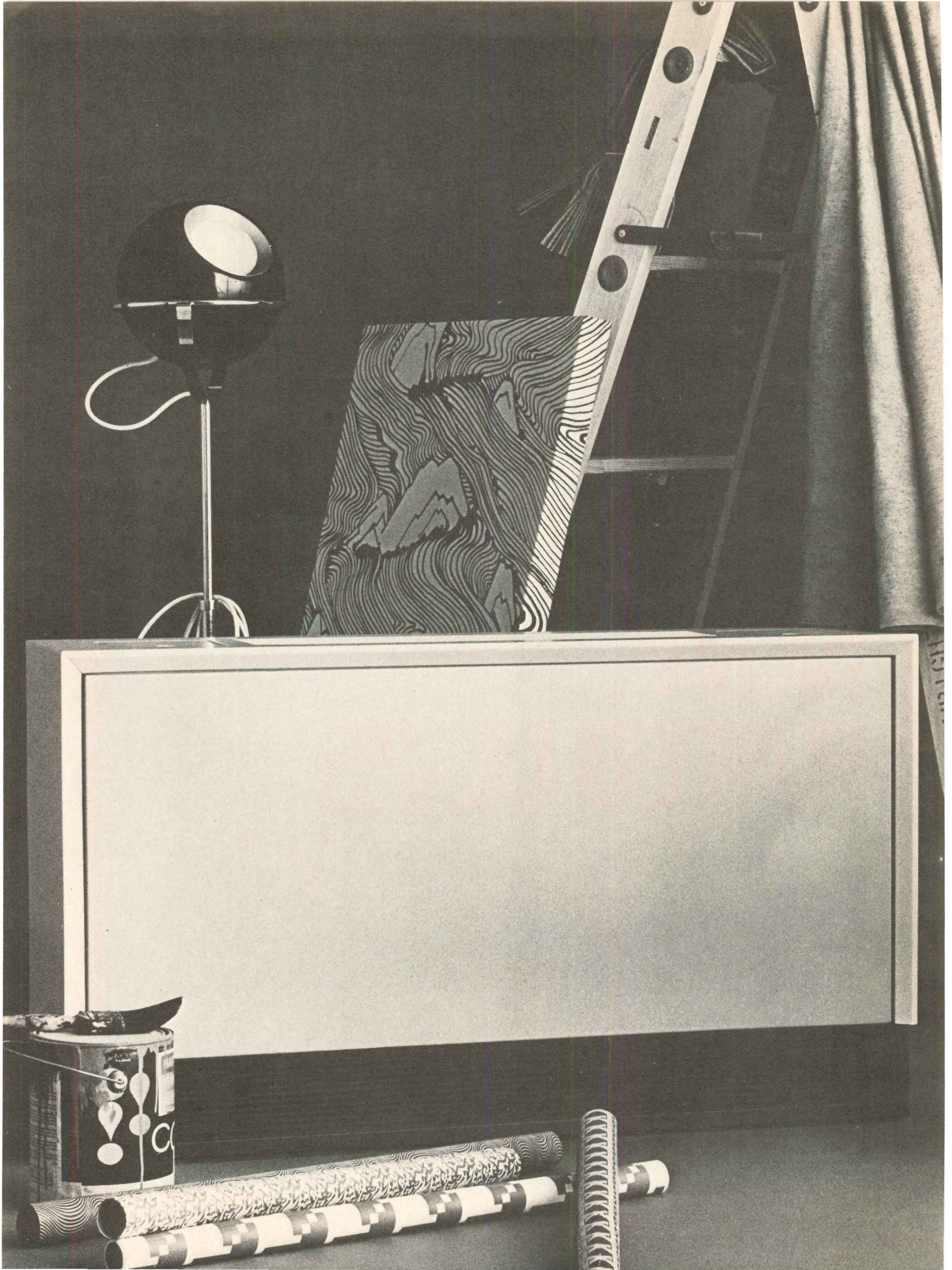
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& SUPPLY CO.
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Seattle, Wash. 98134
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NOW RATED UL-25

SELECTROFOAM

For more data, circle 119 on inquiry card



How to decorate with fresh air.

That's a lot to expect of an air conditioner. But not this new Schemenauer fan-coil unit.

It's all new, inside and out, and here are only a few of many features that will interest you:

25% to 100% fresh air ventilation. Dampers, controlled manually or automatically, mix room air with outdoor air to keep room refreshingly comfortable.

Precise control. Optional face and by-pass dampers control air flow through and/or around the coil. An anti-wipe damper prevents heat pick-up from the coil when the damper system is in full coil bypass position. Result: extremely accurate temperature and humidity control without fan cycling or water flow modulation.

Quick-change filters. On exposed floor models, filter slides out in seconds without removing front panel. Three types of filter media available.

Easy installation. With 9"-wide compartments at both ends, there's ample space for piping, controls and wiring.

5 models, 8 sizes. Standard floor unit comes in 8 sizes from 200 to 2000 cfm. Other models include concealed floor unit, slope-top floor unit, exposed and concealed ceiling units.

May we send you a copy of our fan-coil catalog?

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FIRM _____

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CITY _____ STATE _____ ZIP _____

Mail to: Modine, 1510 DeKoven Ave., Racine, Wis. 53401



MODINE

**Nothing quite equals Modine-Schemenauer
heating and air conditioning quality.**

For more data, circle 120 on inquiry card

You probably know how easy it is to slope a roof with Tapered FOAMGLAS[®] insulation...

Tapered FOAMGLAS eliminates roof drainage problems by automatically putting a slope on a flat deck. The roofer simply places factory-tapered blocks in sequence and roofs over immediately. FOAMGLAS is an excellent base, because it's strong and dimensionally stable. It consists entirely of closed-cell glass, so it's waterproof, vapor-proof, and incombustible—and guaranteed to remain so for at least 20 years.



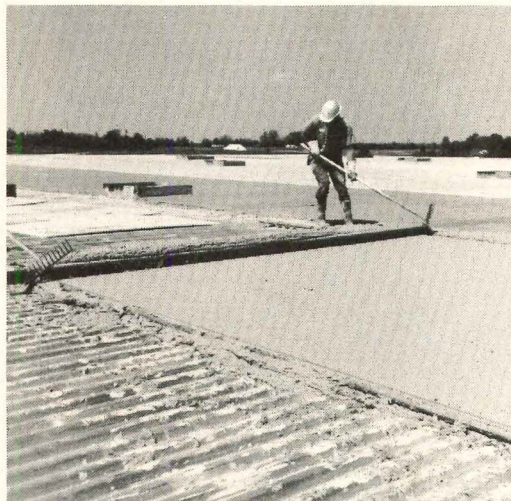
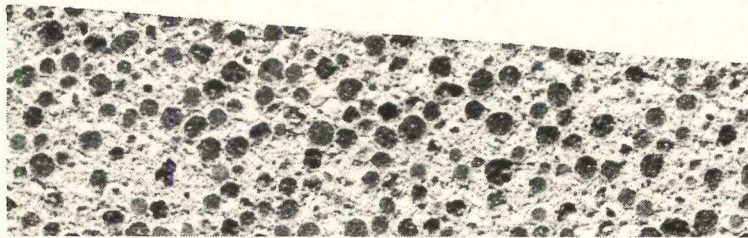
It's just as easy with CIRF, our new insulating fill that acts like concrete.

New CELRAMIC® Insulating Roof Fill is another simple way to slope a roof. CIRF eliminates the traditional problems with insulating fills because its very low water-cement ratio of .62 (6-7 gallons of water per bag of cement) is about the same as for structural concrete.

CIRF gives you a strong, durable concrete base. Curing time is very fast—you can usually roof over in a couple of days. Shrinkage is less than 0.12%, and residual moisture is negligible.

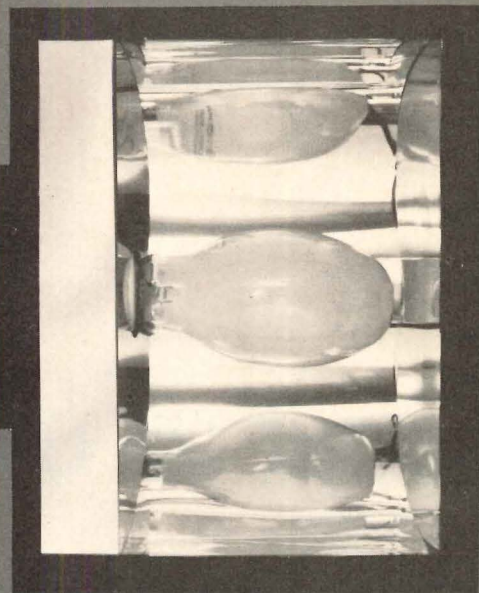
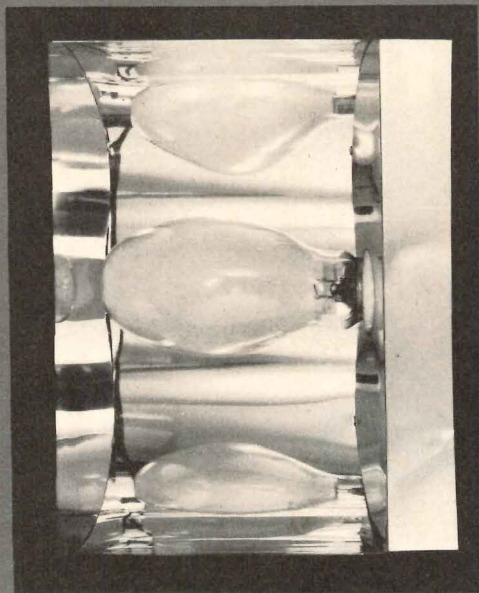
CIRF's secret is in the aggregate—CELRAMIC Nodules made of closed-cell glass. They're nonabsorbent, inorganic and incombustible, which gives CIRF a two-hour rating.

FOAMGLAS or CIRF? We'll help you decide with men, samples and technical data. Write Pittsburgh Corning Corp., Dept. AR-31, One Gateway Center, Pittsburgh, Pa. 15222.



For more data, circle 121 on inquiry card

PANORAMA



lighting perfection

Pole top Mercury Vapor units put day-light in your night



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Whatever the premises, Zonolite roof decks will keep the heat in.



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The Zonolite® Dyzone™ roof deck system produces "U" factors as low as .05.

Dyzone is a combination of vented polystyrene board and Zonolite insulating concrete, applied over a structural base of concrete or metal. Two

great insulations that make one great roof deck.

Zonolite roof decks are permanent, lightweight, and firesafe. They provide positive venting and slope-to-drains. Because they're monolithic, they eliminate heat-leaking seams.

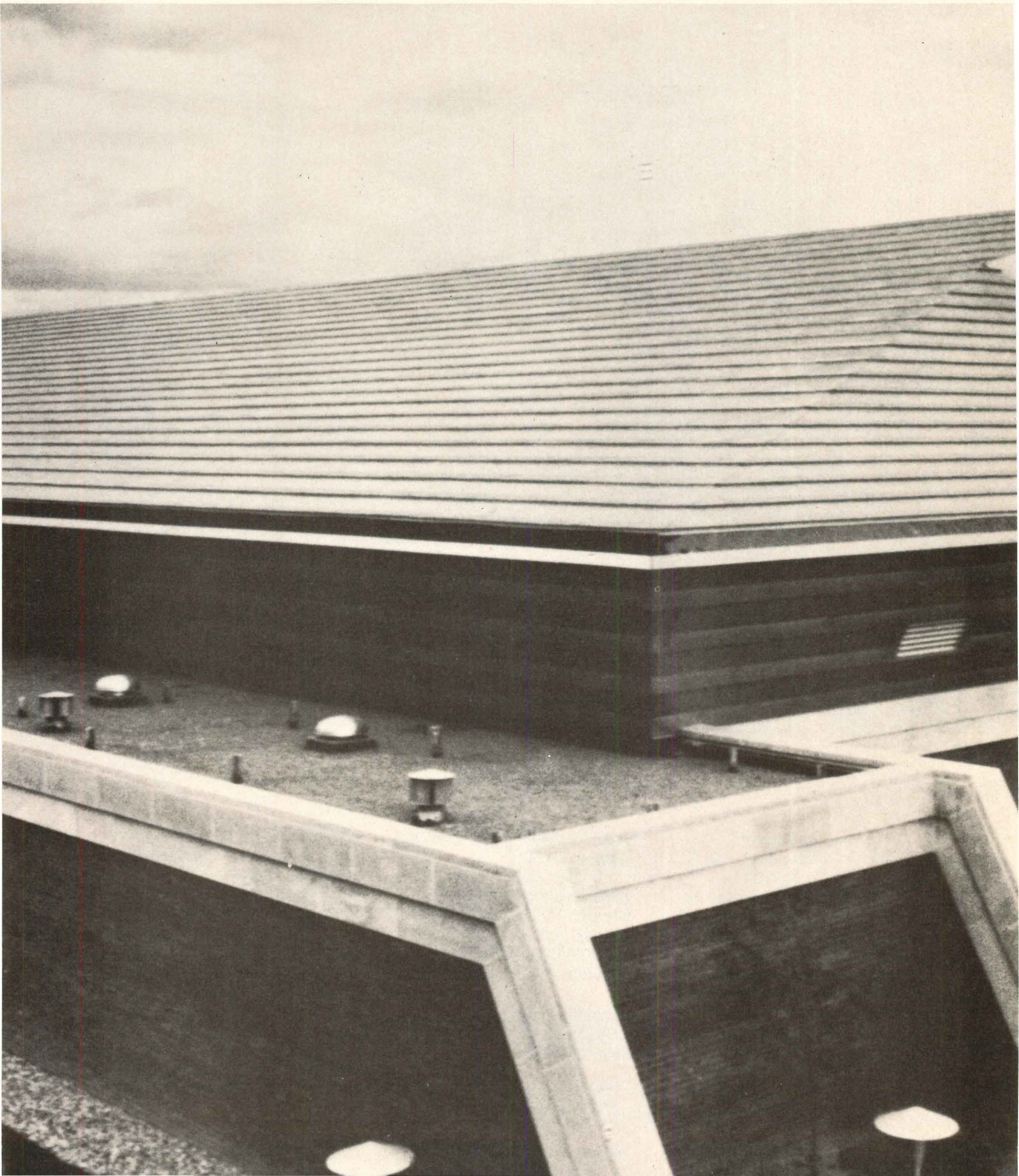
On top of all this, they're applied by approved applicators, and certified. For our latest roof deck catalog, see your Zonolite man, or write to Construction Products Division, W. R. Grace & Co., 62 Whittemore Ave., Cambridge, Massachusetts 02140.

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The Stainless



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The roof's stainless steel was delivered to the job site as flat sheets on skids in 10-foot lengths and 36-inch widths. All fabrication was done directly on the job site. The stainless sheets were cut to size and all flanges were formed with press brake equipment.

The roof is muted silver. But color is the only thing muted about it. This roof is proud, and says so in no uncertain terms. Republic Steel Corporation, Cleveland, Ohio.

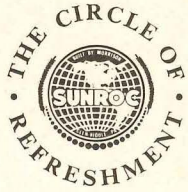
The new Benjamin F. Yack Recreation Center is a multi-use facility (public ice and roller skating, league hockey, band concerts, home and antique shows, graduation exercises) with a skating rink bigger than Detroit's and seating for 2,000 at ice events...double that when the ice is covered.

Owner: City of Wyandotte, Michigan
Mayor - William Sullivan
Architect: Jack W. Yops
Contractor: E. H. Wittman Construction Co., Inc.
Firebaugh & Reynolds Roofing Co.



Republicsteel

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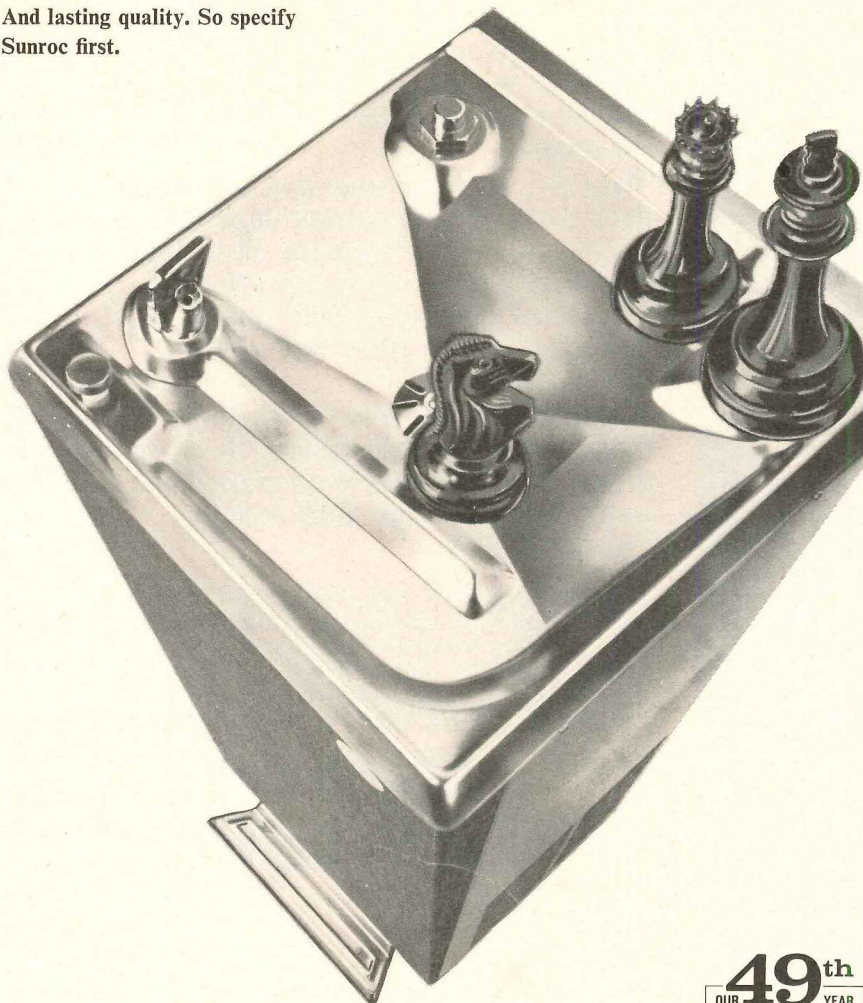


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J. Philip Gaunt, David F. Maurier, associates, Rex Whitaker Allen and Associates, San Francisco, Calif.

Robert Fleischauer, Tyrus J. Porter, Howard E. Goldstein, associates; **Linus M. Dounias and Wayne I. Welke**, senior associates; **Richard I. Krauss, Stephen Carr**, principals, Ashley/Myer/Smith, Inc., Cambridge, Inc., Cambridge, Mass.

Myron A. Pettit, associate, Brubaker/Brandt, Inc., Columbus, Ohio.

James J. Fitzgerald, Mark R. Mendell, Glenn R. Merithew, William E. Palk, Jr., Jan K. Sterling, Samuel C. M. Wang, partners; **Victor Cromie**, planning director, Campbell, Aldrich and Nulty, Boston, Mass.

Robert L. Thorson, partner; **E. John Hornus, Joseph M. Marrow**, senior associates, Carson, Lundin and Shaw, New York, N.Y.

Robert R. Byers, chief of Interior Space Planning and Design, Daniel, Mann, Johnson, & Mendenhall, Los Angeles, Calif.

Richard Lewis Gould, principal and secretary, King + Lewis, Architects, Inc., Southfield, Mich.

Sheldon Feinstein, partner, Lawrence-Hawver Associates, Cleveland, Ohio

Richard D. Gilbert, vice president, Morganelli-Heumann and Associates, Los Angeles, Calif.

Henry C. Hwang, R. P. Sweeney, Jr., Paul M. Terrill, Jr., associate partners; **Elmo M. Valdes, Marcus R. Tucker**, associates, Neuhaus & Taylor, Tex.

Fitzhugh L. Austin, III, Robert S. Smith, Herbert W. Stanford, III, Andrew D. Steever, Charles Leigh McMurray, associates, A. G. Odell, Jr. & Associates, Charlotte, N.C.

Warren C. Anderson, Peter Hitt, Leo W. Steinbrenner, Richard D. Golembek, Isham Baker, Robert Malcolm, senior associates, Perkins & Will, N.Y.

Dennis Ching Lee, associate architect, Haydn H. Phillips Architect, Inc., Honolulu, Hawaii.


W. Allan Tuomaala, vice president; **Arnold F. Serlin**, secretary, Leonard G. Siegal Associates Inc., Detroit, Mich.

George T. Okamoto, Edward D. Pedersen, Philip A. Rude, Roger L. Schultz, participating associates, Skidmore, Owings & Merrill, New York, Calif.

Andrew An, Clarence E. Bentley, Alfred S. Kochanowski, Jr., associates, Tarapata-MacMahon-Paulsen Associates, Bloomfield Hills, Mich.

Paul A. Jaros, Paul J. Mullin, Raymond Yanscik, members, Van Buren and Firestone Architects, Inc., Columbus, Ohio.

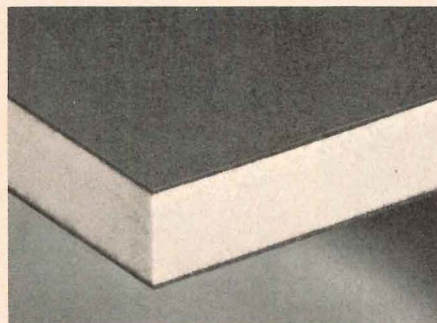
Felix M. Warburg, director of operations, Eckbo Dean Austin & Williams, San Francisco, Calif.



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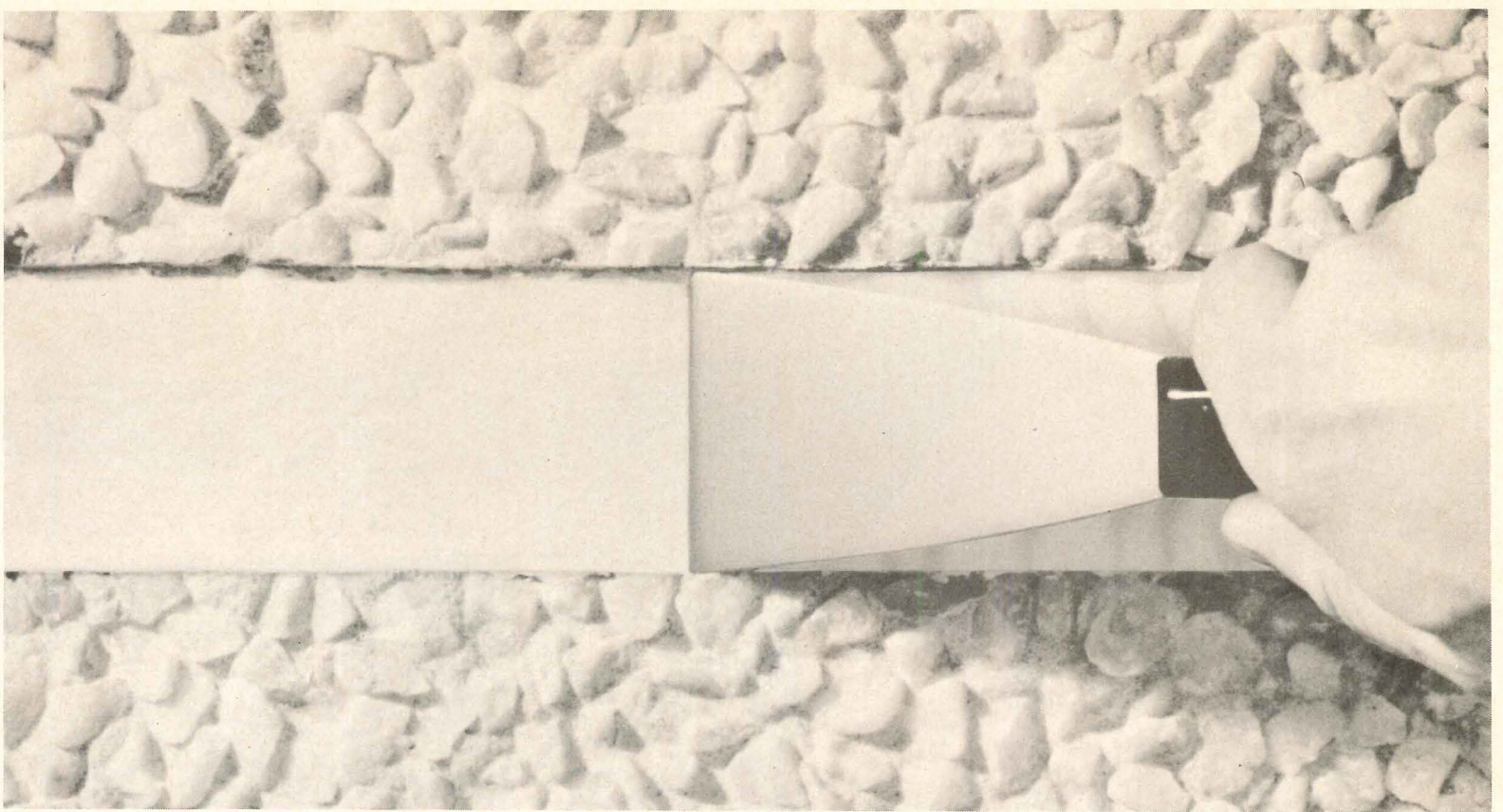
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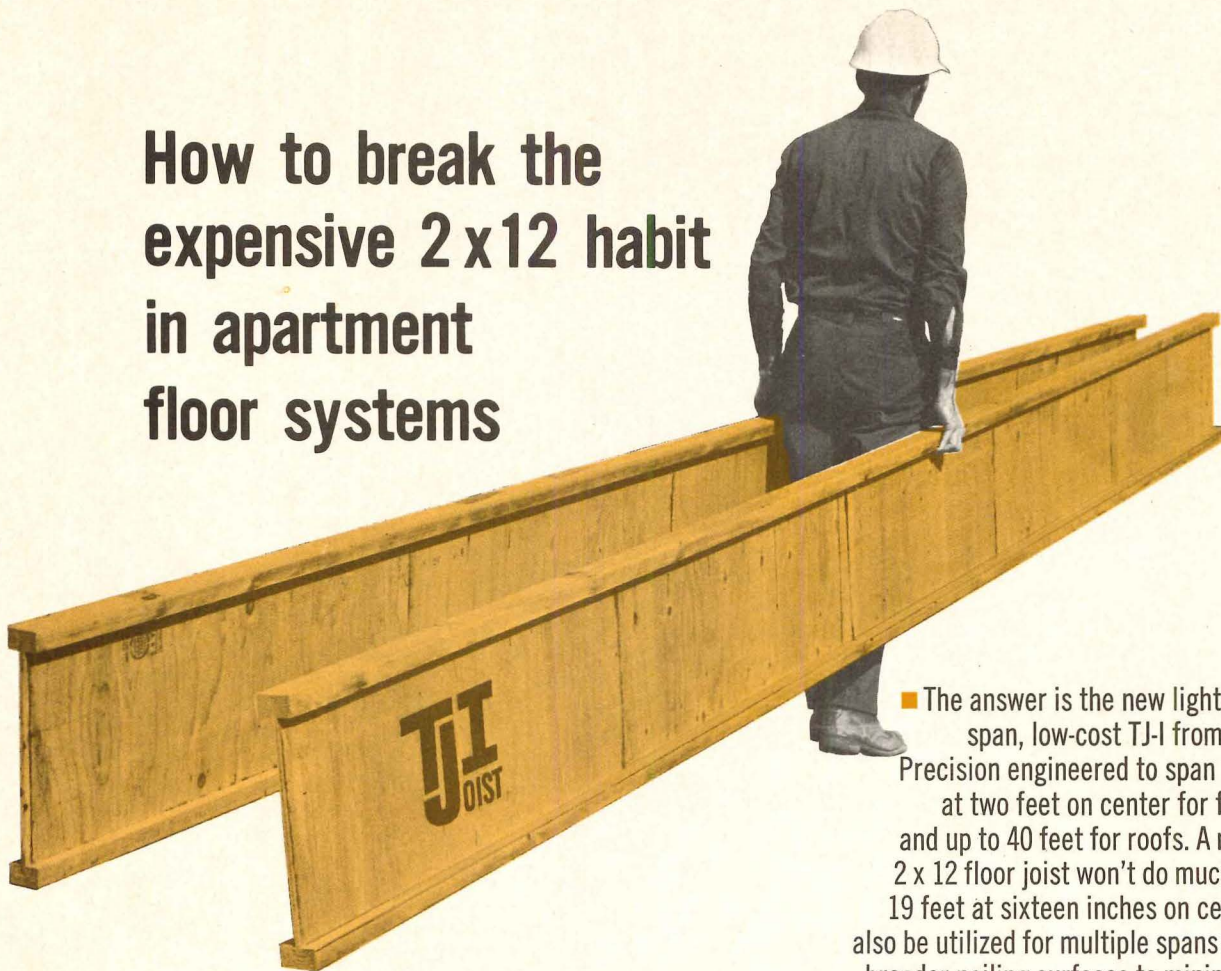
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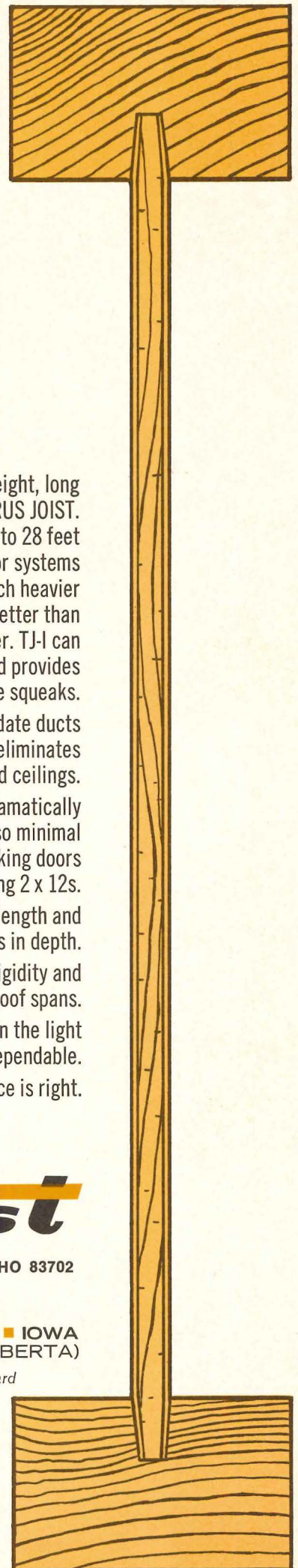
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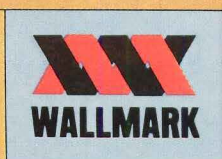
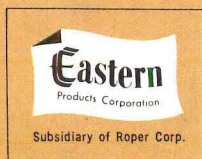
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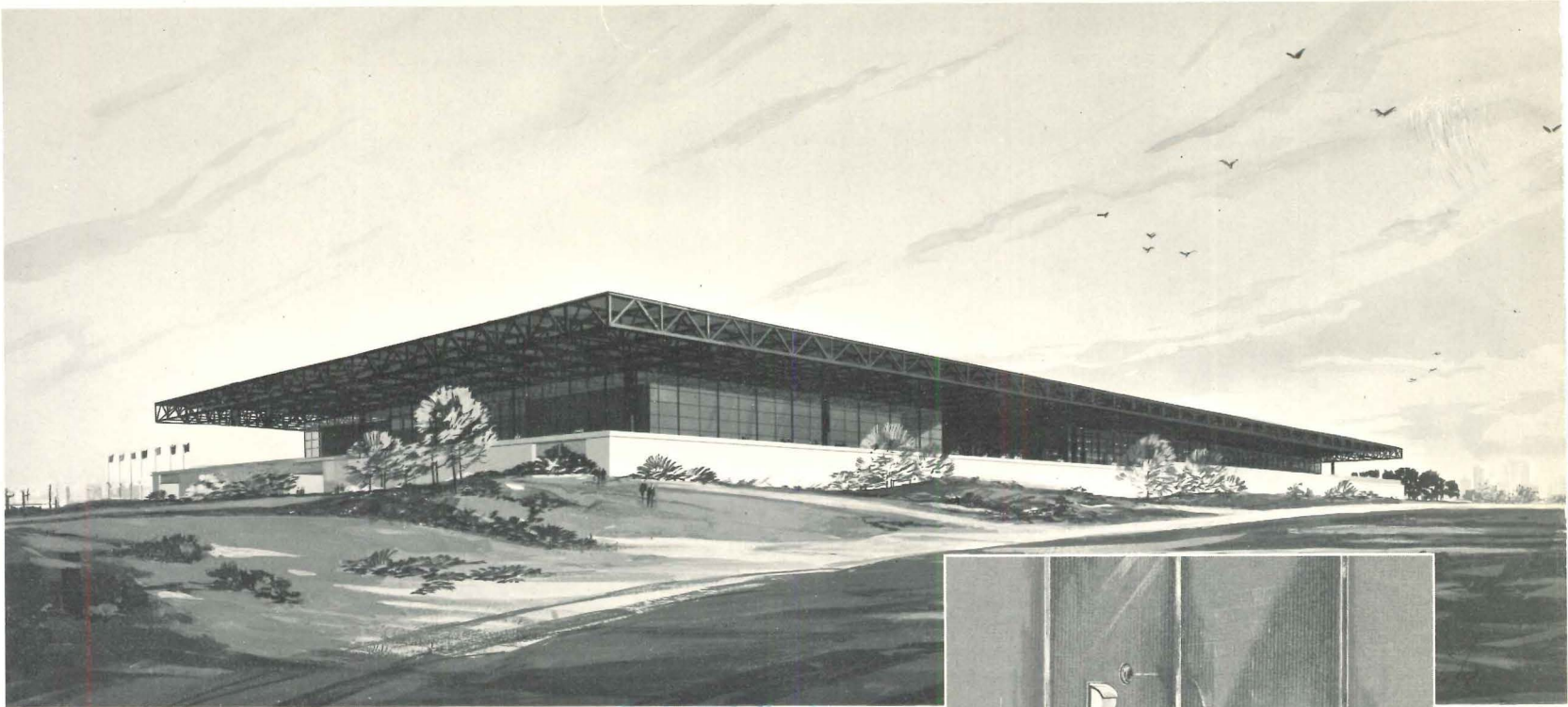
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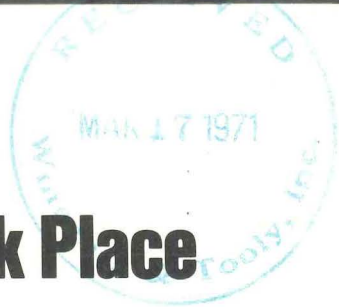
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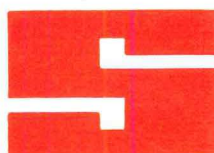
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