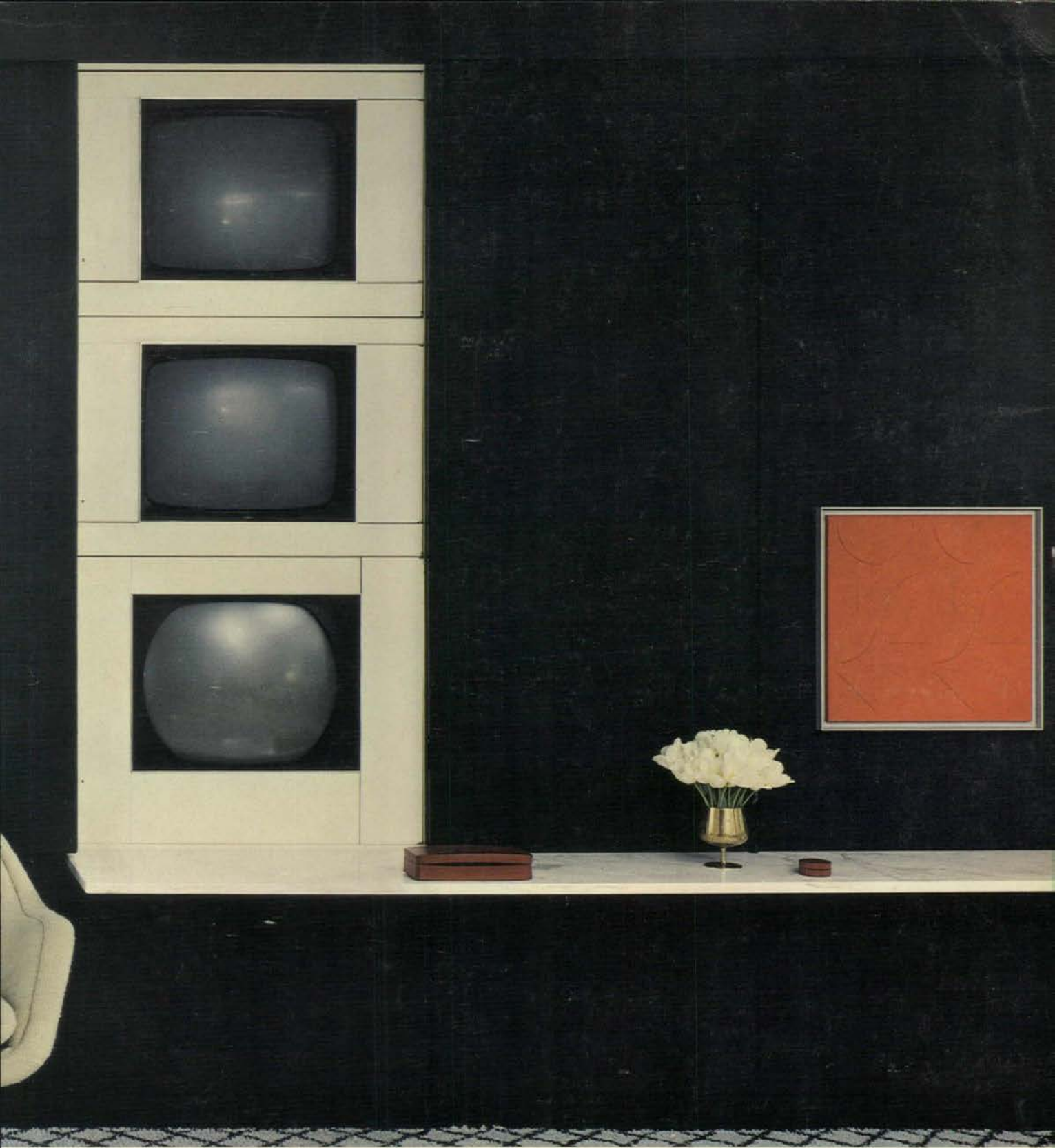


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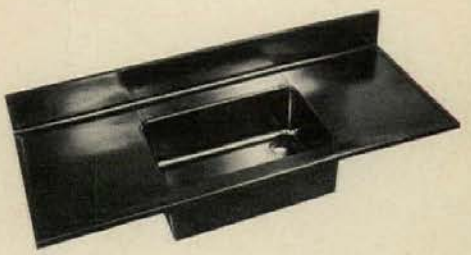
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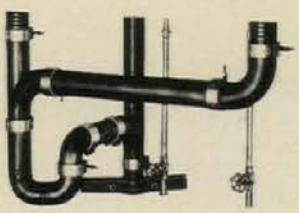
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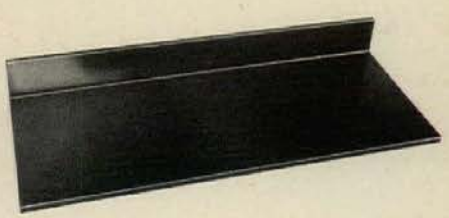
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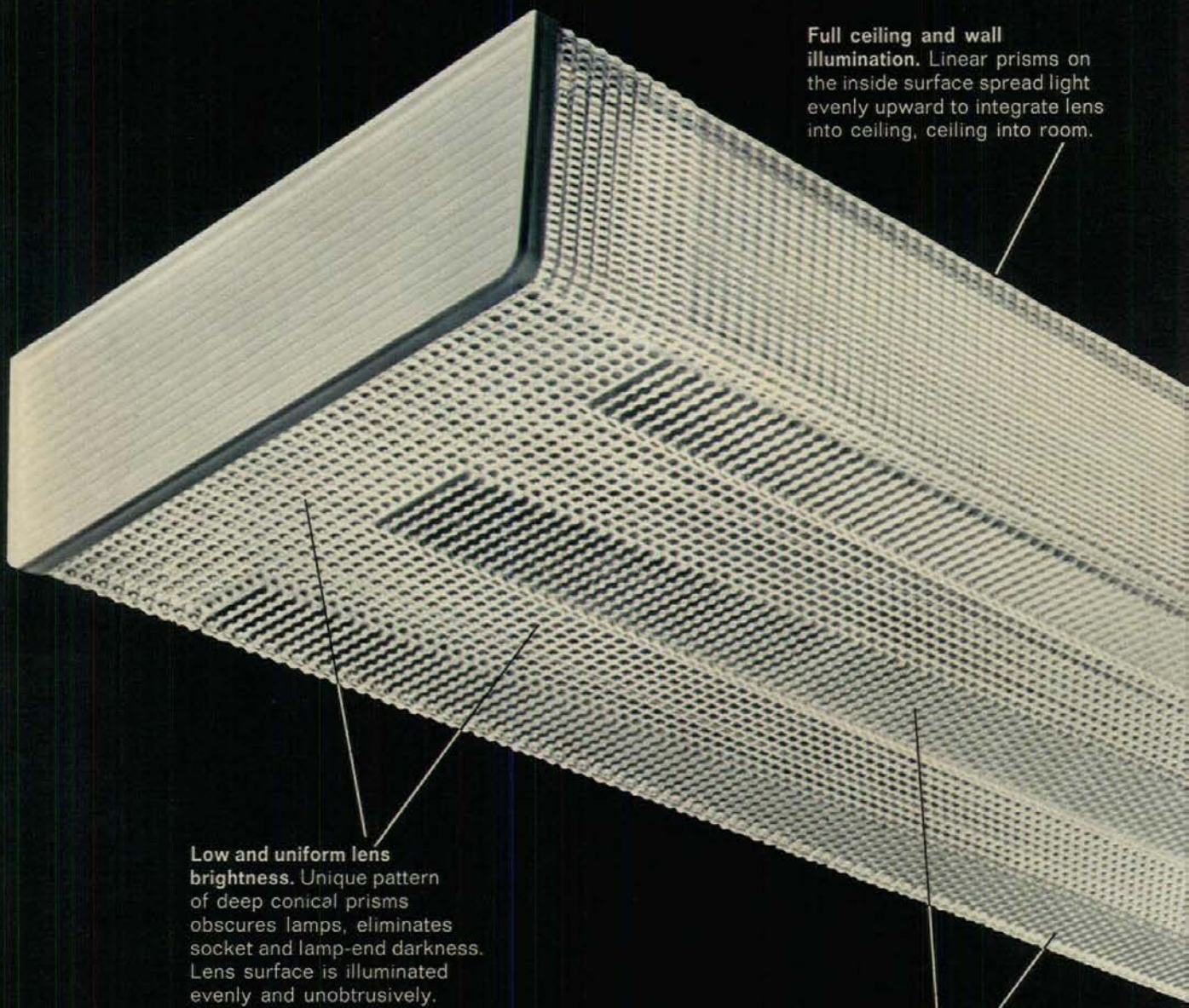
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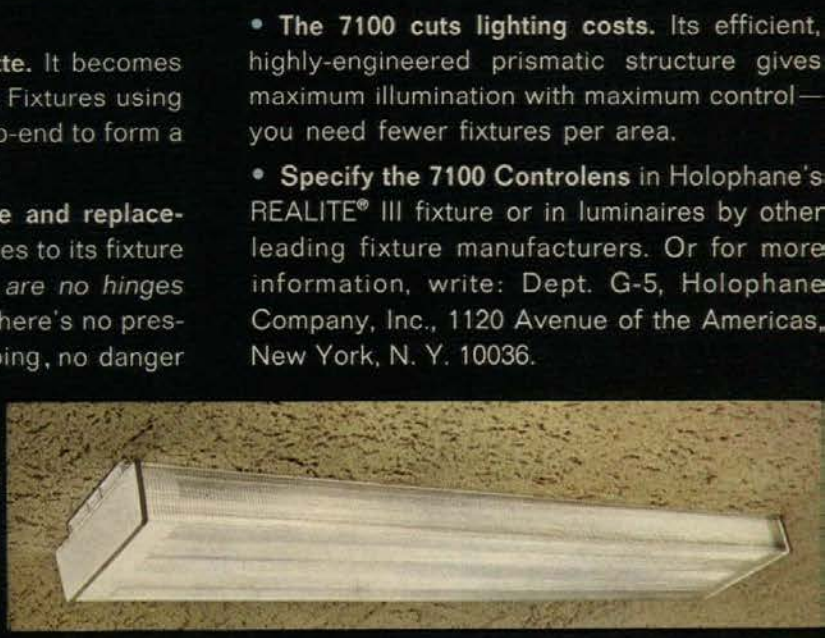
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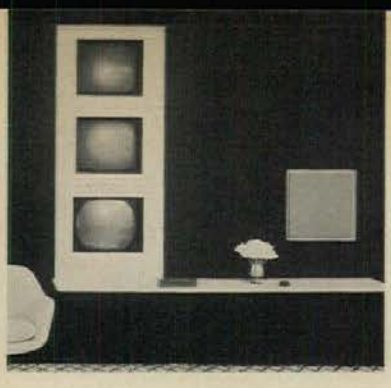
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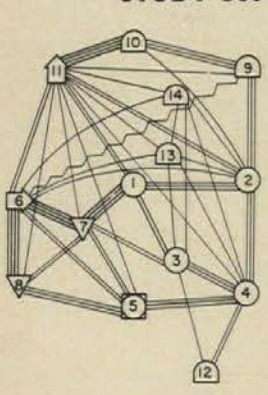
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THE CHANGING ROLE OF ARCHITECTS AND ARCHITECTURE: THE 75TH ANNIVERSARY ISSUE OF ARCHITECTURAL RECORD

In this issue—nearly a year in research—the entire main editorial section will be devoted to a study of what is ahead for architects and architecture as we move into a period of accelerating population boom, rapid urbanization, and drastic social change. The issue will analyze the changes in building-type mix and land use that seem inevitably ahead; the increasing role of science and engineering in design; the new consultants that will be needed to solve the ever-larger and more complex design problems; the responsibility of the architect for creating a better environment for all citizens—and finally, suggest how the traditional roles of the architect must change if we are to cope effectively with the problems and opportunities ahead.

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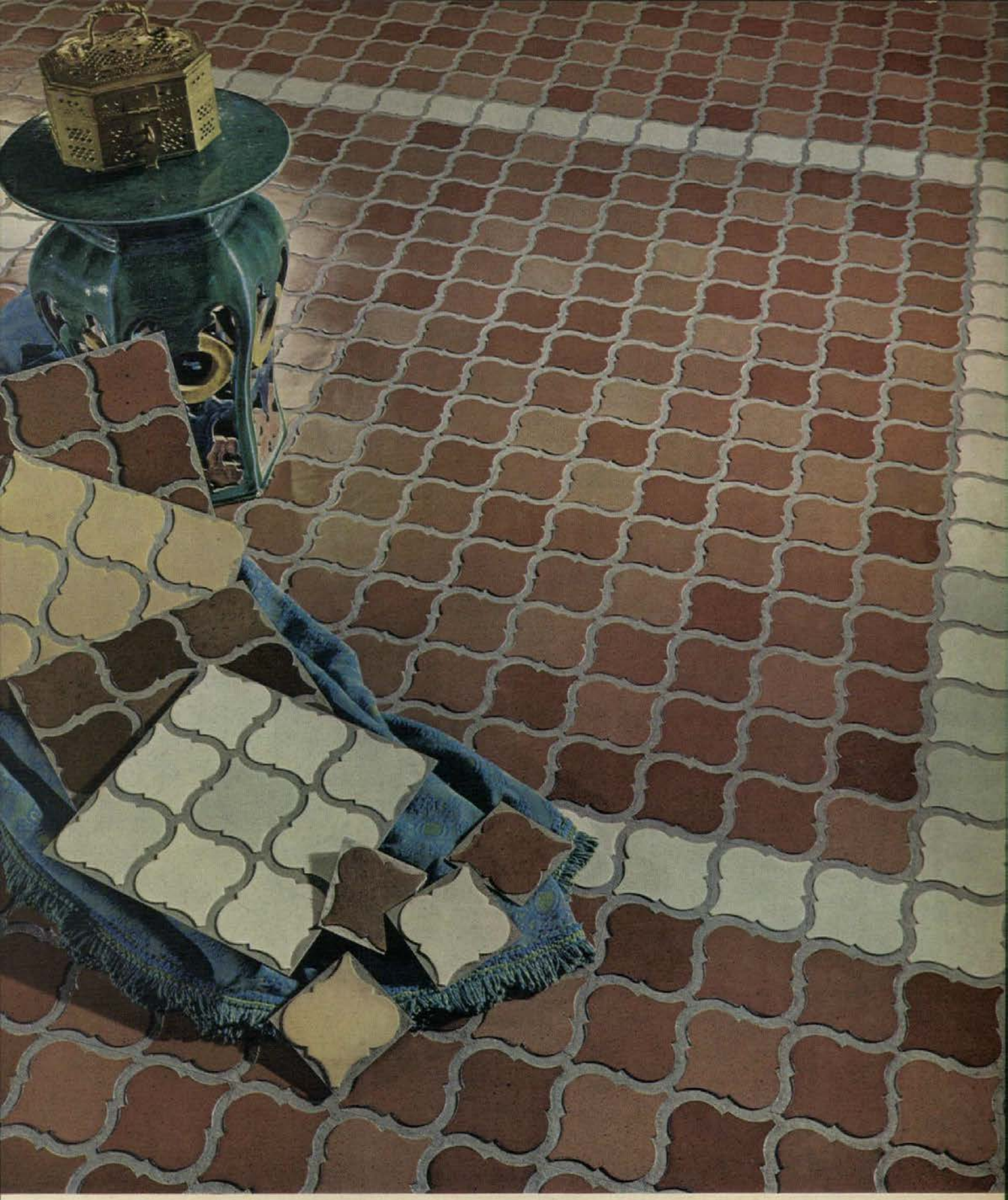
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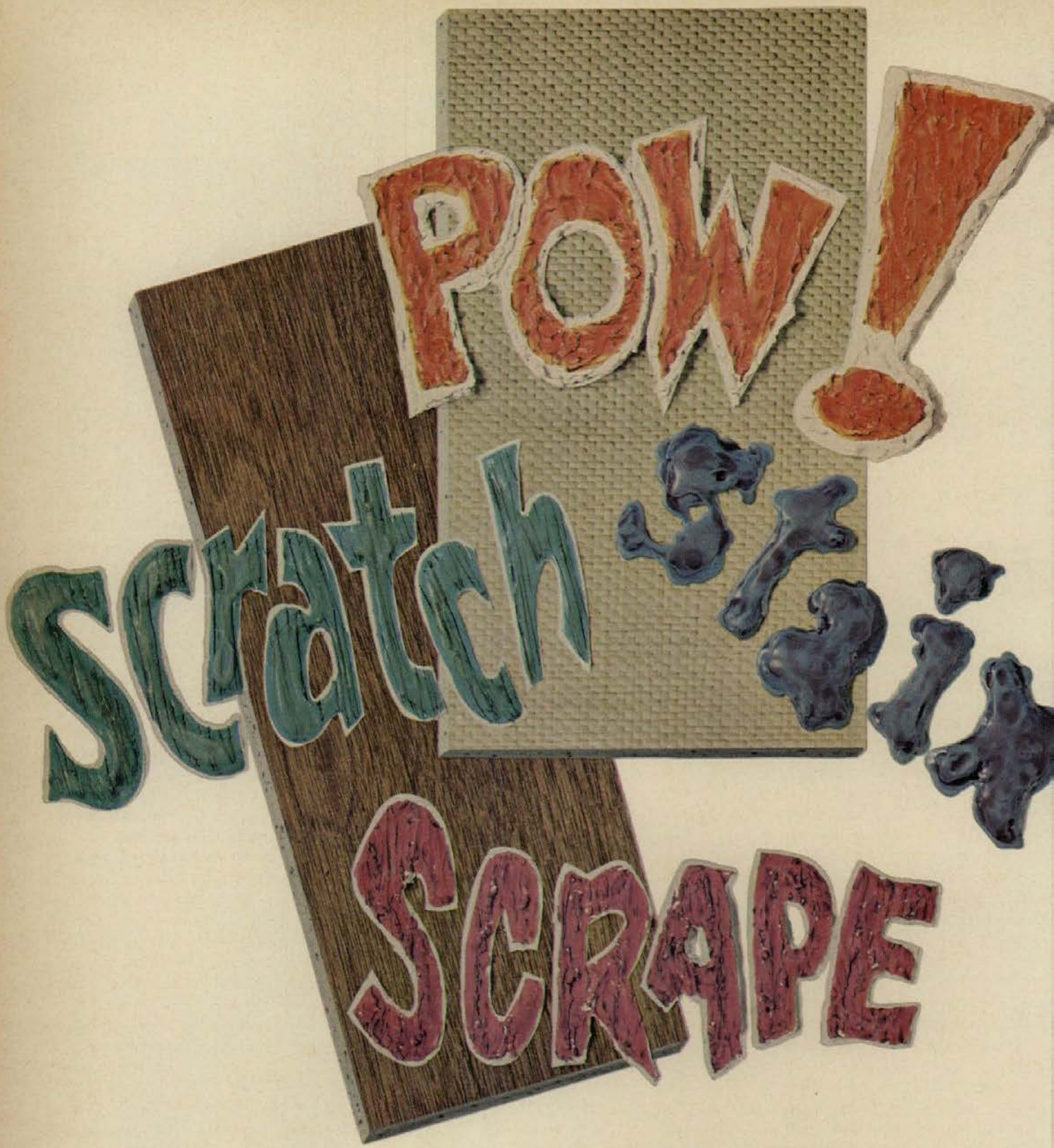


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SEVENTY-FIVE YEARS OF ARCHITECTURAL GROWTH

Back in 1891 the architect's life was a happy one. Or at least an uncomplicated one. There wasn't much doubt about the course one pursued. He graduated in fine arts at an American college, he took a year or two in Paris at the Beaux Arts, soaking up life and art, along with "the orders," and polishing up his manners, not to mention learning to wax his moustaches. Ah, happy days!

The RECORD staff has been trying to peer back to these halcyon days because 75 years ago ARCHITECTURAL RECORD published its first issue; we have all been mentally starting with the moustaches and the lovely drawings on the *charette*, and trying to chart the changes, the shocks, the challenges, the responsibilities that 75 years have thrown at architects. We shall report it all next month. We shall permit ourselves only a few nostalgic sighs, for a review of 75 years of architecture inevitably gives one a feeling of terrific acceleration, and looking forward is more absorbing than looking backward.

We all know some architects who approach things exactly as did their precursors of 75 years ago, or 400 years ago, for that matter. They live for their art; they have a great sense of mission. They reach, subconsciously perhaps, for the glories of Rome, and they scorn the materialism of our time with genuine hauteur. They have beautiful wives, hopefully rich, and earnestly deplore the decadence of the rushing world. Good. May they stand firm, as a fraternity, forever, for the world is richer for them.

As a staff, however, we are increasingly conscious that other architects (and engineers), in growing numbers, are moving out from the parental home, shoving out into space with an orbit-minded world, eagerly inventing an architectural approach to every problem the world can toss at them.

We shall not leave history, however, without giving it a touch of revision. Most architectural history as we know it bases on age-old preoccupations. Surely if the challenges and purposes of architecture have changed, the examination of history ought to have a second look; buildings once considered significant might have to be reclassified as delightful but anachronistic; buildings once passed over might be found to have been prototypical. How about city planning achievements, for example, like Radburn, or Chatham Village, of Central Park, for that matter?

The architect's work is now complicated by associates of dozens of categories—engineers of a dozen types, consultants on everything from acoustics to zoo design, environmental specialists, city planners and landscape architects, programers, cost estimators and accountants, practice organization theorists, lawyers, and so on and so on.

We keep hearing that technology has swamped the architect. We might just as well observe that technology has given him his greatest opportunities. Economic growth, population growth, spreading science and invention—all have been pushing the design world into new highs for activity and prosperity. Architectural offices now have management consultants, organization charts, profit-sharing personnel policies, public relations counsel, and house organs. They have multiple offices, from east to west, and European offshoots.

If anybody feels inclined to moan over a fancied dwindling of an architect's status in this rushing world, it would only be because he hasn't been watching the demands for his services. Great complexes of buildings, new towns, sections of old cities, campuses, civic centers. The challenge to rethink and replan our city living, to study and establish environmental safeguards for human health and happiness, is probably the greatest call on design talents ever seen before.

Is the architect, then, moving farther away from his traditional contact with basic materials, design involvement, or personal contact with building clients and building operations. The answer to that is a simple NO. Everything may be getting more complicated, but there is a clear need—as we approach another 75 years—for closer integration of the various elements in building design.

It is probably true that our little architect with the moustache (make it a beard) is a bit anachronistic. He has, like the general of the old story—"jumped on his horse and galloped off in all directions." —*Emerson Goble*

Drawn for the RECORD *by Alan Dunn*



"I'm certainly getting tired of this 'Because it's there' idea!"

How about "the strip"? Can you do a better one?

We have been passing around the office a very interesting article in New Mexico Architecture, entitled "The Strip! What is It?" It is by J. B. Jackson, editor and publisher of Landscape.

He has been studying this phenomenon of the automobile age, the linear shopping center. He finds it interesting, and worthy of study. A couple of quotes:

"Now these are very obvious traits; automobile-oriented businesses, relying on easy accessibility, spectacular advertising, fast service and long hours—any one of us can identify these characteristics, and add to them. They indicate the general quality of the strip, and help us identify it when we see it. But I think architects and planners ought to have more serious interests in the strip. They ought to know a little how it is formed, how it is structured; they ought to know something about its evolution, and its future. Why do some towns have large and prosperous strips, and others have practically none? In short, architects and planners ought to know enough about a strip to be able to plan a successful one, one far handsomer, far more efficient than any we so far have.

"I don't think it's necessary to dwell on the fact that the strip is largely misunderstood and underestimated by the American public—and particularly by architects and critics of the environment. Neither do I think it necessary or wise to praise the strip as a form of folk art or pop art. The strip has a great many disagreeable and even dangerous qualities. But it has immense potentialities, and we have got to study them. We ought to go out, ask questions, watch and observe and compare and try to understand, in order to give form and coherence to all this undisciplined vitality. But one word of caution. The more you immerse yourself in the strip, the more you like it, and the duller the other parts of town become. In the familiar words of Pope: 'We first endure, then pity, then embrace.' By all means let us embrace the strip and all that it stands for, urbanistically and architecturally speaking; but only as an essential part of the whole city, from which it must never be separated."

Mayor Lindsay speaks out on art for city parks

At least one politician, Mayor John Lindsay of New York, shares some of the expressed concern over selecting art for city buildings and outdoor spaces:

"I wish we could wave a wand and create good design in art and sculpture for our buildings and our parks. But I recognize the dozens of pitfalls, risks and dangers which can attend too deep an entry of government into this area of art sensibilities. I am not persuaded that the heavy hand of government can endorse one design over another. I therefore ask you for your serious thoughts on how far municipal powers ought to go in this area. For example, right now the New York City Planning Commission has no voice in design or scale, only in zoning. Perhaps this too should be reexamined."

And: "I think it would be nice to beautify City Hall Park. I'd like a nice place for pickets to walk around . . . while they exercise their rights under the First Amendment."

Vulgarity our national disgrace, or perhaps times have changed

If you long for the old days, before everything went to pot in unheeding commercialism, here is a little bit from the introduction to the first issue of THE ARCHITECTURAL RECORD, published in July, 1891: ". . . is there a civilization on the face of the earth as uninteresting as ours, as completely material, as lacking in dignity and distinction, as vulgar, commonplace, and shabby?" The then editor, Harry W. Desmond, could charge me with taking the quotation out of context, but he *was* bemoaning a well-fed self-complacence. And he might go on today: "We have been unperceptive; we have become indifferent."

"The greatest contribution in this age of ours"

As if in answer, 75 years later, to the RECORD editor quoted on this page, Morris Ketchum, president of the A.I.A., said recently: "The architect's greatest contribution in this age of ours will not lie in the development of new structures but in awakening the American public to the urgent need to correct the social, political, and educational defects that prevent the flowering of a better urban life. Without these changes, we can aspire to be nothing more than busy cosmeticians—moving slum dwellers from one kind of project to another, building more elaborate civic centers, designing prettier graphics for store fronts. We have an enormous educational task to perform and, in the war on ugliness being conducted by our 160 chapters . . . we have only just begun."

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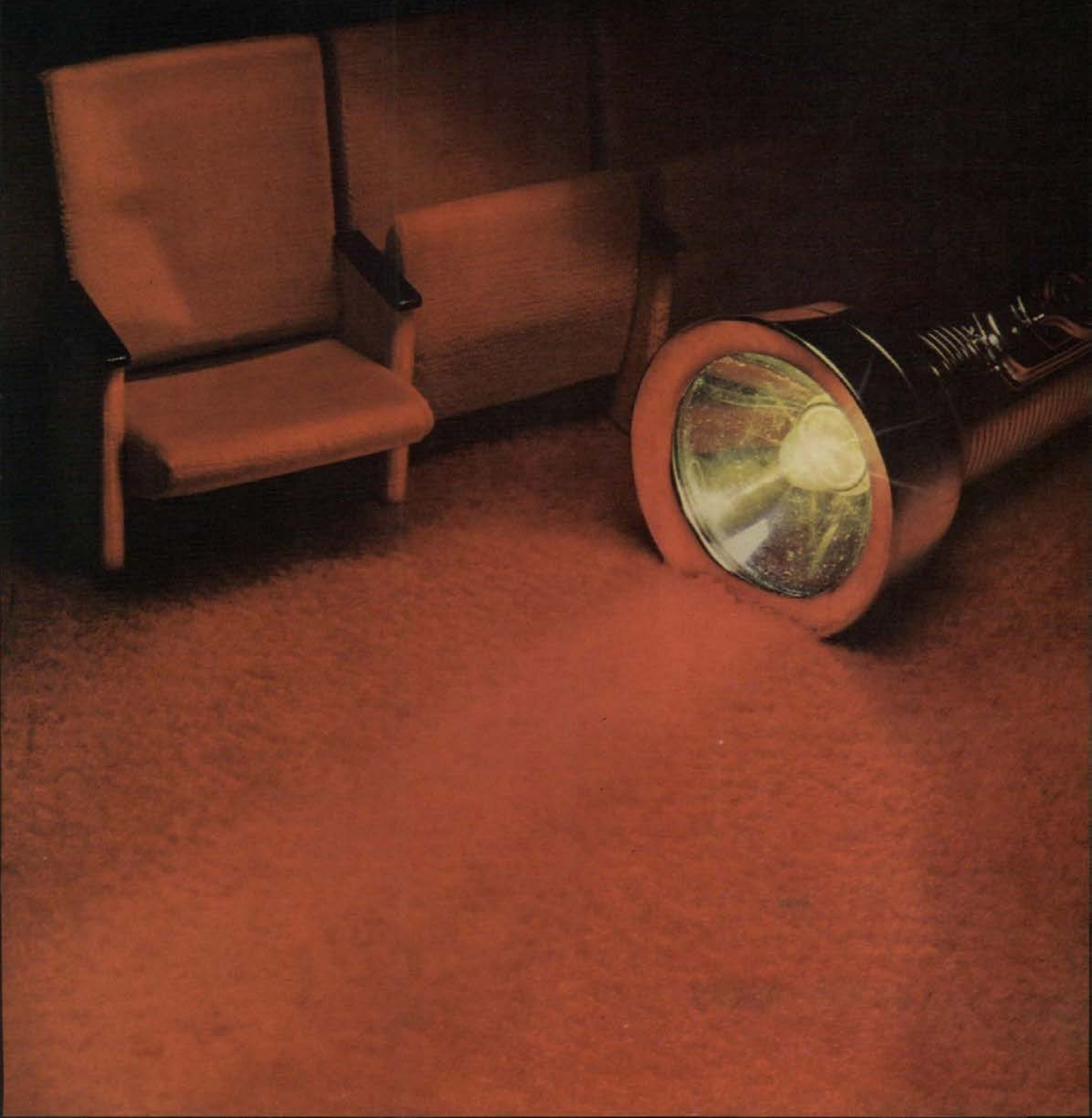
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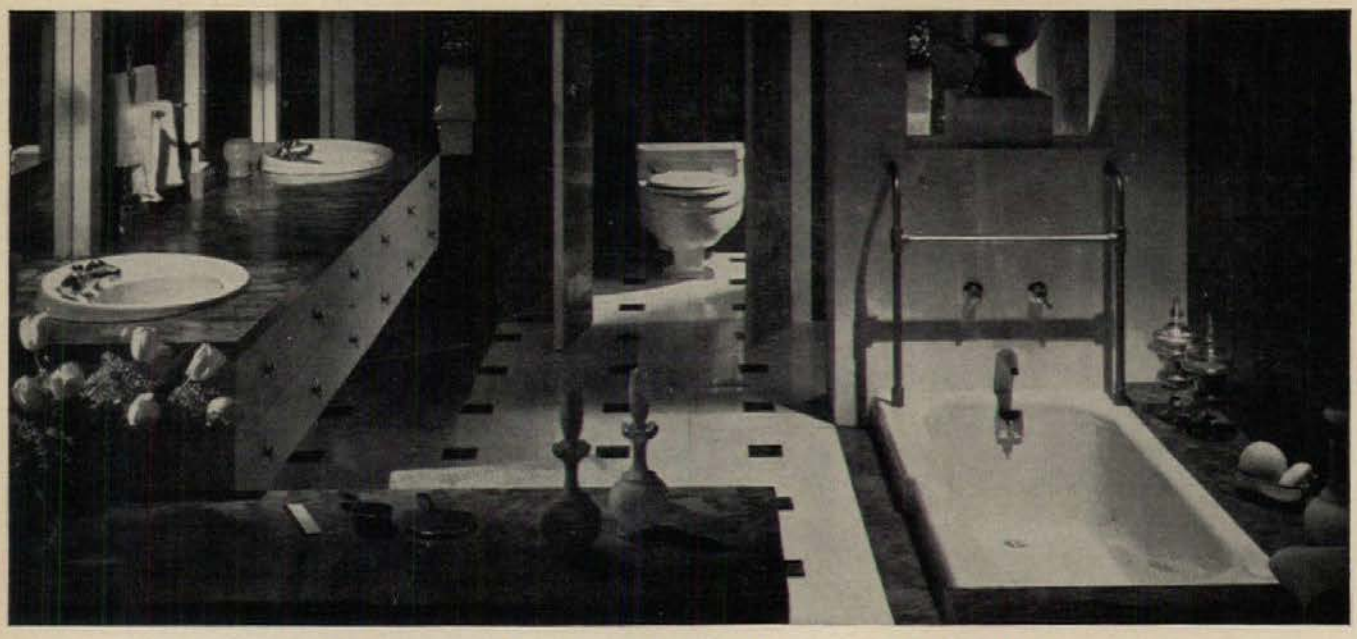
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Eljer's new commercial fixtures are a refreshing departure from the ordinary "institutional" look. Their graceful lines and warm colors take their cue from Eljer's celebrated Master Crafted residential fixtures. Their advanced styling allows the architect greater latitude in washroom design—and they cost no more than conventional makes. Their upkeep is nominal . . . no hard-to-clean nooks and crannies. The acid-resistant surface provides easy maintenance and protection of your investment for years.

Get the entire story. Call your Eljer representative or write Wallace-Murray Corporation, Eljer Plumbingware Division, Dept. AR, P.O. Box 836, Pittsburgh, Pa. 15230.

MASTER CRAFTED ELJER®
SINCE 1904 FINE PLUMBING FIXTURES

For more data, circle 7 on inquiry card



When beauty is just as important as the lighting . . .

. . . that's when you suggest Hadco to your clients

This distinctive "Copenhagen" model is available in 12 lovely finishes, and with either clear or opal glass. And its rich beauty will endure because it is made of *cast* metal, cast aluminum. The "Copenhagen" fixture shown here is big enough to add real drama to your design. (From spire to bottom of scroll, this 3500 series is 36″ high, and Hadco offers both larger and smaller fixtures in the same design to meet any size requirement.)

Want more information on the "Copenhagen" and on the hundreds of other Hadco fixtures for indoor and outdoor lighting, including the revolutionary new Hadco low voltage lighting fixtures? Write Hadco Products, Inc. (a subsidiary of Esquire, Inc.), Dept. 22A-12, P. O. Box 128, Littlestown, Pa. 17340.

Lighting by **HADCO**

For more data, circle 8 on inquiry card

New quiet strength with **flair**...from Lyon!

Revolution in Steel

■ Nothing here is borrowed from the past! Veteran perfectionists in steel equipment set out to please you. And they made this new office furniture so dramatically different, you'll have to see, hear and feel it to believe it!

Lyon engineers designed the desk top as the main structural member from which all other parts stem. They used two layers of steel, ribbed the lower half for extra strength. Gave the back panels double walls. Made the pedestals continuously welded structures which gird the front opening. Then soundproofed both with honeycomb filler. They made our exclusive "lock-in-top" feature control *all* drawers, providing at the same time for interchangeability of pedestals.

Lyon elegance is many things. It's careful sculpturing that looks less massive, adds leg room. It's double walled drawers with vinyl glides and rubber bumpers for added serenity. It's a choice of 9 lustrous 100% acrylic finishes that will last with the furniture.



Ask your Lyon office furniture dealer to demonstrate the "unprecedented 7*" Lyon advantages. Be pleasantly surprised by attractive Lyon prices!

*Patents Pending

LYON OFFICE FURNITURE

LYON METAL PRODUCTS, INC.
651 Monroe Avenue, Aurora, Illinois

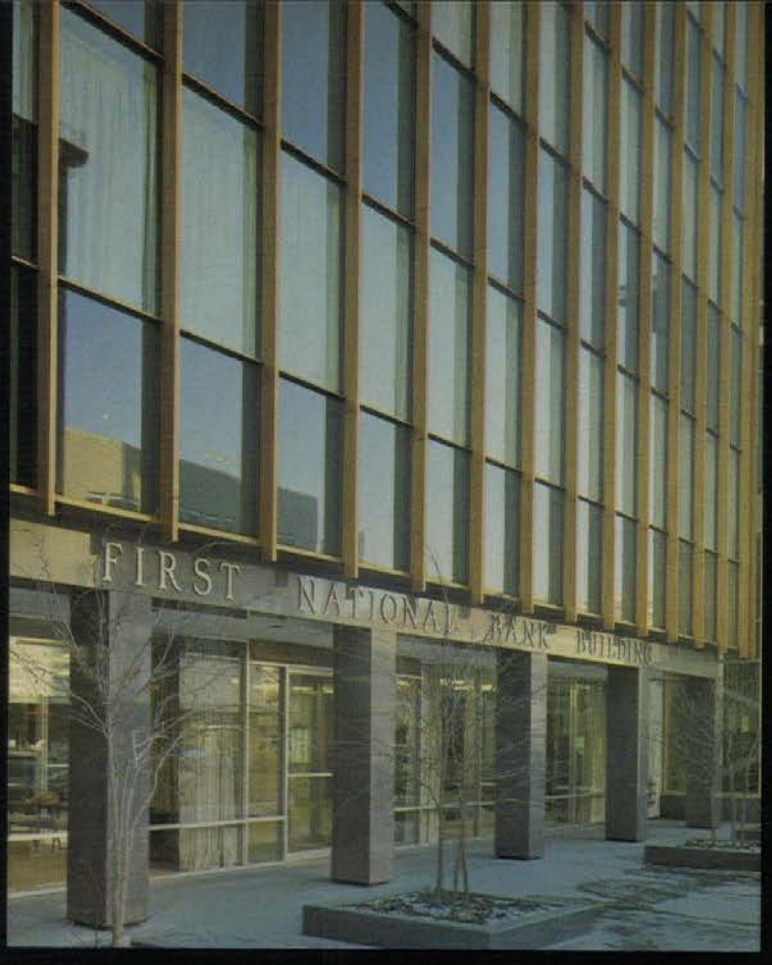
☐ Send my free copy of your full color brochure
☐ I'd like the name of my nearest dealer

Name _____

Address _____

City _____ State _____ Zip _____

For more data, circle 9 on inquiry card



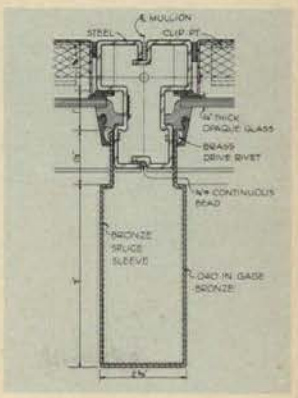
You can't design a bronze curtain wall for $7.00 a square foot. Right? Wrong.

Imaginative use of bronze by the architect and fabricator resulted in an in-place cost of less than $8.00 a square foot for the curtain wall shown above. Further simplification of the mullion design could have brought it in for under $7.00 a square foot.

This curtain wall is basically a rectangular steel grid system with infill panels in place at time of shipment. It was erected and glazed before the non-structural bronze was put on. The mullions, brake-formed by Fenestra, Inc. from .040" and .032" gage bronze sheet, were installed with no interior or exterior fasteners showing.

The basic system utilized in this installation allows the architect greater flexibility in mullion design and appearance. The strength and rigidity of light gage bronze makes it practical and, at a competitive cost, provides the owner with all the richness and permanence of bronze so important to a bank.

Our new brochure, "Copper, Brass and Bronze in Architecture," shows other ways to accomplish the same objective. For a copy, just send a note on your letterhead.

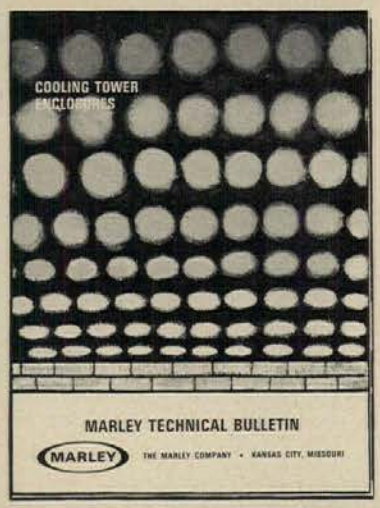


First National Bank, Lincoln, Nebraska
Architects: Davis & Wilson, Clark & Enersen
Metal Fabricator: Fenestra, Inc.

COPPER DEVELOPMENT ASSOCIATION INC.

405 LEXINGTON AVENUE, NEW YORK, N.Y. 10017

For more data, circle 10 on inquiry card



THE MARLEY COMPANY
222 W. Gregory
Kansas City, Mo. 64114

Please send me a free copy of your brochure on cooling tower enclosures. I understand it has helpful information (including photographs) on attractive and technically sound ways to screen towers.

ARCHITECT_____

FIRM_____

STREET_____

CITY_____ STATE_____ ZIP_____

Free to Architects

Clip and mail this coupon now to receive your free copy of Marley's new Cooling Tower Enclosures brochure. It contains photos of a variety of ways architects and contractors have screened towers . . . illustrated suggestions for cross-flow, counter-flow and Underflow® design towers . . . plus vital technical information. There is no charge for this brochure. But hurry, send now . . . supply is limited.

MARLEY World leader in cooling towers

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WOOD DOUBLE-HUNG WINDOWS

OUTSIDE IN!

PELLA Wood Double-Hung Windows can do just that! The sash pivots, bringing the outside of the glass inside for fast, easy washing. Yet, where emphasis is placed on traditional design, PELLA Double-Hung Windows have the grace and charm of classic early American windows. Features include muntin bars that snap in and out and full- or half-length outside screens that are removable from inside. Exterior surfaces are factory primed. Specify windows with dual glazing panels or insulating glass. See cutaway opposite. Mail card.

Architect: Henry T. Gray and Assoc.
Builder: Whipple Alan Construction Co.



Architect: Ralph Huszagh
Builder: Pepper Construction Company

INTRUDE?

Never. Wood frames of PELLA Sliding Glass Doors give you freedom to express exactly the mood you want to create. Paint or stain them to match any interior or exterior decorating scheme. Wood frames also minimize condensation, making scenes like this practical in any climate. Inside screens close automatically. Exterior surfaces factory primed. Select O, OX, XO, OXO or OXXO combinations of 33″, 45″ or 57″ glass widths. Transoms to match. Mail card.

WOOD SLIDING GLASS DOORS

For more data, circle 12 on inquiry card

FLEXIBLE DESIGN

These two words best characterize PELLA Wood M-P Windows! They offer hundreds of design arrangements when used singly, stacked or in ribbons. Awnings or casements. Trapezoidal units, too. Self-storing storm and screen panels add to year 'round convenience. With PELLA M-P Windows, you can create "window spectaculars" without sacrificing comfort or weathertightness. Exclusive GLIDE-LOCK® bar operator locks in 11 open positions. Also roto-operators. Exterior surfaces factory primed. Mail card.

WOOD M-P WINDOWS



Arch
Herbert
Contractor: V
Breiholz
Construction Co.



WASH OUTSIDE INSIDE

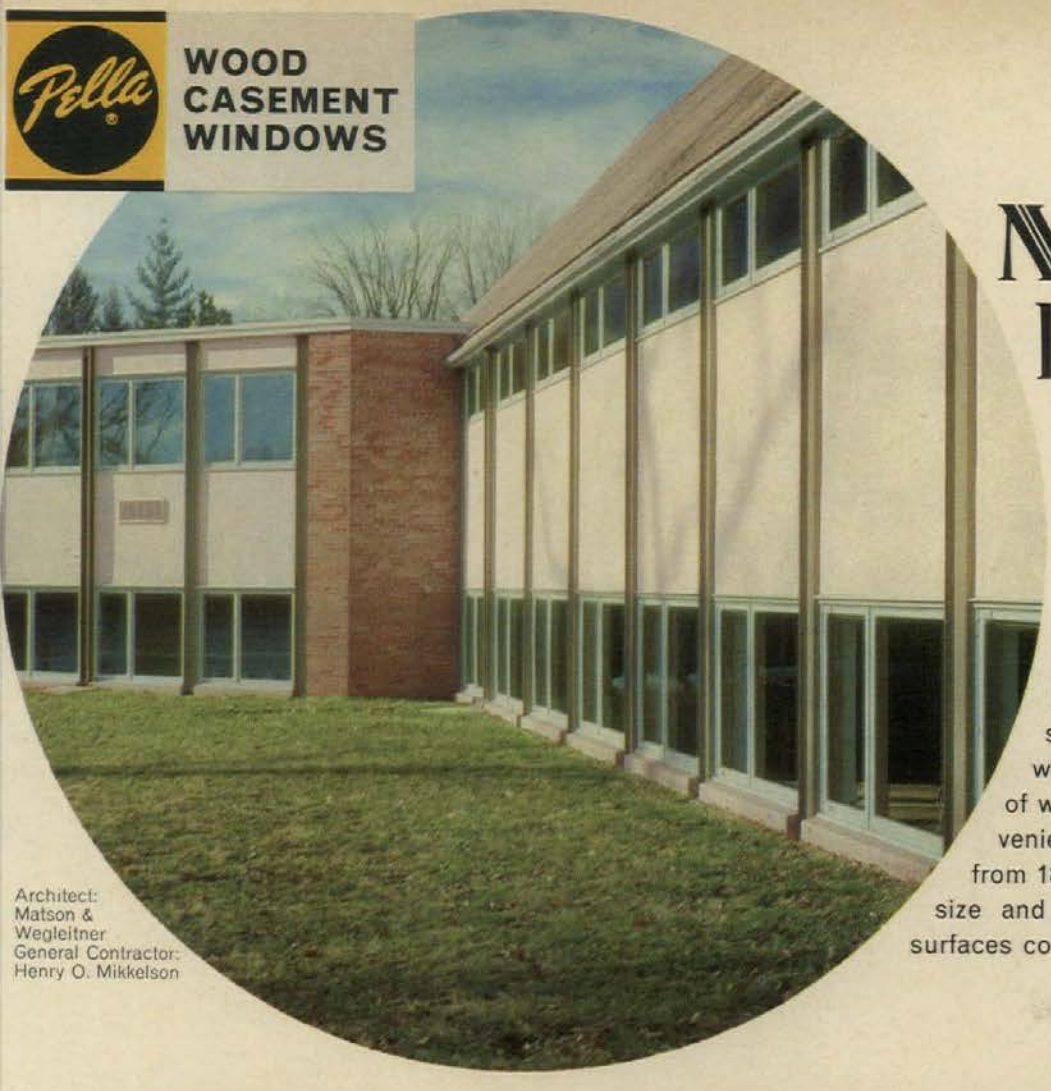
Rotate the sash horizontally to bring the outside glass inside for easy washing! This innovation in windows solves the washing problem where large "fixed" windows are used . . . from multi-story buildings to residences. It will reduce expense, work and the element of danger inherent in window cleaning. What's more, in air-conditioned buildings where only large "fixed" windows are used, the PELLA Pivot Window can also provide emergency ventilation should the air-conditioning system fail. Exterior surfaces factory primed. Mail card today.

WOOD PIVOT WINDOWS

For more data, circle 12 on inquiry card

Pella®

WOOD CASEMENT WINDOWS



Architect:
Matson &
Wegleitner
General Contractor:
Henry O. Mikkelson

NO BUCKS

PELLA Wood Casement Windows are the *only* wood windows specifically designed to permit installation in masonry and other openings *without* wood bucks, brick mould or exterior trim. Wood parts are jacketed in a steel frame for added strength, too. Combined with ROLSCREEN®, the original "instant screen" that rolls up and down, these windows give all the insulating value of wood, the strength of steel and convenience that's second to none! Select from 18 ventilating units to 24" x 68" glass size and 48 fixed unit sizes. All exterior surfaces come factory primed. Mail card today.



New... SLIMSHADE!

Slimshade, the economical, practical solution to light control tucks away between the exterior glazing and the inside double glazing panel. With just a flick of the operating lever, shade is full open; tilted for the amount of light you want; or closed for maximum shading or privacy. There's never any raising or lowering, so appearance is neat. Slimshade, combined with double glazing panel reduces solar heat gain up to 82% in summer when compared with single unshaded window glass. Closed, Slimshade reduces heat loss through the window in winter up to 62%. Slimshade is available in all PELLA casement window sizes for which double glazing panels are furnished. Mail card.

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Quietly effective!

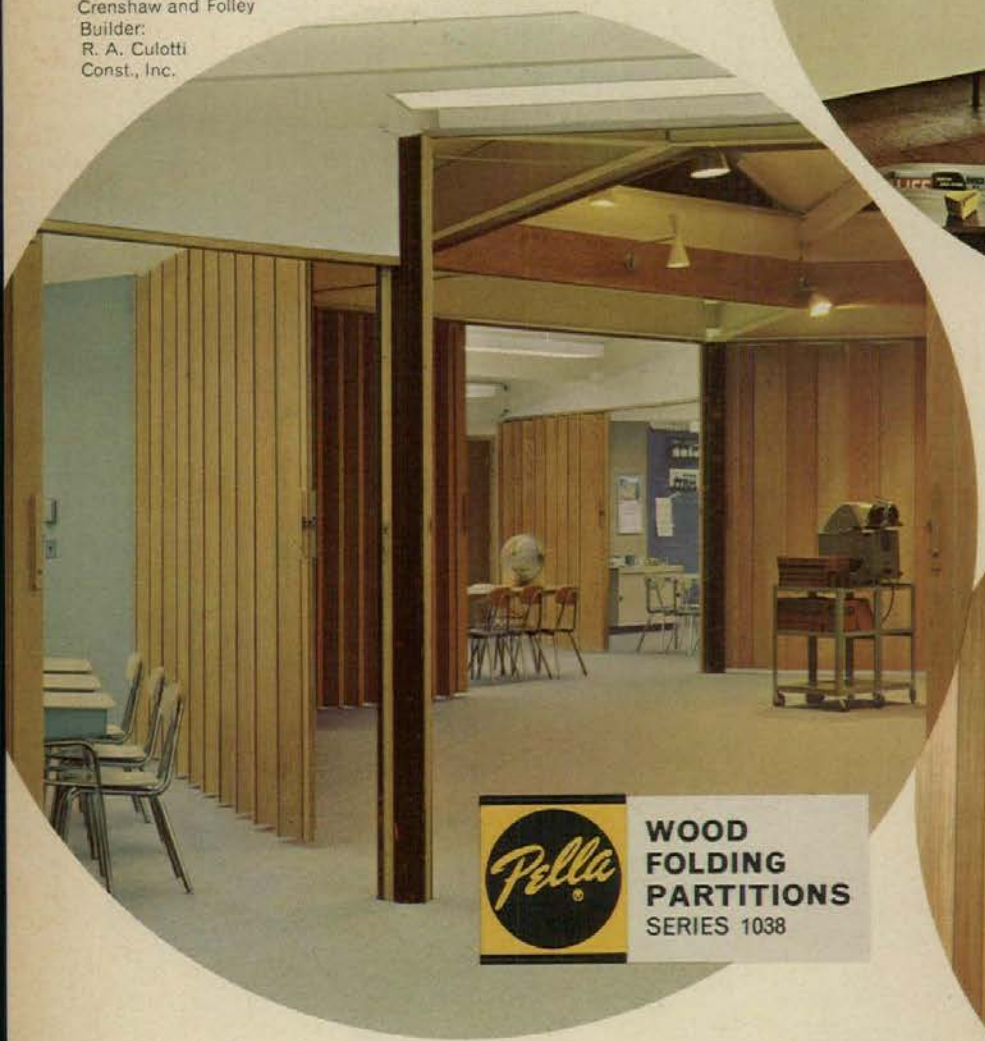
That's the story of PELLA Wood Folding Doors. They operate easily . . . divide decoratively. Soft spoken genuine veneers of OAK, ASH, BIRCH, PINE, PHILIPPINE MAHOGANY or AMERICAN WALNUT give you free rein to provide continuity in wood. Or, paint them for a different effect. We finish them in natural tones at the factory . . . or you can have it done on the job. Stable wood core construction prevents warping. And, patented steel spring hinging means added years of effortless operation. Series 358 Wood Folding Doors have panels that are 3⅝" wide x ⅜" thick. Any width . . . heights to 10′1". Mail card.

Architect: Sövik, Mathre & M
Builder: Arnold M



Pella® WOOD FOLDING DOORS SERIES 358

Architect: Sargent, Webster, Crenshaw and Folley
Builder: R. A. Culotti Const., Inc.



Pella® WOOD FOLDING PARTITIONS SERIES 1038



Pella® WOOD FOLDING PARTITION SERIES 558

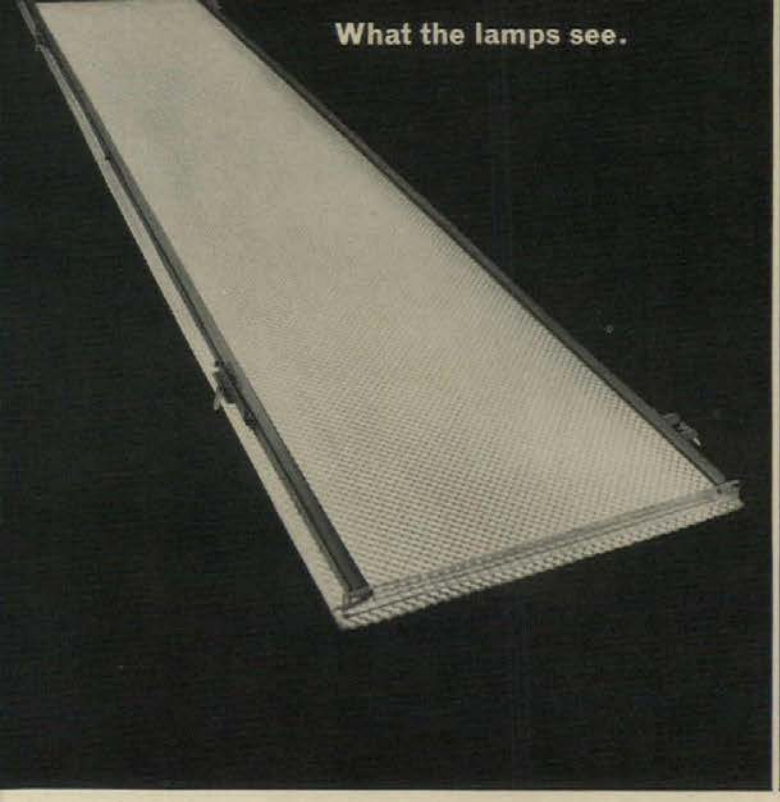
Impressively sturdy!

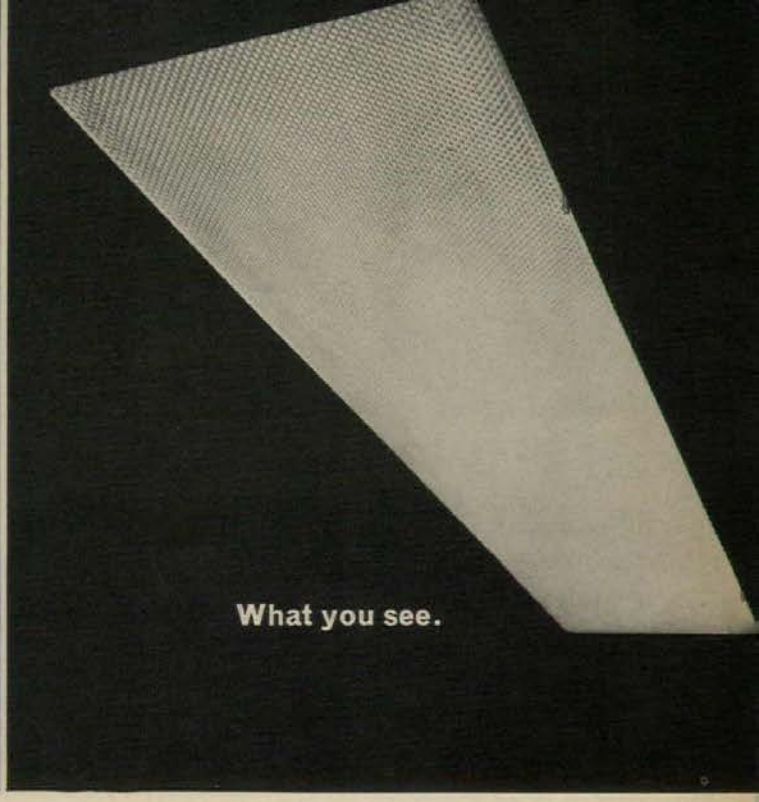
Yet, the warm, rich wood tones of PELLA Wood Folding Partitions add a "touch of home" to schools, churches, restaurants, clubs and offices. Select from six genuine veneers of OAK, ASH, BIRCH, PINE, PHILIPPINE MAHOGANY or AMERICAN WALNUT. We'll finish them in natural tones at the factory if you like, or have them painted or stained on the job. Series 558 panels are 5⅝" wide x 7/16" thick. Series 1038 panels are 10⅜" wide x 1⅛" thick. Stable wood core construction prevents warping, takes heavy abuse and helps keep sound under control. All widths. Series 558 available in heights to 16′1". Series 1038 available in heights to 20′1". Mail card today.

ROLSCREEN COMPANY
PELLA, IOWA

MAKERS OF QUALITY WOOD WINDOWS, WOOD FOLDING DOORS & PARTITIONS AND WOOD SLIDING GLASS DOORS

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LPI's frameless diffuser has a frame. You can't see it, but it's there to provide the strength, safety, and convenience that no other frameless diffuser has.

You wouldn't know that the LPI frameless diffuser has a frame unless the diffuser door was open. Only then could you see the full-length metal frame that provides the positive hinging, latching, and seating that you just can't get from any all-plastic frameless diffuser.

Thanks to this hidden metal frame, an LPI frameless diffuser can never sag and cause unsightly light leaks. Nor is there any possibility of a plastic pin breaking and making it necessary to replace an entire diffuser door.

Maintenance is easier too. LPI frameless diffusers open and close easily and quickly and can be installed to work from either side. There's never any awkward maneuvering. And once the metal latch is locked, LPI frameless diffusers stay in place without any shifting; they can't fall out.

No metal mullions are visible when LPI frameless diffusers are installed in continuous rows. You can illuminate a hallway, a corridor, or any room with an unbroken path of light. You also get the exclusive LPI feature of metal light traps at each end of the luminaire.

LPI frameless diffusers are available to fit the entire line of LPI recessed troffers and surface units. In fact, they can be interchanged instantly with any LPI frame-style diffuser of the same type. No tools or adapters are required.

You can get LPI frameless diffusers with prismatic lenses in clear virgin polystyrene or acrylic. Write us or ask your LPI representative for a brochure which describes our frameless diffusers in detail.

He can also provide information on any of the many other lighting products from LPI.

LPI FLUORESCENT LIGHTING

Lighting Products Inc., Highland Park, Illinois 60035

For more data, circle 13 on inquiry card

and you'll convince yourself that

"Rubber-backed carpeting" is inferior to conventional carpets installed with *Allen* rug cushions

Let's look at the facts about the "new breed" of "rubber-backed carpeting" compared to conventional carpet and **Allen Cushion** installation. Much of this "rubber-backed carpeting" is not of carpet loom origin. It's a modified upholstery-type fabric bonded to rubber.

What do you receive for your money . . . in terms of economics?

	Conventional carpet plus **Allen Cushion**	With "rubber-backed carpeting"
Carpet Pile Height	**1/4" or more**	**1/8"**
Face Yarn Content	**22 oz. or more**	**14 oz.**
Cushion Gauge	**1/4" minimum— usually more**	**3/16"**

Conventional Carpet plus Allen Carpet Cushion



"Rubber-backed Carpeting"



What do you receive for your money in style and design?

With "rubber-backed carpeting" you are restricted in selection to a handful of designs and colors. Most of them have a tight, hard finish. You have little choice. Compare this with the vast assortment of styles, colors and designs available from over 2,000 separate carpet looms . . . with the choice of 41 **Job-Engineered Cushion models made by Allen.**

From the all-important acoustical standpoint, conventional carpet plus **Allen cushions** provide substantially higher benefits.

You just can't shortcut quality. So weigh all the facts . . . Ask your carpet contractor to show you the **Allen-made rug cushion** and the conventional carpet best suited to your specific requirements.



Photographed: Allen Top-Flite, America's Finest Rug Cushion

Compare these differences

	Conventional carpet plus **Allen Cushion**	"Rubber-backed carpeting"
WIDTHS	Unlimited carpet assortments in 12′ and 15′ seamless mean fewer seams, lower installation costs.	Mostly 54″ means potential installation and maintenance problems due to seam separation, unravelling, etc.
ECONOMIC WASTAGE	No loss of Allen cushion yardage. A good installer pre-cuts and fits the Allen cushion to keep wastage at minimum levels.	When "carpet" is cut to fit you automatically have a cushion loss that cannot be recovered.
FREIGHT COSTS	Handling and shipping of separate carpet and Allen cushion assures minimum in-transit costs.	Traffic studies indicate costs as much as 40% higher.
REPLACEMENT	Conventional carpet and Allen cushion can be moved, shifted, or replaced in sections as needed without waste or floor damage.	Most "rubber-backed carpets" must be cemented to the floor. Movement will usually mean destruction of the cushion and inability to seam match the replacement.

For Information and Samples . . . Write Allen Industries, Inc., Contract Division, Detroit, Michigan 48207

For more data, circle 14 on inquiry card



When a roof must be more than a roof, choose Ruberoid T/NA 200® roofing (with Du Pont TEDLAR*)

This new auto showroom for Cann Ford Inc., Batavia, Ohio, was designed to be an attractive standout building in the community—so everyone would remember where the local Ford dealer is!

Basic to this goal was the *roofing* of Ruberoid T/NA 200. T/NA 200 is a tough, flexible prefinished membrane that easily conforms to roofs of unusual contour, on any slope. With its attractive white surface, it was ideal for this dramatic folded-plate design. And the roof will stay weathertight and maintenance-free for years to come.

Installation is easy and quick. T/NA 200 can be handled on-site with conventional roofing techniques; or, as in this case, factory-applied over modular plywood sections.

For a slight contrast, the front peak was roofed with white Ruberoid Sovereign® 300-lb. asphalt shingles. These heavyweight self-sealing shingles give maximum protection and blend pleasingly with the T/NA 200.

Precision Buildings, Inc., Cincinnati, Ohio, prefabricated the roof, factory-covering the plywood sheets with T/NA 200 and hoisting the sheets in position for joining. Additional T/NA 200 and tape were used to weather-seal all roof joints.

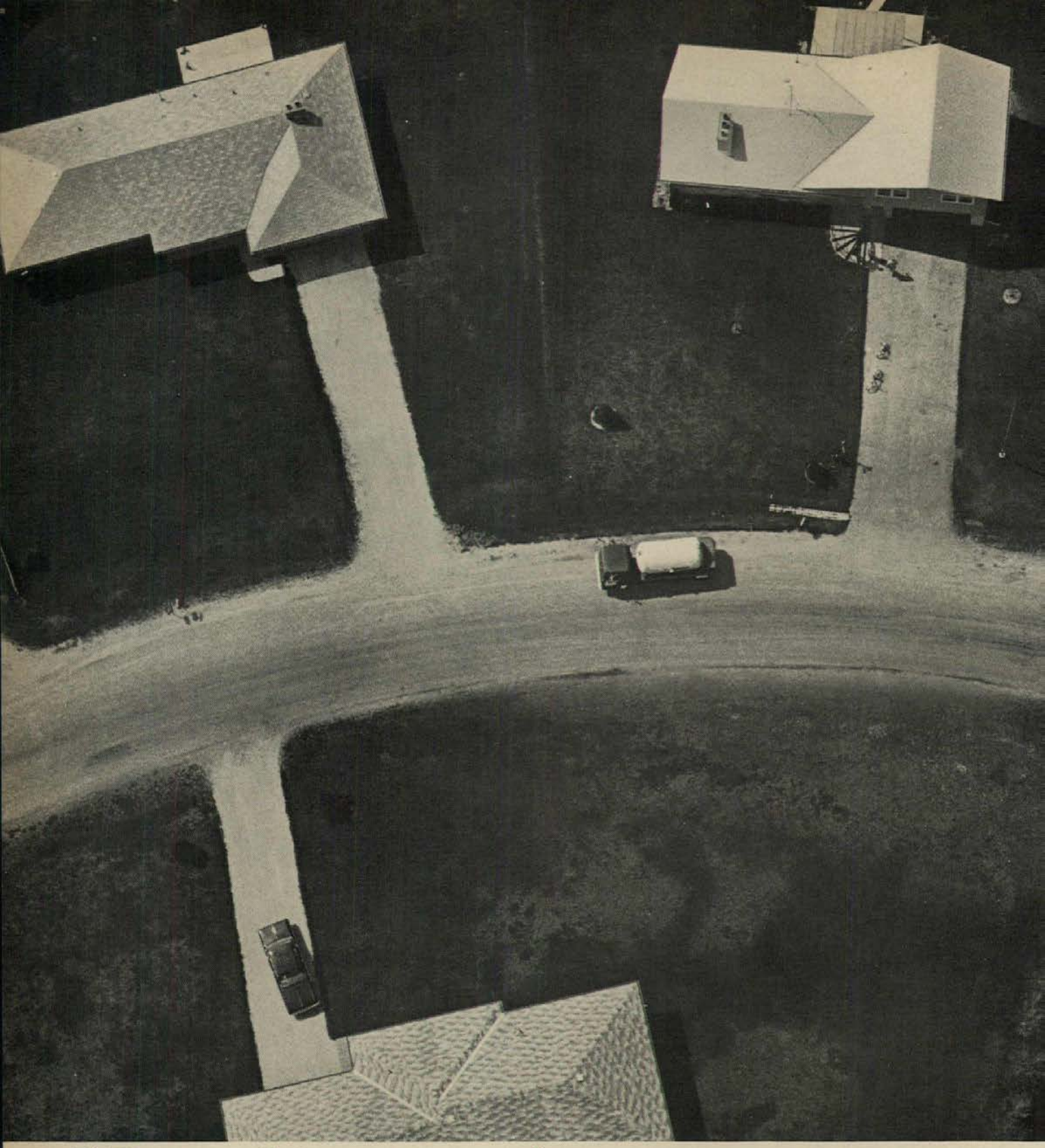
Whenever a roof must be much more than just a roof, consider Ruberoid T/NA 200. Besides white, available in green or gray pastels. Send for full details.

RUBEROID®

The RUBEROID Co., TECHNICAL SALES AND FIELD ENGINEERING DEPT.
DEPT. AR-66, 733 Third Avenue, New York, N. Y. 10017

*DuPont's registered trademark

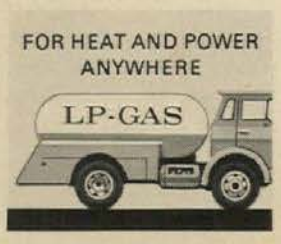
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LP-gas has a growing circle of friends

LP-gas is a vital tool in modern building. For home buyers, LP-gas provides heat, cooks meals, dries clothes, heats water. For builders, it powers forklifts and trucks that heft and haul materials. Warms workers and dries plaster with infra-red heaters. LP-gas generators provide power. *Gas makes the big difference.* Safe. Clean. Dependable. Modern. LP-gas is available to people wherever they live. *Of America's great sources of energy, only LP-gas serves you in so many ways.*

NATIONAL LP-GAS MARKET DEVELOPMENT COUNCIL, Chicago, Illinois 60603



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MODERN makes a low-cost geranium movable wall system that will never go to pot*



***It's crack, chip, peel, stain, fade and moisture resistant . . .**

because the surface panels are VIDENE by GOODYEAR

You don't like geranium? Then take your pick of 33 other colors, 6 smart patterns or 16 wood grain finishes—all architecturally oriented for excellent interior design.

Modern wall systems, surfaced with Videne panels by Goodyear, are in a class by themselves. Here's why: Colors are fade resistant for long, vibrant life. Wood-grain patterns have the look and feel of exotic hand-rubbed woods.

The beautiful low-gloss surface of Videne paneling has up to three times the abrasion resistance of high pressure laminates. Maintenance is minimal. Ordinary cleansers will remove surface abrasions and scratches and restore original luster.

Quick and easy installation requires no special tools. Extra-large, built-in raceways hold down wiring costs.

The beauty and quality of Modern wall systems, with surfaces of Videne panels by Goodyear are unmatched at any price. Videne doors and a complete Videne paneling system with all necessary moldings for fixed walls are available to match Modern Partitions.

If you'd like to know more, just write our Architectural Service Dept.

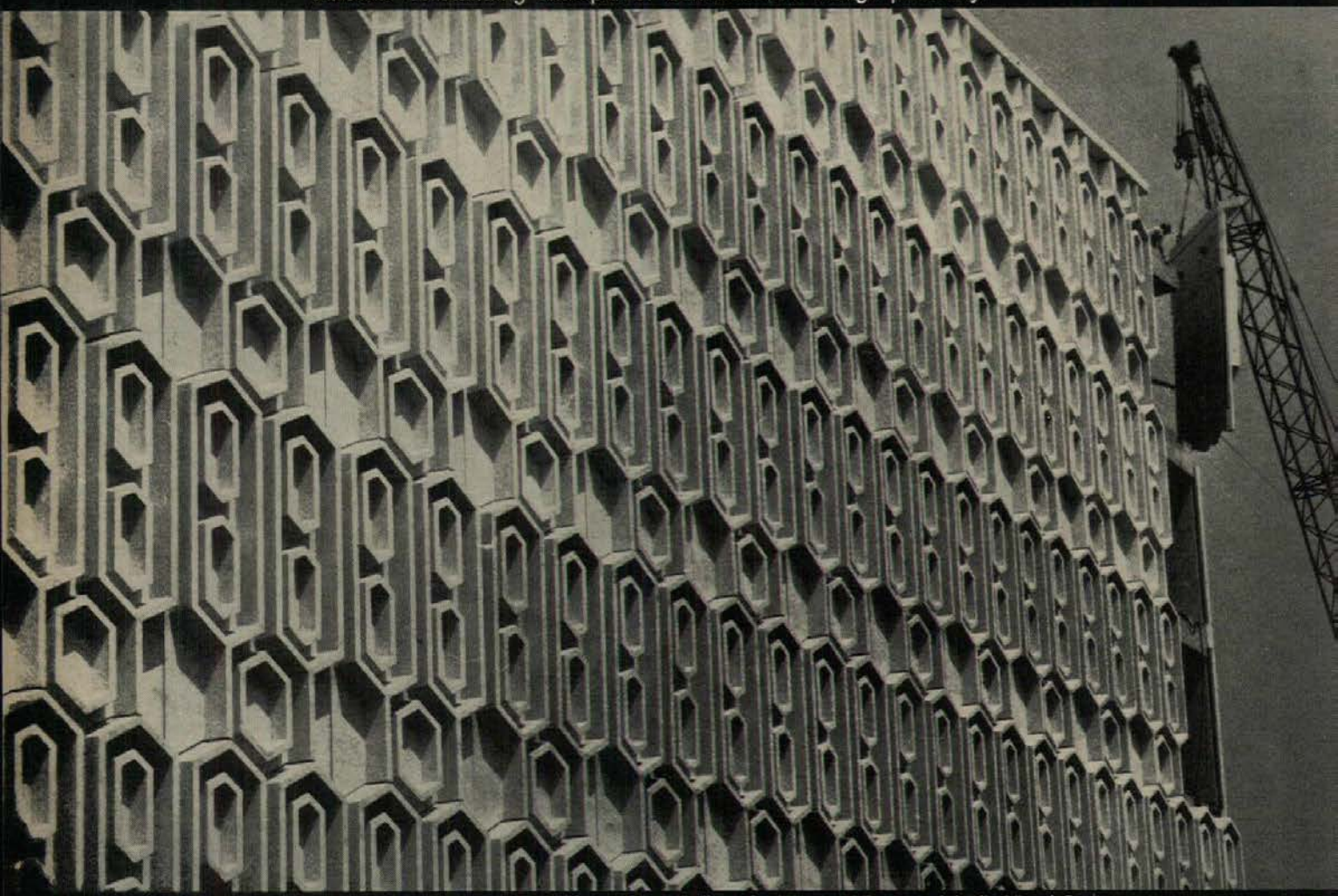
MODERN
MODERN PARTITIONS, INC.
HOLLAND, MICHIGAN 49423

VIDENE,™ for paneling, doors and molding systems. The Goodyear Tire & Rubber Company, Akron, Ohio 44316

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SCHOKBETON®

Another outstanding example of Schokbeton's design plasticity.



Schokbeton precast concrete curtain wall, California State College for Women, Library and Audio Visual Center, Fullerton, California. Architect: Risley, Gould & Van Heuklyn. Engineer: Hillman & Newell.
Schokbeton by Rockwin Schokbeton Division of Rockwin Prestressed Concrete Corporation

For the best in precast concrete, specify Schokbeton

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P.O. Box 56, Brandywine, Md.

SCHOKBETON-PITTSBURGH
A Division of The Levinson Steel Co.
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P.O. Box 328, Lemont, Illinois 60439

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Kalamazoo, Michigan 49003

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SCHOKBETON PRODUCTS CORP., 1270 AVE. OF AMERICAS, N.Y.C. 20, N.Y.—A SUBSIDIARY OF AMERICAN METAL CLIMAX, INC.



You're looking at $10,457.05 through ten pieces of PPG Float Glass

The glint and glimmer that lured knaves and heroes come through as though there were nothing between you and these 298.773 ounces of fine gold—the international standard against which all value is measured.

That's because the glass is PPG Float, the new standard of perfection against which all glass will be judged.

We make it by floating liquid glass on a bath of molten metal. You see the results: a glass with new depth of clarity and brilliant surfaces.

PPG Float Glass is available now. For specification data contact your PPG Architectural Representative or write: Pittsburgh Plate Glass Company, One Gateway Center, Pittsburgh, Pennsylvania 15222.

PPG makes the glass that makes the difference

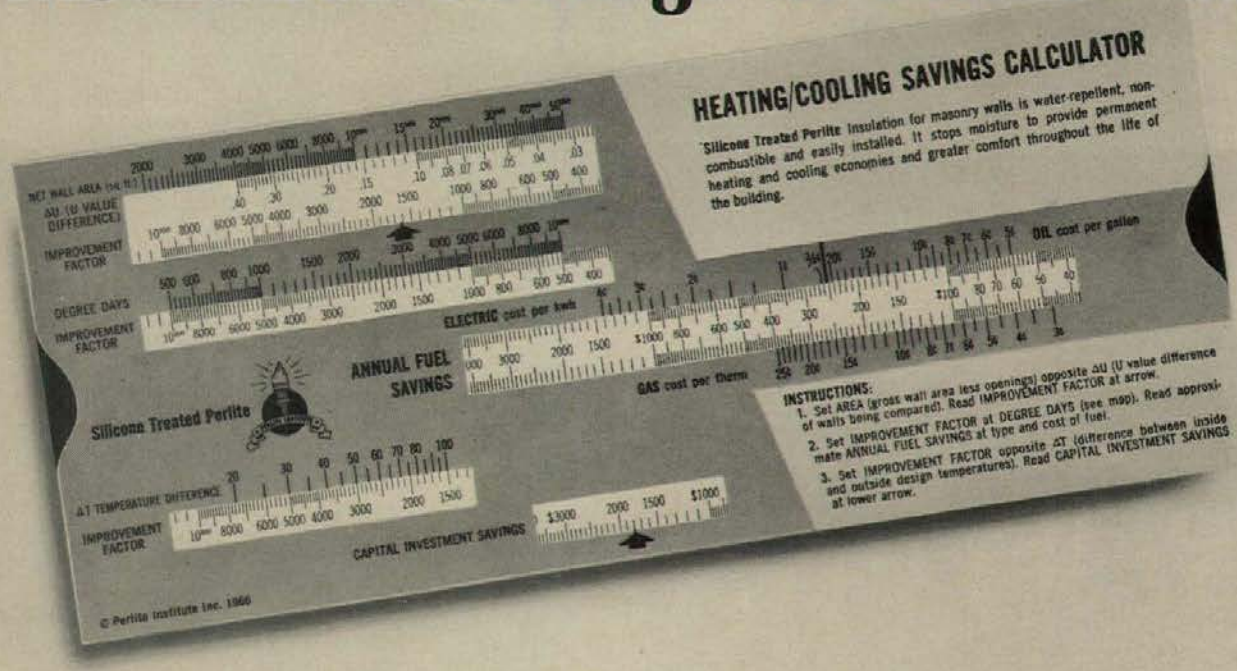


This is how the gold bars were photographed through ten pieces of PPG Float Glass. Courtesy of Engelhard Industries, Inc.

For more data, circle 18 on inquiry card

For more data, circle 19 on inquiry card

Determine comparative insulation savings in 4 minutes



We designed the Heating/Cooling Savings Calculator so you can quickly estimate annual fuel and air conditioning savings by insulating masonry walls.

You may think we goofed because the calculator makes it possible to compare savings between Silicone Treated Perlite and other insulating materials. We don't think so. When all factors are considered—easy application, low initial cost, excellent thermal value, non-combustibility, lasting water-repellency and trouble-free reliability—you too will specify "certified" Silicone Treated Perlite Insulation for concrete block and masonry cavity walls. It's readily available from our member companies.

For your calculator write (on your letterhead) to PERLITE INSTITUTE INC., 45 WEST 45TH STREET, NEW YORK, N.Y. 10036.

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ble in 9" x 9" and 3" x 9" tiles. Write for free design booklet. American Biltrite Rubber Co., Inc., Dept. AR666, Trenton 7, N.J. Showrooms: New York (979 Third Avenue), Chicago, Los Angeles, San Francisco, Dallas, Toronto, Montreal, London

s is Amtico's new solid vinyl flooring, Beacon Hill. If you want something that looks more authentic, see a bricklayer.

AMTICO

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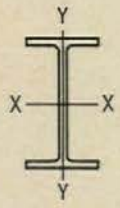
Announces six new Hot Rolled Lightweight Sections

24B61 (USS CBL24 @ 61#)
24B55 (USS CBL24 @ 55#)
21B49 (USS CBL21 @ 49#)
21B44 (USS CBL21 @ 44#)
18B40 (USS CBL18 @ 40#)
18B35 (USS CBL18 @ 35#)

These new lightweight sections are available in A36 Structural Carbon Steel, USS MAN-TEN (A440) High Strength Steel and USS COR-TEN, USS TRI-TEN and USS EX-TEN 42, 50, 60 and 70 High-Strength Low-Alloy Steels.

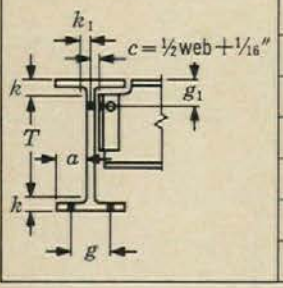
Call the USS Sales Office nearest you for delivery information. USS, COR-TEN, MAN-TEN, TRI-TEN and EX-TEN are registered trademarks.

Light Beams Properties for Designing



Weight per foot	Area	Depth	Flange		Web Thickness	$\frac{d}{A_f}$	Axis X-X			Axis Y-Y		
			Width	Thickness			I	S	r	I	S	r
Lbs.	In.²	In.	In.	In.	In.		In.⁴	In.³	In.	In.⁴	In.³	In.
61	17.95	23.72	7.023	.591	.419	5.71	1535.8	129.5	9.25	34.0	9.69	1.38
55	16.17	23.55	7.000	.503	.396	6.69	1338.2	113.7	9.10	28.7	8.19	1.33
49	14.42	20.82	6.520	.532	.368	6.00	970.3	93.2	8.20	24.5	7.52	1.30
44	12.95	20.66	6.500	.451	.348	7.05	842.1	81.5	8.06	20.6	6.33	1.26
40	11.76	17.90	6.018	.524	.316	5.68	611.3	68.3	7.21	19.0	6.30	1.27
35	10.30	17.71	6.000	.429	.298	6.88	512.3	57.9	7.05	15.4	5.12	1.22

Light Beams Dimensions for Detailing



Nominal Size	Weight per foot	Depth	Flange		Web		Distance						Usual Gage g
			Width	Thickness	Thickness	Half Thickness	a	T	k	k_1	g_1	c	
	Lbs.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
24 x 7	61	23¾	7	9/16	7/16	¼	3¼	20⅞	1 7/16	1	2¾	5/16	3½
24 x 7	55	23½	7	½	⅜	3/16	3¼	20⅞	1 5/16	1	2¾	¼	3½
21 x 6½	49	20⅞	6½	9/16	⅜	3/16	3⅛	18⅝	1⅛	13/16	2½	¼	3½
21 x 6½	44	20⅝	6½	7/16	⅜	3/16	3⅛	18⅝	1	13/16	2¼	¼	3½
18 x 6	40	17⅞	6	½	5/16	3/16	2⅞	15⅞	1	¾	2¼	¼	3½
18 x 6	35	17¾	6	7/16	5/16	3/16	2⅞	15⅞	15/16	11/16	2¼	¼	3½

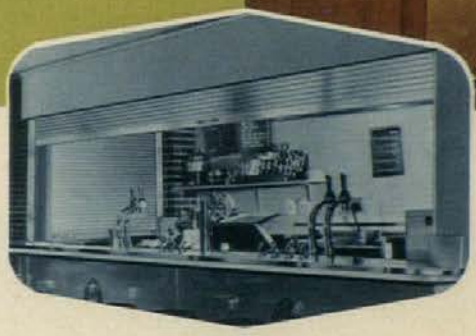
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United States Steel

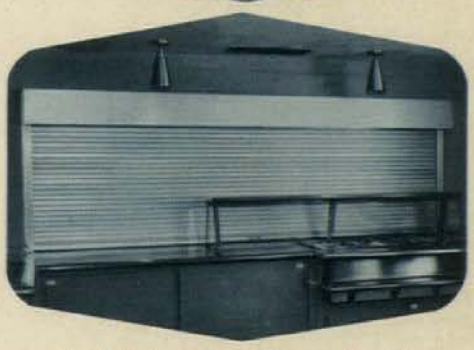
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Top: Refreshment counter for recreation hall
Center: Protection for pool-side concession stand
Bottom: Serving window in church kitchen

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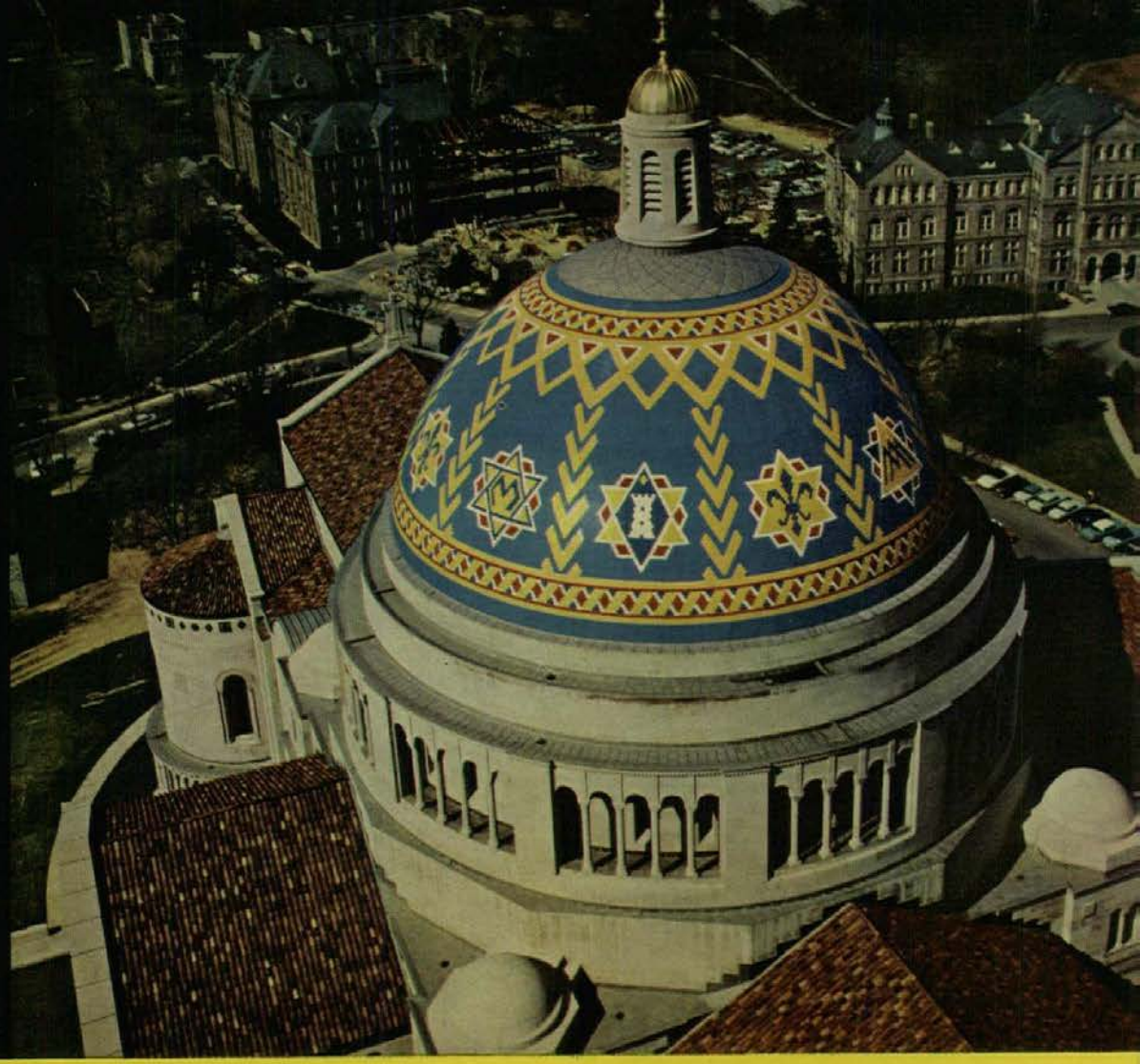
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ROOFING CONTRACTOR: The J. Edw. Linck Sheet Metal Works, Philadelphia, Pa.

DOME: Ludowici shingle tile — full glaze blues, yellow, gray and red

LOWER ROOFS: Ludowici Special Tapered Mission tiles pans and covers — reds, fireflashed buffs and browns

Roofs by Ludowici



FIRST METHODIST CHURCH POMPANO BEACH, FLORIDA

ARCHITECT: Robert E. Hansen, Ft. Lauderdale, Fla.

ROOFING CONTRACTOR: Broward Sheet Metal Works, Ft. Lauderdale, Fla.

ROOF: Interlocking shingle — light blue

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Ars una, mille specie

One art, many kinds. The California Arts Commission has just issued its first report to the people of the state, and it covers with word and picture much of the activity that goes on within the state in the performing arts, and some of the events in the field of visual arts. But nowhere does the report even mention the environmental arts, now more than ever important and, thanks to strong national interest, newsworthy.

The Arts Commission report reflects the Commission's own interests and membership: its strong members represent the performing and the visual arts. And there is not an architect on the roster.

The omission points up all the more clearly the fact that if the environment—urban and rural—is to be pleasant for all of us to live in, and more beautiful for our children to live in, there must be separate bodies set up at all levels, charged with responsibility for the quality of our environment. And the members should be qualified professionals whose voice will be heeded in law-making councils.

Such commissions are not impossible to have. But for them to be created means that a demand must exist.

Why does architecture continue to let itself be lumped in with the fine arts in matters such as these? It is an environmental art, not an art which manifests itself in objects for hanging on walls or for placing on pedestals—beautiful as these are, and essential to our cultural development. Nor is it an art which performs; it may be theatrical, but it is not theater; it may be "frozen music," but it is not music. Each of these arts maintains its integrity. Why not architecture?

Total environment is our commitment—everywhere but where the decisions are being made. Why not proclaim the real nature of environmental arts?

Art is long

There was no art exhibition at the recently concluded 27th National Conference on Religious Architecture held in San Francisco. To the disappointment of many, this facet of the conference was set aside this year. But the reasons for its omission were kept ominously quiet—until speaker after speaker mentioned the fact that the jury had found too few submissions of a quality to make up an exhibition.

But art is long. Next year's conference on religious architecture will be held in New York City, and the religious art exhibition will be under the direction of the Museum of Modern Art and the Museum of Contemporary Crafts as "regular full-length and full-size" exhibitions in connection with the conference.

What happened at San Francisco not only pointed up the woeful state of the arts in religion today, but may well have led to the means of making a stronger and more meaningful advance within this field.

To build or not to build?

Although they end up with a clear indication that architecture is needed by religion, two of the major speakers at the conference suggested that perhaps the church ought to consider seriously whether or not it should build. The idea of mission "extra muros"—outside the walls—came out strong in what both Dr. Robert McAfee Brown, professor of religion at Stanford University, and Peter Hammond, art historian and Anglican priest, had to say. And mission implies not sitting still but going forth. The simple structure may well be the answer, each suggested in his own way. Peter Hammond reminded the conference of the African bishop's bamboo hut which is nevertheless a cathedral, and Dr. Brown challenged both architects and churchmen. "Can you give us a church building that reflects pilgrimage rather than arrival?; that immerses us in the world instead of dividing us from the world?; that keeps us on the march instead of giving the illusion of rootedness?"

But it was the New York architect Edward Barnes who answered the challenge and gave form to some of the ideas which filled the conference: "buildings where space and light are everything, quiet all white interiors, simple prime forms, continuous unbroken surfaces all in one material—an architecture that is an extension of its surroundings, grafted to the city in an integral way instead of standing free as a show piece."

Elizabeth Kendall Thompson

THIS MONTH'S WESTERN REPORTS:

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WESTERN BUILDINGS IN THE NEWS



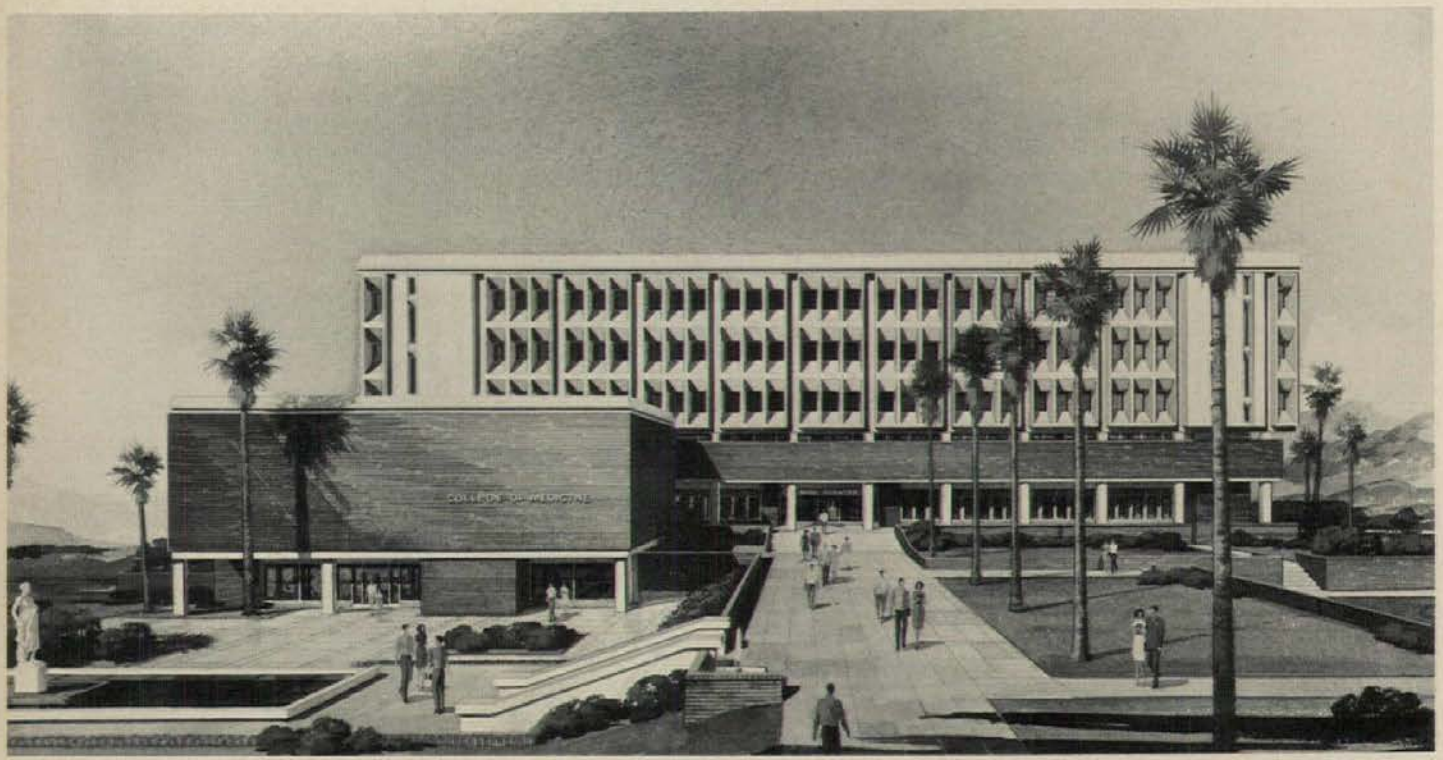
George Lyons

This circular building for the San Diego Zoo, the Elmer C. Otto Center, houses a 200-seat auditorium and office space for the Zoo administration's curatorial, teaching, public relations and graphics departments. The $750,000 center, located at the entrance to the Zoo, is scheduled for completion in October. Architects and engineers: Tucker, Sadler & Bennett; contractors: Callahan Brothers.

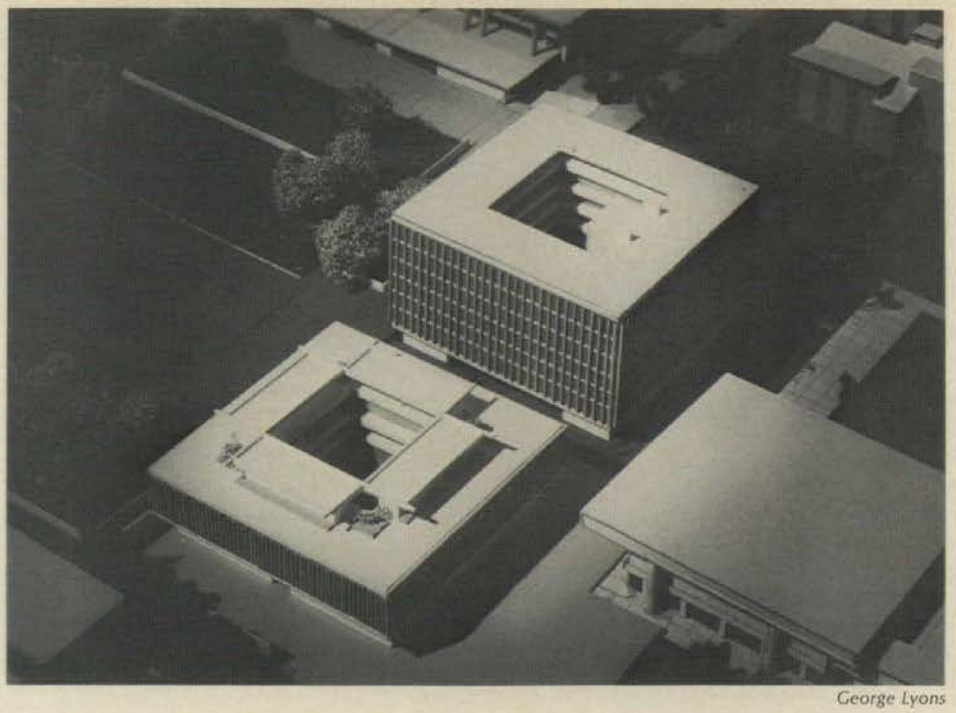


Two new buildings, the City Hall (left) and the Federal Building and Post Office (right) have been added to the Medford, Oregon civic center. The City Hall is a three-story-and-basement building with a dominant copper roof. City departments and administration are on the first two floors; the skylighted Council Chamber is on the third. The four-story Federal Building and the one-story post office, like the city hall, are of reinforced-concrete construction. Architects: (City Hall) Skidmore, Owings & Merrill; contractor: Todd Construction Company. (Federal Building and Post Office) Wilmsen, Endicott & Unthank; supervising architect: Robert Keeney, Medford; landscape architect: Maryl Lorish.





The first medical school in Arizona will begin operation in 1967 when the Basic Sciences Building, shown here, is completed. The $7-million building houses administration, library and central animal facilities on the first three stories of the six-story wing, with academic departments above; and student facilities in the three-story wing. Architects for this first unit: Friedman and Jobusch.



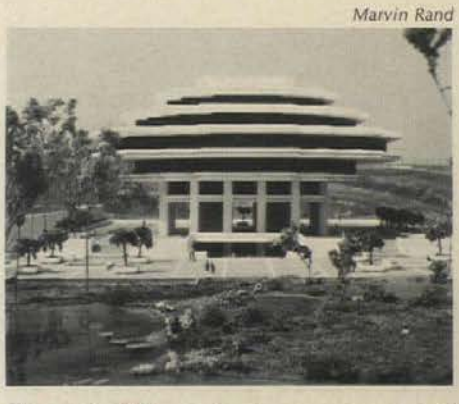
George Lyons

Revelle College Residence Hall Unit II will complete the buildings of the first college at the University of California San Diego campus. Actually two buildings, one six stories high, the other four, "interrelated" by a mall, the residence hall is designed to obviate the hotel-like look of some college dormitories. Each building will have a central atrium, with balconies the means of access to all rooms. Each floor will have quarters for 64 students. Architects and engineers: Tucker, Sadler & Bennett; mechanical engineer: Merle Strum & Associates, electrical engineer: C. M. Cornell; landscape architects: Wimmer & Yamada. Supervising architects, San Diego Campus: A. Quincy Jones and Frederick E. Emmons; campus architect: MacAlfred Cason; project architect: Don McCarty.

This golf clubhouse for the University of New Mexico is being built to a design which won a statewide competiton. Actually a four-building complex—clubhouse, maintenance building, and two shelters—the project is of concrete-frame construction, with a roof system of precast concrete T-beams. The clubhouse itself contains the usual locker rooms, pro shop, cart storage and lounge, and a dining room for 300, two meeting rooms and an outside dining terrace. Its cost is $270,000. Architect: John Reed; structural engineer: James Innis; mechanical engineers: Bridgers & Paxton, electrical engineer: Dean Powell.

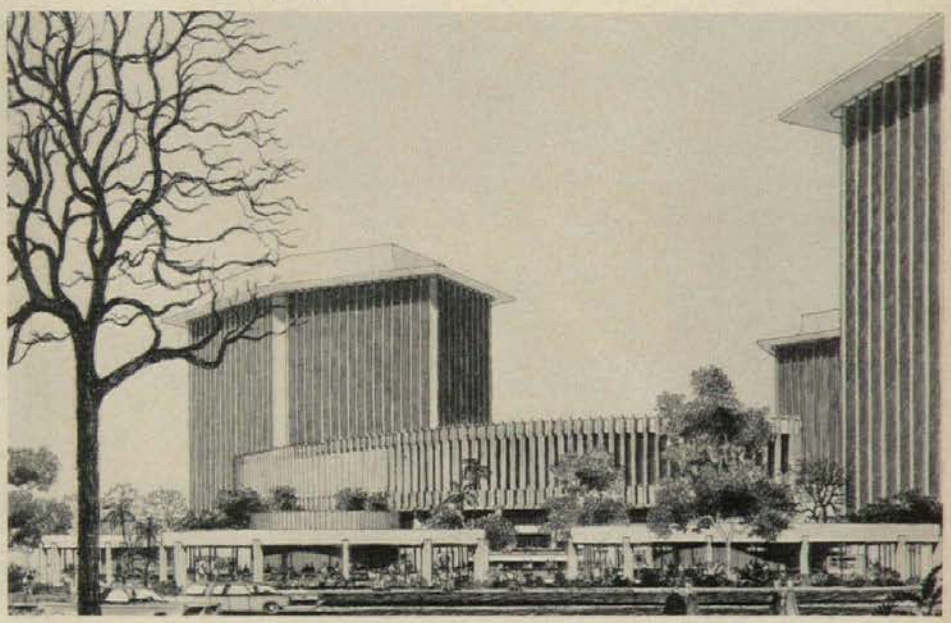


Marvin Rand



The central library for the new campus of the University of California at San Diego will be a five-story circular structure of unusual concept. The central floor will be of larger diameter than the other four, and will be located halfway between them. The two floors above and below will be of progressively smaller diameter, and the whole structure will stand on a podium two stories high and 200 feet square, surrounded by columns. Columns and elevator core will support a large truss, a full story high, from which the floors will be cantilevered. The main floor of the library will be at ground level. Architect: William L. Pereira & Associates.

First phase of a $30-million office building complex in the fast-growing Southern California city of Torrance, this group of buildings includes a 13-story office building, one four-story "ring" building, four two-story pavilions, and a parking garage. When the complex is completed, Del Amo Financial Center will consist of buildings arranged in concentric circles around the three-level garage. Architects: Victor Gruen & Assocs.; planning consultants: Jack Bevash & Assocs.; economical consultants: Economic Research.



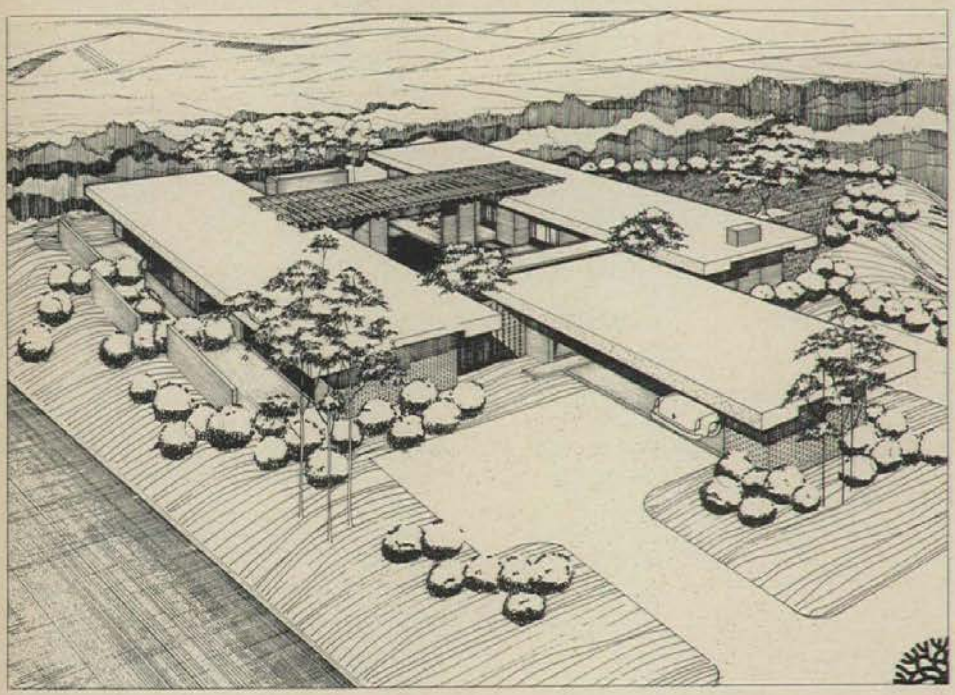
Showplace for a company's products

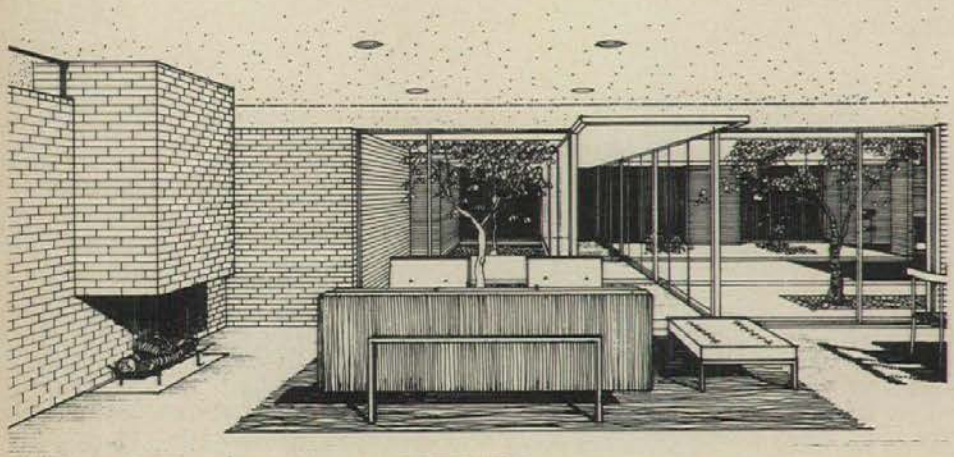
This office building for Arizona Sand and Rock Company in Phoenix tells the story of its owner-occupant's business: the structure uses poured-in-place concrete beams and columns, with precast flat-slab-concrete roof units. Wall panels are of precast concrete, with a special texture and color to contrast with the other exposed concrete members which are smooth. The building rests on a podium three feet above grade with a bed of Salt River boulders around it and a reflecting pool beside the entrance. Architect: P. E. Buchli; structural engineer: Charles Magadini; mechanical engineer: Robert Drain; electrical engineer: William Meier; contractor: Royal Engineering Company.

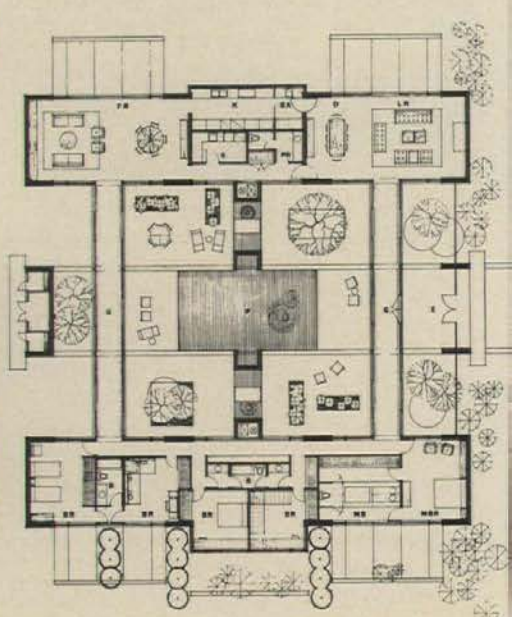


A model house designed to be "original, Californian, innovative"

The kind of house that Janss/Pacific would like buyers of lots to build in its Thousand Oaks section of the vast Janss development in southern California is exemplified in the model house now under construction on a prime hilltop lot there. The house consists of two rectangular wings linked by glass-walled galleries which enclose the ends of a large garden court. The demonstration house, expected to be visited by half-a-million people, will be on display for six months. It will be for sale for $150,000. Architects: Buff and Hensman.







A new life in concrete shapes up for Maybeck's Palace

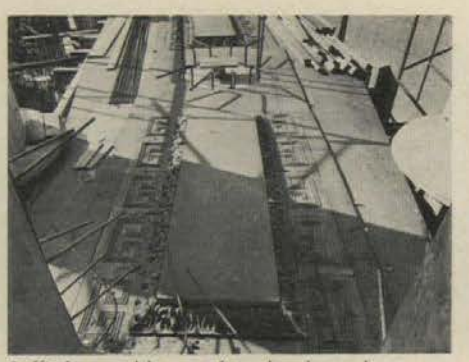
The controversial job of reconstructing the Palace of Fine Arts, designed by Bernard Maybeck for the 1915 Exposition in San Francisco, is nearing the halfway point. The original structure, an ephemeral creation of plaster and lath intended to last only during the exposition, was razed last year to make way for the reconstruction in concrete. When it is completed, the Palace and its grounds will become a California State historical park and monument. Although exact duplication was out of the question from the beginning because of cost, enough of the original sculpture and ornament remained intact for molds to be made of them from which concrete duplicates could be made. Sandblasting has had to replace the texturing of the original colonnade and rotunda, but the color is as near a match as possible for the warm buff which distinguished the old buildings. The cost of reproducing the gallery, the colonnade and the rotunda with all of the ornamentation of the original proved too great: the new Palace will be a stripped-down version of the earlier one, but much that gave the original its character will be in the new structures. Architects: Hans U. Gerson-Welton Becket & Associates; structural engineers: Ellison and Sedgwick; contractor: M & K Corporation.



North colonnade: looking to rotunda.



Repairing specimen for casting waste molds.



Soffit for entablature of north colonnade.



North colonnade: entablature.

WESTERN TOPICS

For the second time in its more than a half century of history, the King County court house has been under grand jury investigation. This time, there has been not only an indictment in the case, but a restraining order has been issued by the state Supreme Court against publication of the grand jury's report, and there are continuing repercussions as to the structural safety of the building. The head of the architectural firm engaged to do the remodeling of the building, Paul W. DeLaney, has been indicted on a charge of gross misdemeanor, but until the jury report is released the exact nature of the jury's findings will not be known.

The county had engaged the services of another firm of architects, Harmon, Pray and Dietrich, after bids for the second phase of the remodeling came in at $11 million—twice the estimate.

Rapid transit in the San Francisco Bay Area is beginning to make itself a part of daily life, not in transporting people (that time is still far off) but in disrupting the patterns of daily life. East Bay cities—Berkeley, Albany, Oakland—are already torn up along the route of the subway where utility lines must be relocated, and large numbers of buildings (mostly houses) have either been demolished or are vacant, boarded up and waiting for the ball and hammer.

Progress on construction is noticeable too: work has begun on the $180-million trans-Bay tube, part of the aerial structure through Albany has been erected, and tests on the pilot line, using full-size cars, continue. Early this month San Francisco's Market Street utilities were being relocated. By next April, three subway stations will be in full construction in downtown San Francisco.

New and lively uses are needed to make Seattle Center—the cultural and civic center which resulted from the 1962 Seattle Fair—an attractive place for people, the Center's Advisory Commission has been told. The Center has been a place of activity for theater and opera, but since the end of the Fair, its daytime use by residents and visitors has been less than was expected. More popular attractions are needed, the mayor has announced—something for everyone would just about fill the bill and most of it should be free.

WESTERN EVENTS

JUNE

26-July 1 American Institute of Architects, national convention. Hilton Hotel, Denver, Colorado.

27-August 7 The work of the late Louis Christian Mullgardt, San Francisco architect. DeYoung Museum, Golden Gate Park, San Francisco.

JULY

5-August 12 Institute on "Design for Nuclear Fallout with Computer Aid." School of Architecture, University of Colorado, Boulder, Colorado.

AUGUST

8-12 "Urban and Regional Information Systems," one-week course, University of California Extension, Los Angeles.

14-18 "Optimum Environment," national convention, American Institute of Planners. Hilton Hotel, Portland, Oregon.

19-September 25 Exhibition of National Treasures from Turkey. Los Angeles County Museum of Art, Los Angeles.

22-26 "Stability and Performance of Slopes and Embankments." University of California Extension, Berkeley.



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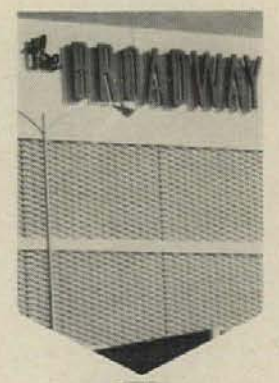




Hartford Building, San Francisco
Architect and Engineer: Skidmore, Owings and Merrill, San Francisco
General Contractor: Dinwiddie Construction Company, San Francisco

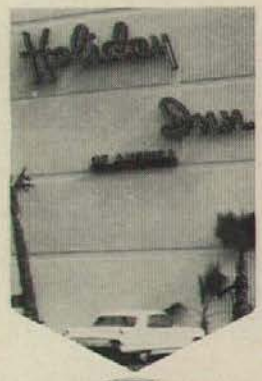
Sacramento Court House
Architect: Starks, Jozen and Nacht, Sacramento
Structural Engineer: Walter Constant, Sacramento
General Contractors: Campbell Construction Company of Sacramento; Heller Construction Company, Sacramento

We've handed out quite a few "medals" lately.





Broadway Department Store
Whittier, California
Architect:
Charles Luckman Associates





Holiday Inn
Montebello, California





140 West Building
Covina, California
Architect:
David Jacobson, Jr.





First Federal Savings Building
San Marino, California
Architect:
Robert Clements Associates





Medical Building
4155 Outer Circle Drive
Long Beach, California
Architect: Richard O. Prior





Fontana City Hall
Fontana, California
Architect:
Grover W. Taylor

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Last year we gave out more than 1000 All-Electric Building Awards in Southern California (including the six "medal winners" above).

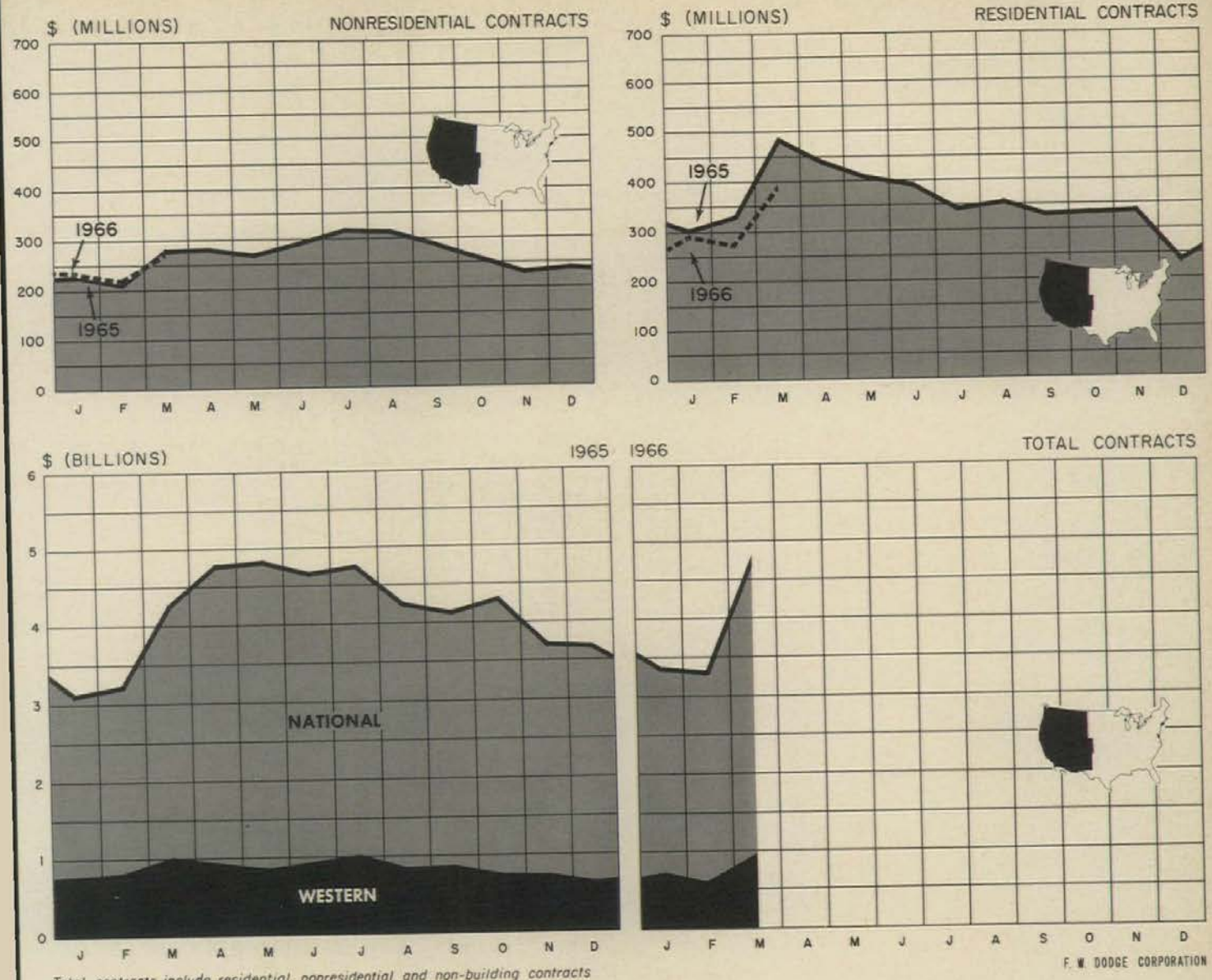
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Total contracts include residential, nonresidential and non-building contracts

Western construction trends

FOR ANALYSIS OF CONSTRUCTION TRENDS NATIONWIDE SEE PAGE 44

With three months of 1966 now in the record books, Western construction has yet to show a year-to-year-gain. Contract value totaled $888.7 million in March, 12 per cent below 1965's performance, as each of the three major building categories trended into the red.

Nonresidential building, the only major category to show any promise at all this year (both the January and February figures were in the black) dropped 1 per cent below the 1965 amount in March. A sharp decline in the large commercial component, washing out strong gains in manufacturing and public building contracts, was the major factor behind the outcome.

Single-family housing recorded a slight three per cent increase in March, but all trace of this was eliminated from the total standings by a 59 per cent decline in apartment contracts. Total residential contract value stood at $398.4 million for the month, 18 per cent below the year-ago amount.

It is now apparent that one major reason for the severity and duration of the current Western housing slump was the effect of certain economic conditions (two of the most important of which were the military base closings and—until recently—the depressed Western aircraft industry) on net migration into the region.

Between 1964 and 1965 a net of only 175,000 persons migrated into the Western region. This is 340,00 less than the previous year, and 313,000 less than the average annual rate since 1960. At current estimates a household size, the migration decline during the 1964-65 period represents a loss of nearly 100,000 potential home buyers and apartment renters, a figure roughly one-third the average annual rate of dwelling unit construction in the West since 1957.

When potential demand is reduced by a figure of this magnitude, a major correction in the supply side of the picture (in this case dwelling unit construction) must follow. While recent seasonally adjusted figures on Western housing seem to indicate that this correction has finally been worked out, confirmation must wait until more is known about the spring months.

The first quarter of 1966 ended with activity in the West's construction markets—as measured by total contract value —15 per cent below that of the same period in 1965. Seasonally-adjusted comparisons put the story in a better perspective, however. On this basis, it is evident that by this time last year, the best was already behind us. Last year's opening quarter was 1965's strongest in the West, and a record as first quarters go. The remainder of the year, then, will derive whatever advantages will accrue from being compared with the weaker side of 1965.

James E. Carlson, *Associate Economist*
F. W. Dodge Company
A Division of McGraw-Hill, Inc.

Estimator's Guide: Los Angeles and The Southwest

The Estimator's Guide alternates monthly among four Western areas. The prices at right are compiled from average quotations received by LeRoy Construction Services for commercial work of approximately $100,000-$250,000 total value. Except as otherwise noted, prices are for work installed including all labor, material, taxes, overhead and subcontractors' profit. Material prices include local delivery except as noted, but no state or local taxes.

EXCAVATION

MACHINE WORK IN COMMON GROUND

Large basement .....CY .80-1.10
Small pits .....CY 1.40-1.90
Trenches .....CY 1.75-2.50

HAND WORK IN COMMON GROUND

Large pits & trenches .....CY 8.00-12.00
Small pits & trimming ....CY 12.00-16.00
Hard clay or shale, 2 times above rates.
Shoring, bracing & disposal of water not included.

SEWER PIPE MATERIALS

VITRIFIED

Standard 4" .....LF .33
Standard 6" .....LF .67
Standard 8" .....LF .98
Standard 12" .....LF 2.15
Standard 24" .....LF 8.58

CLAY DRAIN PIPE

Standard 6" .....LF .34
Standard 8" .....LF .47

Rate for 100 LF FOB Warehouse

CONCRETE & AGGREGATES

GRAVEL, all sizes .....TON 3.75
TOP SAND .....TON 4.00
CONCRETE MIX .....TON 4.10

CRUSHED ROCK

¼" to ¾" .....TON 4.00
¾" to 1½" .....TON 4.00
Expanded Shade ..... CY 5.50
Expanded Perlite .....30# Sack 1.40
ROOFING GRAVEL .....TON 4.10
SAND (#1 & 2) .....TON 5.00

CEMENT

Common, all brands (paper sacks)
Small quantities .....Per Sack 1.40
Large quantities .....Per Bll 4.45
Atlas White .....Per Sack 3.80

Concrete Mix

6 sacks in 5-yd loads.....Per Yd 15.50
Lightweight Concrete Mix
105# cy .....Per Yd 21.25

CURING COMPOUND

Clear, 5-gal drums .....Per Gal 1.45

STEEL MATERIALS

SHEETS

Hot rolled .....LB .11
Cold rolled .....LB .13
Galvanized .....LB .13
PLATE .....LB .11
STRIPS .....LB .13
STRUCTURAL SHAPES.....LB .11

BARS

Hot rolled .....LB .11
Cold finished .....LB .145
Reinforcing .....LB .11

REINFORCED MESH

6 x 6" #10 x #10.....SF .04
6 x 6" #6 x #6 .....SF .07

2000# FOB Warehouse

STRUCTURAL STEEL

$370.00 and up per ton erected when out of mill.
$390.00 and up per ton erected when out of stock.

BRICK & BLOCK

All Prices–FOB Plant

BUILDING (COMMON) BRICK

Standard 2½ x 3⅞ x 8¼".....M 39.00
Oversize 3¼ x 3¼ x 10" .....M 47.50
Modular 3⅝ x 3 x 11⅜" .....M 57.50

FACE BRICK

Standard 2$^{3}/_{16}$ x 3½ x 7½" .....M 85.00
Roman 1½ x 3½ x 11½" .....M 90.00
Norman 2$^{3}/_{16}$ x 3½ x 11½".....M 107.00
Economy Norman 3⅝ x 3 x 11½" M 121.00

PAVING UNIT

Brick 2¼ x 4 x 8⅝" .....M 90.00
Tile 1¼ x 4 x 8½" .....M 94.00
1½ x 3½ x 11½" M132.00
Standard 2½ x 4½ x 9" .....M 120.00

FIRE BRICK

1¼ x 4½ x 9" .....M 120.00

GLAZED STRUCTURAL UNITS

2 x 6 x 12" Furring.....SF .60
4 x 6 x 12"–1 side .....SF .91
6 x 6 x 12"–1 side .....SF 1.32
4 x 6 x 12"–2 sides.....SF 1.00
Add For Color .....SF .25

CONCRETE BLOCKS

4 x 8 x 16" .....EA .23
6 x 8 x 16" .....EA .29
8 x 8 x 16" .....EA .34
12 x 8 x 16" .....EA .51
Add for color .....EA .02

BRICKWORK & MASONRY

Brick Walls, Common Bond, Unreinforced

Building Brick Backup 4".....SF 1.10
8".....SF 2.35
Standard Face Brick 4" .....SF 2.00

BRICK VENEER

1" Veneer Units .....SF 1.90
4" Building Brick .....SF 1.55
4" Modular Brick .....SF 1.25
4" Roman Brick .....SF 2.40
4" Norman Brick .....SF 2.10

Grouted Walls, Reinforced, Faced 1 Side

Building & Standard Facing 10"...SF 3.65
Modular & Economy Norman 8"..SF 2.80

CONCRETE BLOCK, reinforced

6" Walls .....SF 1.70
8" Walls .....SF 1.85
12" Walls .....SF 2.35

BUILDING PAPERS & FELTS

BUILDING PAPER

1 ply per 1,000-ft roll 4.20
2 ply per 1,000-ft roll 6.40
3 ply per 1,000-ft roll 8.75
Sisalkraft, reinforced, 500-ft roll 9.50

SHEATHING PAPERS

Asphalt sheathing, 15-lb
324 SF roll 2.17
30-lb 216 SF roll.....2.93
Dampcourse, 216-ft roll 3.30

FELT PAPERS

Deadening felt, ¾-lb, 50 s.y. roll ..3.00
1-lb, 50-s.y. roll 3.50

ROOFING PAPERS

Standard grade, smooth surface 108-ft., 432 SF rolls
Light, 45-lb 2.20
Medium, 55-lb 2.63
Heavy, 65-lb 2.85
Mineral surfaced 216 SF Roll.....3.50

LUMBER

DOUGLAS FIR

Construction 2x4-2x10 MBM 98.00-105.00
Standard ....2x4-2x10 MBM 94.00- 98.00
Utility .....2x4-2x10 MBM 78.00- 83.00
Economy ...2x4-2x10 MBM 59.00- 68.00
Clear, air dried.....MBM 210.00
Clear, kiln dried.....MBM 250.00

REDWOOD

Foundation grade .....MBM 140.00
Construction Heart .....MBM 125.00
A Grade .....MBM 200.00
Clear Heart .....MBM 240.00

PLYWOOD (DOUGLAS FIR) **MSF**

¼" AB .....MSF 90.00
¼" AD .....MSF 70.00
¼" Ext. waterproof .....MSF 77.00
⅜" AB .....MSF 105.00
⅜" AD .....MSF 95.00
⅜" CD .....MSF 70.00
½" AB .....MSF 140.00
½" AD .....MSF 120.00
½" CD .....MSF 91.00
⅝" AB .....MSF 156.00
⅝" AD .....MSF 136.00
⅝" CD .....MSF 102.00
¾" AB .....MSF 178.00
¾" AD .....MSF 158.00
¾" CD .....MSF 135.00
⅝" Plyform .....MSF 170.00

SHINGLES **Square**

Cedar #1 .....Square 16.50-19.00
Cedar #2 .....Square 14.50-17.00

SHAKES

Cedar
½" to ¾" butt .....Square 18.50-21.00
¾" to 1¼" butt .....Square 21.00-24.00
Redwood
¾" to 1¼" butt .....Square 21.00-24.00

INSULATION & WALL BOARD

FIBRE GLASS INSULATION

foil backed **Per MSF**

1½" thick 40.75
2¼" thick 48.75
3½" full thick 58.75

SOFTBOARDS–wood fiber

½" thick 60.00
¾" thick 128.50

ALUMINUM INSULATION

35# Kraft paper with alum. foil
1 side only 24.00
2 sides 30.00

HARDBOARDS—wood fiber
¼" thick, sheathing 58.00
3/16" thick, sheathing 70.00
¼" thick, sheathing 85.00
⅛" thick, tempered 80.00
3/16" thick, tempered 105.00
¼" thick, tempered 130.00

CEMENT ASBESTOS BOARD
⅛" flat sheets 143.00
3/16" flat sheets 182.00
¼" flat sheets 238.00

ROUGH CARPENTRY

FRAMING
Floors .....BM .27-.32
Walls .....BM .33-.40
Ceilings .....BM .33-.40
Roofs .....BM .30-.38
Furring & blocking .....BM .45-.65
Bolted framing, add 50%

SHEATHING
1 x 8" straight .....BM .25-.30
1 x 8" diagonal .....BM .28-.33
5/16" plyscord .....SF .19-.24
⅜" plywood CC .....SF .27-.32

SIDING
1 x 8" bevel .....BM .45-.50
1 x 4" V-rustic .....BM .55-.65
Bolted framing, add 50%

DAMPROOFING & WATERPROOFING

MEMBRANE
1 layer 50# felt .....SQ 10.00
4 layers dampcourse .....SQ 15.00
Hot coat walls .....SQ 9.00
Konset added to concrete...per gal. 1.95
Anti-Hydro added to concrete
per gal. 1.40

ROOFING

STANDARD TAR & GRAVEL **Per Sq**
4 ply 17.00-22.00
5 ply 19.50-25.00
White gravel finish–Add..... 2.00- 4.00
Asphalt compo. shingles 20.00-24.00
Cedar shingles 24.00-28.00
Cedar shakes 27.00-33.00
Redwood Shakes 33.00-40.00
Clay tiles 55.00-65.00
Concrete tiles 45.00-55.00

SHEET METAL

ROOF FLASHINGS
18 ga galv steel .....SF .80-1.20
22 ga galv steel .....SF .70-1.10
26 ga galv steel .....SF .60-1.00
18 ga aluminum .....SF 1.15-1.65
22 ga aluminum .....SF .95-1.45
26 ga aluminum .....SF .80-1.20
24 oz copper .....SF 2.20-2.70
20 oz copper .....SF 2.00-2.50
16 oz copper .....SF 1.80-2.30

26 ga galv. steel
4" OG gutter .....LF 1.10-1.35
Mitres and Drops .....EA 2.00-4.00

22 ga galv. louvers.....SF 3.25-4.50
22 oz copper louvers.....SF 4.25-5.25

CHIMNEYS, PATENT

6" .....LF 4.00
7" .....LF 5.25
10" .....LF 2.85

MILLWORK

All Prices FOB Mill
D.F., clear,
air dried S4S.....MBM 220.00-250.00
D.F., kiln dried S4S...MBM 240.00-300.00

DOOR FRAMES & TRIM
Residential entrance .....17.00 & up
Interior room entrance ..... 9.00 & up

DOORS
1⅜" hollow core ..... 8.00 & up
1¾" solid core .....19.00 & up
1¾" Birch hollow core.....10.00 & up
1¾" Birch solid core.....22.00 & up

WOOD SASH
D/H in pairs (2 lts).....SF .55
Casement (1 lt) .....SF .65

WOOD CABINETS
¾" D.F. plywood with
¼" plywood backs:
Wall hung .....LF 10.00-15.00
Counter .....LF 12.00-17.00
Birch or maple, add 25%

FINISH CARPENTRY

EXTERIOR TRIM
Fascia and molds ..... BM .60-.75

ENTRANCE DOORS & FRAMES
Single .....60.00 & up
Double .....100.00 & up

INTERIOR DOORS & FRAMES
Singles .....35.00 & up
Pocket sliding .....45.00 & up
Closet sliding (Pr.).....50.00 & up

WINDOWS
D/H sash & frames .....SF 2.00 & up
Casement sash & frames....SF 2.25 & up

SHELVING
1 x 12 S4S .....BM .30-.50
¾" plywood .....SF .40-.60

STAIRS
Oak steps, D.F. risers
Under 36" wide .....Riser 14.00
Under 60" wide .....Riser 19.00
Newel posts and rail extra

WOOD CASES & CABINETS
D.F. wall hung .....LF 15.00-22.00
D.F. counters .....LF 18.00-30.00

HARDWOOD FLOORING MATERIALS

OAK 5/16" x 2" STRIP
Clear .....M 195.00
Select .....M 185.00
#1 Common .....M 180.00

OAK 5/16" RANDOM PLANK
Select & better .....M 285.00
#1 Common .....M 235.00

OAK 25/32" x 2¼" T&G
#1 Common .....M 250.00
Select .....M 250.00

MAPLE 25/32" x 2¼" T&G
#1 Grade .....M 305.00
#2 Grade .....M 280.00
#3 Grade .....M 230.00

NAILS–1" FLOOR BRADS ....KEG 18.00

HARDWOOD FLOORS

Select Oak
Filled, sanded, stained and varnished
5/16" x 2¼" strip .....SF .50- .55
5/16" random plank .....SF .60- .65
25/32" x 2¼" T&G .....SF .70- .80
Maple, sanded, stained & varnished
25/32" x 2½" T&G.....SF .80- .90
Wax finish, add .....**SF .10**

RESILIENT FLOORING MATERIALS

Linoleum, standard gage ....SY 2.75-2.95
Linoleum, battleship .....SY 3.10-3.30
⅛" Asphalt tile, dark .....SF .10- .12
⅛" Asphalt tile, light .....SF .14- .16
⅛" Rubber tile .....SF .40- .44
.080 Vinyl tile .....SF .55- .65
⅛" Vinyl tile .....SF .78- .82
⅛" Vinyl Asbestos tile.....SF .23- .32
4" base, black .....LF .11- .18
4" base, colored .....LF .12- .16
Rubber treads .....LF 1.60-2.30
Linoleum paste .....GAL .75- .90

FLOORS

⅛" Asphalt tile, dark colors..SF .23- .26
⅛" Asphalt tile, light colors.SF .27- .30
⅛" Rubber tile .....SF .60- .70
.080 Vinyl asbestos tile .....SF .35- .40
⅛" Vinyl Asbestos tile .....SF .45- .52
.080 Vinyl tile .....SF .75- .85
Linoleum, standard gage....SY 3.75-4.25
Linoleum, battleship .....SY 5.25-5.75
4" Rubber base .....LF .25- .35
Rubber stair treads .....LF 2.25-2.75

LATH & PLASTER MATERIALS

METAL LATH
Diamond 3.4# copper-bearing....SY .49
Ribbed 3.4# copper-bearing .....SY .53

ROCK LATH
⅜" thick .....SY .36

METAL
¾" Standard channel .....LF .038
1½" Standard channel .....LF .053
3¼" Steel studs .....LF .088
4" Steel studs .....LF .098
Stud shoes .....EA .03

PLASTER
Browning, hardwall .....Sack 1.55
Finish, hardwall .....Sack 1.70
Stucco .....Sack 2.50
Expanded Perlite .....30# Sack 1.30

LATH & PLASTER WORK

CHANNEL FURRING
Suspended ceilings .....SY 3.00-3.30
Walls .....SY 2.90-3.25

METAL STUD PARTITIONS
3¼" studs .....SY 3.10-3.40
4" studs .....SY 3.25-3.55
Over 10-0 high, add .....SY .25- .35

3.4# METAL LATH & PLASTER
Ceilings .....SY 4.45-5.30
Walls .....SY 4.55-5.40
Keene's cement finish, add..SY .45- .65

ROCK LATH & PLASTER
Ceilings .....SY 3.35-3.80
Walls .....SY 3.45-3.90

WIRE MESH & ⅞" STUCCO
Walls .....SY 4.60-5.80

STUCCO ON CONCRETE
Walls .....SY 3.40-3.90
Metal accessories .....LF .25- .55

DRYWALL

GYPSUM BOARD
⅜" thick .....Per M SF 51.00
½" thick .....Per M SF 60.00
⅝" thick .....Per M SF 83.00

METAL STUD PARTITIONS
1⅝" studs ..... .28
2½" studs ..... .31
3⅝" studs ..... .37

GYPSUM BOARD NAILED ON
⅜" .....SF .125
⅝" .....SF .155

GYPSUM BOARD SCREWED ON
½" .....SF .145
⅝" .....SF .175
Taping .....SF .05

TILE MATERIALS

FOB Warehouse
CERAMIC TILE
4¼ x 4¼" glazed.....SF .72
4¼ x 4¼" hard glazed .....SF .74
Random, unglazed .....SF .72
6 x 2" cap .....EA .79
6" cove base .....EA .31
¼" round bead .....LF .18

QUARRY TILE
6 x 6 x ½" red .....SF .51
6 x 6 x ¾" red .....SF .53
6 x 9 x ¾" red .....SF .65
6 x 6" cove base .....EA .23

TILE & TERRAZZO WORK

CERAMIC TILE, stock colors
Floors 1.85-2.25
Walls 1.90-2.40
Cove base 1.10-1.35

QUARRY TILE
6 x 6 x ½" floors .....SF 1.75-2.20
9 x 9 x ¾" floors .....SF 1.90-2.35

TERRAZZO
Terrazzo floors .....SF 2.15-2.65
Cond. Terrazzo floors.....SF 2.30-2.80
Precast treads & risers .....LF 3.60-4.60
Precast landing slabs .....SF 3.00-4.10

WINDOWS

FOB Warehouse
STEEL SASH
Under 10 SF .....SF 2.55 & up
Under 15 SF .....SF 2.10 & up
Under 20 SF .....SF 1.55 & up
Under 30 SF .....SF 1.05 & up

ALUMINUM SASH
Under 10 SF .....SF 2.80 & up
Under 15 SF .....SF 2.30 & up
Under 20 SF .....SF 1.85 & up
Under 30 SF .....SF 1.35 & up
Above rates are for standard sections and stock sizes, FOB Warehouse

GLASS—CUT TO SIZE

FOB Warehouse
SSB Clear, aver 4 SF .....SF .17
DSB Clear, aver 7 SF .....SF .28
Crystal, aver 16 SF .....SF .35
¼" Polished plate, aver 50 SF.....SF .90
⅛" Obscure, aver 7 SF .....SF .55
⅛" Ribbed, aver 7 SF .....SF .68
⅛" Rough, aver 7 SF .....SF .68
¼" Wire plate, clear, aver 40 SF ..SF 1.90
¼" Wire plate, rough, aver 40 SF..SF .90
⅛" Heat absorbing, aver 7 SF.....SF .90
¼" Tempered plate, aver 40 SF...SF 3.60
½" Tempered plate, aver 40 SF.. SF 6.40

GLASS BLOCKS
6" .....EA .70
8" .....EA 1.15
12" .....EA 3.10

GLASS & GLAZING

SSB Clear .....SF .60
DSB Clear .....SF .80
Crystal .....SF .95
¼" Plate.....SF 2.00
⅛" Obscure .....SF .80
⅛" Heat absorbing .....SF 1.35
¼" Tempered plate .....SF 4.75
½" Tempered plate .....SF 9.00
¼" Wire plate, clear .....SF 2.90
¼" Wire plate, rough .....SF 1.50

PAINT MATERIALS

All prices FOB Warehouse
Thinners 5-100 gal .....Gal .63
Turpentine 5-100 gal .....Gal 1.59
Linseed oil, raw .....Gal 2.36
Linseed oil, boiled .....Gal 2.43
Primer-sealer .....Gal 3.12
Enamel undercoaters .....Gal 5.54
Enamel .....Gal 5.58
White lead in oil .....LB .36
Red lead in oil .....LB .36
Litherage .....LB .32

PAINTING

EXTERIOR
Stucco wash,
1 coat .....SY .48
2 coats .....SY .80
Lead & Oil,
2 coats .....SY 1.20
3 coats .....SY 1.75

INTERIOR
Primer-sealer .....SY .50
Wall paint,
1 coat .....SY .60
2 coats .....SY 1.10
Enamel,
1 coat .....SY .70
2 coats .....SY 1.25
Doors & trim .....EA 14.00
Sash & trim .....EA 16.00
Base & molds .....LF .18
Old work, add 15-30%

VENETIAN BLINDS

RESIDENTIAL .....SF .45 & up
COMMERCIAL .....SF .55 & up
VERTICAL .....SF 1.25 & up

PLUMBING

Lavatories .....EA 210.00-275.00
Toilets .....EA 275.00-340.00
Bath tubs .....EA 300.00-410.00
Stall shower .....EA 160.00-220.00
Sinks .....EA 200.00-270.00
Laundry trays .....EA 130.00-200.00
Water heaters .....EA 125.00-400.00
Prices based on average residential and commercial work. Special fixtures and excessive piping not included.

HEATING

Furnaces–Gas-Fired, Average Job
FLOOR FURNACE
25,000 BTU .....EA 140.00-170.00
35,000 BTU .....EA 150.00-185.00
45,000 BTU .....EA 180.00-215.00
Automatic control,
add .....EA 25.00- 35.00

DUAL WALL FURNACE
25,000 BTU .....EA 160.00-185.00
35,000 BTU .....EA 182.00-210.00
50,000 BTU .....EA 190.00-215.00
Automatic control,
add .....EA 55.00- 70.00

FORCED AIR FURNACE
80,000 BTU .....EA 245.00-335.00
100,000 BTU .....EA 270.00-355.00
125,000 BTU .....EA 305.00-390.00
Automatic control,
add .....EA 38.00- 60.00

HEAT REGISTERS
Outlet 20.00-50.00

ELECTRIC WIRING

Per Outlet
Knob & Tube .....EA 12.00
Armor .....EA 20.00
Conduit .....EA 24.00
220-V Circuit Range ...EA 89.00-125.00

ELEVATORS & ESCALATORS

Prices vary according to capacity, speed and type.
Consult elevator companies.
Slow speed apartment house elevators including doors and trim about $3,500 per floor.

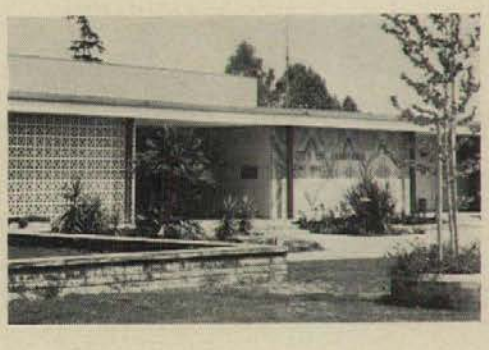
11¢/SQ. FT.

The annual operating cost of heating and cooling the Fontana City Hall electrically

Fontana City Hall
8353 Sierra Avenue
Fontana, California

Architect
Grover W. Taylor

Engineers
Tharaldson, Matthewson, Argebright and Doby, Consulting Mechanical Engineers;
Ted Stuhl, Consulting Electrical Engineer



Only 11¢. And that's for both heating and cooling.

Electric space conditioning *is* economical. And it's practical. Only one source of power is needed.

Drop by an Edison office and see for yourself. We have records like this for hundreds of Southern California buildings.

Southern California Edison SCE

For more data, circle 27 on inquiry card

For more data, circle 28 on inquiry card



Architect-*wise*, it's DURAFLAKE
. . . the *engineered* board
to assure smooth results.
***Wise* architects specify DURAFLAKE**

DURAFLAKE is the core stock for fixtures and cabinets of every description. Workable and strong, it holds screws firmly on edge and face. In a wide variety of sizes and thicknesses. DURAFLAKE UNDERLAYMENT assures smooth surfaces for laying any floor covering. DURAFLAKE EXTERIOR SIDING helps insulate and deaden sound, easily exceeds commercial standard UM-32. Start specifying DURAFLAKE now!

Get more information about Duraflake today. Clip and mail to:

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Box 428, Dept. AR
Albany, Oregon

Phone: 503/928-3341
TWX: 503/967-0608

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Firm _____ Title _____

Address _____

City _____ State _____ ZIP _____



6500 custom-made steel ribs— enduring strength for a long, tough, rapid transit tunnel.

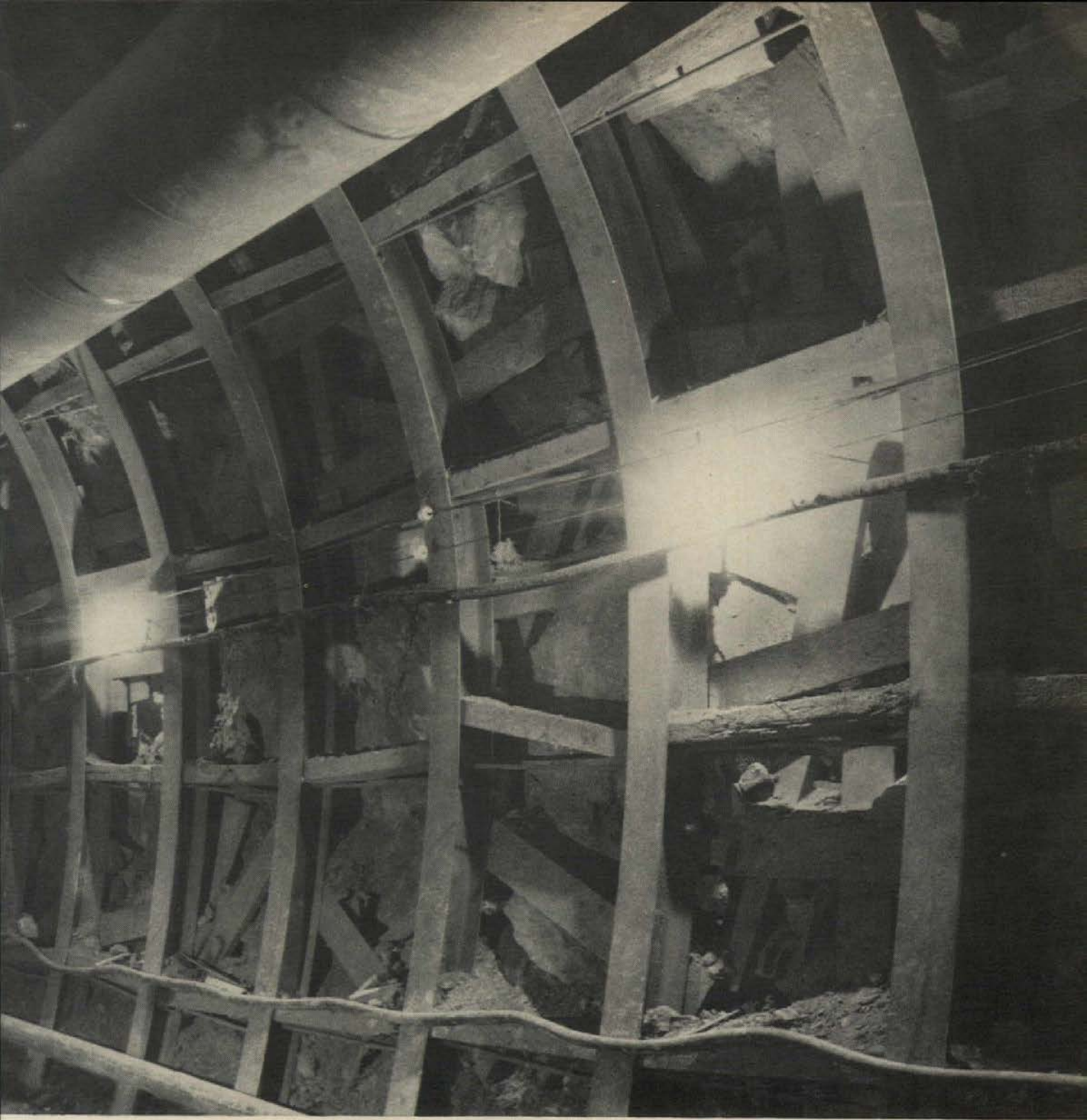
DESIGNS OF THE TIMES... IN STEEL



PROBLEM: Drive a twin-bore tunnel more than three miles through highly faulted earth zones—to carry people safely through the Berkeley Hills. Do it economically, quickly, and safely.

SOLUTION: Use steel tunnel support ribs—ribs made from rolled sections specially designed by Kaiser Steel for the new Bay Area Rapid Transit system.

RESULT: "This has been one of our roughest tunnel jobs because of its length and the type of terrain, but so far we're right on schedule. Kaiser Steel has provided us with everything we need in design assistance and finished product." says Ed Shea, Project Manager.



Twin-bore tunnel through Berkeley Hills for Bay Area Rapid Transit. General Contractor: Shea-Kaiser-Macco. A joint venture sponsored by J. F. Shea Co., Inc.

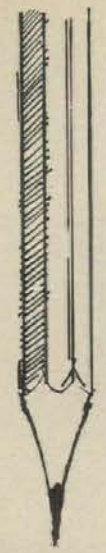
Kaiser Steel has produced 6500 of these tunnel ribs, 19 feet in diameter, at new production line rates to meet exacting delivery schedules. In addition to tunnel ribs, Kaiser Steel is furnishing more than 17,000 steel liners for bored subway tunnels for this world-recognized transit system. On this and other major tunnel jobs, Kaiser Steel has provided—and will provide on future requirements—design consultation service on the fabrication and application of tunnel ribs and liners.

For answers to your tunnel problems call Kaiser Steel Fabricating Division: Telephone 415/271-2703 (Oakland) or 213/685-4930 (Los Angeles).

KAISER STEEL

ACTION—TO SERVE THE GROWING WEST

For more data, circle 29 on inquiry card



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VENETIAN-CUT
MOSAIC TILE

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These vitreous, hand-crafted tiles give the appearance of authentic antique beauty, with an old-world charm that makes them truly distinctive. Yet they actually cost less than most Venetian tiles on the market today.

Available in the Antique shades of White, Ivory, Champagne, Putty, Black, Beige, Brown, Amber, Marine, Orange, and Aqua. Other colors include Persimmon, Aztec Orange, Brite Red, Antique Silver, Antique Brass, and four shades of Antique Gold.

"VENEZICO" is suitable for interior or exterior use, and impervious to wear and weather.

Mesh mounted on 12"x12" sheets, for easy installation at low cost. Matching trimmers are available.

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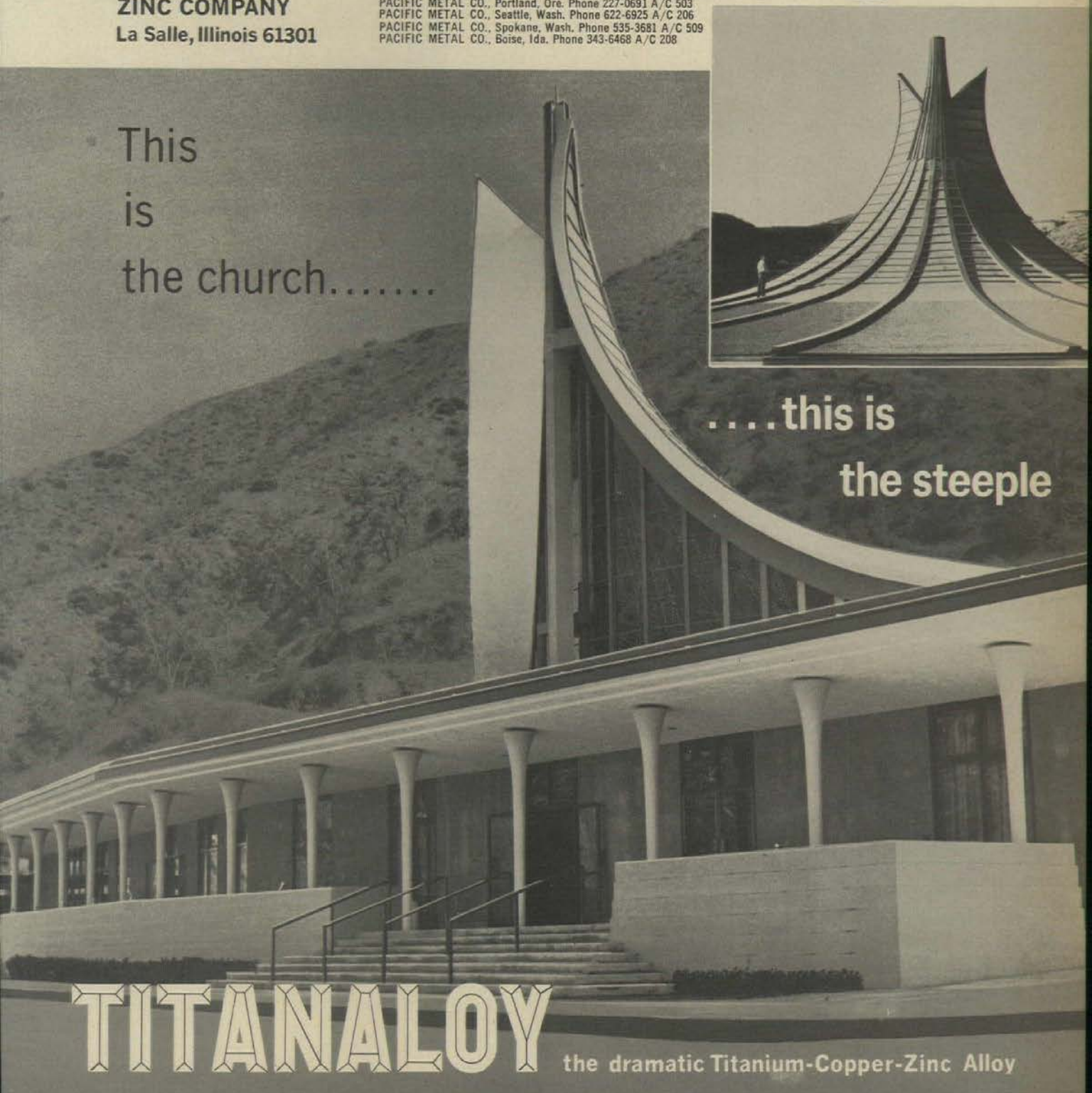
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CHICAGO, ILLINOIS: 33-story, 600-room Holiday Inn motor hotel. *Architect/Engineer:* William Bond & Associates. *Contractor:* Turner Construction Company.



WHITTIER, CALIFORNIA: 172,000 sq. ft. Broadway department store. *Architect:* Charles Luckman Associates. *Electrical Engineer:* C. E. Mauk.



SPRINGFIELD, MASSACHUSETTS: 5,000 sq. ft. Metropolitan Life Insurance Company branch office building. *Contractor:* A. C. Dufault. (Design by Metropolitan Life Insurance Company architects.)



TAMPA, FLORIDA: 8-story, 97,000 sq. ft. IBM office building. *Architect:* Aeck Associates. *Engineer:* Blakely-Daniels and Associates. *Contractor:* International Construction Co.



JOHNSON COUNTY, KANSAS: 2000-student, 287,400 sq. ft. Shawnee Mission South High School. *Architect:* Tanner, Linscott & Associates. *Engineer:* Scott, Kinney, Holloway and Perkins. *Contractor:* Sharp Brothers Construction Company.

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Gold medalist, more honorees named for A.I.A. convention

Japanese architect Kenzo Tange will receive the highest honor bestowed by the American Institute of Architects, the Gold Medal, at the A.I.A.'s convention to be held in Denver from June 26 to July 1. Mr. Tange, the first architect from Japan to be so honored, is the 31st person to receive the Gold Medal since its inception in 1907.

Sixty architects have been announced as new Fellows of the Institute, raising the membership of the College of Fellows to 688. Investiture of Fellows will take place at the A.I.A. annual dinner on July 1. Serving on the jury of selection were the following Fellows of the Institute: Samuel E. Homsey, Wilmington, Delaware, chairman; Linn Smith, Birmingham, Michigan; Clinton E. Brush III, Nashville; Paul R. Hunter, Los Angeles; Joseph D. Murphy, St. Louis; and Reginald H. Roberts, San Antonio.

Elected for both Design and Service to the Profession are the following: Francis D. Lethbridge, Washington, D. C.; Howard H. Morgridge, Los Angeles; and Ambrose Richardson, Champaign, Illinois.

Elected for Design were: Joseph Amisano, Atlanta; Edward Larrabee Barnes, New York City; Roy M. Drew, La Jolla, California; Arthur Froehlich, Beverly Hills, California; Bertrand Goldberg, Chicago; Bruce J. Graham, Chicago; the late Charles Thomson Granger Jr., Austin, Texas; William E. Haible, Boston; Thomas Thurman Hayes Jr., Southern Pines, North Carolina; Philip Ives, New York City; Floyd Lamar Kelsey Jr., Colorado Springs; William D. Merrill, Honolulu; Robert Billsbrough Price, Tacoma; Dahlen K. Ritchey, Pittsburgh; Peter Tarapata, Bloomfield Hills, Michigan; Harwood Taylor, Houston; Max O. Urbahn, New York City; and Gin Dan Wong, Los Angeles.

Elected for both Service to the Profession and Public Service were: Paul Bradley Brown, Detroit; Grosvenor Chapman, Washington, D.C.; Frank Crimp, Boston; and Wayne Weber, Lafayette, Indiana.

Elected for Service to the Profession were: Rex Whitaker Allen, San Francisco; Leslie N. Boney Jr., Wilmington, North Carolina; Philip W. Bourne, Boston; Robert John Brocker, Greensburg, Pennsylvania; John Stanley Carver, Philadelphia; James Ford Clapp Jr., Boston; Kenneth S. Clark, Sante Fe; Louis de Moll, Philadelphia; Gerald George Diehl, Detroit; William Wallstone Freeman, Burlington, Vermont; Charles Eugene Fry, Los Angeles; Victor C. Gilbertson, Minneapolis; G. Harold W. Haag, Jenkintown, Pennsylvania; Donald L. Hardison, Richmond, California; James C. Hemphill Jr., Charlotte; Dean Hilfinger, Bloomington, Illinois; Santiago Iglesias Jr.; Hato Rey, Puerto Rico; A. Stanley McGaughan, Washington, D. C.; Ralph L. Mott, Fort Smith, Arkansas; Suren Pilafian, Detroit; Arthur Rigolo, Clifton, New Jersey; Bernard B. Rothschild, Atlanta; Ronald Senseman, Washington, D. C.; John Sweeney, St. Louis; and Harry C. Weller, Pullman, Washington.

Elected for Public Service were: Louis Watkins Ballou, Richmond, Virginia; Bernard J. DeVries, Muskegon, Michigan; Andrew J. Ferendino, Miami; Angus McCallum, Kansas City, Missouri; and Clarence Henry Rosa, Lansing, Michigan.

THE RECORD REPORTS ON:

Chicago building will combine residential and commercial use 83

British pavilion designed to appear "incomplete" 83

Office building has balconies which serve as sunscreens 120

Apartment building will have core articulated on facade 120

Strong vertical emphasis expressed in office building 285

Community health center has 265-bed "day hospital" 285

Construction begins on Kennedy Memorial Grave 300

Elected for Educational Service were: James Joseph Walton Biggers, Columbus, Georgia; and James Elmor, Tempe, Arizona.

Elected for Literature were: Marvin Eickenroht, San Antonio; and Theo Ballou White, Philadelphia.

Elected for Science of Construction was: Sol King, Detroit.

Eight distinguished foreign architects from as many different countries have been elected Honorary Fellows of the Institute. They are: Jacob B. Bakema, Rotterdam, Netherlands; Ralph Erskine, Drottningholm, Sweden; Aarne Ervi, Helsinki, Finland; Denys Louis Lasdun, London, England; Alfred Roth, Zurich, Switzerland; Harry Seidler, Sydney, Australia; Gerard Venne, Quebec, Canada; and Bernard Zehrfuss, Paris, France.

Receiving the Henry Bacon Medal for Memorial Architecture, which is being presented for the first time, is The Gateway Arch, St. Louis, designed by the late Eero Saarinen. The Institute's Citation of an Organization will go to New York's Museum of Modern Art.

Two more Honorary members (making a total of six this year) have been named: Edward J. Logue, Development Administrator of the Boston Redevelopment Authority; and Dr. Albert Bush-Brown, president of The Rhode Island School of Design.

Two government departments hold design award programs

Both the United States Department of Housing and Urban Development and the Office of Education in the Department of Health, Education and Welfare are holding design award programs in 1966.

The Department of Housing and Urban Development program states that "it is the intent of the Secretary that all department-assisted developments reflect excellence in planning and design and thereby enhance their environment," and emphasizes "the use of the best and most modern techniques." Entries must have been completed or substantially completed since January 1, 1961 under any assistance program of the Department or its pre-

decessor, the Housing and Home Finance Agency. For more information on this program write: '66 Design Awards Program, Department of Housing and Urban Development, Washington, D.C.

The U.S. Office of Education in collaboration with the American Institute of Architects and the Educational Facilities Laboratories, Inc. hopes to stimulate excellence in the design and development of college facilities. All projects with approved grant or loan applications under the Higher Education Facilities Act of 1963 are eligible. The deadline for receipt of entries is July 29, 1966. For more information write: Design Awards Committee, Bureau of Higher Education, Room 4931, GSA-ROB, U.S. Office of Education, 400 Maryland Avenue, S.W., Washington.

HUD fills two more key vacancies

Wih the appointment of Donald Hummel, 58, to be assistant Secretary for Renewal and Housing Assistance, and the appointment of Ralph Taylor, 47, as Assistant Secretary for Intergovernmental Relations, most of the top posts in the new Department of Housing and Urban Development have been filled.

Mr. Hummel, formerly mayor of Tucson, Arizona, takes the post that many thought Wiliam Slayton, former Urban Renewal Administrator, would assume. Mr. Hummel is expected to continue the Federal emphasis on good design in urban renewal projects, having been active in this field in Tucson.

Mr. Taylor, former director of the New Haven renewal agency, will be in charge of HUD's various experimental programs, including "demonstration cities" if Congress should pass it.

Constantinos Doxiadis wins Aspen Humanities Award

Dr. Constantinos Doxiadis, renowned Greek architect and planner best known for his concept of Ekistics—"the science of human settlements" — has been awarded the third Aspen Award in the Humanities by the Aspen Institute for Humanistic Studies. This prestigious tribute in humanistic achievement was announced by Alvin C. Eurich, President of the Institute. The annual award, carrying a tax-free stipend of $30,000, honors "that individual anywhere in the world judged to have made the greatest contribution to the advancement of the humanities."

The first award was presented in 1964 to composer Benjamin Britten, and the second to dancer Martha Graham.

Romaldo Giurgola wins Brunner Memorial Prize

Romaldo Giurgola, chairman of the Department of Architecture at Columbia University, and winner in the National Headquarters competition for the American Institute of Architects, has been awarded the 11th Arnold W. Brunner Memorial Prize in Architecture of The National Institute of Arts and Letters. The award, carrying an honorarium of $1,000, is given annually to an architect who "shows promise of contributing to architecture as an art."

Campus planning society formed at Michigan

The Society for College and University Planning, initially serving as an informational clearing house for data relating to college and university expansion, is a new organization with headquarters at the University of Michigan. Executive director will be John D. Telfer, who will continue as University of Michigan planner. "The society's principal objective," says Mr. Telfer, "is to further cooperation among college planners so as to prepare effectively and economically for the expansion necessary to accommodate an increase of about four million students on our campuses in the years ahead." Society officers include Professor K. C. Parsons, city and regional planning department chairman, Cornell University, president; Norbert Gorwic, principal of Crane and Gorwic, planning consultants, Detroit, vice-president; and Albert R. Wagner, University of California, secretary-treasurer.

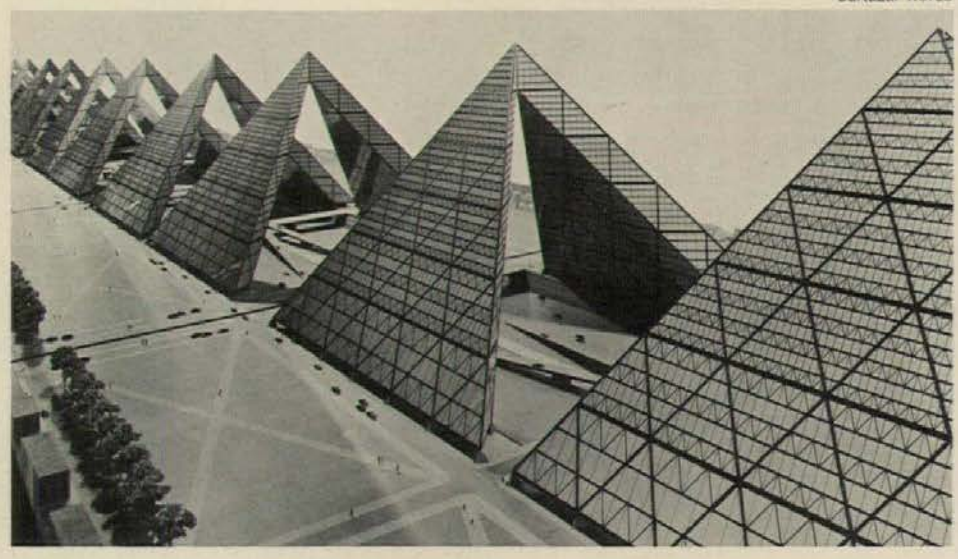
Research competition aims to employ prefabricated units

The Brenta Precompressi AB of Milan is sponsoring an international research competition for new architectural projects which employ prefabricated elements in reinforced concrete and in prestressed reinforced concrete. The aim is to see prefabrication "as a technical opportunity for new creation." The projects may be of any kind of building.

The jury consists of: Giovanni Michelucci, architect; Pier Luigi Nervi, engineer; Joseph Rykwert, London critic; Gio Ponti, architect and editor of Domus; and Andrea Brenta, engineer.

Entries must be postmarked by June 22, 1966. They are being received at the offices of Brenta Precompressi AB, Parini 11, Milan.

Baltazar Korab



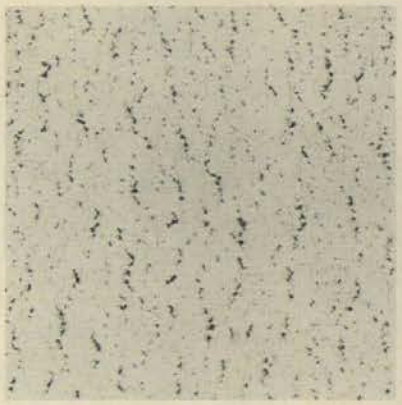
Mega-structure utilizes area over an expressway

Logically, we can expect our cities of the future to grow along expressways. Chicago architect Stanley Tigerman's concept of future urban living utilizes the space which is projected into the vertical circumference of the expressway. Termed "instant city," the concept is for either a single mega-structure or a series of mega-structures.

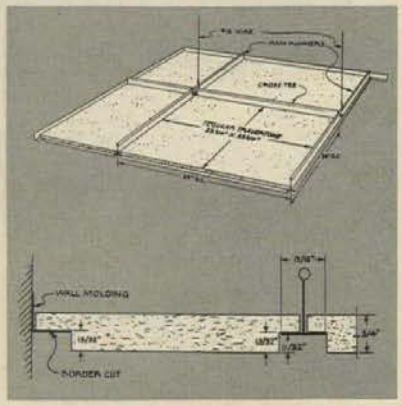
The space frame of the structure is tilted and triangular, a pyramid with two sides removed to allow an unimpeded flow of traffic along the expressway. The building is 485 feet above ground. The outer walls slope 600 feet from base to top. Each leg is 50 feet wide with 36 floors. By the geometry and dimensions only 50 per cent of the area over the expressway is used. Fortunately, the carbon monoxide fumes are allowed to disperse.

This design calls for the use of lightweight materials which effectively reduce dead weight loads. The project was commissioned by the Vermiculite Institute.

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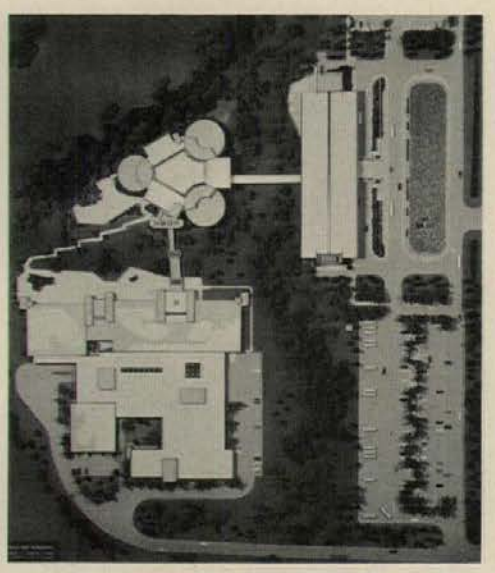
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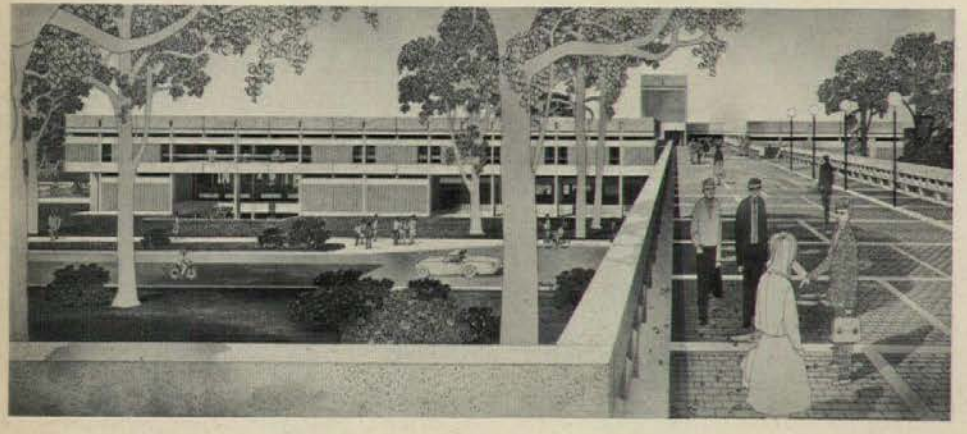


The Centennial Center of Science and Technology in Toronto, designed by Raymond Moriyama, consists in its initial stage of three connected structures running down the side of a valley. The total complex will cost $21.7 million. The rectangular reception building, fronted by a 400-foot-long pool, is connected by a 250-foot-long covered walkway to the core building, which has three circular wings, containing an auditorium, theaters and other facilities around a great hall. The exhibit and collections building on the valley floor is connected to the core building by a series of escalators. Precast concrete panels will be used on all buildings.

Alt-Lee Photographers



A grade school in Washington, D. C., designed by Lyles, Bissett, Carlisle & Wolff, locates 30 classrooms for over 1,000 students in a three-story structure, with kindergarten rooms, offices, library and combined cafeteria and all-purpose room located in a one-story wing which forms an inner courtyard. Construction will be of brick and cast stone.



The student union at the State University of New York at Stony Brook, Long Island, designed by Damaz-Pokorny-Weigel, incorporates a pedestrian bridge with the building giving it access to the main campus plaza. The $4.5-million project, which mainly contains dining and recreational facilities, will be entirely in reinforced concrete construction, partly precast and partly cast-in-place.



©Ezra Stoller

The $260-million Eaton Center development adjacent to the recently completed Toronto City Hall consists of six structures designed by the Toronto firm of Mathers and Haldenby with the New York office of Skidmore, Owings & Merrill as consultants. Immediately to the right of the City Hall are twin 57-story office towers sandwiching a circular 500-room hotel. To the right of the twin towers is a 69-story apartment tower in back of which is a 32-story office building and in front of which is a nine-story department store.

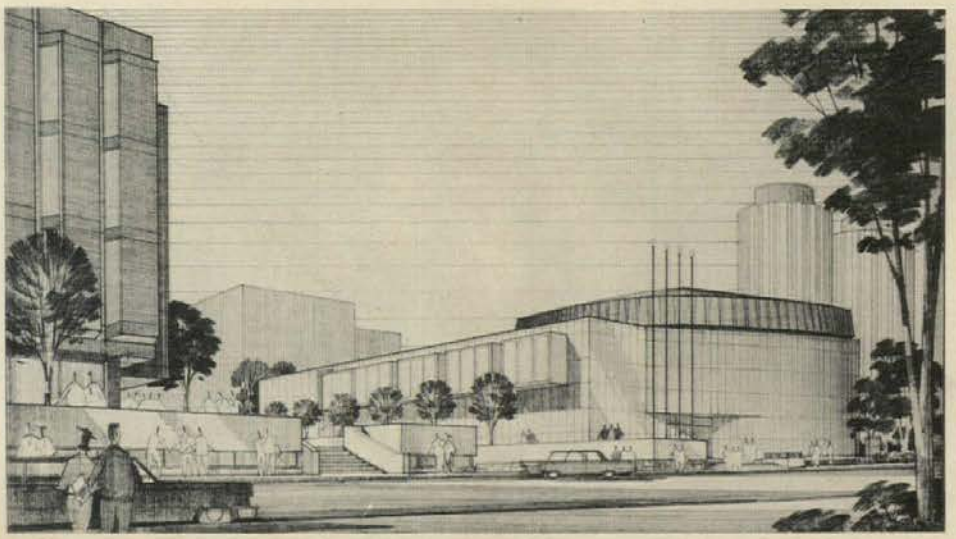
*Franz Hubmann photos



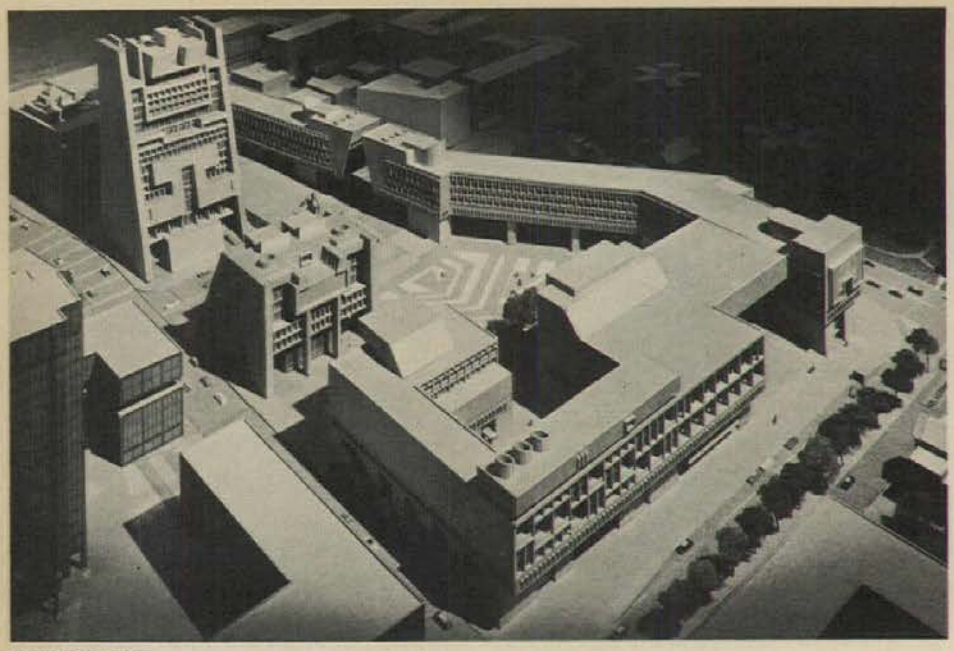
The Retti Candle Shop in Vienna, designed by Hans Hollein, has won the 10th annual R. S. Reynolds Memorial Award of $25,000 for "distinguished achievement in architecture with significant use of aluminum." The store has only a 12-foot frontage (see photograph of exterior at bottom of page 5), and provides 160 square feet of floor space (display room shown above). The store is located in a 19th-century building within a recess left by the razing of an old store. Total cost of the project: $20,000.



The School of Engineering Building at the University of Pittsburgh, designed by Deeter • Ritchey • Sippel architects, is a 12-story, $13.5-million project which is expected to be completed in 1968. Each of the top 11 floors contain laboratories in the central core with classrooms, offices, and conference rooms on the perimeter protected by concrete sunscreens. Construction is under the auspices of the General State Authority of Pennsylvania.



The Common Facilities Building at the University of Pittsburgh, designed by Johnstone, McMillin and Associates, will provide facilities for several professional schools within the university. A circular structure, 176 feet in diameter, will house an assembly room seating 1,000. In the adjoining wing will be four forums, each seating 80, five classrooms and six seminar rooms. Construction is under the auspices of the General State Authority.

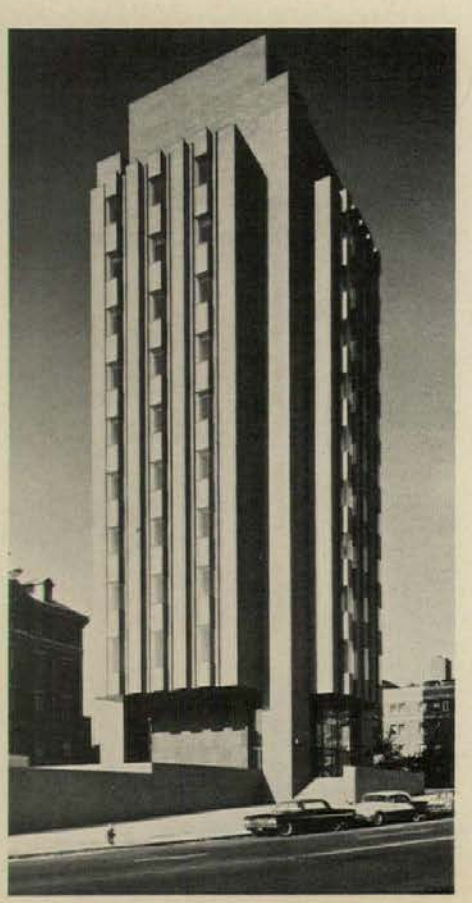


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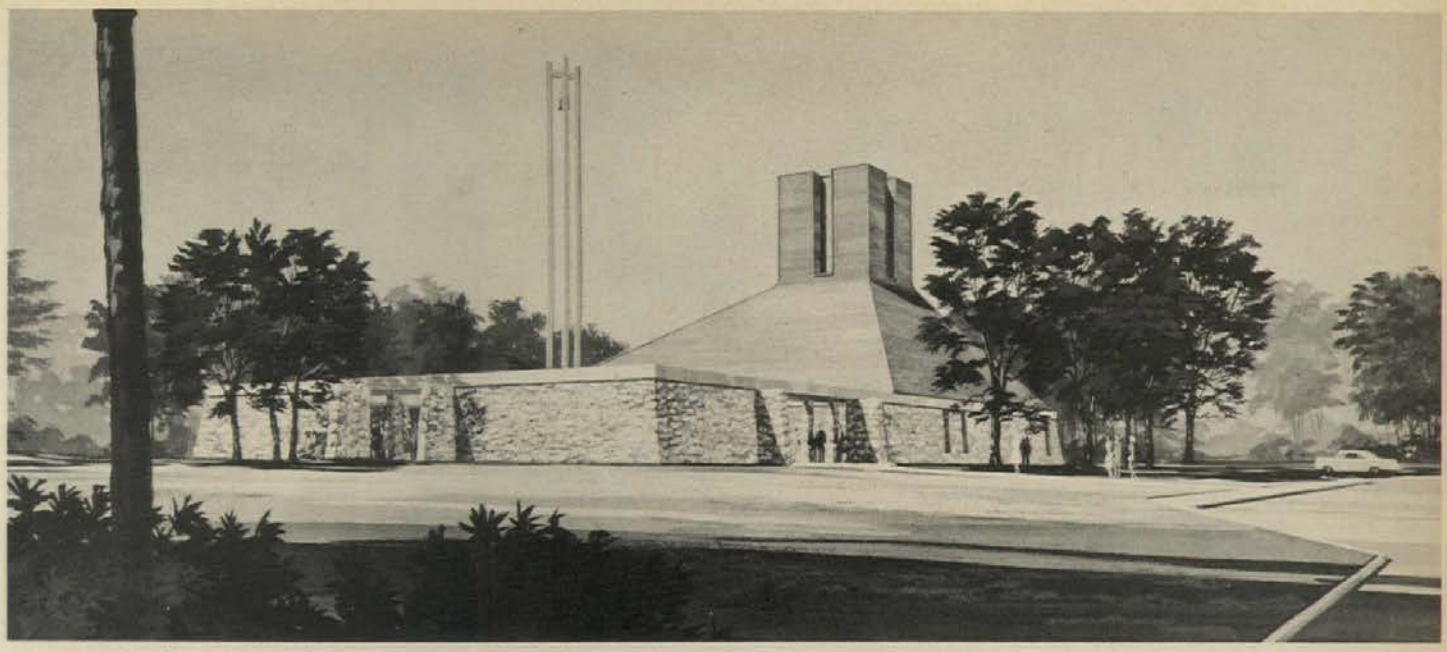
The Civic Center for White Plains, New York was designed by Carson, Lundin & Shaw to serve as a focal point for the city. In the foreground is a cultural center which defines a plaza and abuts the Federal and State Office Building. A City Hall is located to the left behind the cultural center, and behind City Hall is the county courthouse. Some 2,000 cars are parked underground.



The Friends' Select School is combined with a 20-story office building in center-city Philadelphia, designed by Kneedler, Mirick, Zantzinger, Pearson, Ilvonen & Batchler, and will provide income from commercial tenants which will eventually underwrite a major portion of the school's operating budget. The school, for 470 students, is a two-story structure with a landscaped roof for outdoor sports.



The Henry L. Moses Institute at Montefiore Hospital and Medical Center, designed by Philip Johnson, was one of three projects winning first honor awards for excellence in Architecture and Urban Design in The Bard Awards Program of the City Club of New York. The awards jury cited the building as "a first-rate example of urban architecture involved with its setting, clarifying it as well as enriching it." General contractor was Turner Construction Company. Other first-honor award-winning projects were the sculpture garden at the Museum of Modern Art, and Lincoln Center Plaza North, both previously published in the RECORD.



John Knox Presbyterian Church, Marietta, Georgia. Architects: Toombs, Amisano & Wells, Atlanta.



Parish Hall for Christ Church, Sausalito, California. Architects: Henrik Bull & Associates, San Francisco.



St. Leo's Roman Catholic Church (remodeled), Solana Beach, California. Architects: Delawie & Macy, San Diego.

Westminster Congregational Society Church (Unitarian), East Greenwich, Rhode Island. Architect: William Warner, Providence.



Four projects honored in 1966 church architecture awards

The four projects shown here received the 1966 church architecture awards at the National Conference on Religious Architecture held in San Francisco in late April. Serving on the awards jury were Charles Edward Bassett, architect, San Francisco; Robert C. Alexander, architect, Los Angeles; and the Reverend Peter Hammond, Hull, England, visiting professor of art history, Newcomb College, Tulane University.

Pace of building accelerates in 1966

The opening quarter of 1966 proved to be a record buster for the economy as a whole and for the construction industry in particular. The big $17-billion jump in the rate of Gross National Product during the first three months of the year carried us well over the threshold from "recovery" (a state we'd technically been in ever since the low point back in 1961) to all-out full employment. And with that long-awaited breakthrough came a host of economic problems that we haven't had to face up to for a long time: production delays, material shortages, scarcities of skilled labor, shortages of credit, and the one that sums them all up — rising prices.

Much like the rest of the economy, construction demand was booming along in the early part of 1966. The Dodge Index of total contract value topped 150 in *each* of the first three months for an average of 156 (last year, by contrast, averaged 143), and appeared to be holding that pace in April. In a continuation of last year's trend, nonresidential building has been sparking most of the current advance as commercial and industrial projects, along with surging educational building, are more than taking up any slack left by this year's doubtful housing market.

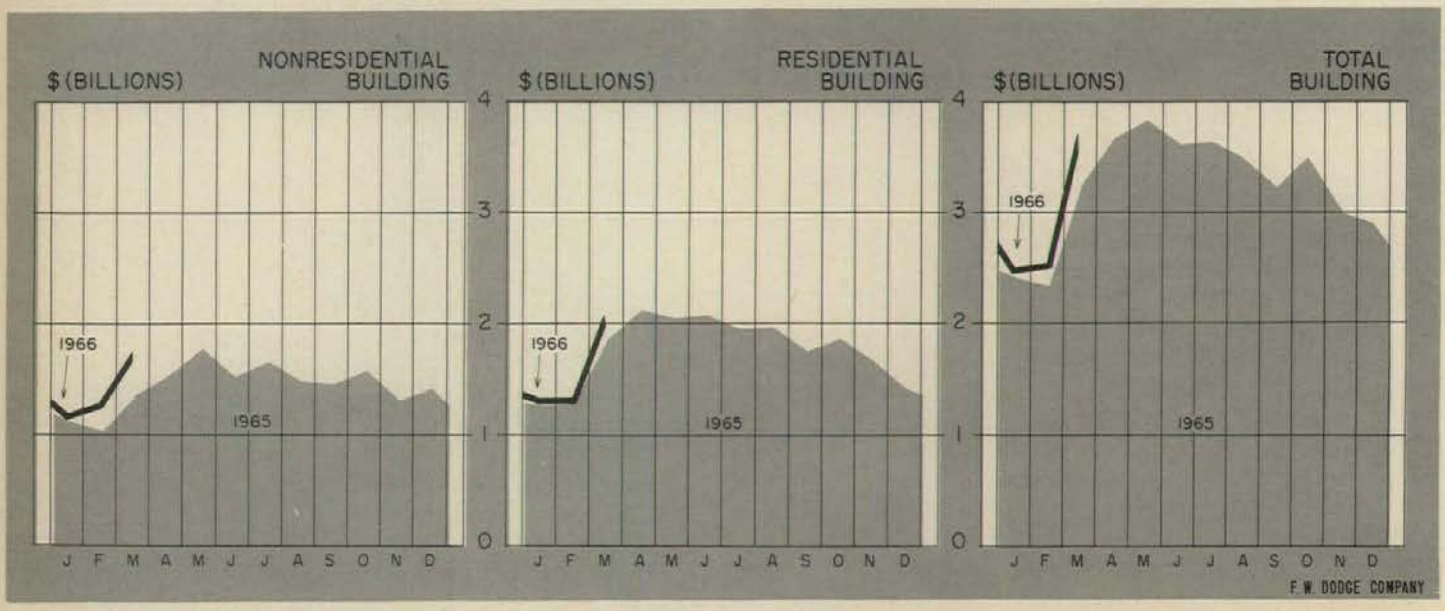
In the residential area, the tug-of-war between the positive forces of high incomes and demographic expansion on one side, and the restraining influence of severely curtailed mortgage funds on the other seemed to be producing pretty much of a stand-off. But while the total *number* of housing units reported so far this year stands only a shade ahead of last year's weak beginning, the *value* of residential building in 1966 gives a more encouraging picture. And it isn't entirely a matter of rising costs, either. Both the average one-family home and the typical apartment unit being built this year are running roughly fifty square feet bigger than last year's equivalents.

Nonresidential building contract value soared to extraordinary heights in the first quarter as its seasonally adjusted index topped 175 in February and March. On a year-to-year basis, total nonresidential contracts were nearly 20 per cent above last year's opening three months, with industrial and commercial buildings ahead by 22 per cent and schools up an even 20 per cent. In fact, *all* major categories of nonresidential buildings, including hospitals, public administration buildings, religious, and recreational buildings, were well ahead of last year's pace as 1966 was moving into the spring period of heaviest building activity.

Maybe the most convincing indicator of just how strong the total construction market has been so far in 1966 is the fact that the first quarter's hefty gains were scored *in spite of* rather than with the help of the normally expansive Western region. Continued low-level housing activity in that area was compounded early this year by a sharp dip in nonbuilding construction work, holding the West's first quarter contract value to less than 19 per cent of the national total. At that time of the year, the states west of the Rockies normally make up something like a quarter of the entire US total. This suggests that there's a sizeable potential building up in the West which may turn into one of the important construction demand factors during the second half of 1966.

George A. Christie, *Chief Economist*
F. W. Dodge Company
A Division of McGraw-Hill, Inc.

Building activity: monthly contract tabulations





A lounge of Huntington Memorial Hospital, Pasadena, Calif. Architects: Thormin, Haynes, Oakley & Associates; David Oakley in charge of design. System Design and Mechanical Contractors: Kilpatrick & Co.

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BUILDING CONSTRUCTION COSTS

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

William H. Edgerton
Manager-Editor, Dow Building Cost Calculator, an F. W. Dodge service

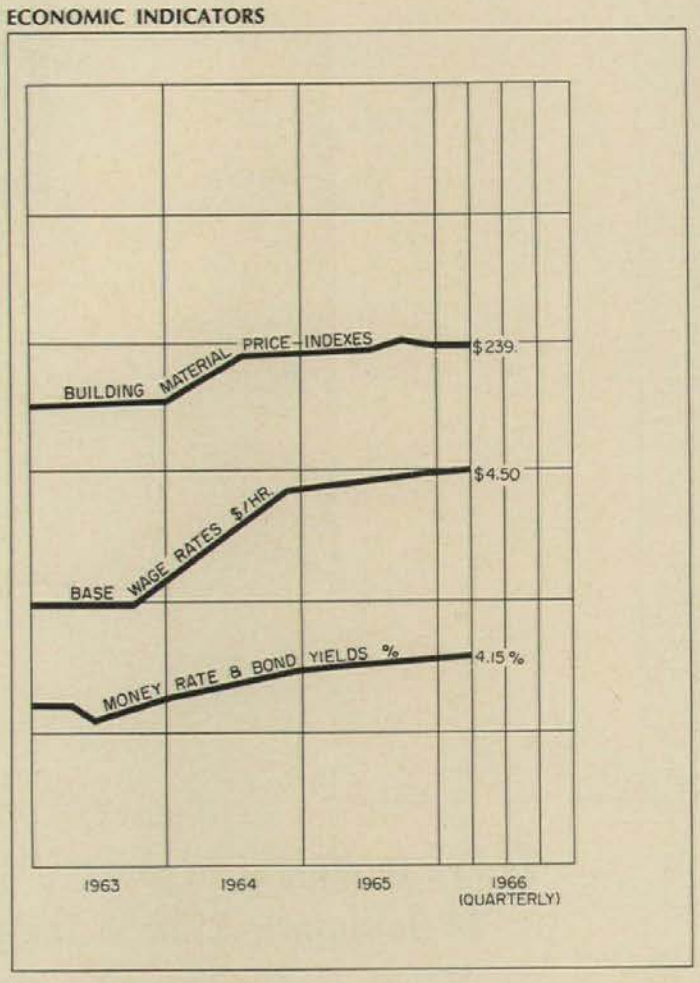
MARCH 1966 BUILDING COST INDEXES

1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index residential	Current Dow Index non-res.	% change year ago res. & non res.
U.S. Average	8.5	273.6	291.4	+1.02
Atlanta	7.2	308.3	327.0	+1.02
Baltimore	7.7	276.9	294.5	+1.03
Birmingham	7.5	252.5	271.5	+1.01
Boston	8.5	248.2	262.7	+1.03
Chicago	8.9	302.3	318.0	+1.02
Cincinnati	8.8	262.6	279.1	+1.02
Cleveland	9.2	280.5	298.1	+1.04
Dallas	7.7	256.5	264.9	+1.02
Denver	8.3	281.0	298.7	+1.02
Detroit	8.9	275.7	289.4	+1.02
Kansas City	8.3	247.0	261.4	+1.02
Los Angeles	8.3	278.9	305.2	+1.03
Miami	8.4	269.1	282.5	+1.01
Minneapolis	8.8	272.5	289.6	+1.01
New Orleans	7.8	246.6	261.3	+1.02
New York	10.0	284.0	305.4	+1.01
Philadelphia	8.7	272.1	285.7	+1.02
Pittsburgh	9.1	256.8	273.0	+1.02
St. Louis	9.1	270.7	286.9	+1.03
San Francisco	8.5	352.8	386.0	+1.03
Seattle	8.4	249.8	279.1	+1.02

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0÷10.0=80%) or they are 20% lower in the second city.

ECONOMIC INDICATORS

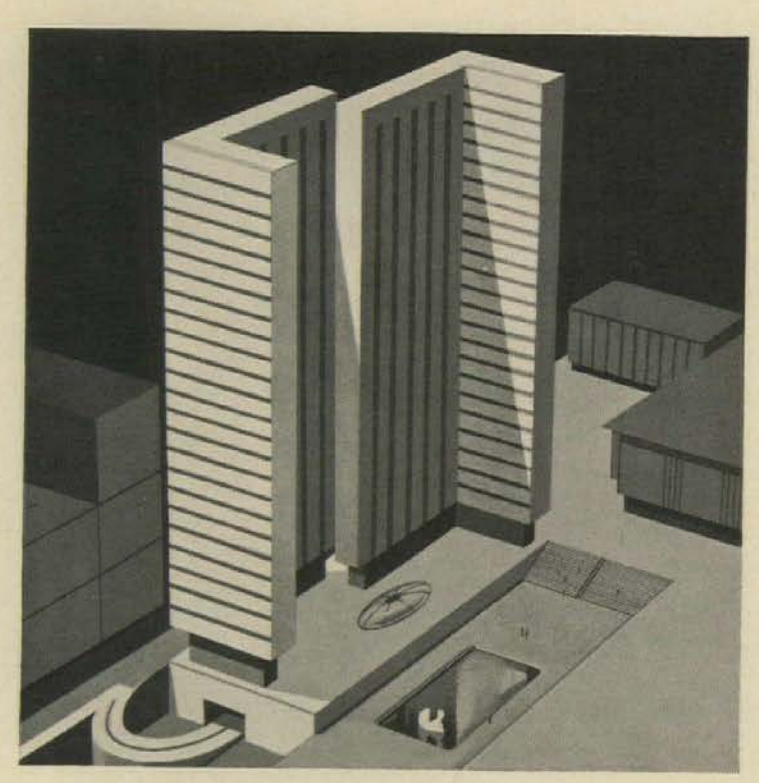


HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

Metropolitan area	1952	1959	1960	1961	1962	1963	1964	1965 (Quarterly) 1st	2nd	3rd	4th	1966 (Quarterly) 1st	2nd	3rd	4th
U.S. Average	213.5	255.0	259.2	264.6	266.8	273.4	279.3	279.5	281.0	288.7	284.9	286.3	–	–	–
Atlanta	223.5	283.3	289.0	294.7	298.2	305.7	280.6	280.5	281.0	284.7	285.7	322.2	–	–	–
Baltimore	213.3	264.5	272.6	269.9	271.8	275.5	260.9	261.2	264.1	264.9	265.6	288.6	–	–	–
Birmingham	208.1	233.2	240.2	249.9	250.0	256.3	252.1	251.7	252.6	256.3	257.8	267.1	–	–	–
Boston	199.0	230.5	232.8	237.5	239.8	244.1	306.6	306.5	307.3	310.2	311.7	258.5	–	–	–
Chicago	231.2	278.6	284.2	289.9	292.0	301.0	313.7	313.9	317.9	320.6	321.5	312.6	–	–	–
Cincinnati	207.7	250.0	255.0	257.6	258.8	263.9	269.5	269.4	270.2	272.9	274.0	274.7	–	–	–
Cleveland	220.7	260.5	263.1	265.7	268.5	275.8	283.0	282.3	283.4	290.8	292.3	293.0	–	–	–
Dallas	221.9	237.5	239.9	244.7	246.9	253.0	256.4	256.9	257.9	259.5	260.8	261.7	–	–	–
Denver	211.8	257.9	257.9	270.9	274.9	282.5	287.3	287.3	288.2	292.7	294.0	294.6	–	–	–
Detroit	197.8	249.4	259.5	264.7	265.9	272.2	277.7	277.7	279.3	283.5	284.7	285.5	–	–	–
Kansas City	213.3	239.6	237.1	237.1	240.1	247.8	250.5	251.2	252.0	255.0	256.4	257.3	–	–	–
Los Angeles	210.3	263.5	263.6	274.3	276.3	282.5	288.2	288.9	289.7	295.8	297.1	298.0	–	–	–
Miami	199.4	249.0	256.5	259.1	260.3	269.3	274.4	274.4	275.4	276.6	277.5	278.4	–	–	–
Minneapolis	213.5	254.9	260.0	267.9	269.0	275.3	282.4	283.4	283.6	283.9	285.0	285.7	–	–	–
New Orleans	207.1	237.5	242.3	244.7	245.1	248.3	249.9	250.5	253.1	255.1	256.3	257.1	–	–	–
New York	207.4	260.2	265.4	270.8	276.0	282.3	289.4	290.2	294.0	296.0	297.1	297.8	–	–	–
Philadelphia	228.3	262.8	262.8	265.4	265.2	271.2	275.2	275.5	276.4	279.5	280.8	281.7	–	–	–
Pittsburgh	204.0	241.1	243.5	250.9	251.8	258.2	263.8	264.0	264.9	265.9	267.0	268.9	–	–	–
St. Louis	213.1	246.9	251.9	256.9	255.4	263.4	272.1	272.9	276.1	279.9	280.9	282.2	–	–	–
San Francisco	266.4	321.1	327.5	337.4	343.3	352.4	365.4	366.6	366.9	367.7	368.6	376.2	–	–	–
Seattle	191.8	232.7	237.4	247.0	252.5	260.6	266.6	265.1	266.3	267.8	268.9	271.1	–	–	–

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



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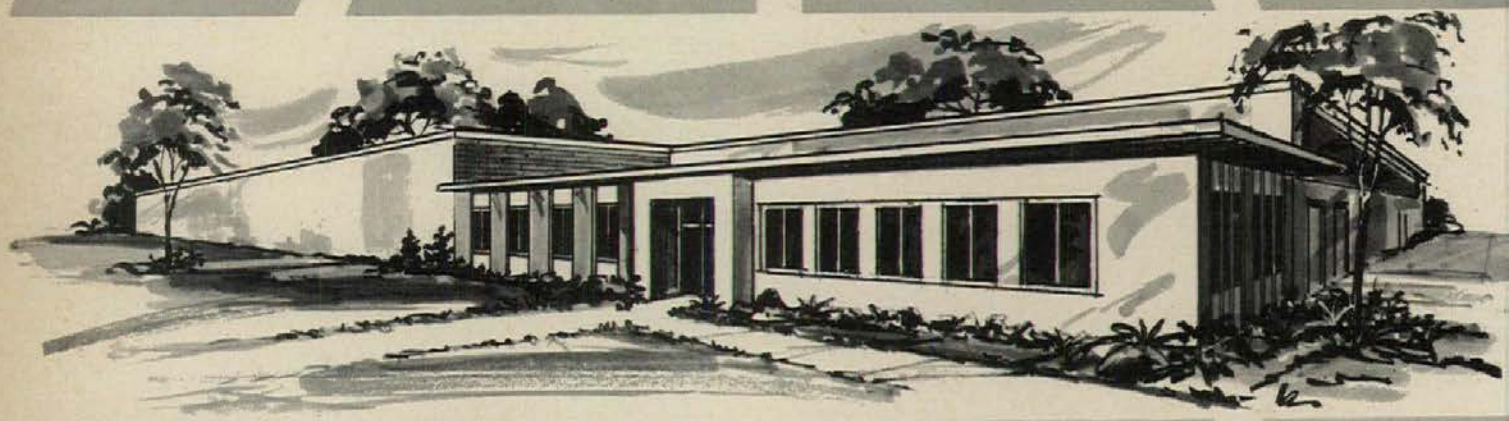
For further information on communications planning, see Sweet's Architectural File 33a/Be and Sweet's Industrial Construction File 19f/Be.

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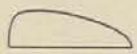
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Time-Saver Standards

TIME-SAVER STANDARDS, *A Handbook of Architectural Design Data. John Hancock Callender, editor-in-chief. McGraw-Hill Book Company, 330 W. 42nd Street, New York, N. Y. 1,292 pp., illus. $27.50.*

The long-awaited fourth edition of this standard reference work for architects and their consultants is now off the press. The new volume is the first revision since 1954, and the revision is monumental in size and scope. The fourth edition represents probably the largest and most complete collection of architectural design data of any published work in the areas of basic data: structural design; building materials, components and techniques; environmental control; residential and nonresidential design elements; site planning and recreation.

The fourth edition is a departure from earlier ones in that much new material has been included which was never published in magazine form. Earlier editions were based on pages that had appeared in ARCHITECTURAL RECORD, and before that in The American Architect, which originated Time-Saver Standards and which was merged with the Record in 1938. Some of the most prominent of the new sections cover acoustics, structural design, curtain walls, heating and air conditioning and finish materials. Several sections have been completely redone — kitchens; furniture and storage; doors and windows; fireproofing.

Some of the new material differs also in presentation, containing quite a bit of explanatory text—acoustics, heating and air conditioning, lighting, and design elements, to name several of the categories. And other pages which were developed from text-type articles are more descriptive than they are graphic and tabular.

The authority for much of the material comes from the various technical and code organizations, professional societies and trade associations. Other material—the section on acoustics for example—has developed out of the practice and background of specialists in given fields.

Time-Saver Standards gives guide-



line information in some areas; specific data for layout and planning and calculations in others. For example, the material on thin shells deals mainly with shapes, basic behavior, range of sizes, etc., whereas the material on prestressed concrete includes load tables.

Time-Saver Standards is an indispensable aid for the architect's office.

Pedestrians and traffic

THE PEDESTRIAN IN THE CITY. *Edited by David Lewis. D. Van Nostrand Company, Inc., 120 Alexander St., Princeton, N. J. 299 pp., illus. $18.50.*

This book tackles the traffic-pedestrian segregation problem in the high-density city environments. It is not one man's treatise but an organized composite of essays written by a large number of practitioners and intellectuals, city planners, architects, authors, editors, and photographers — national and international.

Five cities (Philadelphia, Liverpool, Sheffield, Chandigarh and Cumbernauld), each of which approaches the problem in a different way, are written about. The theoretical aspects of the problem are defined and finally a series of ethnological articles prove that in spite of anything to the contrary, the pedestrian in the city is a regional problem, particularly in underdeveloped countries and emergent societies.

The essays reflect the growing concern of architects all over the world for the urban problems of the second half of this century—and yet in the editor's words, "the projects published here are but fragments in a general sea of indifference."

The gravitational pull is indeed toward cities and their environment, even by conservative estimates. President Johnson referred to the major cities which will form the megalopoli of the future when he said, "In scarcely more than a generation we will have to build in our cities as much as all that we have built since the first colonist arrived on these shores. It is as if we had 40 years to rebuild the entire urban U. S."

These essays are pertinent and readable, and the illustrative material is didactic. One notes an interesting irony pointed out by editor David Lewis. The old-closed form city is a thing of the past. In the U.S. super highways swing into the city. It is not the city center which is the immediate center, but the surburban shopping drive—of which Victor Gruen's Northlands, near Detroit, was a pioneering example. ". . . the irony is how close to the classic, early modern movement theories of Sant' Elia and Le Corbusier the idea essentially is. The shopping drive-in is pedestrian-traffic segregated. Whether you have had to walk across quarter of a mile of tarmac—or simply had to ascend by escalator from parking decks contained within the structure beneath —once you are in the center, you are implicitly in an air-conditioned, pedestrian-dominated city, to which you have traveled along your six-lane throughway."

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THIS MONTH'S BOOKS

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John Hancock Callender, "Time-Saver Standards" 63
David Lewis, "The Pedestrian in the City" .63
Ervin J. Bell, "The Architectural Index for 1965" 66
Rolf Jensen, "High Density Living" 66
John R. Spencer, "Filarete's Treatise on Architecture" 70
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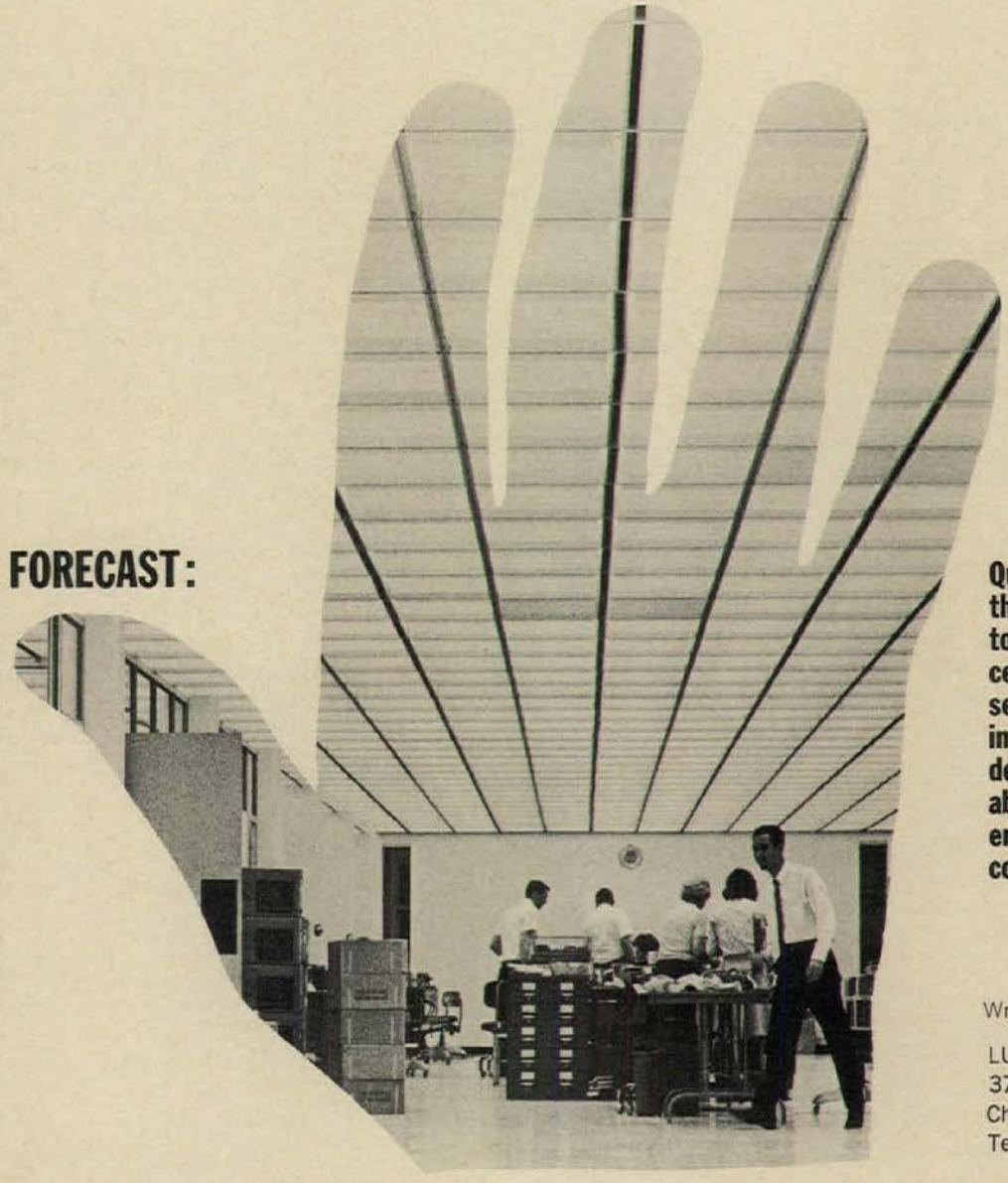
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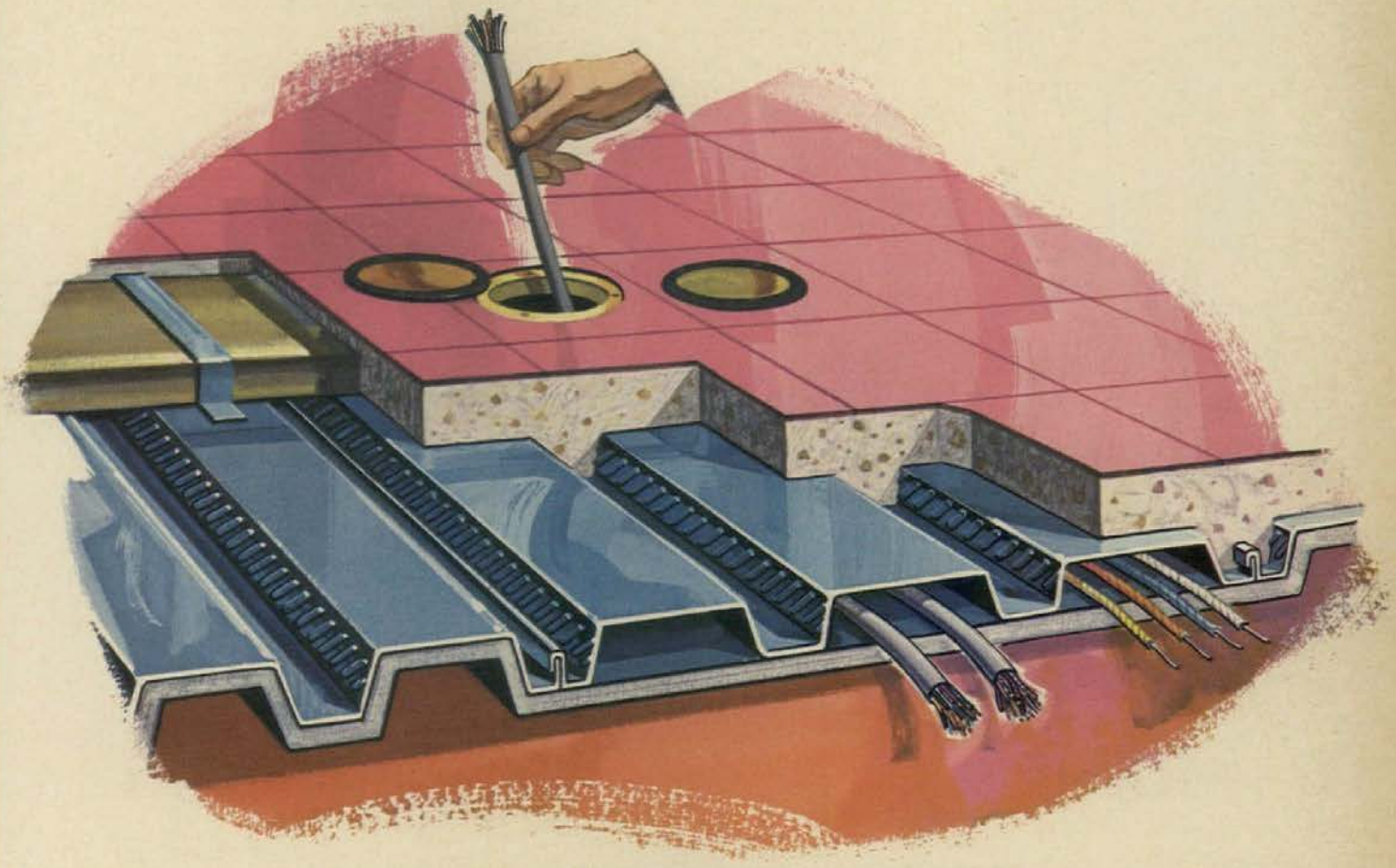
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Magazine index

THE ARCHITECTURAL INDEX FOR 1965. *By Ervin J. Bell. Post Office Box 945, Sausalito, Calif. 94965. 77 pp. $6.00.*

The present edition marks the 16th year of issue of this useful index. It is newly expanded to include the indexing of Architectural and Engineering News and, as usual, it covers Architectural Forum, ARCHITECTURAL RECORD, House & Home, Interiors, Progressive Architecture and the Journal of the American Institute of Architects.

The city and its residential population

HIGH DENSITY LIVING. *By Rolf Jensen. Frederick A. Praeger, Publishers, 111 Fourth Ave., New York, N. Y. 10003. 245 pp., illus. $20.00.*

The world wide high-density development that has taken place in the last 20 years is documented in this book and it is a good record of recent experiments in multi-story residential living. The buildings are well selected from an architectural point of view and the author makes a good case that they make positive contributions to the problem of town planning.

Mr. Jensen offers a thorough diagnosis of this most critical social problem—high-density living. The many aspects important to the understanding of high-density residential development are given attention. In countries with shortage-of-land problems the aim has been to see how far densities could be raised in urban areas as a means of saving land elsewhere for agriculture. But also, the examination of density is clearly an important criterion in relation to housing at large.

The author does not evaluate density expressed solely as the intensity of land occupation. He includes the quantitative assessment of density in terms of bulk of buildings, site coverage and any necessary height limitations—means of securing balanced open spaces and certain intangibles nurturing emotional satisfaction.

Local living conditions and services available have a considerable bearing on the problem. Two-to-three-thousand persons per acre is commonplace in Hong Kong. Fifteen-hundred persons per acre may be acceptable there whereas 400 persons per acre may be considered high in New York and 200 persons per

continued on page 70

For more information, write or call any of the Institute members listed below:

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Structural Mo-Sai wall units 7 feet wide by 24 feet high were cast with gentle concave surfaces of exposed white quartz. Alternating windowalls have a dark Mo-Sai background of exposed flamingo quartz, red granite, and black obsidian accenting the white quartz surfaces of graceful arches cast in the Mo-Sai.

The Mo-Sai wall units were welded to plates in the concrete flooring and then the second floor and roofing concrete was poured, filling around dowels and in grooves cast in the Mo-Sai. The alternating concave panels and arched windowalls of Mo-Sai form a striking maintenance-free facade, as well as a rugged fire-resistant structural system.

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Chicago's new Civic Center

Here are 1,601 of them.

They used that many Architrac® drapery hardware sets in Chicago's Civic Center. And a lot more went into new buildings all over the country. Architrac sales are six times what they were two years ago. Why do so many architects specify this patented, extruded aluminum traverse track?

For one thing, styles are available for any type of installation: recessed in plaster or acoustical tile; wall or casing, ceiling—even cubicles and closets. If you want to control the exterior appearance of a building, specify a perimeter installation of Architrac (tenants can individualize interior treatments while maintaining a uniform appearance from the outside).

All nine styles of Architrac are of anodized extruded aluminum to blend with aluminum window casings. They work easily with any weight fabric. And, for more window area, only Architrac lets draperies pack all the way back to the ends of the track.

Some styles have ball bearing carriers. On hand traverse models, edges are coated with Teflon* to cut friction as much as 70%. On dual-channel track styles, cords run in a separate channel and cannot sag.

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Because . . . lavatories are fine at home, but in employee and public washrooms, people want wash fixtures that are truly sanitary, quick and easy to use, and require no fussing. Only one wash fixture fits that bill — a foot-operated Bradley Washfountain.

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ARCHITECTURAL FORMING

WITH SYMONS STEEL-PLY PANELS AND V-SHAPED CHAMFER STRIPS



Two 3-story concrete towers, unbroken by windows or other openings, will provide the passerby with an attractive view due to a pleasing architectural treatment of the walls. The job is in Norwalk, Connecticut, by contractor Thomas H. Riordan. The building itself is roughly "T" shaped, and the architectural walls are on the elevator and utility cores of the new structure.

For the architectural effect, a series of longitudinal striations were cast into the tower walls. These lines served to slim the building down by reducing its visual mass.

The striations were achieved with surprising ease using Symons Steel-Ply panels. V-shaped chamfer strips were nailed to the panel faces at 8" centers. Panels were then hand set and moved upward in line as each pour of the concrete was stripped for the entire 33' height of the tower.

Forms were handled individually since the small size of the towers didn't warrant ganging.

Symons forms can be used for battered, curved, straight, column or architectural work. Panels can be set horizontally and vertically to any wall height. And, panels and fillers can be used, side by side, in any combination desired.

Information on the use of Symons Forms for architectural concrete sent upon request.

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MORE SAVINGS WITH SYMONS

continued from page 66

acre may be considered high in London.

High-density urban developments have naturally come under criticism from the garden-city school. The greatest criticism has been leveled against the social aspects of such living. It is implicit in this *tour de force* that when high-density development takes place, it should be part of a fully comprehensive pattern of planning whose factors taken together should add up to an ideal total environment from a sociological as well as other points of view.

Renaissance treatise

FILARETE'S TREATISE ON ARCHITECTURE, *Being the Treatise by Antonio di Piero Averlino. Translated with an Introduction and Notes by John R. Spencer. Yale publications in the history of art. Yale University Press, New Haven, Conn. Volume 1: The Text, 338 pp. $30.00; Volume 2: The Facsimile, 192 pp., illus. $30.00.*

Il Filarete (artistic pseudonym of Antonio di Piero Averlino) resolved his treatise to teach "the modes and measures of building." He composed it in Milan between 1461 and 1464 and it rests on the literary device of the construction of an ideal city, Sforzinda, and its port, Plusiapolis. Filarete's exposition of an ideal as well as a new architecture to create these cities is the core of the treatise, although on a superficial level it can be considered a kind of literature.

Filarete, Florentine sculptor and architect, presented his treatise to Francesco Sforza and to Piero de' Medici. The original text written in Filarete's hand or dictated by him to a scribe has not survived. The Sforza manuscript was destroyed in 1944 by bombing and the Medici manuscript, of necessity, is the basis for this first English translation and edition of the original text.

Volume 2, bound separately, is a complete and legible facsimile of the Magliabecchiana manuscript.

BOOKS RECEIVED

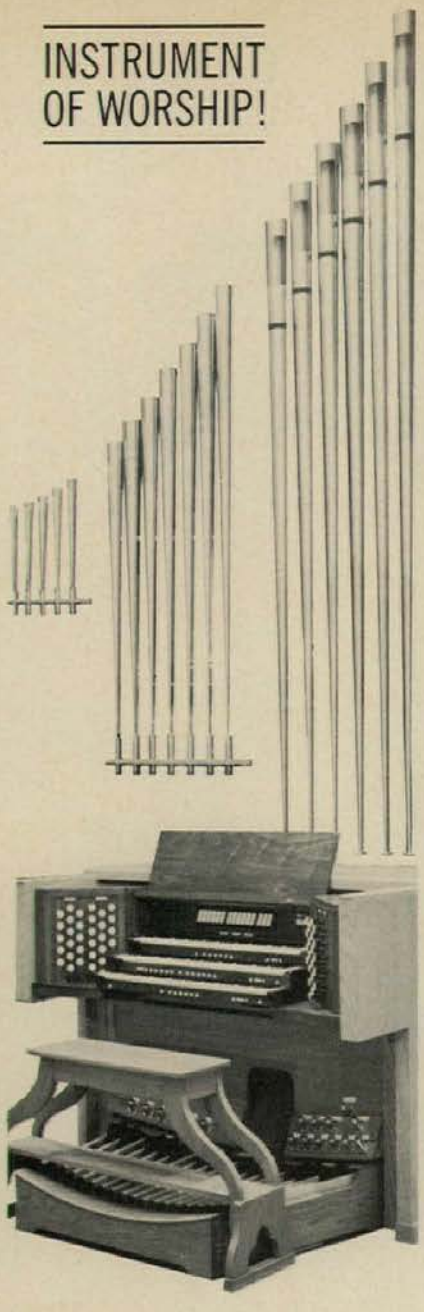
Part 15, 1966 BOOK OF ASTM STANDARDS ON PAPER; PACKAGING; CELLULOSE; CASEIN; FLEXIBLE BARRIER MATERIALS; LEATHER. *American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103. 892 pp. $13.00.*

THE ARCHITECTS COLLABORATIVE. *Edited by Walter Gropius, Jean B. Fletcher, Norman C. Fletcher, John C. Harkness, Sarah P. Harkness, Louis A. McMillen and Benjamin Thompson. Arthur Niggli Ltd., 9053 Teufen AR (Switzerland). 300 pp., illus. $26.50.*

1965/1975 GENERAL PLAN FOR THE CITY OF BOSTON AND THE REGIONAL CORE. *By the Boston Redevelopment Authority, 1108 City Hall Annex, Boston, Mass. 02108. 162 pp., illus. $10.00.*

continued on page 77

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It's non-combustible, grease-, oil- and solvent-resistant. Good looking, too.

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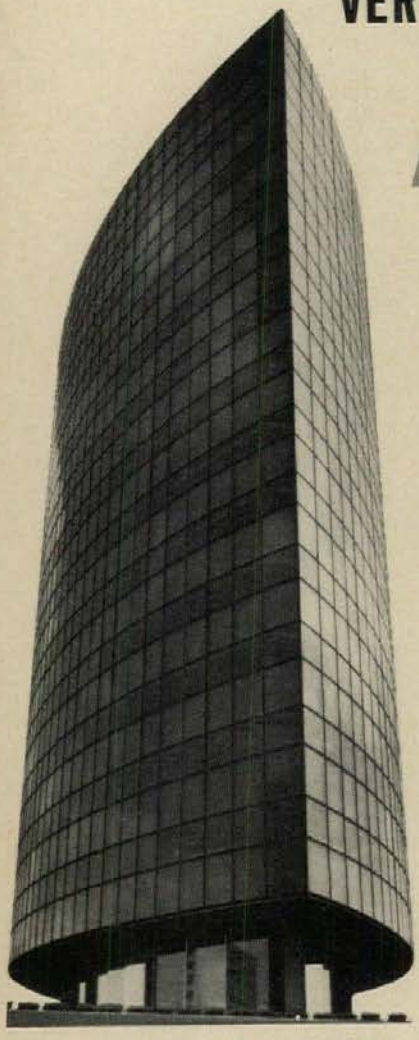
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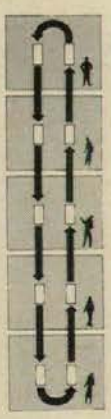
Recordlift

VERTICAL MAIL CONVEYOR BY

Standard Conveyor



Phoenix Mutual Life Insurance Co., Hartford, Conn. *Architect:* Harrison & Abramovitz. *Contractor:* George A. Fuller Co.



The ultra-modern office buildings seen here differ greatly in architectural style—yet they do have one thing in common to give them remarkable functional efficiency.

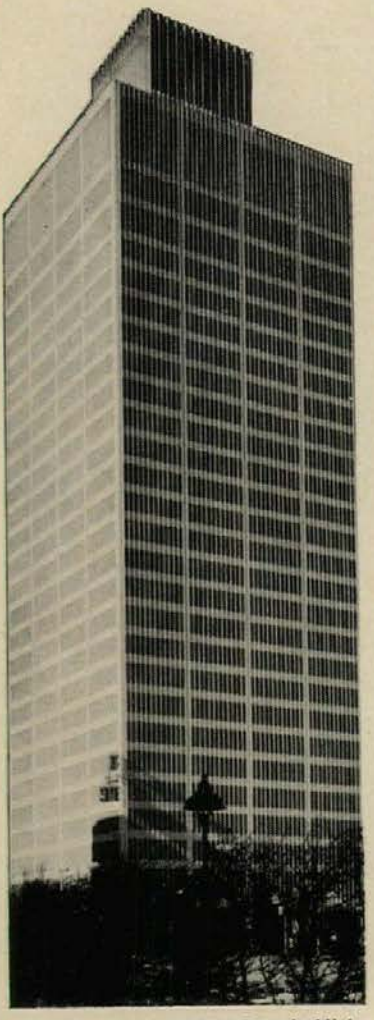
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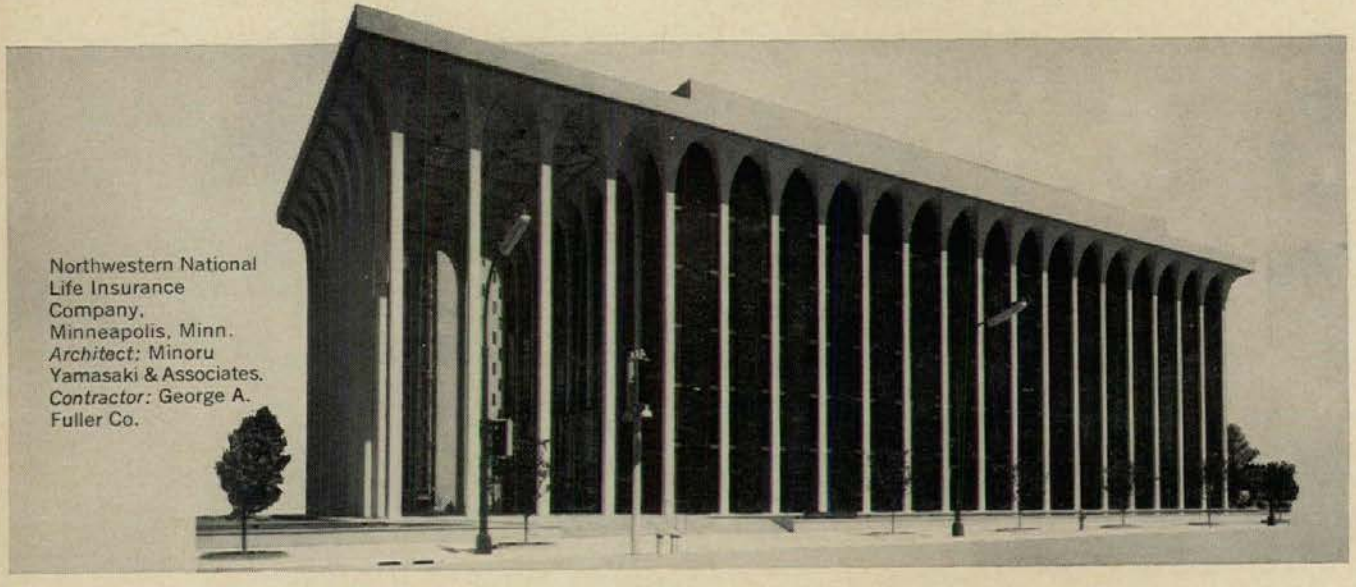
It's the *proven* way to solve office building distribution problems! Ideal for hospital use, too!

Get details. Write for new illustrated Recordlift Bulletin 153. Describes operation, shows various addressing systems, gives dimensional requirements. Standard Conveyor Company, 312-F Second St., North St. Paul, Minn. 55109.





Michigan Consolidated Gas, Detroit, Mich. *Architect:* Minoru Yamasaki — Smith, Hinchman & Grylls. *Contractor:* Bryant & Detwiler Co.



Northwestern National Life Insurance Company, Minneapolis, Minn. *Architect:* Minoru Yamasaki & Associates. *Contractor:* George A. Fuller Co.

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THE BEST IDEAS ARE MORE EXCITING IN CONCRETE

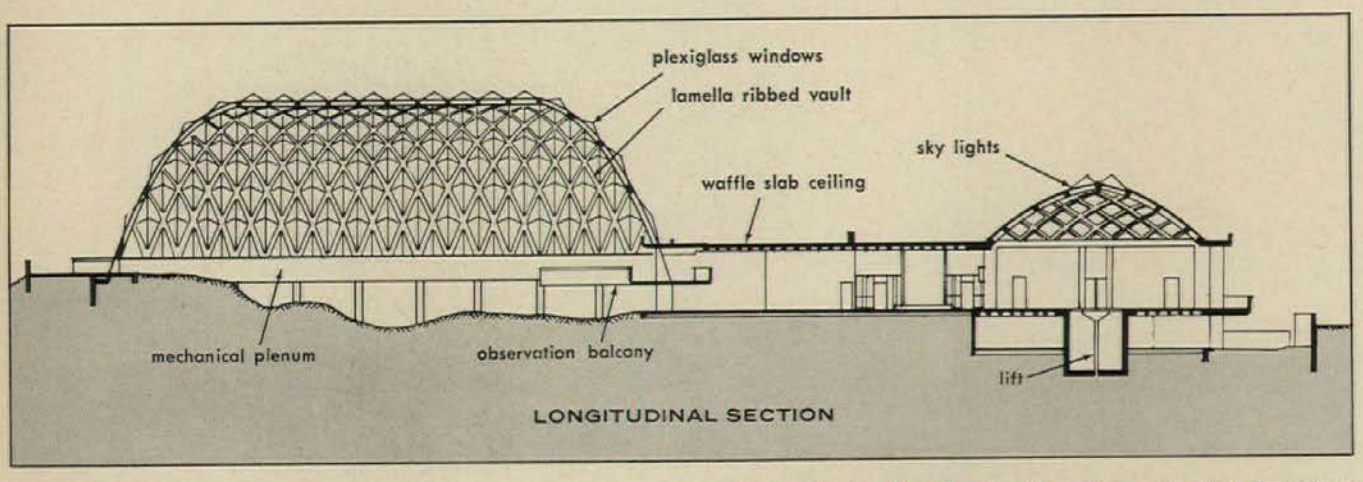
ARCHITECTS: VICTOR HORNBEIN AND EDWARD D. WHITE, JR., DENVER, COLO. STRUCTURAL ENGINEER: ROBERT S. NEDELL. CONTRACTOR: GERALD H. PHIPPS, INC.

raceful, curving ribs of concrete roof a modern tropical garden. In the new Boettcher Con-ervatory of Denver's Botanic Gardens, concrete achieves a striking departure in design and construction. □ Ribs of reinforced concrete are used to create the 450-window roof. Rising in a 50-foot high curve, they ere entirely cast in place with integral condensate reglets and glazing channels. □ Boldness of the concrete ccentuates the transparency of the unique pyramidal plastic lights. Progressing upward in diminishing size, he linked window shapes produce a new and pleasing visual experience. □ Throughout the structure, even to the balconies for high-level viewing of the plant exhibits, concrete brings aesthetic rewards — along with minimized maintenance in the humid, tropical atmosphere. Across the nation, today's most imaginative structures of every ype and size demonstrate the unequaled versatility of modern concrete.



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organization to improve and extend the uses of concrete, made possible by the financial support of most competing cement manufacturers in the United States and Canada 33 West Grand Ave., Chicago, Ill. 60610



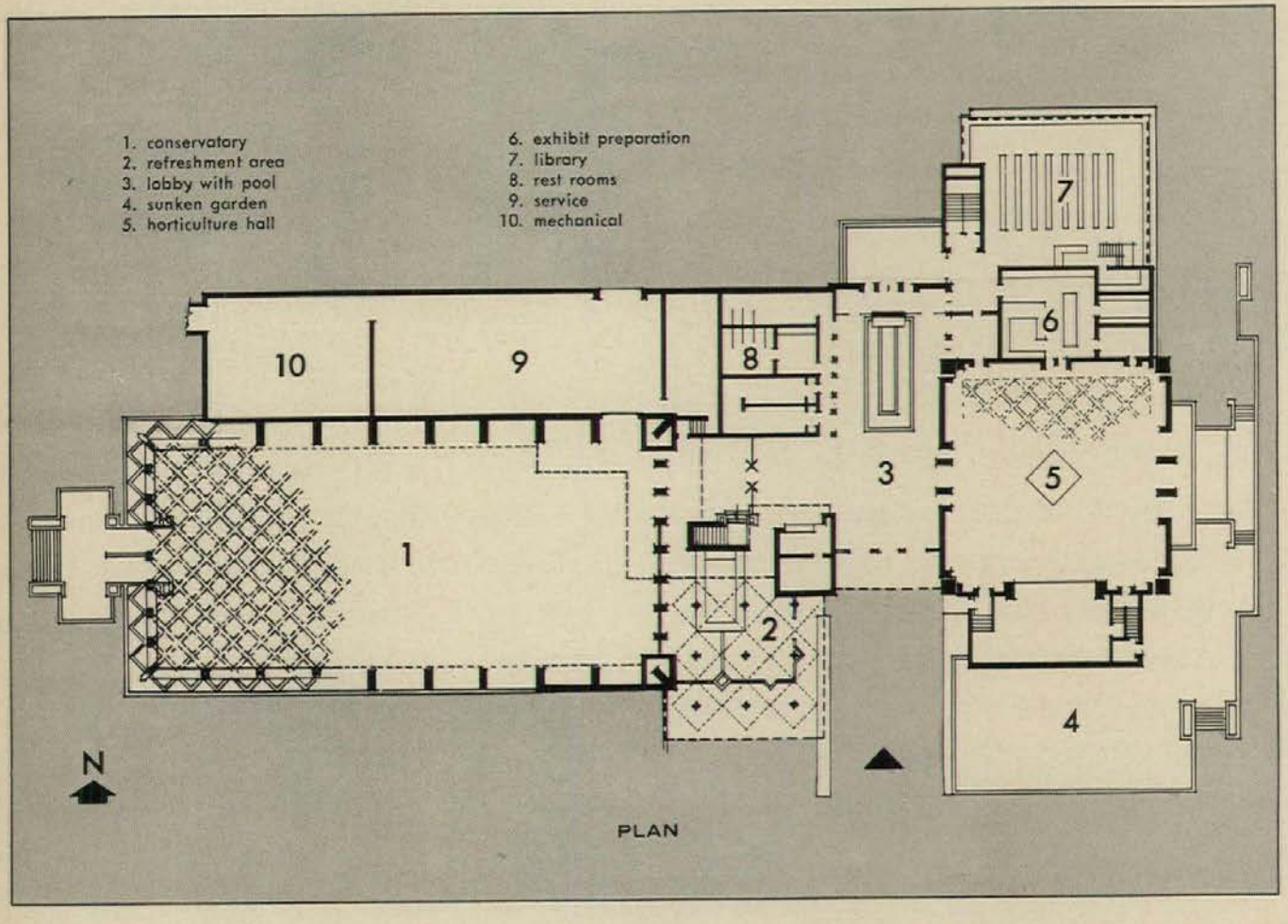
LONGITUDINAL SECTION

Architects exploit esthetic potential of concrete in Denver Botanic Gardens

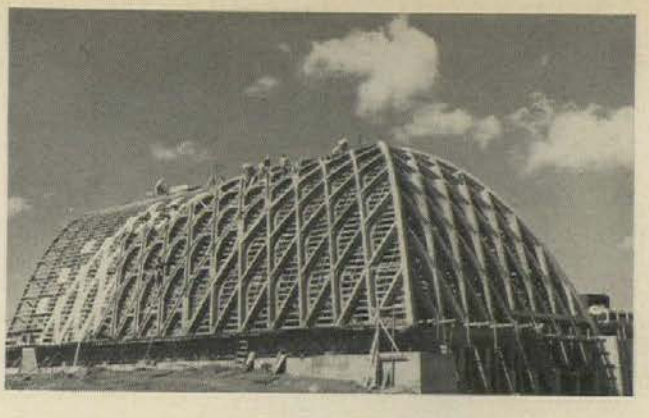
Designed to an educational function, as well as for public enjoyment, the new Denver Botanic Gardens are located on an 18-acre site with a view of Colorado's Rocky Mountains. When completed, the Gardens will embrace a complex of integrated building units for the study and exhibition of plant life, as shown above and below in the longitudinal section and plan drawings.

Dominating the Gardens is the recently completed Boettcher Conservatory. More than a full year of study and design went into its planning. Problem solutions for the 72-ft. by 160-ft. facility are projectable to similar structures many times its size.

Esthetic potential was a vital factor in the choice of concrete. However, concrete also offered the low maintenance characteristics and durability that met important owner requirements.



PLAN



Conservatory frame designed to translate full load into compressive force

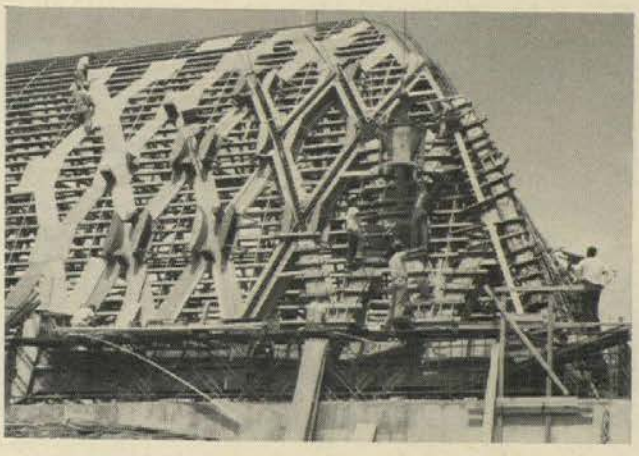
The Conservatory's lamella-type vault is designed as an inverted catenary curve and intersects with half catenary end sections.

The frame is based on an 8-ft. module. When projected in plan, frame ribs intersect at 45 degrees to form diamond-shaped openings of nine different sizes. These openings, square at the peak of the vault, become progressively longer toward the bottom. Alternate ribs bear on narrow concrete buttresses spaced 16 ft. apart, while intermediate ribs are carried on a continuous grade beam.

Theoretically, there is no bending in the 10-in. by 16-in. rectangular frame members. They carry only compressive forces.

The required frame strength was readily achieved with a structural lightweight concrete of the following mix proportions:

Portland cement, Type I	658 lb. per cu. yd.
Expanded shale, #8 max.	720 lb. per cu. yd.
Expanded shale, ⅜ in. max.	885 lb. per cu. yd.
Water	333 lb. per cu. yd.
Entrained air, average	11 percent
Slump	5 inches
Unit weight, average	92 lb. per cu. ft.
Strength at 28 days	5200-6200 psi

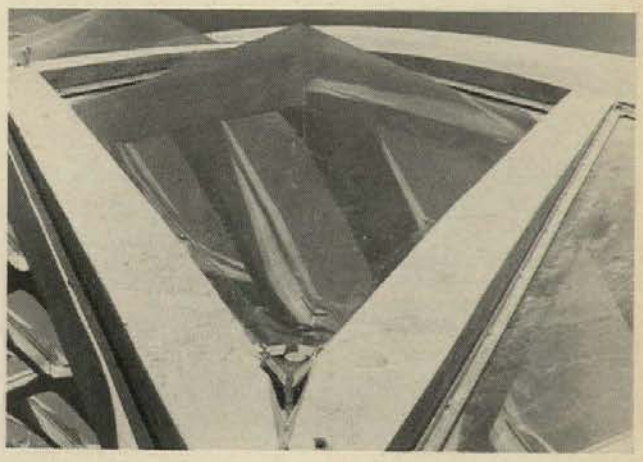


Rib members constructed without use of detailed drawings

Formwork for casting the Conservatory frame was supported on a series of bow-string trusses, acting in pairs and hinged at the top. Outlines for the arch ribs were drawn on plywood panels, as shown in the photo, and the formwork for each rib was built up from the bottom.

No detailed shop drawings were used. Instead, the architect worked closely with the contractor from the beginning of the project to develop an efficient system of construction.

Concrete was placed in 10- to 15-yard increments permitting repeated reuse of the forms. Ribs in the lower portions of the vault required cover forms to retain concrete during placement. Each rib was filled in 16-in. increments, and the concrete was vibrated through access holes in the cover forms, which were later plugged.

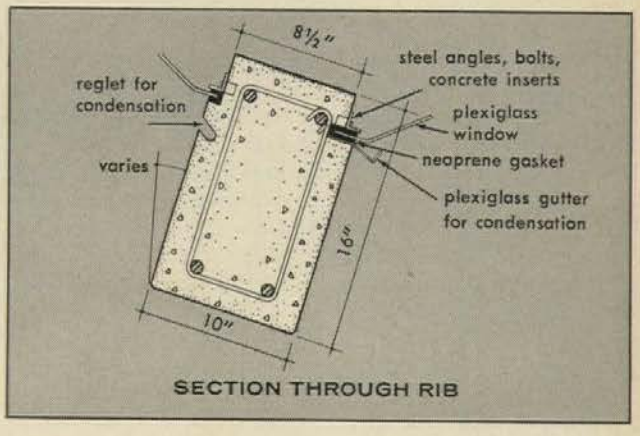


Unique tetrahedronal windows include miniaturized gutter system to prevent condensation drip

Glazing of the diamond-shaped frame openings is ¼-in. clear plexiglass, shaped as tetrahedrons of varying height. (See photo above.) Each is formed from a single sheet, except for the larger units in the bottom two rows. Setting in neoprene gaskets, as shown in the detail below, provides a permanently tight seal.

The system devised to collect condensation from the windows and prevent drip is both effective and inconspicuous. Small reglets have been cast into the concrete on the upper side of the ribs; plexiglass gutters are mounted on the lower side. Condensation collected then drains to the outside through weep holes at the lowest corner of each diamond.

Full-scale mock-up panels of the window units were constructed and tested to check gasket seal retention and efficiency of the condensate handling system.



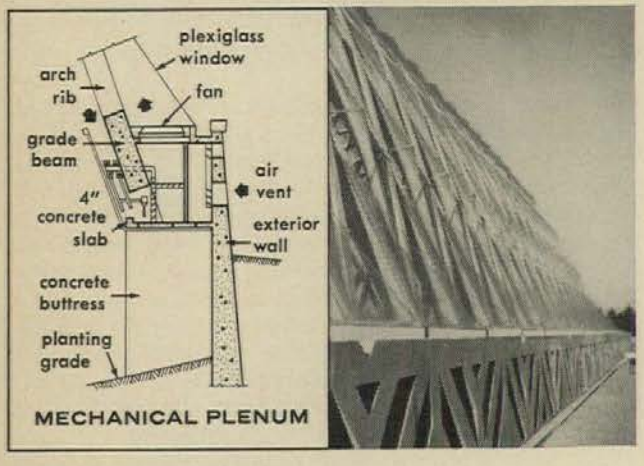
SECTION THROUGH RIB



"Hilltop view" achieved with multi-level balconies

Recognition that indoor gardens, just as outdoor scenes, take on an added dimension in beauty when viewed from above made high observation points a prime requirement.

Varied viewer perspective has been provided in the Conservatory by cantilevered balconies at approx. 8-ft., 12-ft. and 17-ft. levels. 8-in. reinforced slabs of structural lightweight concrete are used, with integrally cast railings. Integration of the balconies with the garden scene was enhanced by Colorado red quartzite stone overlays for floors and trim for copings.



Mechanical plenum integrated into concrete design

Mechanical equipment for heating, cooling and ventilating is concealed and integrated into the structural system forming a continuous plenum at the base of the ribs. Fresh air intakes in the exterior walls of the Conservatory are concealed behind a decorative chevron design (see photo above). Fresh air or recirculated air can be forced upward from the plenum by 32 propeller fans around the base of the Conservatory.

In the summer, cooling is accomplished by evaporation making use of air vents at the base of the Conservatory and 11 ventilating skylights at the top of the vault. In the winter, fans blow air through steam fin tubes to heat the Conservatory.



Precasting permits custom-designed lamp posts at low cost

Specific design ideas in lighting fixtures for the Gardens were made possible by concrete. The architect wanted an atmosphere of a park at night. 15-ft. tree-shaped lamp posts, comprised of four identical sections bolted together, were cast on the site.

Use of a single form shape for all sections speeded reinforcing, casting and handling, resulting in economy. Posts have a smooth hand-rubbed finish. Bolted connections will be concealed with bronze-plated cover boxes.

Lamp posts inside the Conservatory are of the same design but also serve as ventilators. Fans in boxes at the base of the posts force air up through the center of the posts.

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PCA 1966 50th year

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continued from page 70

SILENT CITIES, *Mexico and the Maya. By Norman F. Carver, Jr. Wittenborn and Company, American distributors, 1018 Madison Ave., New York, N. Y. 10021. 246 pp., illus. $21.00.*

ECONOMIC FACTORS IN URBAN PLANNING STUDIES. *Technical Guide 20, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. 40 pp. Paperbound, $.35.*

THEORY AND PRACTICE OF REINFORCED CONCRETE. *By Clarence W. Dunham. McGraw-Hill Book Company, 330 W. 42nd St., New York, N. Y. 10036. 629 pp., illus. $13.90.*

AMERICAN STANDARD PRACTICE FOR OFFICE LIGHTING. *By the Illuminating Engineering Society. Publications Office, Illuminating Engineering Society, 345 E. 47th St., New York, N. Y. 10017. 36 pp. $.60.*

ROOFS IN THE WARM HUMID TROPICS. *By Otto Koenigsberger and Robert Lynn. Wittenborn and Company, American distributors, 1018 Madison Ave., New York, N. Y. 10021. 56 pp., illus. Paperbound, $3.50.*

THE SWEDISH DEPARTMENT STORE BOOM. *By Hans S:son Leijonhufvud. Rabén & Sjögren, Reklamavdelningen, Fack, Stockholm 45, Sweden. 92 pp., illus. $6.00.*

A WALK IN GEORGETOWN. *By Mary Mitchell. Barre Publishing Company, South St., Barre, Mass. 95 pp., illus. $6.95.*

NORWICH CATHEDRAL AT THE END OF THE EIGHTEENTH CENTURY, *Drawings by John Adey Repton. Edited by S. Rowland Pierce. Gregg Press, Inc., 171 Ridgewood Ave., Ridgewood, N. J. 13 Plates and annotations. $58.75.*

BUILDINGS PHYSICS: ACOUSTICS. *By H. J. Purkis. Pergamon Press Inc., 44-01, 21st St., Long Island City, New York 11101. 141 pp., illus. $2.95.*

ANNUAL REPORT OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION, *Publication 4613, Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 553 pp., illus. $4.00.*

THE ENGINEER'S COMPANION. *By Mott Souders. John Wiley & Sons, Inc., Publishers, 605 Third Ave., New York, N. Y. 10016. 426 pp., illus. $8.95.*

TOWARD NEW TOWNS FOR AMERICA. *By Clarence S. Stein. The M.I.T. Press, 50 Ames St., Cambridge, Mass. 265 pp., illus. Paperbound, $2.95.*

SWIMMING POOLS. *By the Editors of Sunset Books and Sunset Magazine. Lane Magazine & Book Company, Menlo Park, Calif. 111 pp., illus. Paperbound, $1.95.*

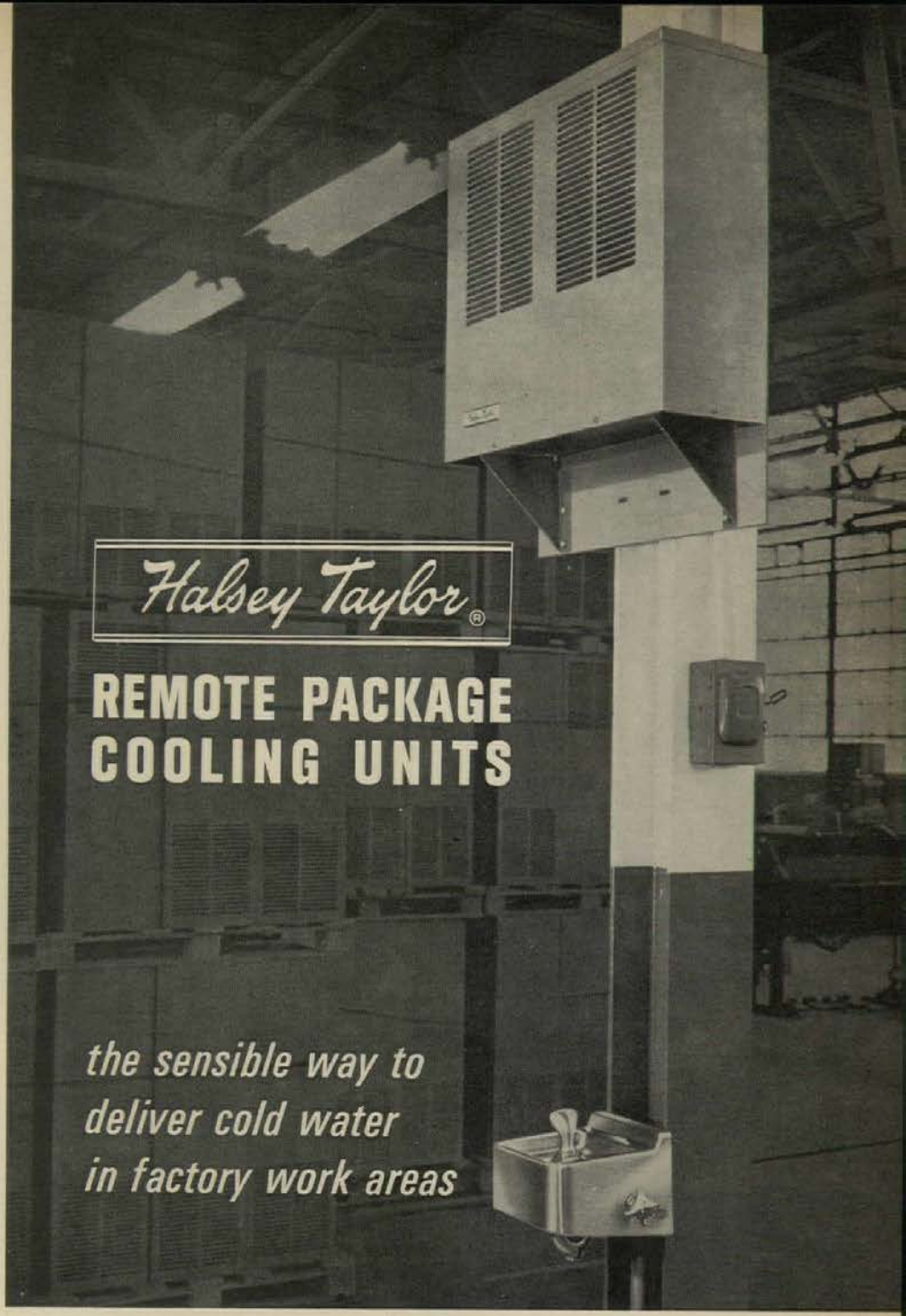
ARCHITECTURAL RESEARCH ON STRUCTURAL POTENTIAL OF FOAM PLASTICS FOR HOUSING IN UNDERDEVELOPED AREAS. *By the Architectural Research Laboratory, The University of Michigan, Ann Arbor, Mich. 279 pp., illus. $5.00.*

NEW USES FOR OLD CANNONBALLS: *And Other Novel Decorative Arrangements. By David B. Van Dommelen. Funk & Wagnalls Company, Inc., 360 Lexington Ave., New York, N. Y. 10017. 152 pp., illus. $4.95.*

CIVITATES ORBIS TERRARUM. *Advisory Editor: Alexander O. Vietor. The World Publishing Company, 119 West 57th St., New York, N. Y. 362 Plates. $195.00 for the three volume set.*

URBAN RENEWAL: THE RECORD AND THE CONTROVERSY. *Edited by James Q. Wilson. The M.I.T. Press, 50 Ames St., Cambridge, Mass. 683 pp., illus. $10.00.*

PERSPECTA, *Issue 9/10. School of Art and Architecture, Yale University, New Haven, Conn. 2121 Yale Station, New Haven, Conn. 336 pp., illus. $7.50.*



Here's a water cooling unit that can be mounted overhead and out of the way—takes up no valuable floor space—is less apt to be damaged. Easy to install—mounting shelf can be bolted or welded to post or column. Can also be tucked away in wall recesses, under counters, on shelves, or secluded in closets. Remote cooling units are available in a wide range of capacities and can be connected to serve more than one fountain outlet. In addition to the stainless steel fountain shown above, these remote cooling units can be equipped with many other types and designs of Halsey Taylor fountains.

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Please send me complete information about Halsey Taylor remote cooling units for plant and factory installations.

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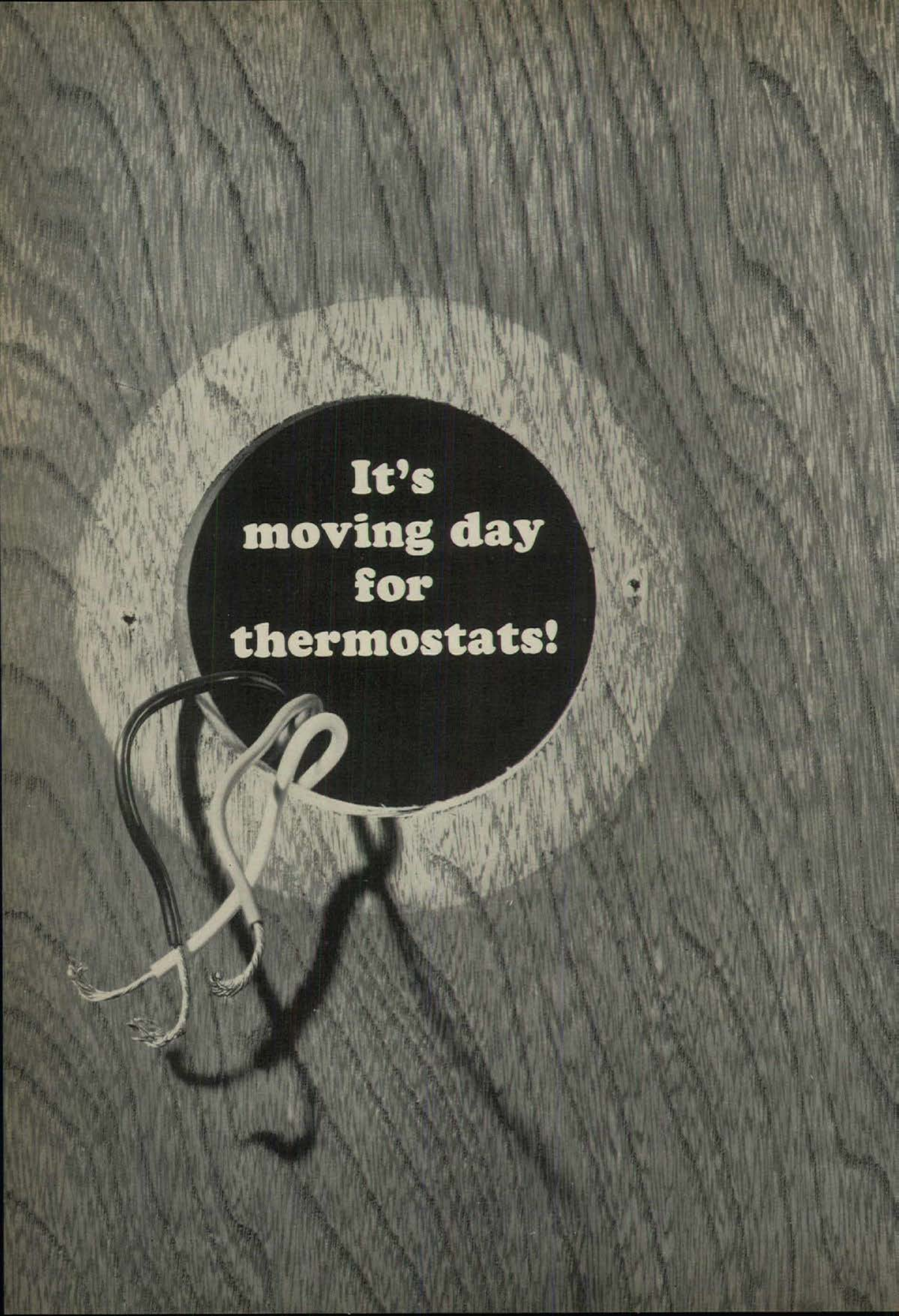
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It's
moving day
for
thermostats!

"Room thermostats belong on the wall"

ridiculous!

New Barber-Colman Heat-of-Light System puts the thermostat where it works best—in a moving air stream. Result: Temperature changes are detected up to 15 times faster than with wall-mounted thermostats. Clip coupon for complete information.

"Room thermostats belong on the wall." Ridiculous! Walls soak up heat (or cold). Wall-mounted thermostats pick up this heat or cold, so response to room temperature changes is slowed, resulting in overheating (or overcooling).

New temperature sensing element mounts in ceiling diffuser

Thermostats work best in a *moving* air stream. That's where Barber-Colman puts them in the Heat-of-Light System. Conventional, wall-mounted thermostats have been replaced by pencil-thin electronic sensing elements that fit in the air-handling system (in air/light diffusers, under-the-window units, ceiling diffusers). This new development in thermostat design and application means that the moving air surrounding the people in the room can be continuously sampled. Changes in temperature are detected and acted upon up to 15 times faster than with wall-mounted thermostats. Temperature control is more accurate and uniform.

What's more, moving the thermostat off the wall reduces installation costs. No drilling or channeling for electrical conduit or pneumatic tubing—low-voltage wires connect the electronic sensing element to the control system. Walls and panel dividers can be moved without altering the temperature control system. The costs of re-installing and recalibrating thermostats every time a partition is moved are eliminated.

New system combines lighting, heating, and cooling functions

Today, lighting levels of up to 150 foot-candles (or more) are common. Up to 85c of every dollar you spend for light at these higher levels ends up as heat. With the new Barber-Colman Heat-of-Light System, much of the heat generated by light, as well as people and equipment can now be put to work heating the building.

Air-handling lighting fixtures remove up to 85% of light-generated heat from the occupied zone. Barber-Colman's Jetronic mixing units capture this heat and use it to warm interior zones and offset heat losses at the building perimeter. Result: Ideal operating temperatures for fluorescent lights (75° to 80°F) are maintained—increasing light output by 15 to 20% over "static" fixtures. Lighting levels can be doubled (up to 200 foot-candles or more) without increasing conditioned air load.

And, there are other important benefits: You realize major savings in the cost of air conditioning. Steam boilers and other high-output heat sources can be reduced in size (or eliminated). Hot air ducts, reheat coils and piping are not required. Less pipe and duct insulation are needed. And, you get more air conditioning in less space.

Computer helps you evaluate Heat-of-Light for your building

Now, take the guesswork out of designing your next air conditioning system. A simple one-page Feasibility Study (plus a few minutes work by our Transac 2000 computer) lets you evaluate a Heat-of-Light System before it's installed. The computer carefully studies each floor in the building. It calculates heating and cooling air temperatures for perimeter air systems . . . the number of light fixtures required . . . supply air quantity and temperature . . . and primary air quantities. You get an answer quickly—often within 48 hours. (More than 100 of our customers and prospects have used this computer service in the past six months.)

Get the facts! Clip coupon below or contact your nearest Barber-Colman field office for a Feasibility Study.

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about

take another look.

Look at Wheeling before you sign another order.

Look at our expanding line of expanded metals.

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Go ahead, look.
We did.

We took a long hard look at ourselves and we know what we're doing.

We're hustling.

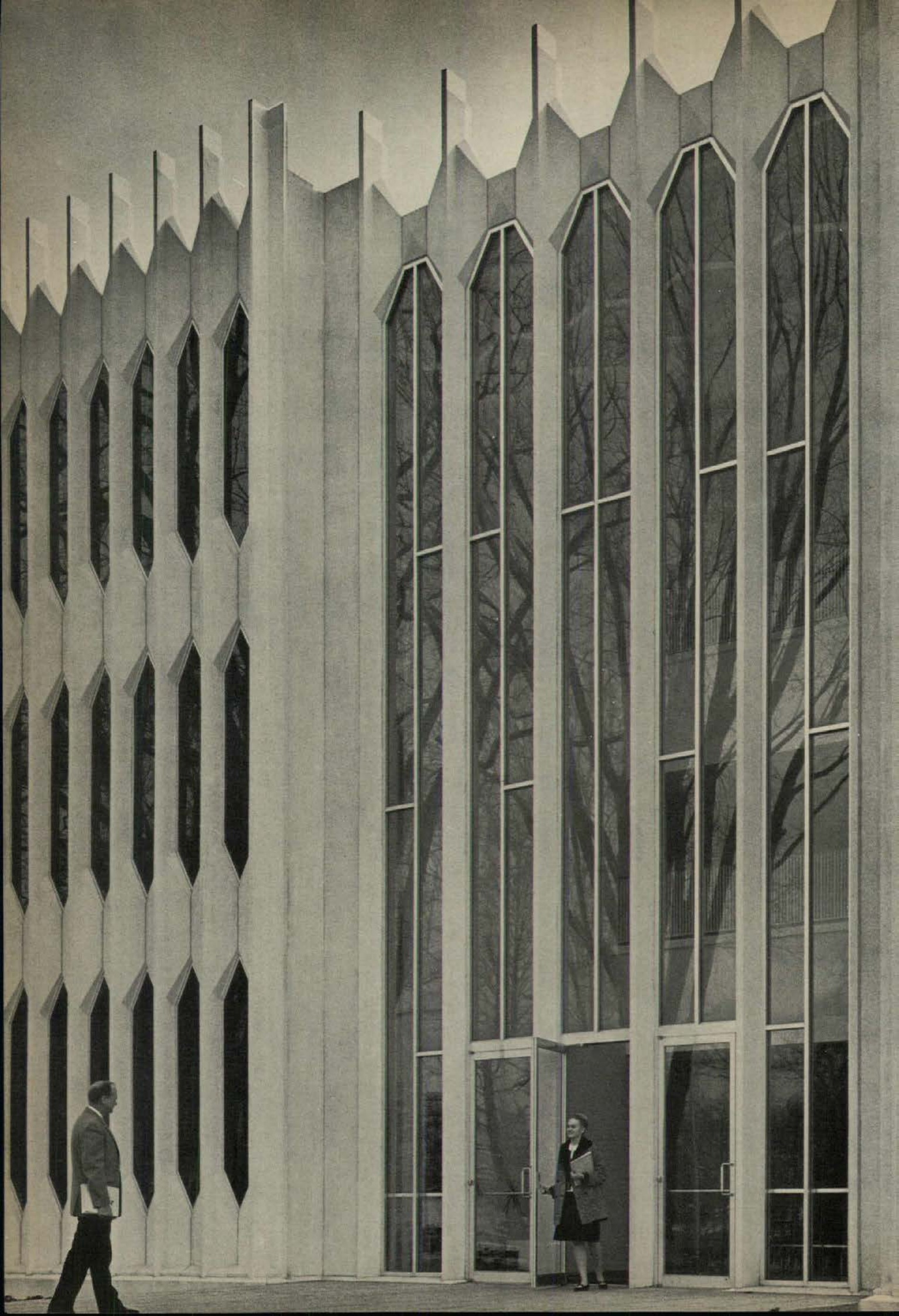
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Wheeling Corrugating Co., Wheeling, West Virginia

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Entrance and other doors smoothly controlled by

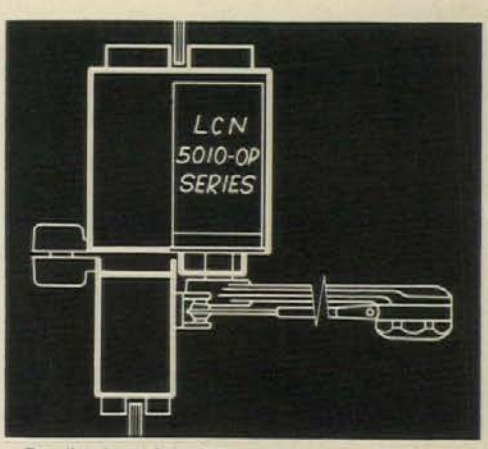
LCN DOOR CLOSERS

No matter how fine the building, how interesting its design, all its doors need closers.

The right closer protects door, hinges and frame from the destructive effects of winds and interior drafts. Its smooth control also helps visitors to operate the door safely and without undue effort.

For the entrance pictured here, LCN 5010 closers are well suited. The powerful closing unit is hidden in the overhead frame. The double lever arm transmits power most effectively.

LCN's forty-year experience in making *nothing but door closers* is reflected in the 5010 series. Its high quality and record of low maintenance tend to assure *lowest long-run cost* to the user.



Detail at head for LCN overhead concealed closer shown in photograph

Full description on request
or see Sweet's 1966, Sec. 19e/Lc

LCN

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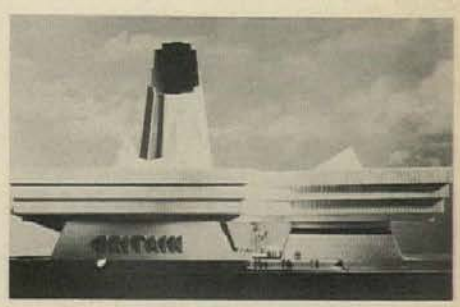
PHOTO: Oberlin College Conservatory of Music, Oberlin, Ohio; Minoru Yamasaki and Associates, Architects

666



Chicago building will combine residential and commercial use

The 27-story Regency Orleans, now under construction in Chicago, will provide 7,500 square feet of office space on each of six commercial floors with 19 stories of apartments above. There will be 114 terrace and one-bedroom units. The $4-million project will have gray glass windows set in white-finished reinforced concrete. A lounge and pool will be located on the penthouse level. Architect and engineer is Joel R. Hillman Associates and general contractor is Burton-Lipman Company.



British pavilion designed to appear "incomplete"

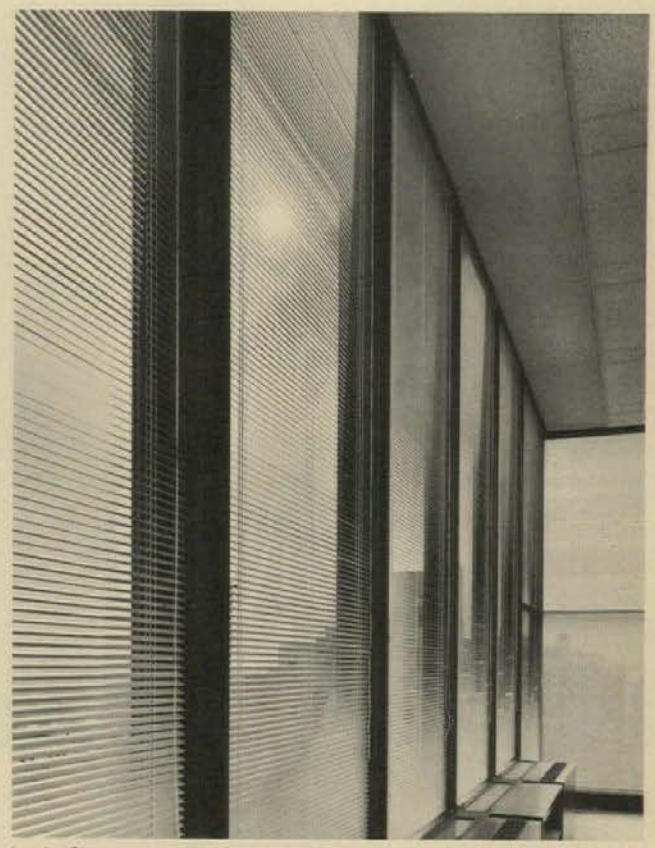
Great Britain's pavilion for Expo '67 in Montreal was designed by Sir Basil Spence to be "rough and tough"—"craggy, tough and uncompromising, symbolic of the spirit of Britain and her people." Predominant on the facade is a tower nearly 200 feet high, designed to appear incomplete. It is that way, said the architect, "because a lot of us feel Britain's contribution to the world is uncompleted. We've got a lot more to do and a lot more to contribute." The pavilion will be in five main sections, with an exhibit in each that reflects Britain's history and growth.

For more data, circle 60 on inquiry card



People who live in glass houses should have a soft outlook.

The airiness glass gives a building is seldom visible to the people who work in it. Bulky window coverings usually get in the way. Not any more. The narrow braided ladder and slender 1-inch slats of Levolor Riviera venetian blinds put the view in a new, softer light. Their delicate proportions never compete in scale with room space or furnishings. And, seen from the outside, Rivieras seem to disappear. Shouldn't your clients have it pretty soft, too?



Levolor *Riviera* venetian blinds were specified for use throughout Philadelphia's General Waterworks Corp. Building. Architects for the project are Bower & Fradley.

LEVOLOR
VENETIAN BLINDS
Levolor-Lorentzen, Inc., 722 Monroe St., Hoboken, N.J.

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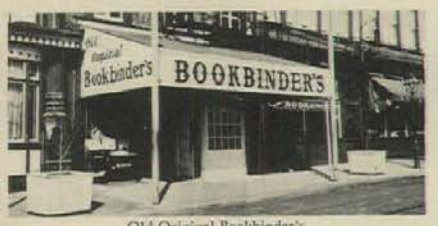
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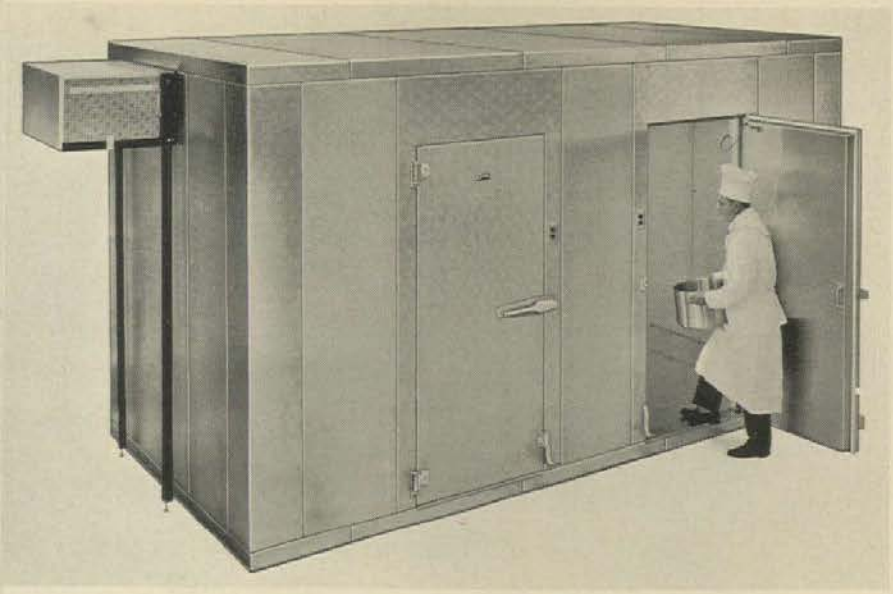


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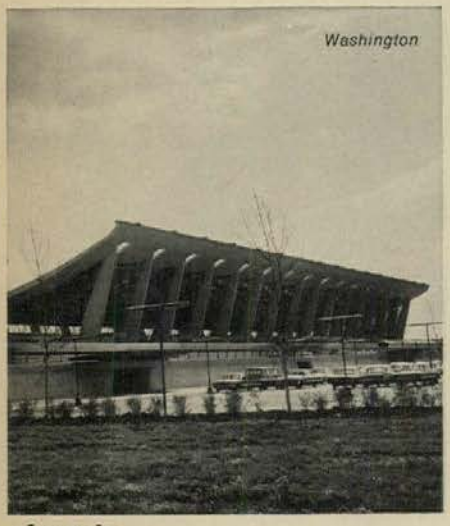


office buildings . . .



hospitals . . .

These buildings have one thing



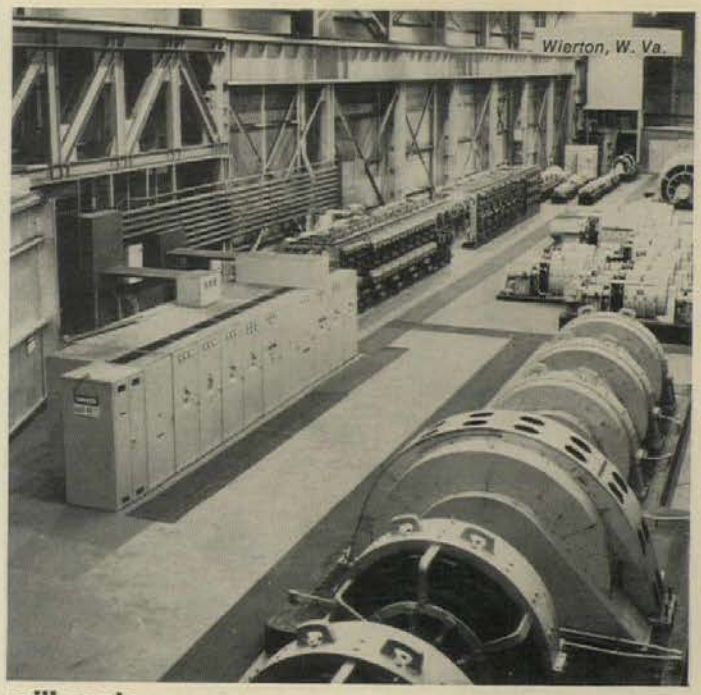
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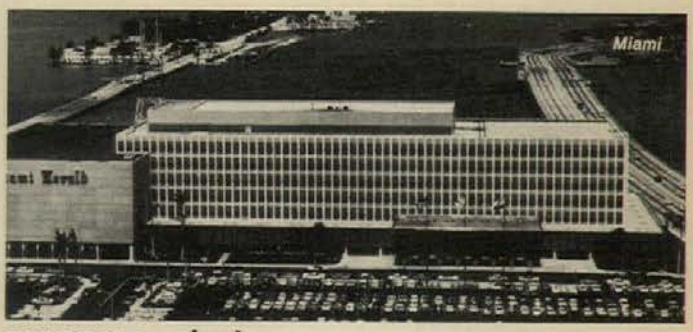
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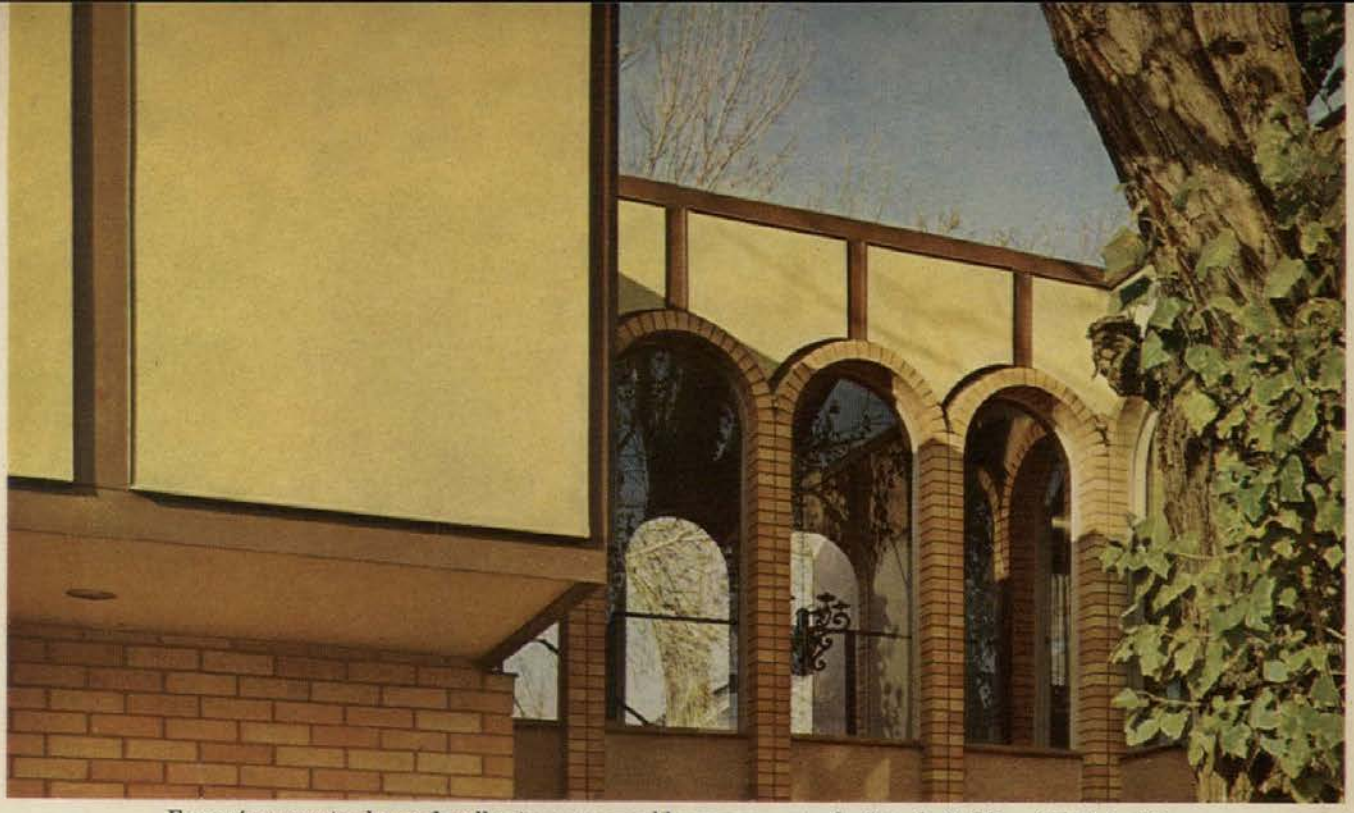
Perry, Dean, Hepburn and Stewart, *Architects* — Henry E. Wile Company, *General Contractors*

In these school buildings where design brings a uniquely modern touch to traditional New England architecture, Hope's new Weatherstripped Steel Windows, in custom sizes, have been installed with pleasing effect. Construction of Hope's Weatherstripped Windows is in keeping with Hope's traditional standard of quality: Frames and ventilators are hot rolled solid steel sections with all corners mitered and solidly welded for maximum strength and rigidity; solid bronze hardware is furnished on all ventilators for permanence and durability; and Hope's exclusive continuous Neoprene weatherstripping reduces air infiltration by over 60% (confirmed by independent laboratory tests) and is well within the maximum rate established for weatherstripped aluminum windows.

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Epoxy/aggregate plywood walls give a masonry-like appearance to the Intrade Building, Salt Lake City, Utah. These low-cost walls are available in a wide selection of natural stone textures and colors. (Architect: Roger Merrill Van Frank; Builder: Calvin J. Moss Construction Co., Owner: William E. Buchanan.)

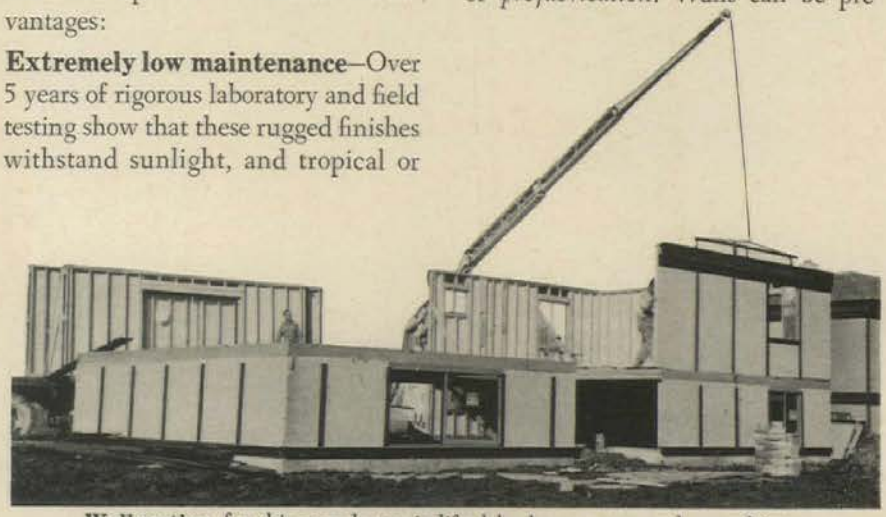
Epoxy/aggregate finishes based on Shell Epon® resin give plywood siding an attractive pebbled texture—cut building costs

Factory-finished Hycon 75® Sanspray® siding, manufactured by Hodges Chemicals Co., Burlingame, Cal., will give many years of trouble-free service.

Now there's a new attractive look for economical plywood exterior siding. It's a remarkably durable finish consisting of natural stone aggregates and Shell Epon resin. Here are the advantages:

Extremely low maintenance—Over 5 years of rigorous laboratory and field testing show that these rugged finishes withstand sunlight, and tropical or sub-zero temperatures without cracking. They resist weathering, humidity, salt and fresh water and have an estimated service life of many years. Hycon 75 Sanspray epoxy/aggregate plywood has earned a Certificate of Qualification from the American Plywood Assn., meets FHA standards.

Low building costs—This new construction material offers the economy of *prefabrication*. Walls can be pre-



Wall section for this new house is lifted by boom crane and moved into position for installation. Interior wall is completed with foil-faced fiber insulation and ½ in. dry walls. Prefabricated walls are erected quickly and easily.



Pebbled texture of durable Hycon 75 Sanspray epoxy/aggregate plywood flatters the crisp modern lines of the Intrade Building.

assembled in any height up to 16 feet and to any desired width. They can be erected on 6 in.-wide concrete foundations. No painting, priming or staining needed before or after installation. Semi-skilled workmen can easily cut and nail the walls.

Interested? Write to Shell on your letterhead at 110 W. 51st Street, New York, New York 10020 and we will refer you to the manufacturer of Epon resin/aggregate plywood siding.

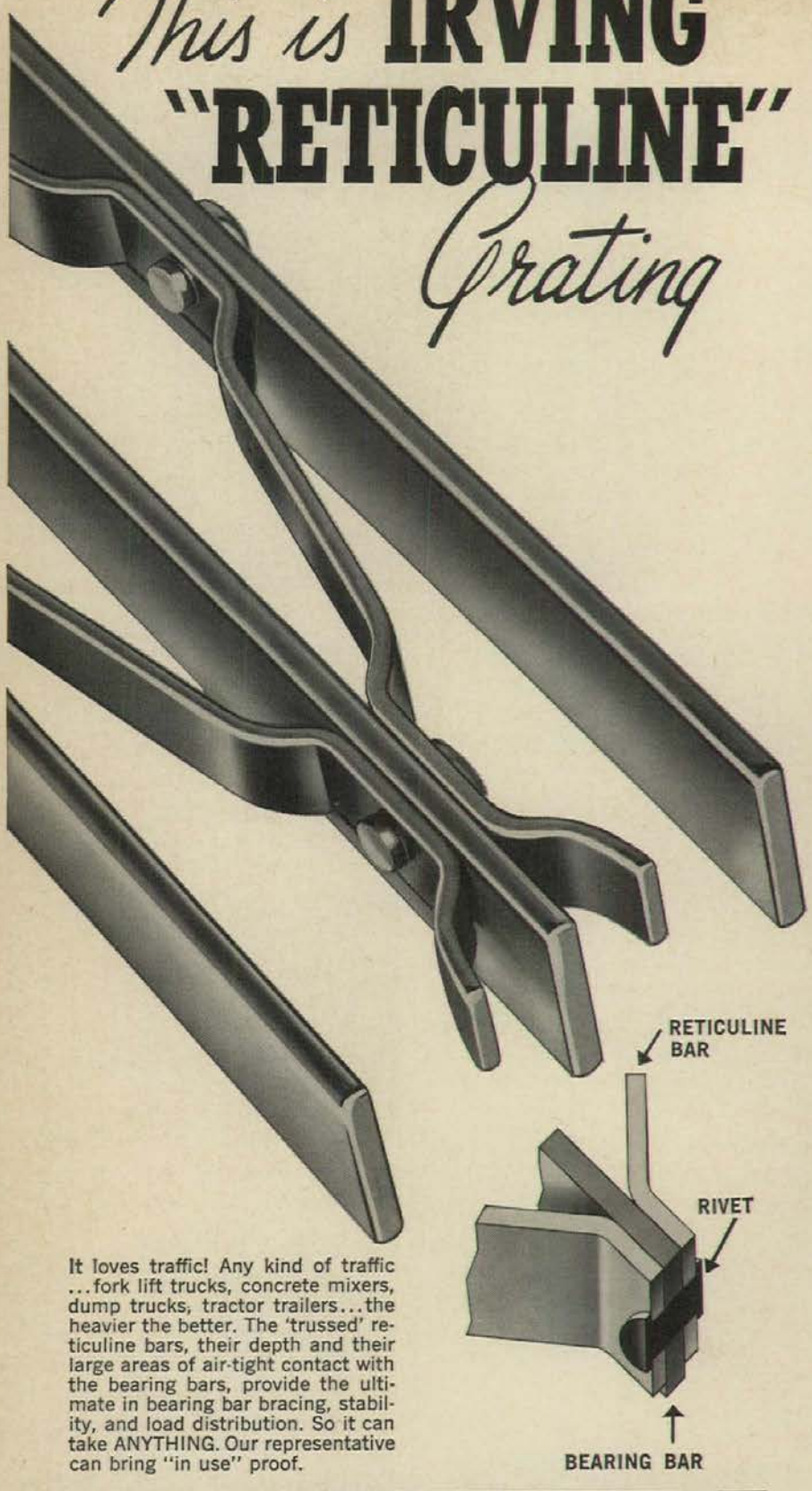
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Office building has balconies which serve as sunscreens

The nearly completed five-story office building for the Seltzer Partnership of Philadelphia, located in suburban Bala Cynwyd, will have floor slabs extending beyond the exterior walls to form balconies and to serve as sunshades. The building will be of reinforced concrete construction with exterior walls of stucco and glass. Architects are Alexander Ewing & Associates; landscape architect is Shin Abayashi; and general contractor is Barclay White & Company.



©Louis Checkman

Apartment building will have core articulated on facade

A new 31-story apartment building in New York City, designed by Emery Roth & Sons, will have its core articulated on the facade and flanked by the two wings of the building. The $8-million structure will be constructed of cast-in-place concrete, dark brown brick and glass. The lobby and public areas will be designed by Edward Wormley & Associates. The general contractor is the MacArthur Construction Company.

New THRU-CHIP PASTELS by RUBEROID

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Thru-Chip Pastels have an unusual light reflective quality especially suited to areas which require additional light—schools, hospitals, institutions, office buildings, corridors.

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Maintenance cost is low. The smooth, clean surface tends to repel normal traffic stains—is easily maintained with routine cleaning.

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Available in 12" x 12" tiles, 1/8" and 3/32" thickness, in the 5 colors illustrated above.

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only $564.62 to heat 16,000 sq. ft. garage



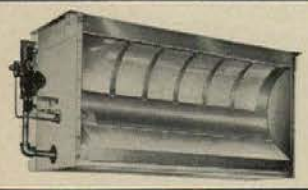
MODEL SRO-40 (40,000 Btu)

for entire heating season

Despite frequent periods of below zero weather, and doors being constantly opened and closed, the City Municipal Street Vehicle Garage in Kansas City, Kansas, remains warm as a tropical sun. And the heating cost is far below expectation.

27 Space-Ray Model SRO-40 gas infra-red overhead heaters (40,000 Btu each) provide clean, draftless, consistently uniform comfort heat in this building... and the average monthly cost during one 6 months heating season was only $94.10.

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Ideal for use on freezer, refrigerator, fire, or general industrial doors.



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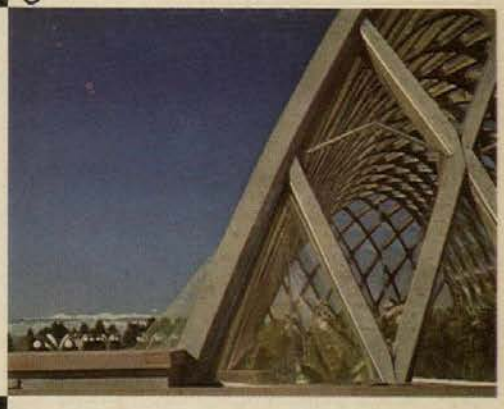
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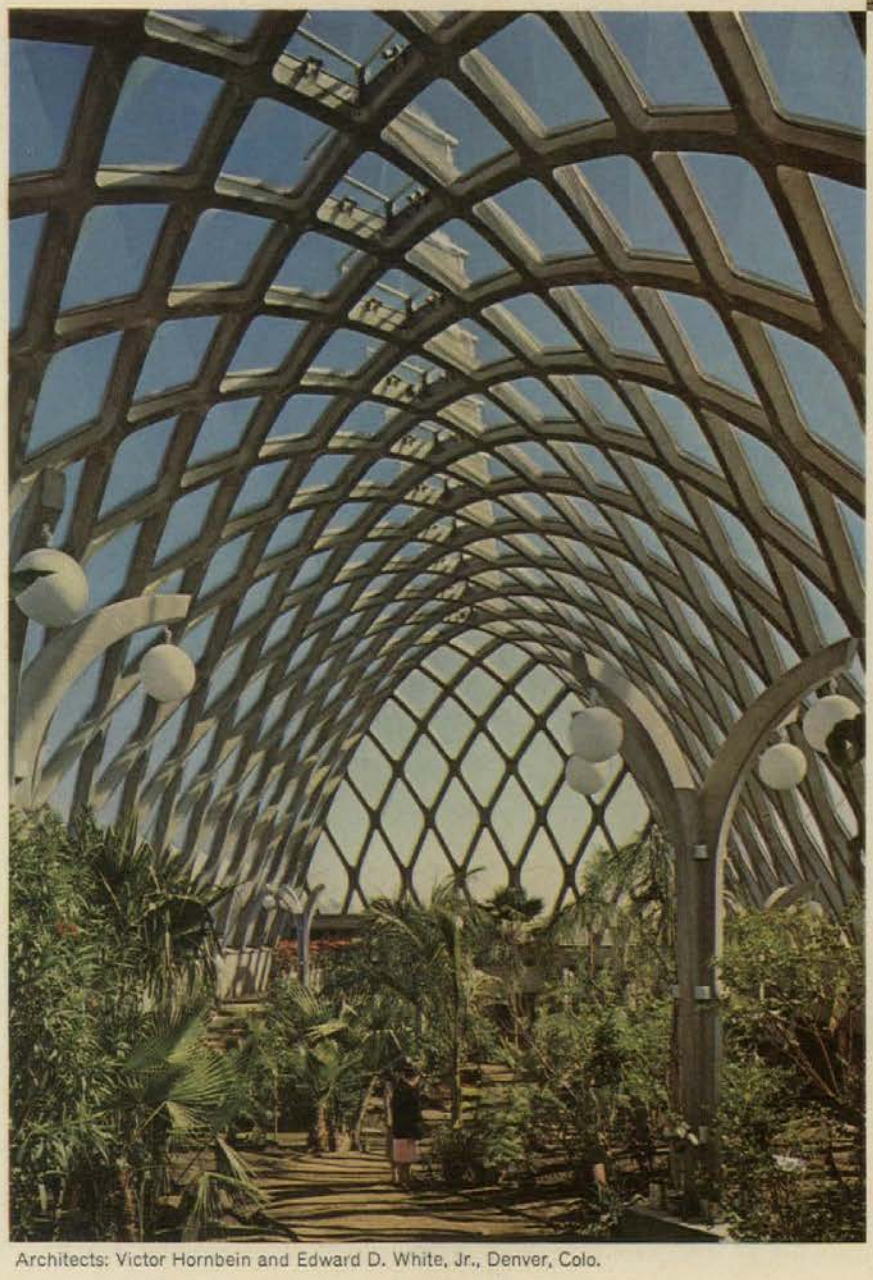


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Architects: Victor Hornbein and Edward D. White, Jr., Denver, Colo.

Arching over an area of 11,500 square feet, this graceful enclosure glazed with PLEXIGLAS acrylic plastic provides a spectacular setting for tropical plants at the Denver Botanic Gardens. In addition to providing a natural environment for the display of exotic vegetation, the crystal-clear PLEXIGLAS lets in ample sunlight to sustain plant growth.

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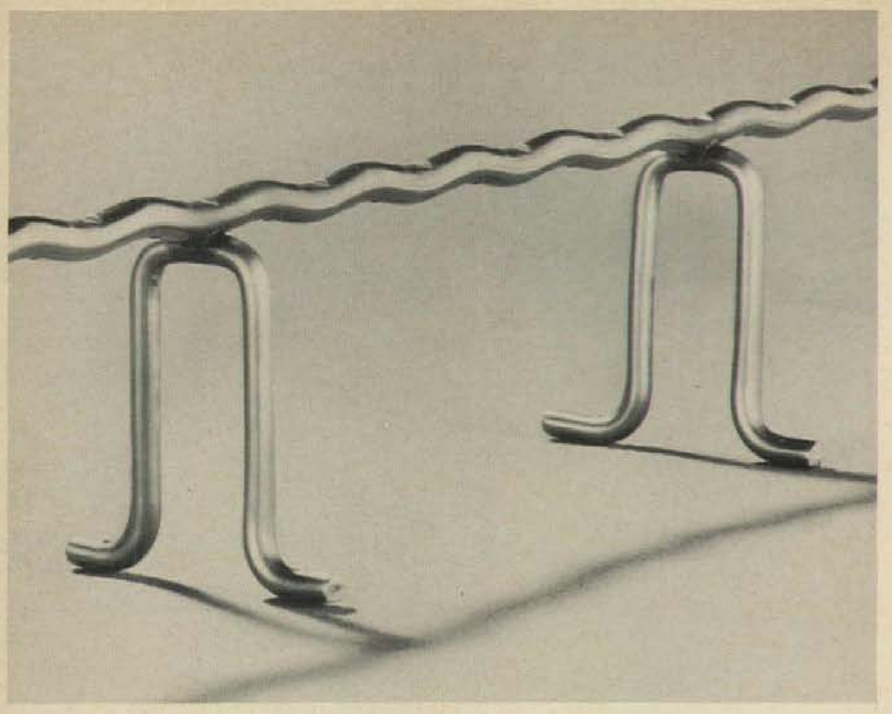
In addition to clear transparent sheets, PLEXIGLAS is available in a broad range of transparent tints to meet varying requirements for solar heat and glare control in dome structures. The color stability and resistance to weathering of PLEXIGLAS has been established through more than 20 years of exterior use.

For more information write for our brochure, "Natural Light Through Domes and Arches of PLEXIGLAS"

®Trademark Reg. U.S. Pat. Off., Canada and principal Western Hemisphere countries. Sold as OROGLAS® *in other countries.*

ROHM AND HAAS
PHILADELPHIA, PENNSYLVANIA 19105

For more data, circle 83 on inquiry card



This new rebar support is made of stainless steel!

(Can't stain concrete. Eliminates plastic spalling.)

It's stronger than other supports

(Holds a greater load without spreading or dropping.)

It's priced low!

(Your total cost will usually be less than plastic-coated supports — on the average job.)

It's just one of the new Sure-Grip stainless steel concrete reinforcing supports that eliminates rust stains and plastic spalling on exposed concrete surfaces. Does away with troublesome plastic coatings that often pull off, crack or become soft.

The combination of stainless steel and the new design of the legs makes these supports stronger than others. They're less likely to spread and drop if overloaded. Keep your reinforcing in proper position.

These new supports don't cost any more than plastic-coated types, usually less; and, they're easier and more economical to place on the job.

Sure, we still make other rebar supports from different materials and with plastic coating, but architects and contractors have asked us for stainless steel supports where non-staining qualities are required. Now you can get them from us . . . exclusively.

DSG ENGINEERED QUALITY

Write for free sample, literature, Pittsburgh Testing Laboratory report, prices and name of your local Sure-Grip distributor. See our complete catalog in Sweet's.

THE DAYTON SURE-GRIP & SHORE COMPANY

Main Office & Factory—721 Richard St., Miamisburg, Ohio
Southern Office & Factory—1400 5th Ave., South, Birmingham, Ala.
Western Franchise Mfr.—Euclid Metal Products Co., 2349 Jefferson Street, Torrance, California

For more data, circle 84 on inquiry card

ON THE CALENDAR

JUNE

19-24 16th Annual International Design Conference—Aspen, Colo.

20-24 Polymer Conference Series, "Use of Plastics in Building and Construction" —Wayne State University College of Engineering, Detroit.

26 Annual Convention, American Institute of Architects—Hilton Hotel, Denver; through July 1.

26 69th Annual Meeting and 17th Materials Testing Exhibit, American Society for Testing and Materials—Chalfonte-Haddon Hall, Atlantic City, N. J.

29 1966 Convention, National Council of Instructors of Landscape Architecture —University of Wisconsin, Madison; through July 2.

JULY

4-15 Annual International Seminar on Ekistics and The Future of Human Settlements—Athens Center of Ekistics.

5-9 Secondary School Planning Institute, School Planning Laboratories—Stanford University, Stanford, Calif.

6-9 Annual Meeting, National Society of Professional Engineers—Capp Towers Motor Hotel, Minneapolis.

20-22 Second Annual National School Facilities Conference on high schools, colleges, universities—University of Omaha, Neb.

OFFICE NOTES

OFFICES OPENED

Dale A. Blosser, A.I.A. has opened **Dale Blosser & Associates** to furnish professional services in architectural supervision, Box 10547, Raleigh, N. C.

Robert K. Grubb Architect A.I.A. has opened an office to offer service in general architecture, interior design and planning, 960 N. San Antonio Road, Los Altos, Calif.

NEW FIRMS, FIRM CHANGES

The architectural firm of **Beatson-Stevens-Associates** is no longer in operation. **D. S. Stevens** has opened a new firm, **D. S. Stevens & Partners,** 1134 8th Ave. S.W. Calgary, Alberta, Canada.

Benham-Blair-Botich-Poppino of Anaheim, Calif. has been established in

continued on page 278







Bell Telephone Laboratories, Holmdel, New Jersey. Plant Design and Construction: Western Electric Co., Inc. Architect: Eero Saarinen and Associates.

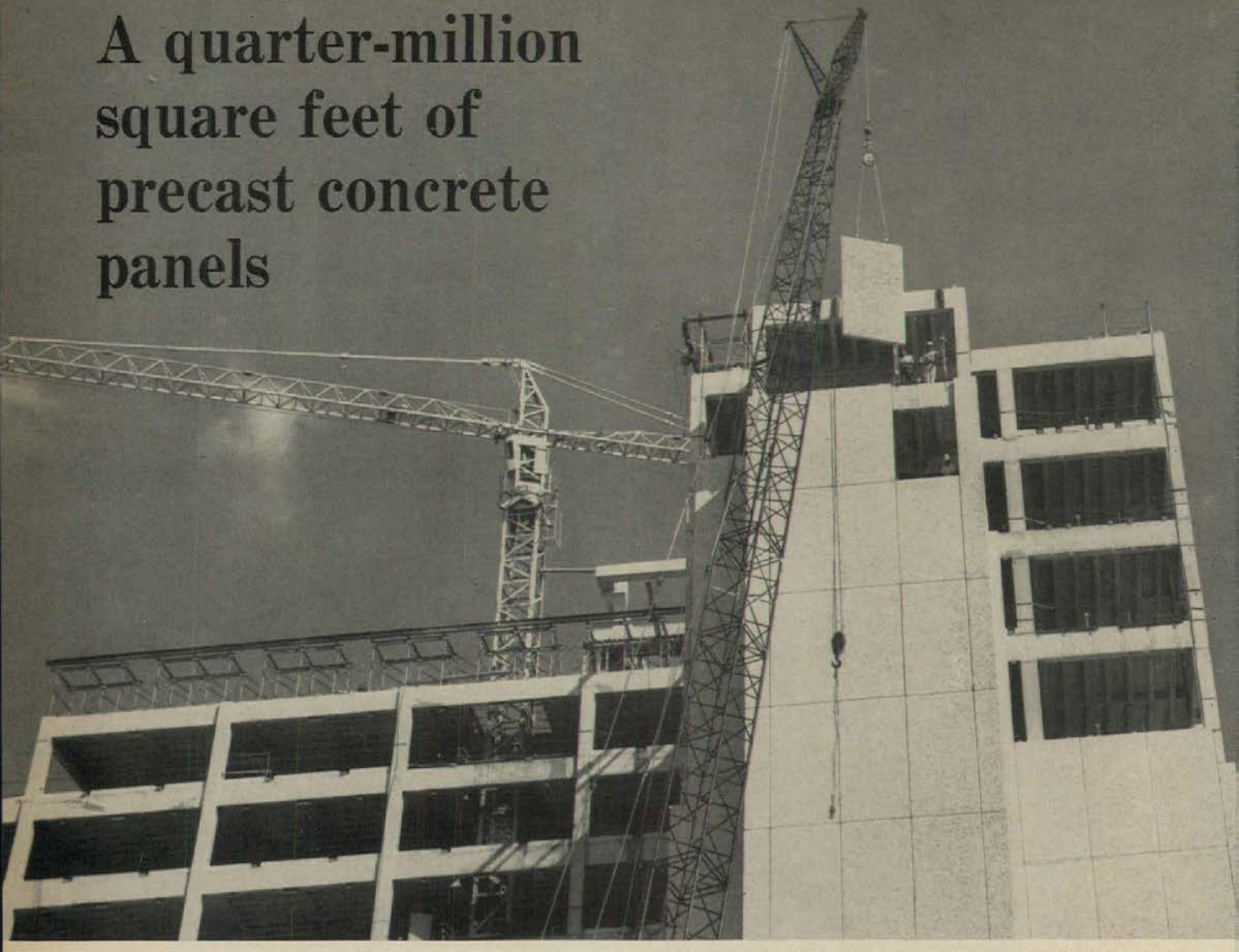
mirror, mirror, on the wall...

How better can a structure harmonize with its environment than by reflecting that environment from its walls — changing with it hour by hour, season by season — yet preserving the purity of the architect's original design. Kinney architectural glass is precision vacuum coated with a metallic film. From the interior, one sees an unobstructed view through its transparency. From the exterior, a gold or silver mirror reflects the surroundings concealing the full range of interior activities. And it's as practical as it is beautiful. This glass rejects up to seventy percent of the solar heat!

KINNEY VACUUM COATING DEPT.
Kinney Vacuum Division
The New York Air Brake Company
7030 Colonial Highway
(Airport Industrial Park)
Pennsauken, New Jersey 08109
Tel. 609-665-9364

For more data, circle 85 on inquiry card

A quarter-million square feet of precast concrete panels



Architects—Engineers: Smith, Korach & Arnold, Miami, Fla., **General Contractor:** J. W. Bateson Co., Inc., Dallas, Texas, who used concrete made with Lehigh Portland Cement. **Mason Contractor:** Cook & Pruitt Masonry Contractors, Inc., Miami, Fla., who used Lehigh Mortar Cement throughout. **Precast Concrete:** Pre-Cast Industries, Inc., Miami, Fla., who used Lehigh Early Strength Cement in the manufacture of wall panels.

. . . enclosed this 12-story Veterans Hospital

This new veterans' facility in Miami is built almost entirely of concrete. Its reinforced concrete frame is covered with precast exposed aggregate panels. Interior partition walls are concrete masonry. Even the utilities atop the structure are screened with precast concrete grilles.

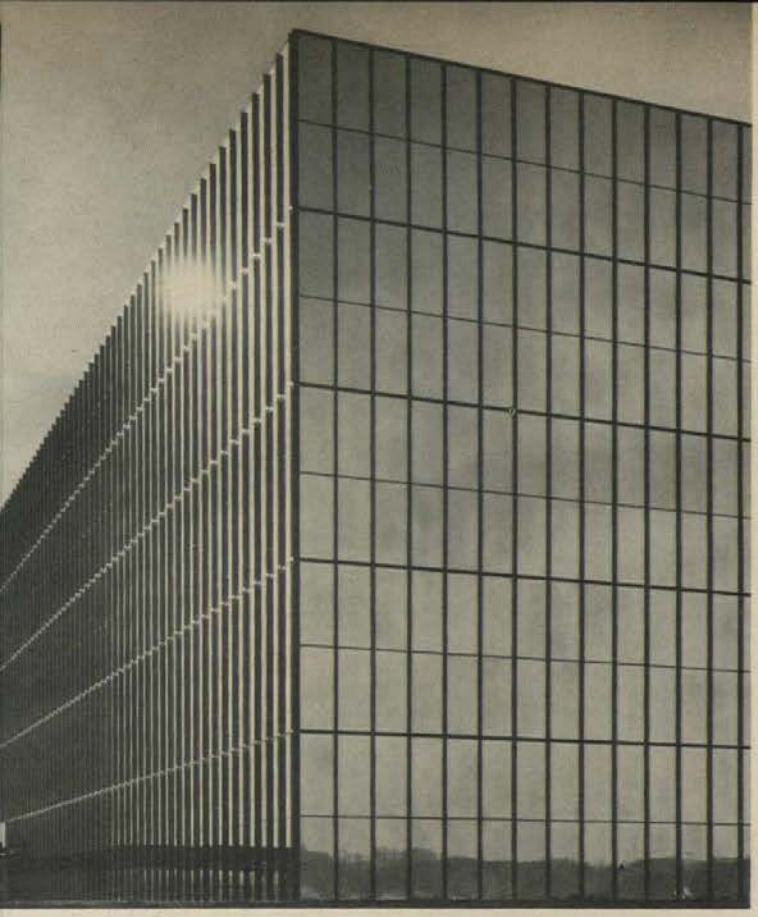
Lehigh Early Strength Cement benefits the entire construction team. Lehigh Early Strength Cement was used by Pre-Cast Industries, Inc. in the manufacture of the precast panels. Here as in almost any precast work, this cement benefits precaster, erector, and architect alike. Quicker reuse of forms. Earlier delivery units. Orderly, on-time construction scheduling.

LEHIGH PORTLAND CEMENT COMPANY
Allentown, Pa.

LEHIGH CEMENTS

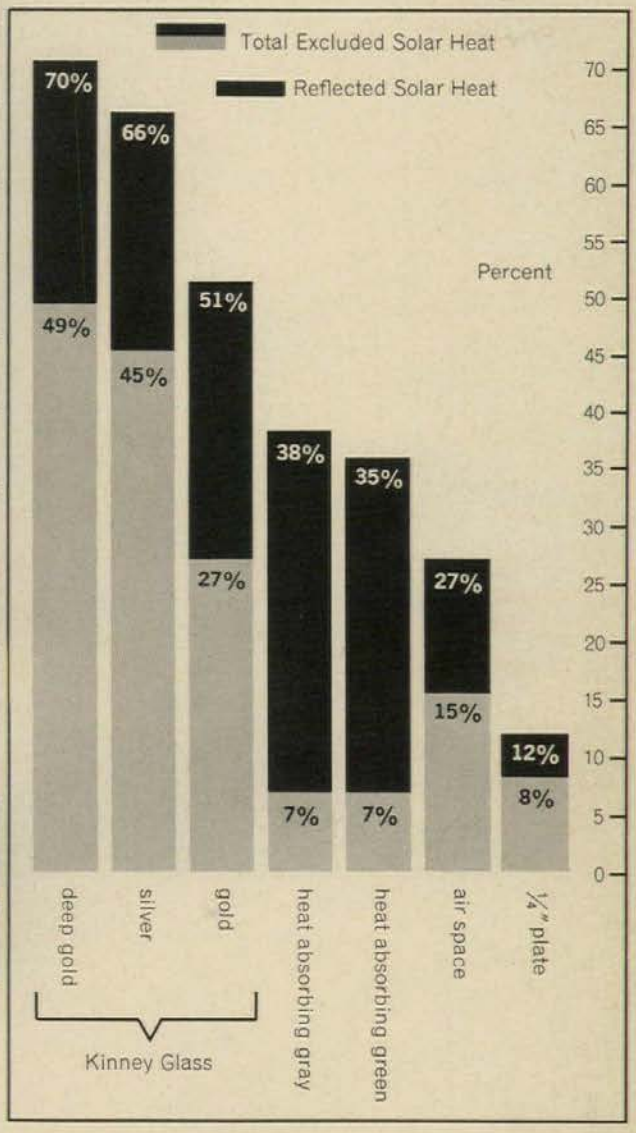


Veterans Administration Hospital
Miami, Florida





Bell Telephone Laboratories, Holmdel, New Jersey.
Plant Design and Construction: Western Electric Co., Inc.
Architect: Eero Saarinen and Associates.



...who's the fairest of them all

Kinney architectural glass reflects — not absorbs. Up to seventy percent of the solar heat striking the surface is rejected. This fact alone will affect your air conditioning design requirements, reducing installation, maintenance and operating costs and minimizing the need for exterior or interior shading. Full utilization of interior floor space is possible because peripheral areas are usable in full sunlight and furnishings can not be seen from the outside. Available in silver, gold and deep gold. Kinney glass has been extensively tested and the comparisons shown above are confirmed by five years of prominent installations. Kinney glass is manufactured in ¼", ⅜" and ½" thicknesses, 60" x 96" maximum size, in laminated safety glass.

KINNEY VACUUM COATING DEPT.
Kinney Vacuum Division
The New York Air Brake Company
7030 Colonial Highway
(Airport Industrial Park)
Pennsauken, New Jersey 08109
Tel. 609-665-9364

For more data, circle 85 on inquiry card



Geigy Pharmaceuticals selected as one of the Ten Top Plants of 1966 by FACTORY magazine.

What's behind the 17 separate climate control units at Geigy?

Gas and Carrier air conditioning

Temperature-humidity control for the new Geigy Pharmaceuticals plant in Suffern, N. Y. was a complex problem. Variance in the production areas couldn't be more than ±1° of temperature or ±5% humidity. What's more, comfort in the office areas also had to be considered.

The solution was a Gas-powered Carrier air conditioning system. One that employs no less than 17 separate air handling units for the 180,000 sq. ft. of plant. Each is tailored to the special needs of an area. Three reasons for the choice: First, Gas gives the lowest long-term operating cost. Second, Gas boiler capacity can be utilized year-round. Finally, Carrier absorption cooling equipment has no major moving parts, needs little upkeep.

Learn more about Carrier and Gas, its precision and economy. Call your local Gas Company Sales Engineer. Or write: Carrier Air Conditioning Company, Syracuse, N.Y. 13201.

AMERICAN GAS ASSOCIATION, INC.

For cooling and heating... Gas makes the big difference

Architect: Martin Burckhardt, Basel, Switzerland
Consulting Engineer: Walter P. Bluntschli, Summit, N. J.
General Contractor: John W. Ryan Construction Co., Inc., New York, N.Y.
Mechanical Contractor: Wolff & Munier, Inc., New York, N.Y.
Construction: Supervised by architects and engineers of Lockwood Greene Engineers, Inc., New York, N.Y.

For more data, circle 87 on inquiry card

ARCHITECTURAL RECORD
JUNE 1966

Distinguished Interior Architecture For CBS

Florence Knoll Bassett's recently completed interiors for the late Eero Saarinen's CBS building in New York City are marvels of coordination and attention to detail. They are also works of art.

The colors used in an individual reception area provide the key to the color scheme for the entire floor. *Robert Damora*



Scott Hyde



CBS employees now work in a serene environment in which paintings and vases of flowers accent subtly controlled spaces in which all clutter has been carefully tucked away. Television sets, high fidelity equipment and the speakers and control panels which go with them, as well as telephones, switchboards and other electronic paraphernalia, have disappeared into custom-made desks and cabinets or have been unobtrusively placed in the walls. Florence Knoll Bassett is a master of such sleight of hand. She designed the furniture in which some of the miscellany of office life is concealed, and collaborated with interior architects Carson, Lundin and Shaw in the detailing required to make the rest of it invisible.

The basic interior planning, partition design and coordination of mechanical and electrical services within the five-foot building module was done by Carson, Lundin and Shaw (July 1965, pages 111-118). Florence Knoll Bassett's contribution began with the planning of space within the individual offices and included the selection of furniture, fabrics and color schemes as well as paintings, sculpture and other decorative objects. "My real job was the proper assembly of everything."

The proper assembly of everything is governed by the disciplines of architecture. Many architects would agree, however, that often the promise held forth by a well sited, handsome building is left unfulfilled for anyone bold enough to cross the threshold and take a look inside.

Good buildings often have bad interiors

Even in building interiors that are completely under the control of highly competent architects, one finds gloomy public spaces that combine a low light level with dark woods and exposed concrete of a deep grey; private work spaces too brightly lit and glaring; offices with skimpy curtains badly hung; large wall areas painted in bold colors which clash; furniture, contemporary and often handsome, but out of scale and poorly arranged; and large plants in pots.

This frequent failure of the good architect to create fine interiors is perplexing when one considers that he is dealing with matters of scale, lighting, color, texture and detail, concerns which he handles with some success in the context of the building as a whole. Interior architecture, while more limited in scope than building design, requires a long apprenticeship and subsequent attention which the architect, who may wish to work upon a broad canvas, will not necessarily give to this branch of his art. Among those who have selected this smaller framework, Mrs. Bassett has a leading place.

The education of a designer

Since persons combining talent, discipline and the capacity for effort don't necessarily achieve works of beauty or elegance, Mrs. Bassett's distinction may be attributed in part to her unusually rewarding architectural training, which began in grade school. She is one of a group of architects, designers, painters, sculptors, ceramicists and weavers, which included the late Eero Saarinen, who received their early education at Cranbrook in Bloomfield Hills, Michigan. Cranbrook, at the time, was staffed by artists assembled by the elder Saarinen, who was president of the Academy. She began architectural drafting in the ninth grade. Orphaned at an early age, the developing artist was encouraged and looked after by faculty members, students at the Academy of Art, and by the Saarinen family including young Eero who was studying architecture at Yale. Later she was to enter the Cranbrook Academy of Art, attend the Architectural Association in London and earn her architectural degree at the Illinois Institute of Technology under Mies van der Rohe. "Mies taught me to think and organize," she believes. She learned the principles of furniture manufacture from her late husband Hans Knoll.

Eero Saarinen, shortly before he died, invited Mrs. Bassett to work with him on the interiors for CBS. It would have been a deeply rooted collaboration.

Mildred F. Schmertz

Scott Hyde



Opposite page left: Main reception area. The receptionist's desk has a crimo marble shelf and floats on a bronze pedestal which conceals elaborate communications wiring. A Vasarelly oil is in the left foreground and a Soulages is in the background. A Somaini sculpture is on the right.

Left: The walls of this executive office have panels covered in bronze velvet. Chairs are olive green and the curtains are of beige natural linen mesh. The painting is by Mario Molli.

Right: Entrance foyer to dining rooms. The painting is by Jean Dubuffet.

Below: Reception area opening into corner executive office. The partition at right is paneled in French walnut. The painting is by Francis Celetano.

Robert Damora



Scott Hyde



Scott Hyde





Robert Damora

Robert Damora







Scott Hyde photos





Above left: Small executive dining room on the north corridor. The shelf and table top are crimo marble. The bright green carpet acts as a foil for the royal blue velvet chairs which were designed by Saarinen. The panels are white lacquer with gold leaf edging. The collage is by Mon Levinson.

Above: Employee cafeteria. The mural was created by artists and craftsmen in the CBS design department under the direction of graphic artist Lou Dorfsman. Incorporated in it are objects, words and scenes having to do with food. The chairs have walnut frames, and the white plastic table tops are edged in walnut to harmonize with the walnut-paneled core in the cafeteria.

Left: Division president's office. The round wood table desk is favored by many executives. The desk chair is by Don Pettit; the other chairs and the glass table are by Mies van der Rohe. Upholstered pieces and table-desk are by Florence Knoll Bassett.



Right: Four details which show built-in files and storage cabinets; a reception area desk with built-in communications panel; a corner detail of an executive office showing ventilating slot at the juncture of walls and ceiling; and a special installation of small TV sets.



Scott Hyde photos

Left: Four details which show a special door jamb light switch; carefully hidden telephones and control panels; and the receptionist's desk floating on its bronze pedestal. The painting in the top photograph is by Larry Poons.

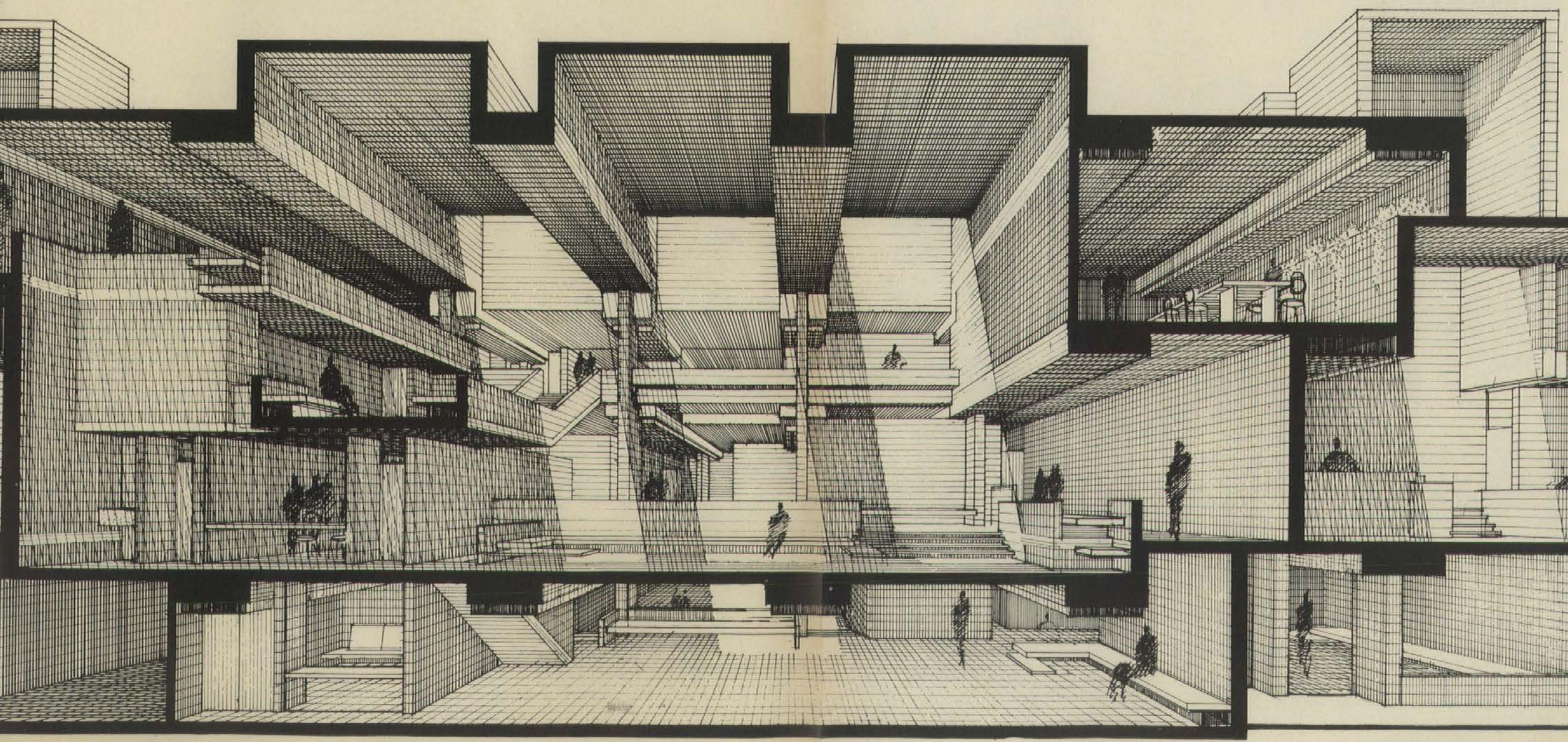


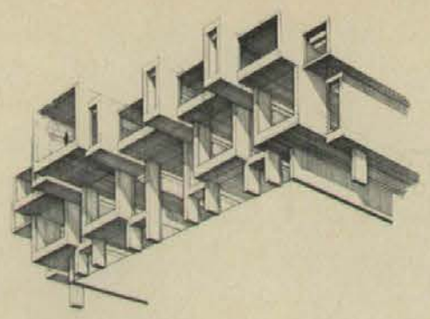


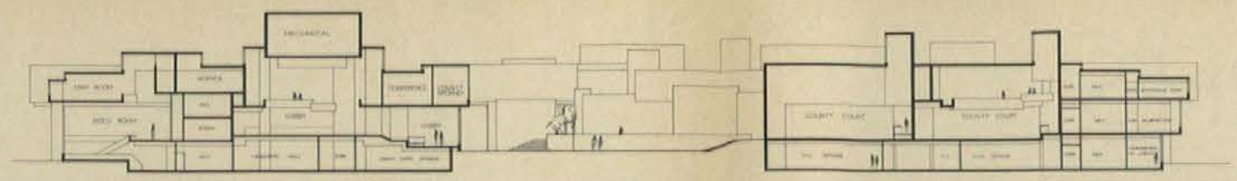


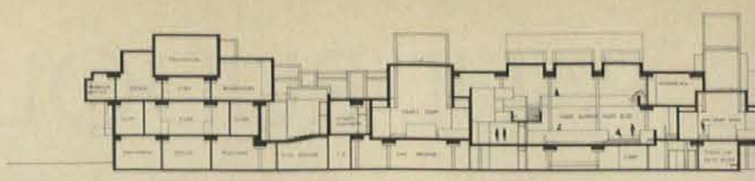
PAUL RUDOLPH'S ELABORATED SPACES: SIX NEW PROJECTS

Note: the drawings were done by many different people under Rudolph's supervision. Peter Hoppner was his major assistant in their preparation.









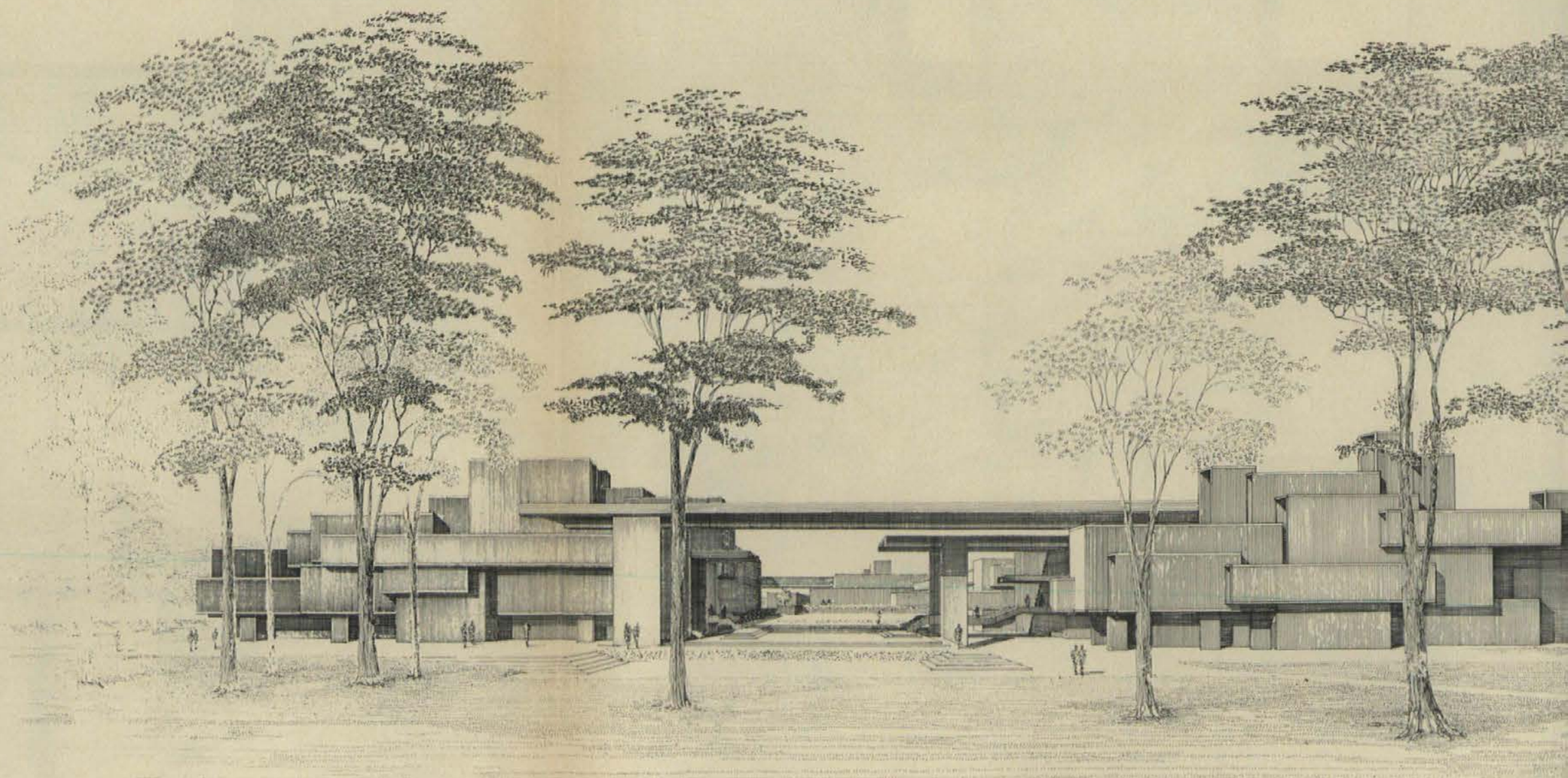
ORANGE COUNTY OFFICE BUILDING AND COURTHOUSE GOSHEN, N.Y.

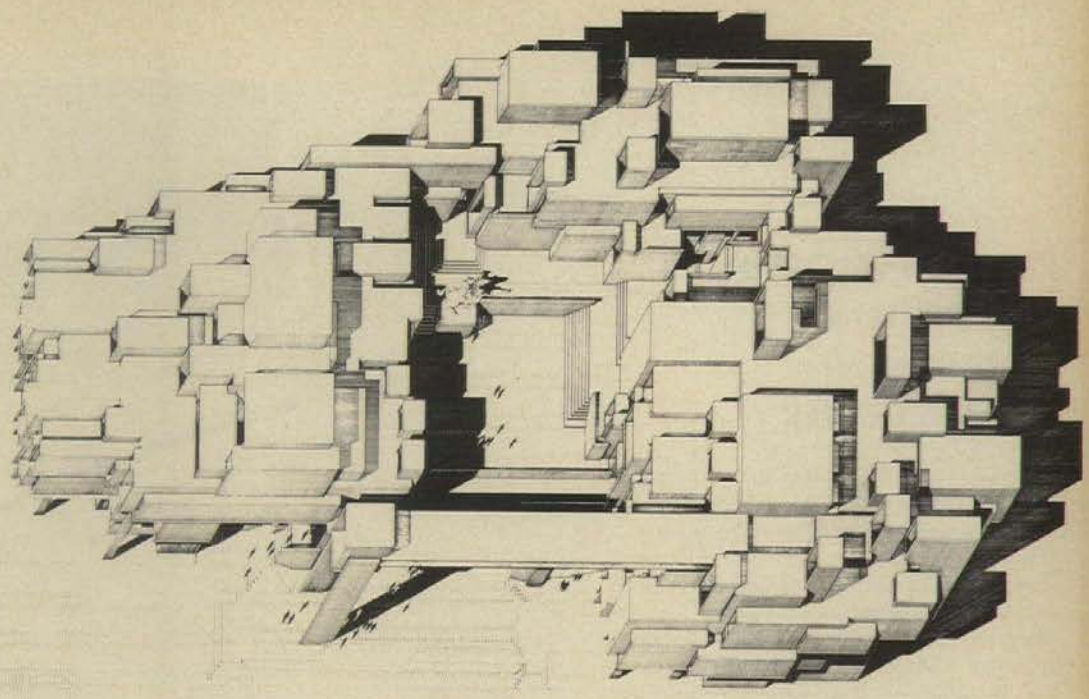
Paul Rudolph considers this building his most important current project in terms of the development of his design ideas. "I am working with Mies van der Rohe's concept of implied space." For Mies the implied space is beyond the free-standing interior wall which helps define areas within a single open volume. In Miesian buildings, sound as well as space flows over and around the interior wall. This office building and courthouse is composed of a great many closed volumes in which transmission of sound is blocked. As the section on the preceding page shows, in each space Rudolph has attempted to define the adjacent areas in such a way that their volumes are implied.

Each volume, as the plans indicate, has its own principal axis which meets the principal axes of adjoining spaces at a 90-degree angle. Most of the volumes are defined by two continuous solid walls on either side of the major axis, with a wall of glass and a wall of entry or storage on opposite sides of the minor axis. Sizes of the volumes were determined by the various room functions which will not change. Flexible partitioning would have required a different solution.

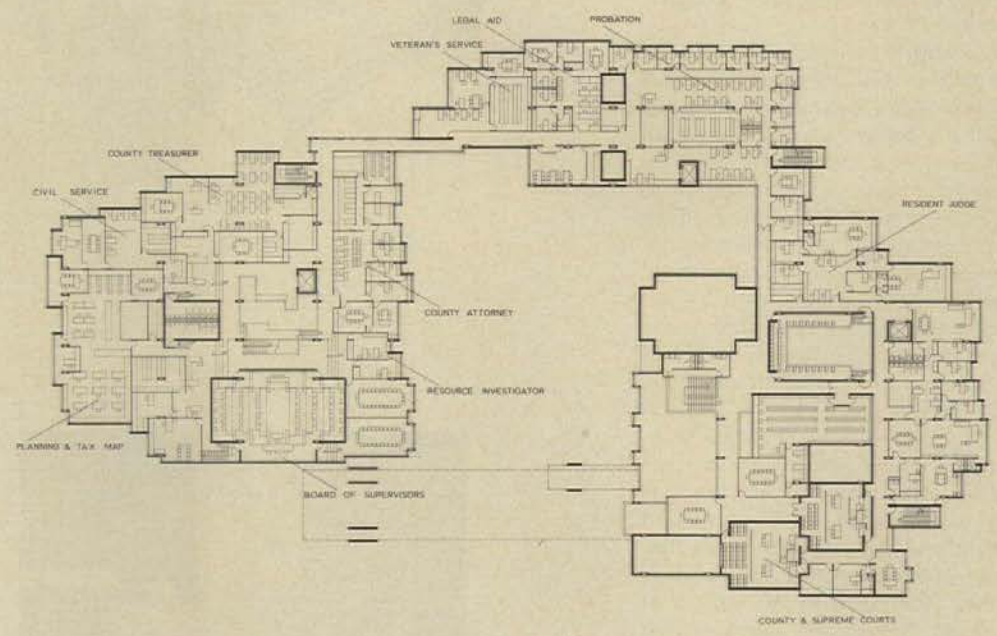
The plans, sections and isometrics reveal a building of spatial complexity, assembled within a structural and mechanical framework of simplicity. The column spacing is regular and both the air-conditioning ducts and light fixtures are in the structural module, tucked under the beams. Concrete slabs frame the short spans which will be free of the clutter of mechanical equipment. Great clerestories carefully oriented to the south or north provide natural light for interior spaces. From the exterior one is able to sense the forms of the rooms within. Its many-faceted aspect breaks down the scale and brings the immense building into a better relationship with the smaller structures which surround it.

Architects: *Paul Rudolph* and *Peter Barbone;* structural engineers: *Lev Zetlin & Associates;* mechanical engineers: *Caretsky & Associates.*

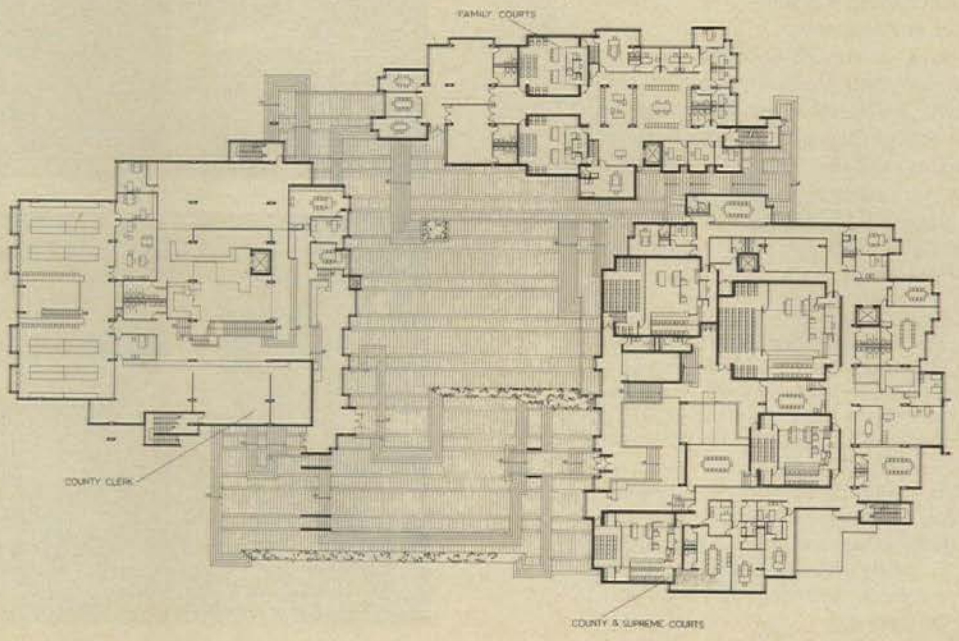




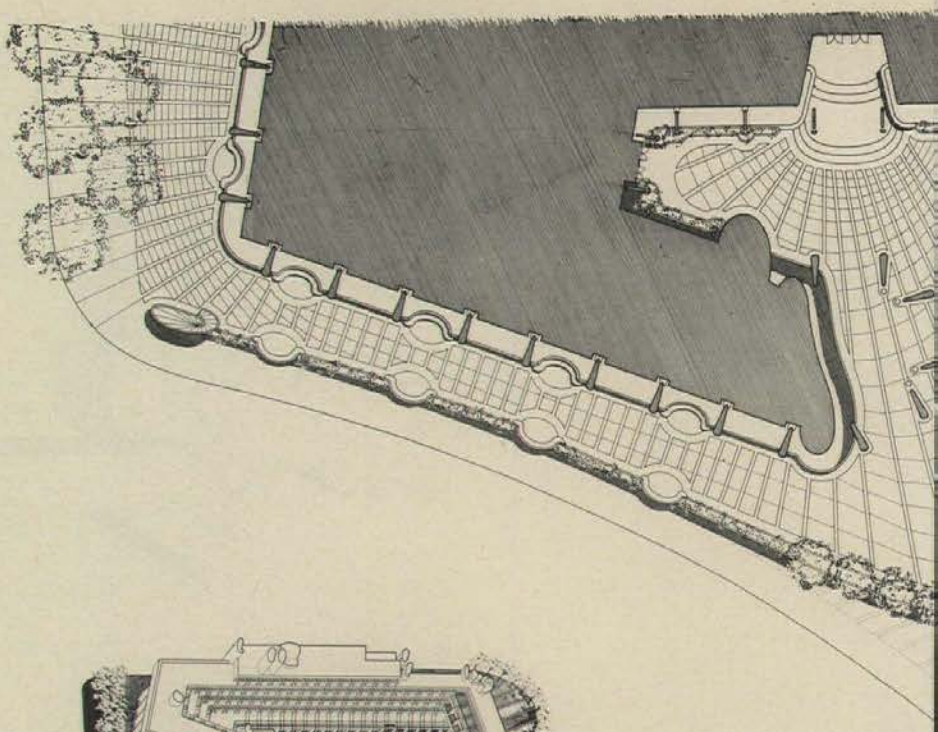


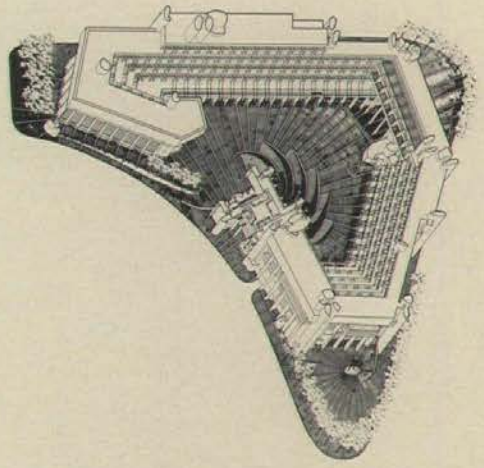

LEGAL AID
PROBATION
VETERAN'S SERVICE
COUNTY TREASURER
CIVIL SERVICE
RESIDENT JUDGE
COUNTY ATTORNEY
RESOURCE INVESTIGATOR
PLANNING & TAX MAP
BOARD OF SUPERVISORS
COUNTY & SUPREME COURTS




FAMILY COURTS
COUNTY CLERK
COUNTY & SUPREME COURTS

PLAZA DEVELOPMENT FOR BOSTON GOVERNMENT SERVICE CENTER





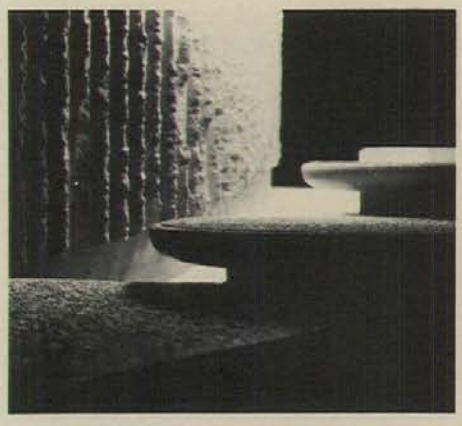
Rudolph, asked if his plaza design signalled a return to the Baroque, rejected such an idea, and asserted that his scheme was a straightforward, functional solution to problems of circulation and drainage, as well as to the requirements of lighting for elements below the surface. The new drawings represent further study of the spaces which are enclosed by and surround Rudolph's scheme for Boston's Government Service Center, shown on this page in an earlier drawing and in the March 1964, RECORD (pages 195-200).

The building's perimeters are surrounded by a continuous well, defined by small curves, which allows natural light to penetrate the floors below, acts as a drainage basin and provides a location for vents for the underground garage. "I am opposed to putting a building on a podium when there are five floors below," says Rudolph.

His plaza will have many places to sit. Along the perimeter are benches of elliptical shape, which, according to their architect, do not suggest a Renaissance garden at all. "The benches are curved for sociability . . . they are my social statement." The curving stairs "are not just steps, they are seats. Have you ever noticed that people are just as happy to sit on steps as on benches? The stairs will be used for circulation in the morning and evening but at midday they will be used for resting and enjoying the weather." The curve in the section of the stair tread follows the curve of the echinus of the Doric columns in the Temple of Demeter at Paestum.

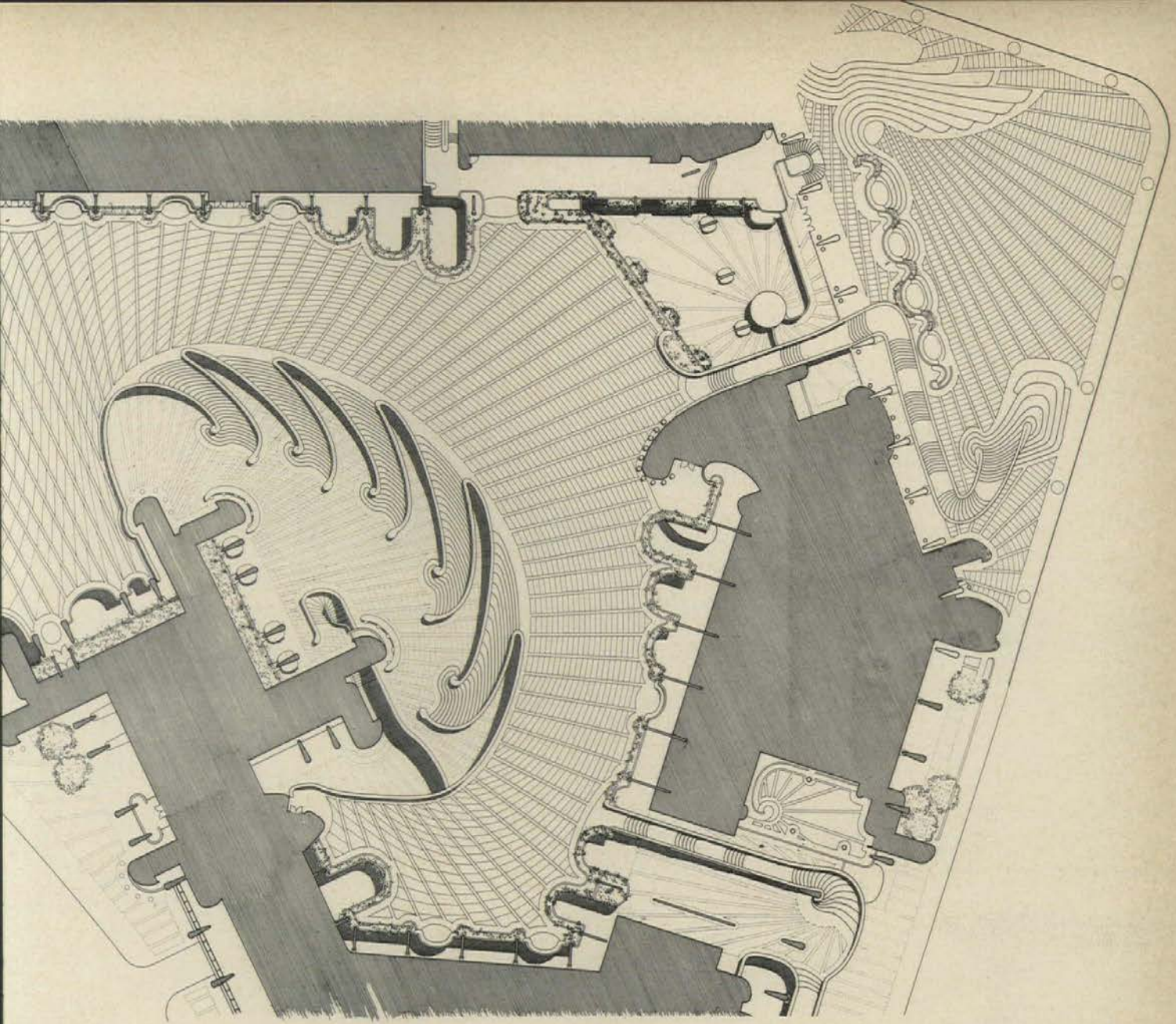
The plaza slopes approximately 2½ feet and water will drain in channels which run between the balustrades and the steps as shown in the photographs of the full-size model. Lights will be inserted under the projecting bannister.

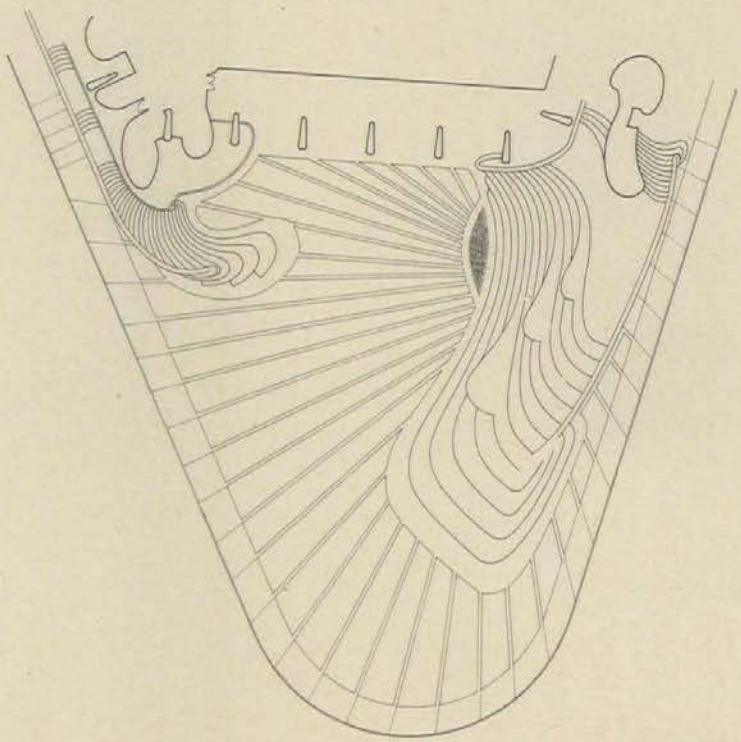
The plaza will be of concrete. The patterns will be formed by three contrasting textures—from rough to smooth.

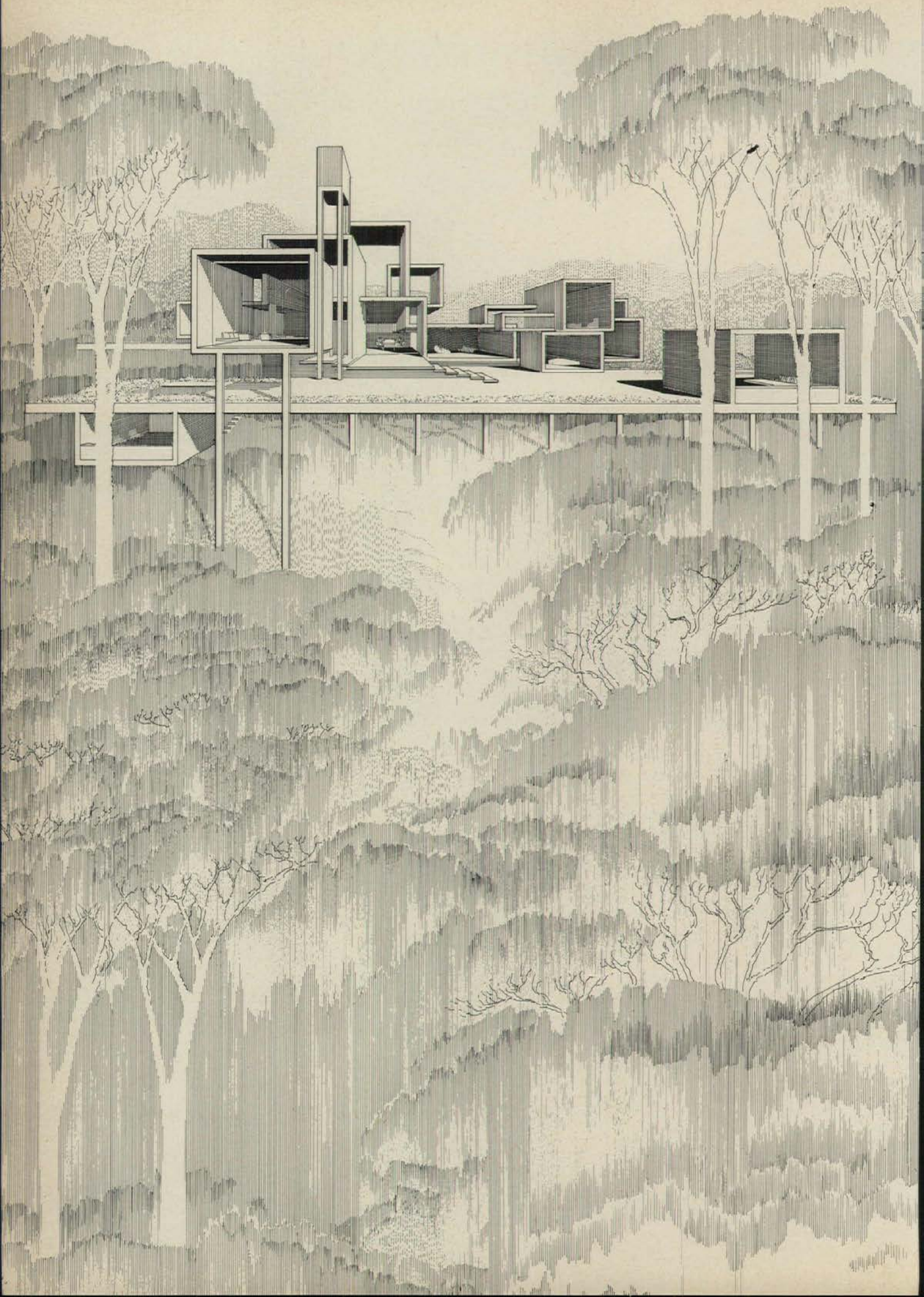


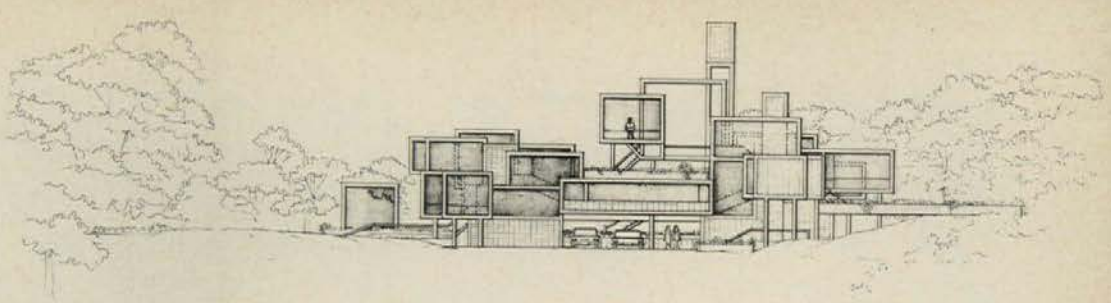


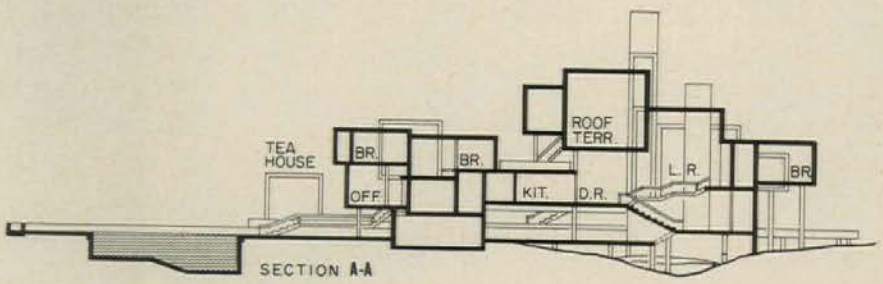
Owner: *Commonwealth of Massachusetts;* coordinating architect: *Paul Rudolph—job captain: William Grindering;* Division of Employment Security Building architects: *Shepley, Bulfinch, Richardson & Abbott.* Mental Health Building architects: *Desmond & Lord;* architectural design: *Paul Rudolph.* Health, Welfare & Education Building architects: *M. A. Dyer* and *Pedersen & Tilney;* architectural design: *Paul Rudolph.* Garage, plaza and landscaping architect: *Paul Rudolph;* structural engineers: *Souza & True;* mechanical and electrical engineers: *Greenleaf Associates.*

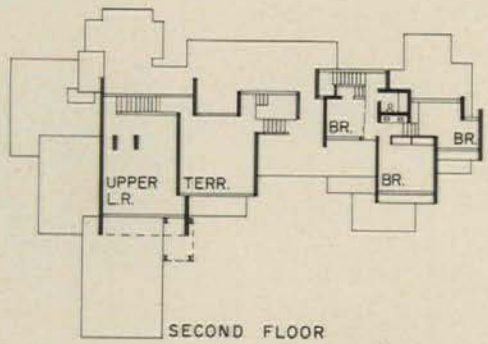












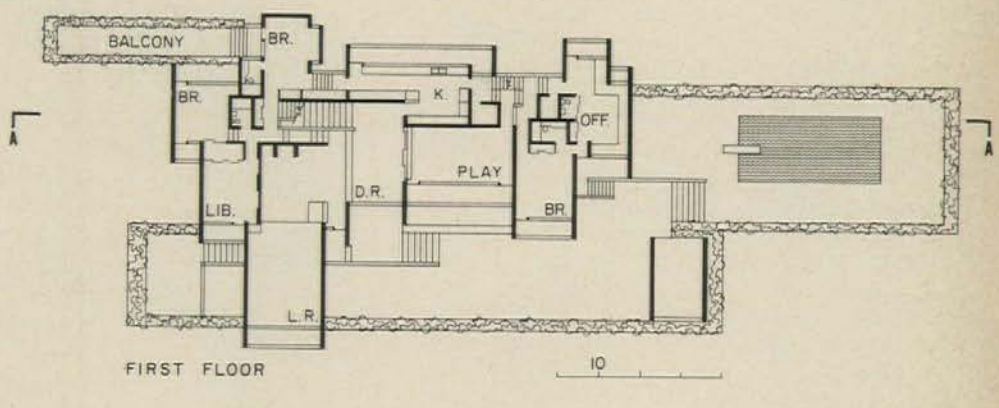
A HOUSE IN THE SOUTH

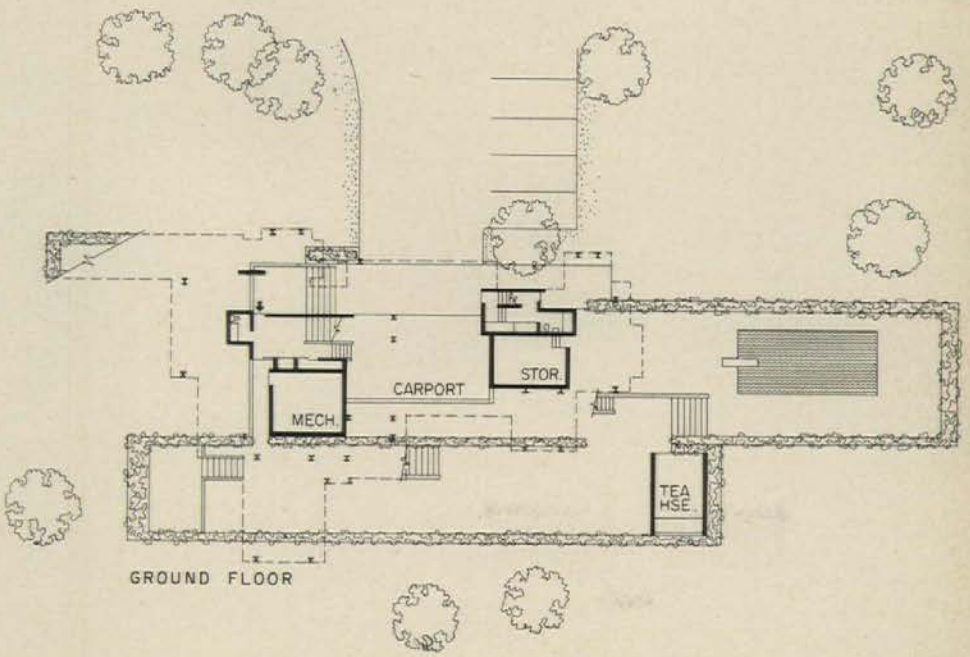
Rudolph calls this house "a living room on a platform." Like the Orange County Office Building and Courthouse, and like its famous prototype, the Milam house, this new project represents a definite effort to assemble volumes in such a manner as to make articulate the implied space beyond. Like the Milam house, but unlike the Orange County structure, the volumes are not organized around a structural system of regular bays. In both houses the interior volumes are expressed clearly on the outside, but in the Milam house they are contained within a simple rectangle, while in this current project the spaces do not resolve to a simple form.

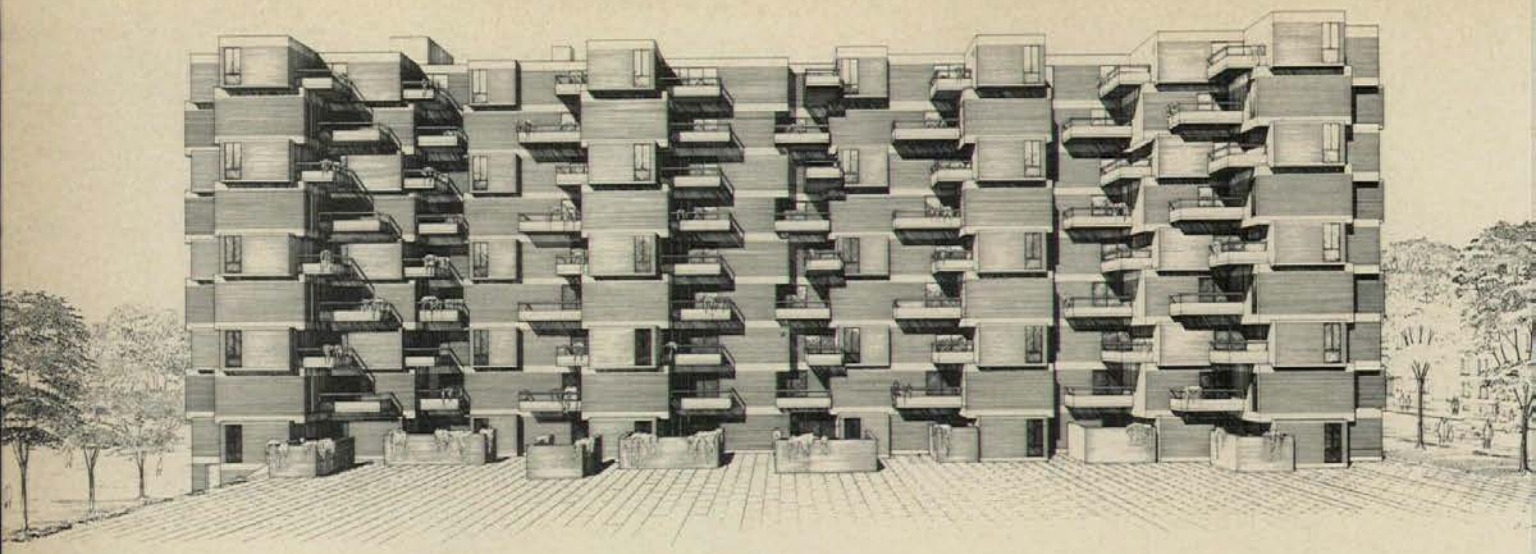
The elements which appear in the perspective at left include a remote terrace for quiet reflection, suspended under the platform; the living room, perched like a tree house on its own long thin supports; the cooling tower; an entrance platform with dining room beyond; and a playroom connecting to the office wing with bedrooms above.

The volume to the far right of the drawing encloses a tea house.

Of the Rudolph projects shown in the issue, only the house will not be built. Asked if the great elaboration of its individual spaces brought the costs out of line, Rudolph stated that such had not been the case for this particular budget. And this led him to assert that the volumetric complication of his work does not add appreciably to its cost. "It is really a shibboleth that all this 'in and out' costs a lot." He implied that this was an excuse made by architects who preferred to make their buildings simple, when they could easily make them complicated and better.





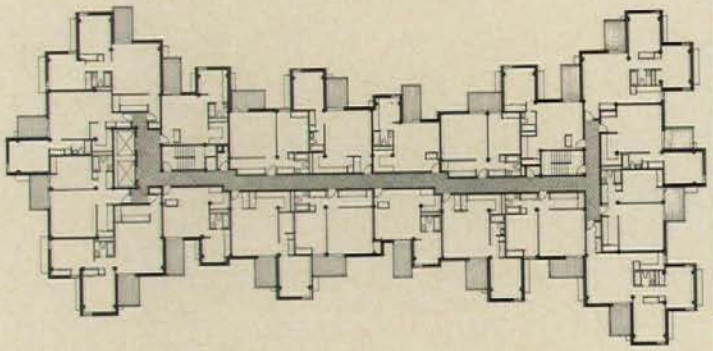


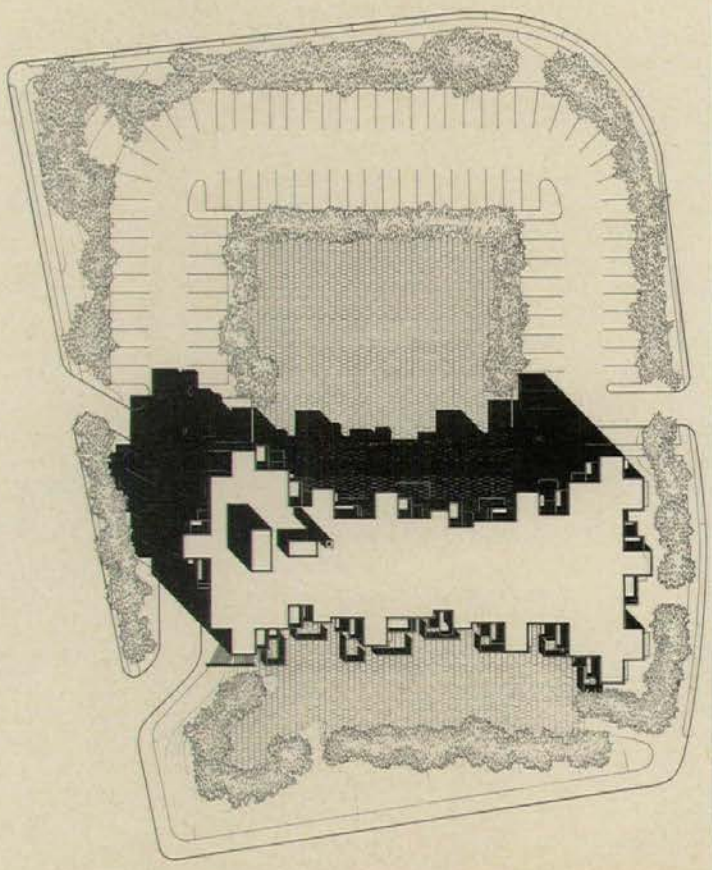
BENEFICENT HOUSE
PROVIDENCE, R. I.

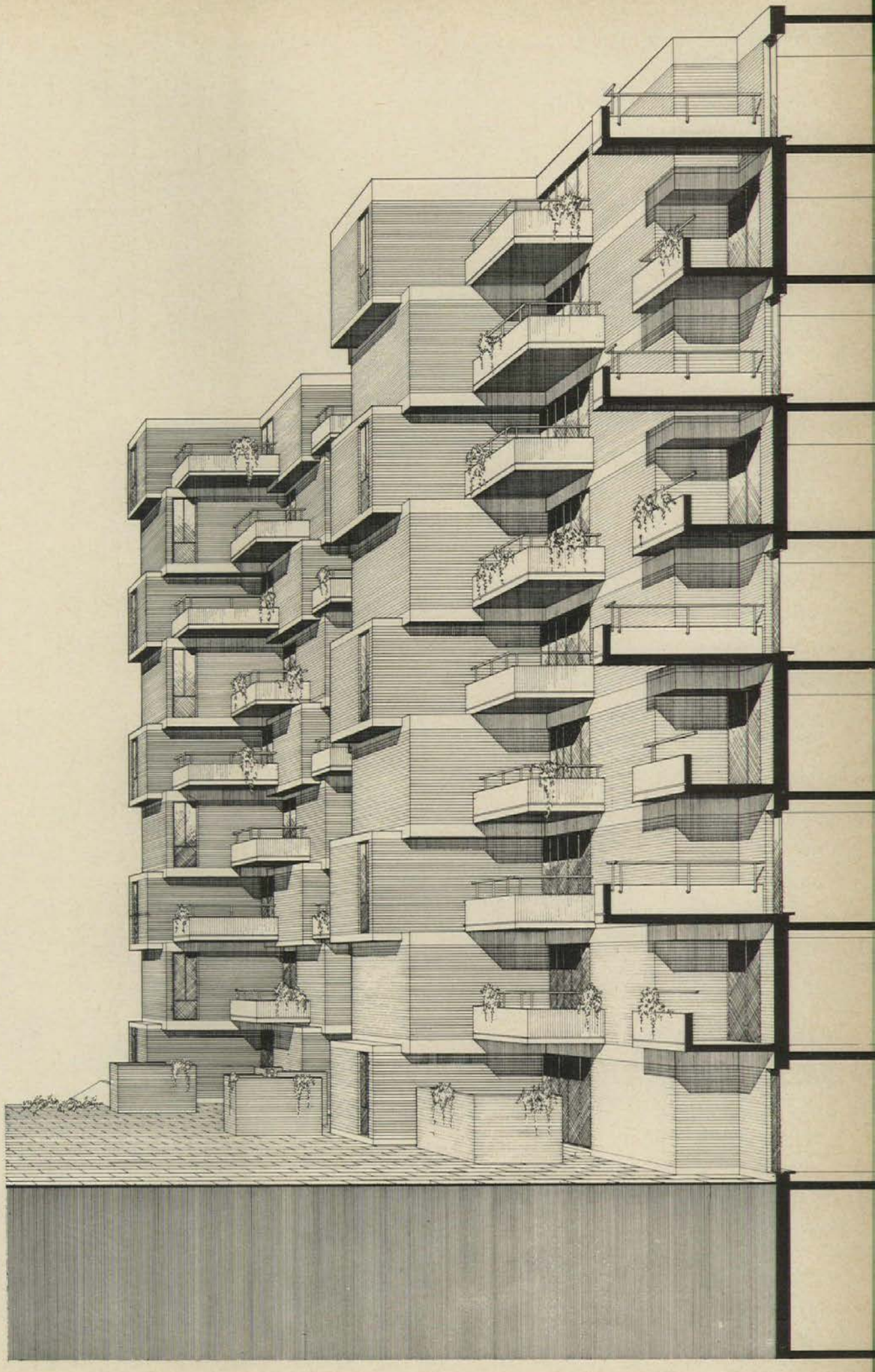
Now under construction, this lowest of low-cost FHA housing is being built as drawn except for the balconies which had to be cut from the budget. "Ninety-eight per cent of my work gets built as drawn," says Rudolph," with all its 'ins and outs.' My plans don't have to be simplified and neither do my sections. The last building I had to drastically simplify after the cost estimates came in was the married student dormitories for Yale [March 1961, pages 142-146]. Since then I have learned how to construct my designs within the budget. I use inexpensive materials, concrete block for an example... but then I *like* concrete block." The plastic quality which Rudolph gets by projecting elements of a surface forward and back is inexpensively achieved, he claims, since it is but a simple matter of extending cantilevers. In this design, apartments are expressed in plan, section and elevation as clusters of rooms, which Rudolph likes to compare to the Ponte Vecchio or to medieval hill towns. He is opposed to ordering his elements to fit a square or rectangular container or package. "Architecture then becomes," says he, "the art of decorating the box," and, he adds, "you can't make cities out of packages."

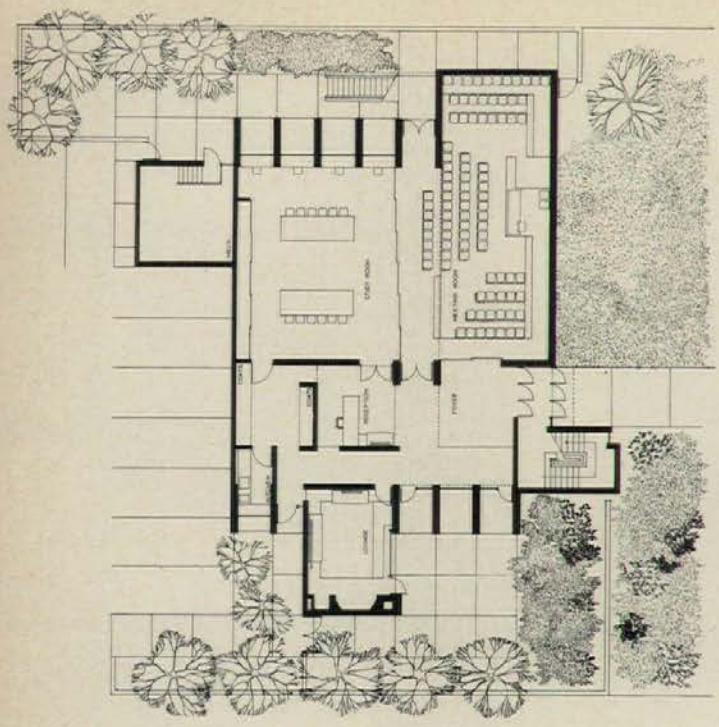
Rudolph does not think that a relatively haphazard articulation of individual room clusters should necessarily lead to visual chaos in part of our urban environment. In the medieval hill town, such clusters were given focus by the church and contained by the town wall. The modern city, he believes, will get its definition from the highways and throughways, some of which should become buildings.

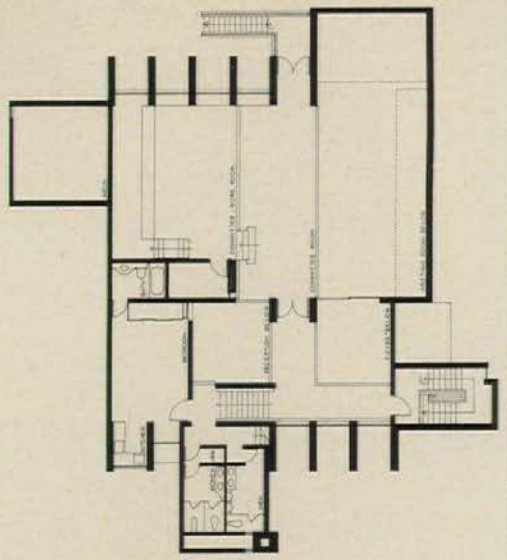
Owner: *The Beneficent Church;* architect: *Paul Rudolph—job captain: Jonathan Hall;* structural engineers: *Spiegel & Zamecnik;* mechanical engineers: *van Zelm Heywood & Shadford;* site engineers: *Chumard & Erikson.*









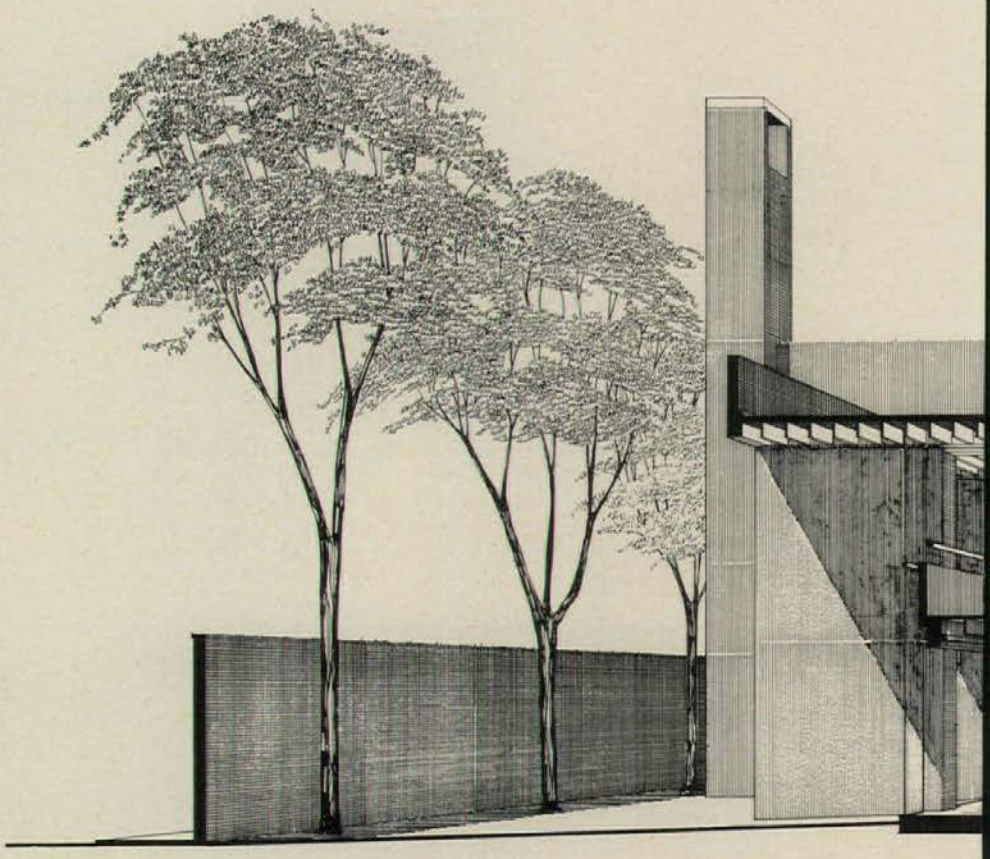


CHRISTIAN SCIENCE BUILDING URBANA, ILLINOIS

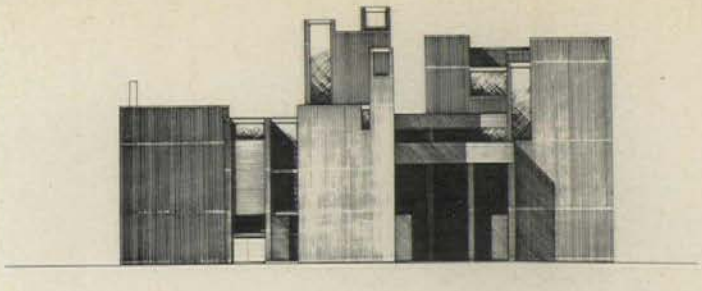
This church, now nearing completion on the campus of the University of Illinois, has been deliberately designed by Rudolph to be without scale on its exterior, so that it will not appear too small in contrast to an immense armory next door. Elements which have a readily identifiable size—such as doors or steps—are deeply recessed. Unit materials of known dimension—brick or concrete block for example—are avoided for exterior walls and paving, and different textures of concrete are used instead. The structural supports for the projecting roof and parapet are heavier, deeper and more tightly spaced than necessary, playing their part in fooling the eye.

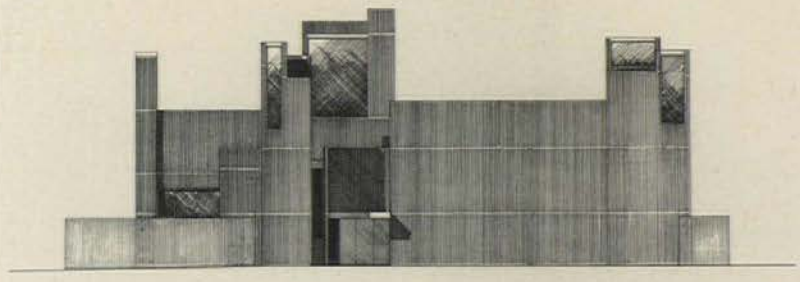
This church is planned for expanded seating in the few days a year when large crowds are expected. At these times the sliding doors which separate the meeting room are thrown open. A balcony platform is located above the study room and reception space.

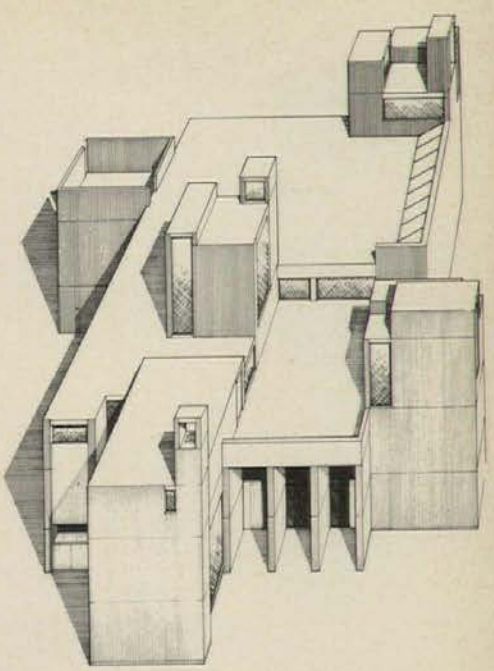
As the isometric and perspective show, careful attention has been paid to the problem of introducing natural light into the interior. The reflecting surfaces of the clerestories have been painted in colors selected to enhance the quality of reflected light. The wooden ceiling is painted in shades of red. The trough attached to the balcony parapet conceals a source of artificial light.

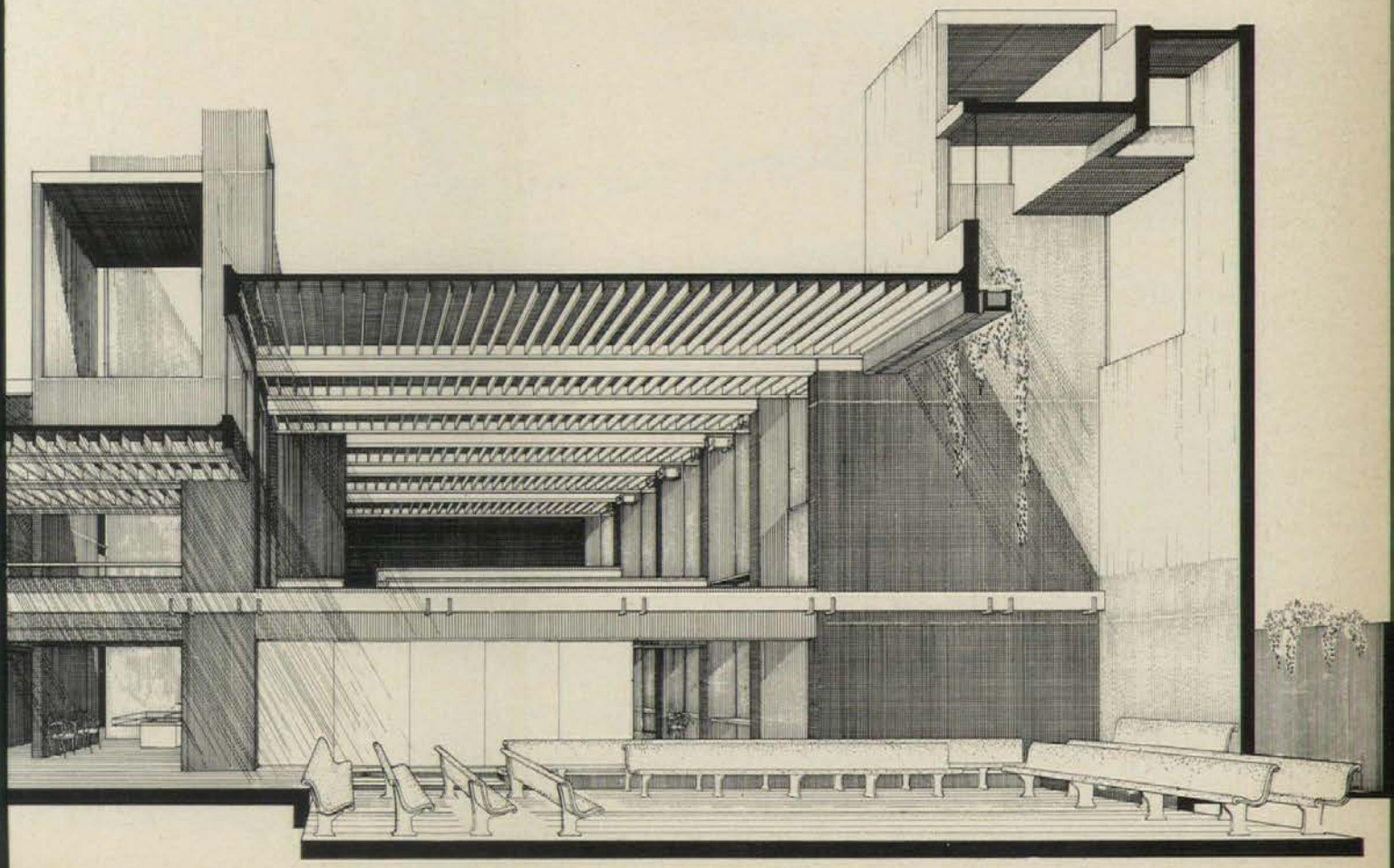


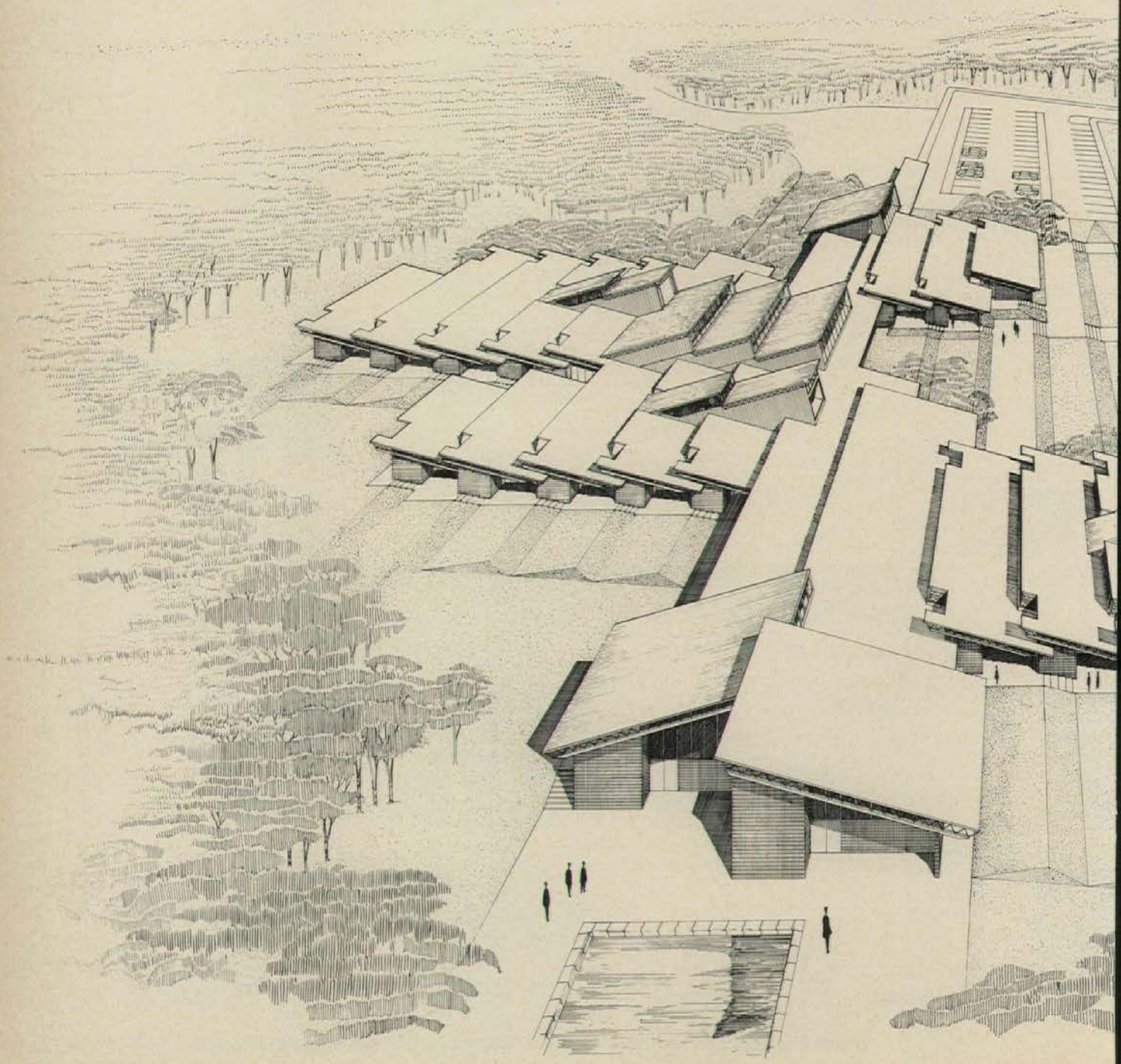
Owner: *Christian Science Organization;* architect: *Paul Rudolph—job captain: John Damico;* structural engineers: *Spiegel & Zamecnik;* engineers: *van Zelm, Heywood & Shadford;* supervising architects: *Smith, Seation & Olach;* contractors: *Felmley-Dickerson Company.*

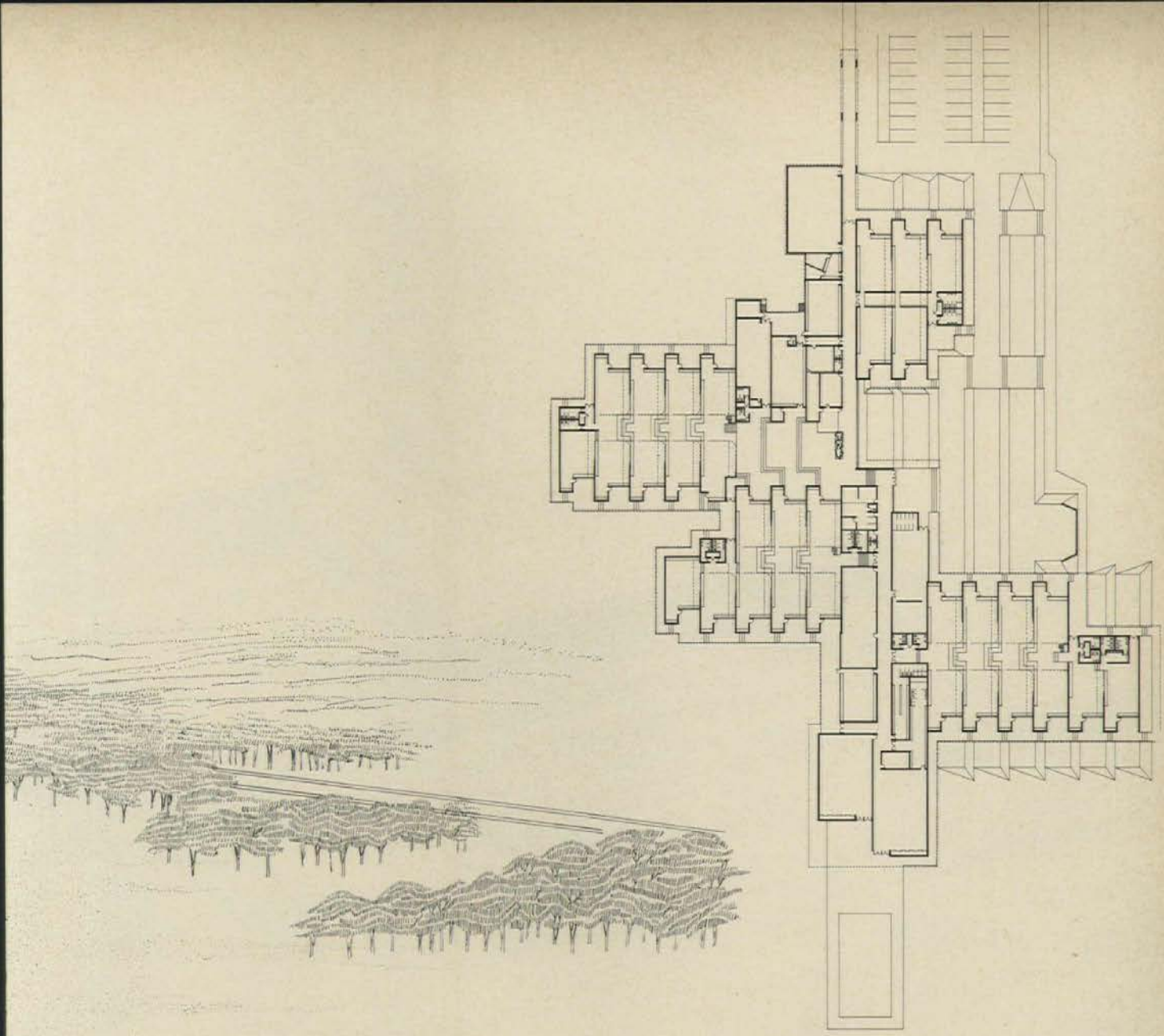


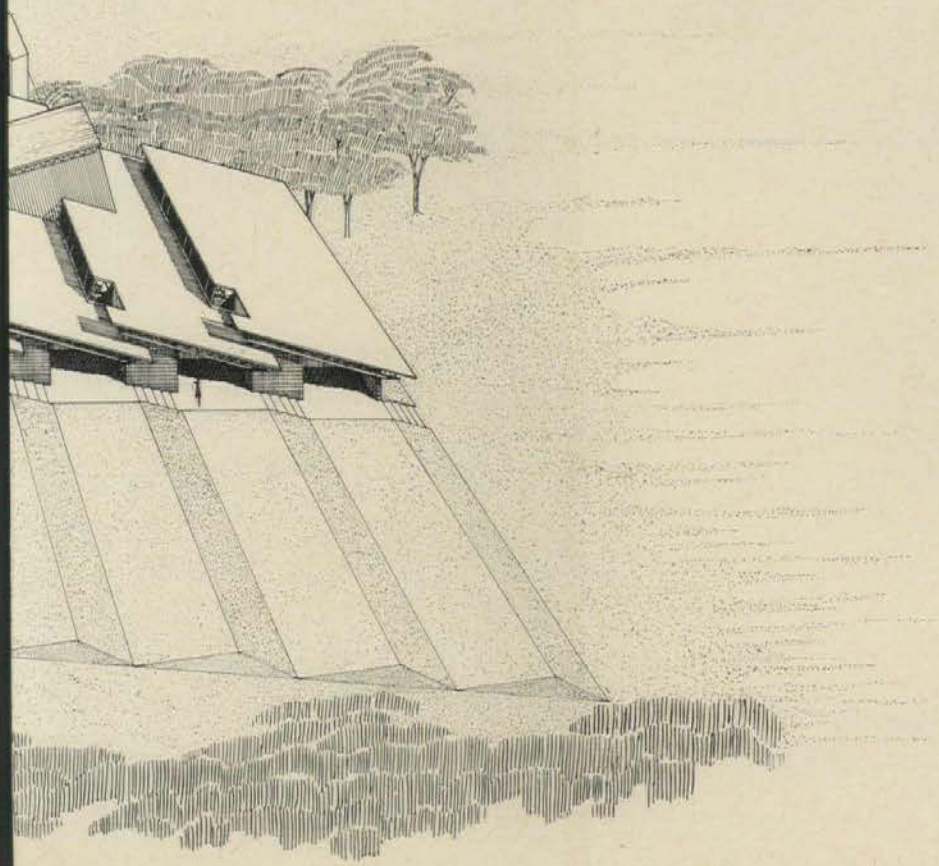












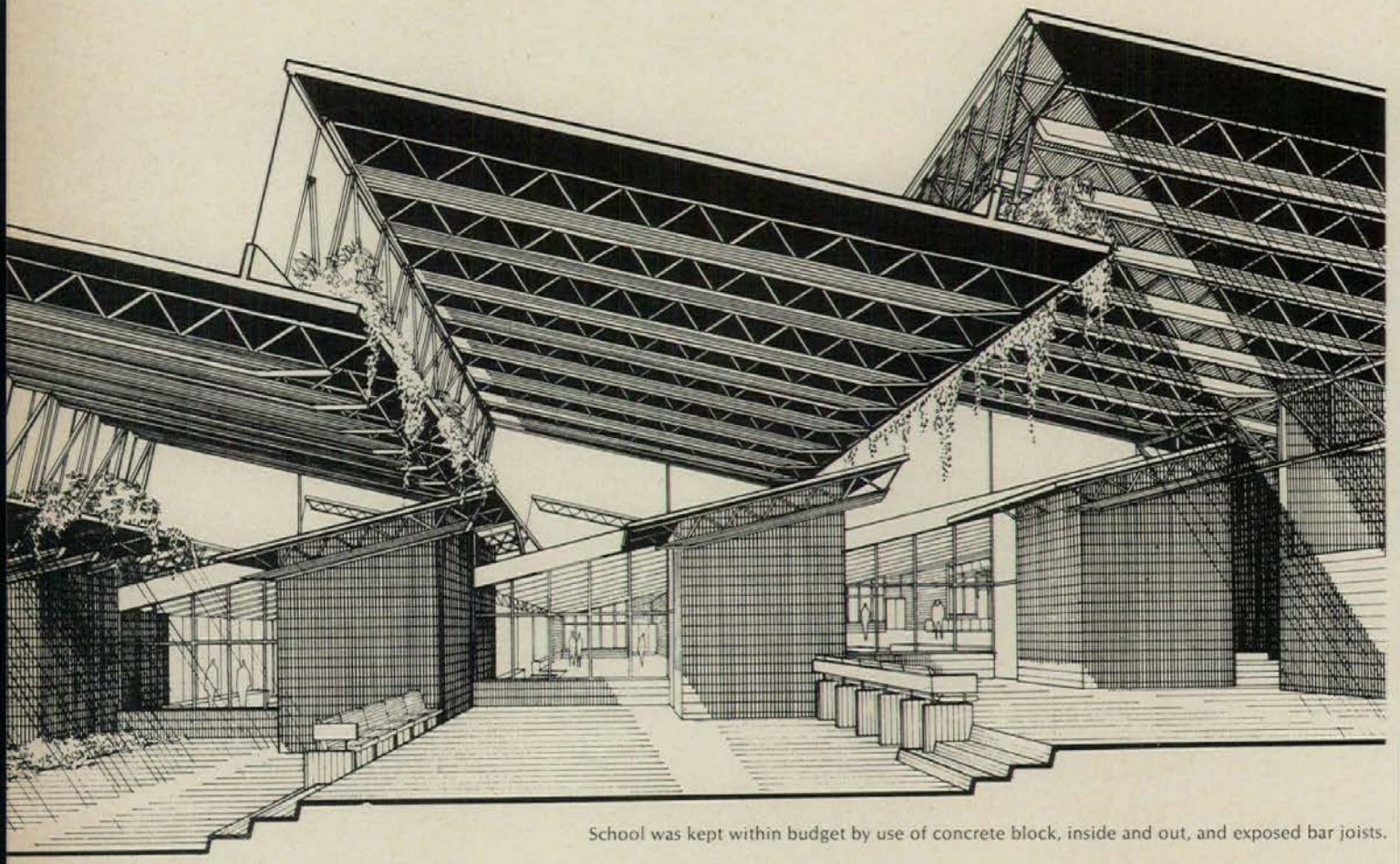
JOHN W. CHORLEY ELEMENTARY SCHOOL MIDDLETOWN, N.Y.

The basic circulation of this school is along the central spine. Each classroom wing can become one big open space or can be partitioned off into a number of spaces of varying sizes and shapes, as the plan indicates. The building consists of a series of pitch-roofed elements which gradually make their way up a gentle slope. Teacher offices are located on the second story under roofs which are pitched in the opposite direction.

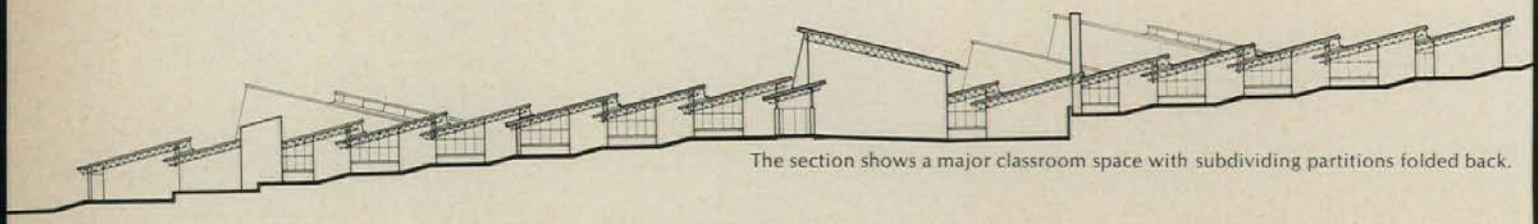
According to Rudolph, breaking the space into so many smaller segments reduces its apparent size, modifies its institutional character and creates a domestic quality. Each roof plane will have a different color when the building is complete.

Classrooms can be entered directly from the outside through doors adjacent to cloak rooms.

Architects: *Paul Rudolph* and *Peter Barbone—job captain: Jonathan Hall;* structural engineers: *Spiegel & Zamecnik;* mechanical engineers: *van Zelm, Heywood & Shadford;* site engineers: *Chumard & Erikson.*



School was kept within budget by use of concrete block, inside and out, and exposed bar joists.



The section shows a major classroom space with subdividing partitions folded back.

NEW LEGISLATION PUTS FRESH IMPETUS BEHIND NURSING HOMES AND HOUSING FOR THE ELDERLY

"On July 1, when the first phase of the Medicare Act becomes effective, 19 million elderly Americans will be able to pick up a telephone and call a doctor without fear that hospitalization may wipe out their savings." Thus novelist Julius Horwitz introduces a May 1 New York Times Magazine article, "The Nursing Home Industry Tools Up." On January 1, 1967, Mr. Horwitz reminds us, the second phase of Medicare —providing 100 days of nursing home care for each illness— will become effective.

No one really knows what the impact on the quantity and quality of facilities for the elderly will be—except that there will surely be one. And although 100 days is only the beginning of the average, long-term nursing home stay by today's standards, the effect of the new act is sure to strain the capacity of the 565,000 beds in the nation's 13,500 "skilled homes"—those which offer 24-hour nursing care. There are, after all, more than 10-million Americans over 70 years old.

One theory that seems reasonable is that the 100-day provision of Medicare will change the nature of the typical nursing home population from almost 100 per cent long-term terminal care to a somewhat younger average of patients with a higher potential for rehabilitation.

This social legislation means new work for architects

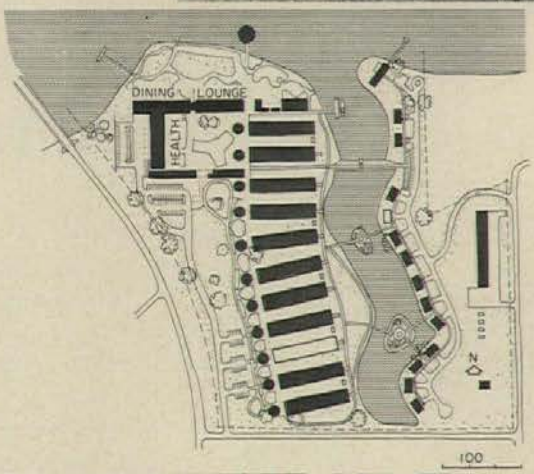
Clients who will be clamoring for nursing home designs are likely to be hospital-affiliated, non-profit sponsors. There will, of course, be much private enterprise at work, as there is already, but provisions limiting the amounts and duration of support, as well as the qualifying provisions of granting and insuring agencies of government, would seem to favor acceleration of construction in the non-profit field. The pressure of extended-care occupancy of general hospital beds is already being felt and is resulting in construction of separate affiliated facilities. Some of these are combined with separate hotel-like facilities for ambulatory patients on the theory that there would be a similar degree of intensiveness of nursing care.

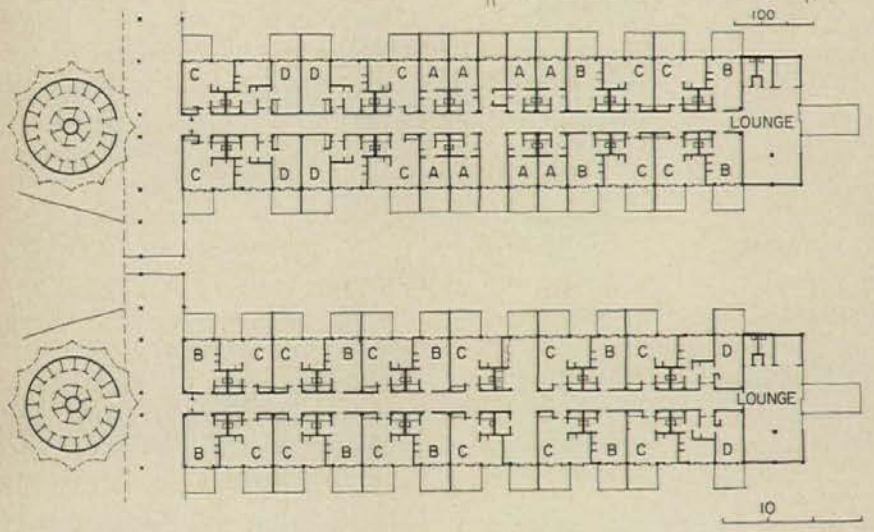
The multi-service type, residence-medical facility is already increasingly in demand and will doubtless gain support. This type has many forms and degrees of service from the multi-story urban complex to the rural campus such as the Wesley Manor complex shown below and next page.

New impetus from direct-grant and "below-market" loan programs, reinforced by the rental subsidy program, seems certain to increase starts of public housing for the elderly.









Wesley Manor Retirement Village

The architects' problem at Wesley Manor was to provide an environment of safety, beauty, efficiency, and dignity for approximately 300 elderly persons in a 42-acre setting of lush Florida vegetation overlooking a broad tributary of the St. John's River. The concept was to include limited medical care, housing in congregate apartments, various "urban" services, and as wide a variety as possible.

The urban buildings, including shops and a medical center, are arranged around a traditional village green (opposite, top right) which is the visual center of the scheme. A future six-floor hospital of 100 beds will overlook this green.

Eleven rowhouse apartment buildings with four basic apartment arrangements communicate from a pedestrian "main street" which leads to the downtown area and village green. At the east end of each row house is a group lounge with complete cooking and recreational facilities overlooking an artificial lake. At the west is a round storage unit.

WESLEY MANOR RETIREMENT VILLAGE. Associated architects: *Robert C. Broward* and *Robert A. Warner;* structural engineer: *Gomer E. Kraus;* mechanical electrical plumbing: *Frank B. Wilder & Associates;* landscape architect: *Edward L. Daugherty;* contractor: *The Auchter Company.*

Housing for the elderly:
new understanding, new concepts

In public housing, several methods of distributing apartments for the elderly among standard residential facilities have been tried. According to Beverly Diamond, consultant on housing of the National Council on the Aging, the assembly of apartments for the aging in one wing of a building has proved more satisfactory than scattered distribution throughout a project. The apparent reasons: it permits oldsters to dwell among a peer group, free from the noise and traffic of children; while at the same time those who enjoy contact with youth (and many do) can have it ready at hand.

Miss Diamond warns, however, that even a 3 per cent direct-loan program, such as some now in work for public housing, puts undue restriction on the dwelling area older people can afford to rent. The norm for efficiency apartments for the elderly has approached a minimal 350 square feet. This is not enough. The minimum should be at least 550 square feet and there should be at least a sleeping alcove, if not a separate bedroom, to help avoid the hazards of cluttered space. Further, it has been found that where financing has engendered too many efficiency apartments in a project, there has been a loss of flexibility.

"Who are the aged but all of us?" asks Julius Horwitz, and this sense of identity pervades the whole climate of concern—not only on the part of "professionals" who tend to prescribe less glibly for a group totally outside themselves, but also on the part of legislators.





Wade Swicord photos











"We are all entitled to freedom of choice . . ."

"Older people have the same variety of preferences and circumstances as other people," said Beverly Diamond in a recent interview. "Unfortunately, the later years are likely to be years of reduced income. Nevertheless, I think that older people should have a choice of living quarters at a price they can afford. That is why, in a recent [April 22] statement of the National Council on the Aging before the Senate Subcommittee on Housing, rental subsidies were an important part of our recommendations."

In 1960, the statement points out, over five million people receiving social security lived in housing inappropriate to their needs, judged on a basis of both quality of housing and suitability of living arrangements. Low income was the predominant reason for this deficiency. The present rate of elderly housing starts in all three major Federal programs—Public Housing Administration, Federal Housing Administration and Community Facilities Administration—has been considerably below 20,000 units per year. At that rate it would take over 100 years to develop enough suitable dwelling units for the present ill-housed elderly population—to say nothing of the projected increase in their number.

Although more enabling legislation has been passed in the past six years than ever before, it is not reaching those for whom it was intended. Special housing can, in fact, provide the kind of preventive health care which would be, in the long run, less costly to taxpayers than any amount of standard

Helena Nursing Home, phase 1

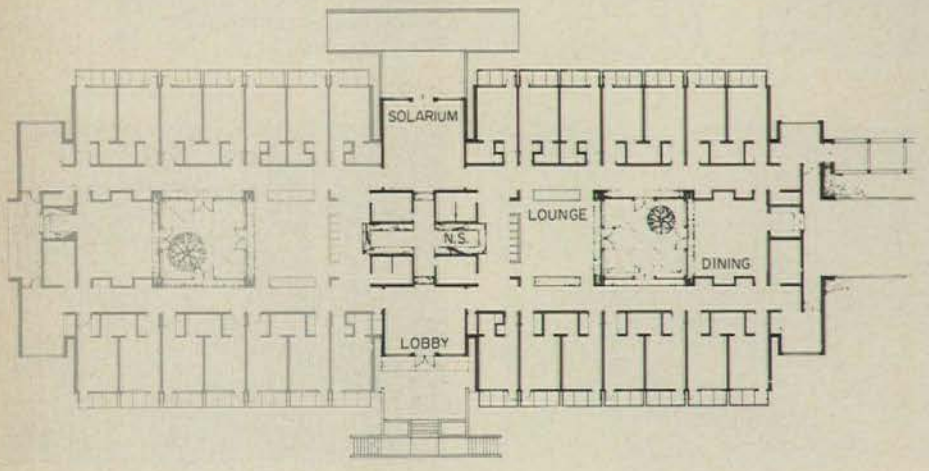
This is the first wing of a two-phase nursing home in Helena, Arkansas. The over-all concept envisions a central reception and distribution area, flanked by double-corridor wings. The divided roof structure of this central unit permits clerestory illumination of a solarium at the rear of the reception area. Wood-railed balconies outside each room overlook approaches and park-like grounds. Room furnishings and the general aspect of common spaces are designed to avoid institutional appearance. Central to each wing is an open court viewed through glass walls from an interior living room and dining room. Supplies and food service will be obtained through a passageway to an adjacent hospital. Capacity of this first phase is about 25 beds. Phase 2 of this white brick and concrete nursing home will be of similar capacity and will complete the rectangle as the plan shows.

HELENA NURSING HOME, Helena, Arkansas. Architects: *Wittenberg, Delony & Davidson.*





Earl Saunders photos





or inappropriate housing. Many older persons pay from 40 to 60 per cent of income for rent. The ensuing hardship tends to undermine health, and will do so at public expense.

Non-profit agencies, however willing, cannot do enough, and what they can do provides only for those with incomes above the poverty line.

A comprehensive and coordinated assault on the problem is called for, says the Council statement: "A more comprehensive Rent Supplement Program, more universally applicable, more flexibly designed, with appropriations more commensurate with the need, can give the older person mobility and some measure of choice, and can aid sponsors both in utilizing existing housing and creating new facilities." Although the Senate subcomittee later voted rent subsidies down by a narrow margin, the Council has by no means given up. The House passed $22 million of the President's rent subsidy program on May 10, and the Senate was expected to go along as this goes to press.

Should there be direct loans for nursing homes?

The non-profit sponsor, who is both a purveyor of community services and a builder of nursing homes, says the National Council statement, ". . . finds himself in an untenable position." While Congress, in 1964, extended credit resources for nursing homes to non-profit sponsors, terms of the credit were on the same basis as applied to profit-motivated sponsors. But the non-profit sponsor provides serv-

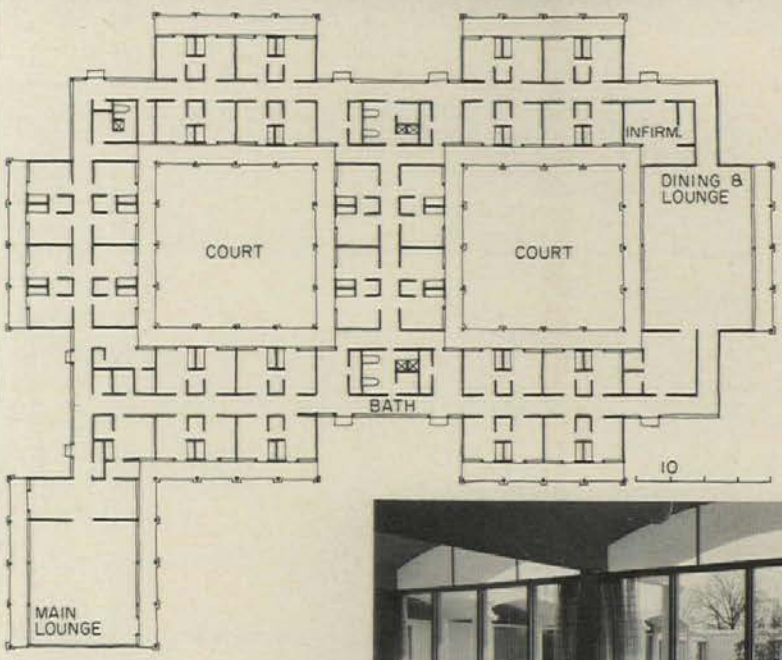


Ben Newby photos

Mary Galloway Home for aged women

This charitable institution represents a move from crowded downtown quarters to a suburban site near Memphis. Immediate capacity is 48, with provisions for a future addition to house 24. Tradition of the institution called for a maximum of privacy; hence pairs of single rooms, sharing lavatory facilities, are grouped around courtyards. Although the age of occupants called for a one-story building of fireproof construction, no major medical facilities were included. The one-story structure was designed as six bedroom units, a lounge and dining room, grouped about two open courtyards. The structure is a concrete frame of barrel-vaulted units connected by flat slabs and supported by concrete columns. Exteriors are brick and glass, with insulated cement asbestos panels.

MARY GALLOWAY HOME, Memphis, Tennessee. Architects: *Walk Jones/Mah & Jones/Architects/Inc.;* structural engineers: *S. S. Kenworthy & Associates, Inc.;* mechanical and electrical engineers: *Flinn & Humphrey, Inc.;* general contractor: *Sam P. Maury Construction Company, Inc.*







ices on the basis of need, not cost, and is accountable through a board of trustees to the community. He cannot tailor his services to the competitive market.

Under Medicare, more non-profit nursing homes will be needed. Senator Harrison Williams of New Jersey has introduced bill S-2520 authorizing the Department of Housing and Urban Development to make direct loans covering 100 per cent of development costs for new or rehabilitated nursing homes to non-profit sponsors, limited dividend corporations and public housing. Loans would be at a maximum interest rate of three per cent and for 50-year terms. The Council recommends its passage and further that present FHA provisions be amended so that sponsors can negotiate with a single agency for the creation of multi-type facilities which include both residential and nursing care homes.

A guide to selection of quarters for the aging

A national directory of housing for older people,* published by The National Council on the Aging, includes a guide for selection written by Beverly Diamond, consultant on housing for the Council. It contains a thoughtful review of the decisions and considerations facing people in middle and later years: whether to move or not to move into new or different housing; what the community itself should offer; what the

A National Directory on Housing for Older People, 1965, including a guide for selection, National Council on the Aging, 49 West 45th St., New York, N. Y. XXXI—224 pp. $5.00.

Jewish Home of Eastern Pennsylvania

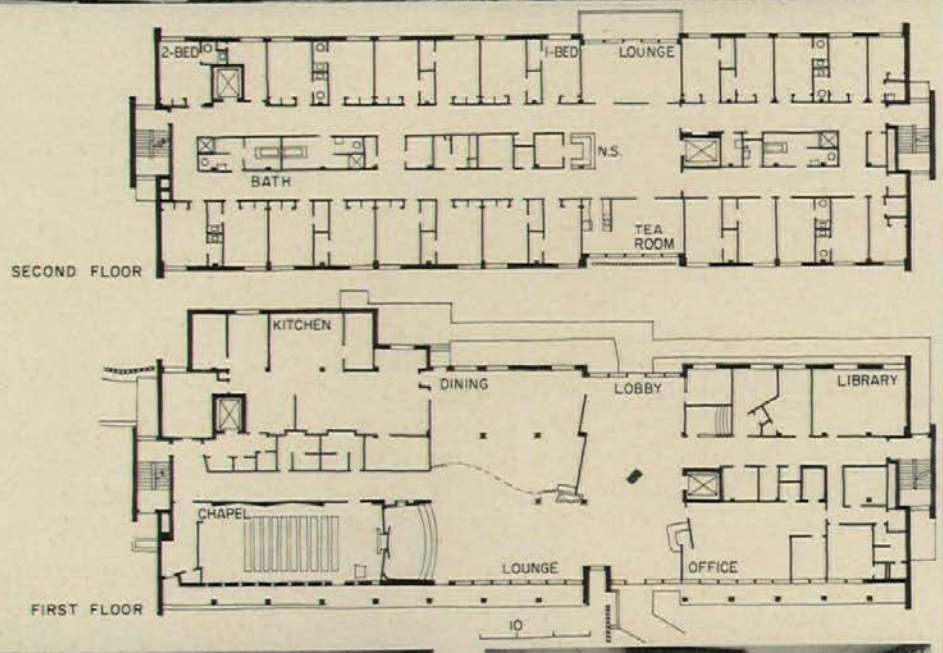
This is a three-story nursing home of 86 beds, equipped with complete medical, dental and therapy areas, in addition to a chapel and library. A program requirement for complete privacy and draft-free accommodations for the baths generated a center-core plan for utility spaces and nursing stations. All patient rooms are located on the perimeter.

Each nursing floor has a kitchenette and "tea room" where ambulatory patients can socialize over a snack. There is also a living-room lounge space with a generous balcony for relaxing or visiting. Physical therapy and rehabilitation spaces are important to the program of this nursing home.

Central supply, kitchen and dining areas are located on the first floor. A curved folding wall separates the dining area from lounge space adjacent to the chapel. This permits creation of a large entertainment space on occasion.

JEWISH HOME OF EASTERN PENNSYLVANIA, Scranton, Pennsylvania. Architect: *Samuel Zouri Moskowitz;* construction engineer: *Leo F. Garlick;* mechanical engineer: *Von Seb, Inc.;* general contractor: *R. D. Richardson Construction Company.*







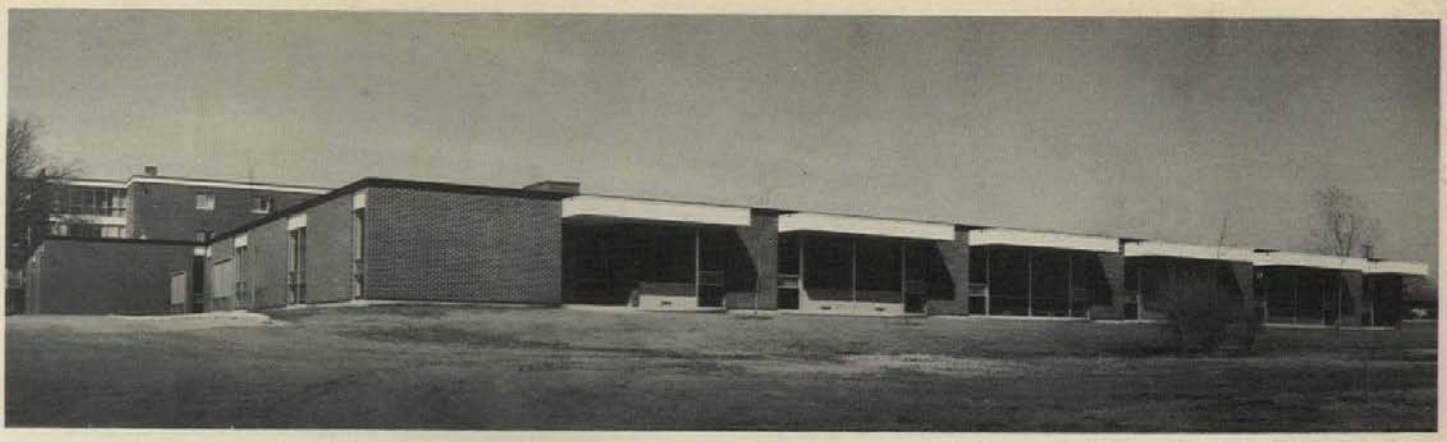




living quarters themselves should be like; what kinds are available; what about relatives, etc. Much of this work is in the form of checklists of considerations for assessing present housing or choosing a new home.

One of these lists is on housing and living arrangements. Although some of the items are primary to any architectural approach, architects may find it useful not only as a guide in their own work but as a clue to what clients will be learning to expect. It is reproduced here for that purpose:

1. Does your house make it possible to look out on a pleasant view, see people go by, make friends with the neighbors?
2. Are there sitting spaces and greenery outside?
3. Is the housing easy to get in and out of or do you have to climb steep grades, several steep, unrailed, unlighted steps?
4. Is there sufficient parking space for visitors?
5. Is the structure fireproof?
6. Are the walls soundproof, or do traffic or neighbors' noises disturb you?
7. Is your housing light enough and warm or cool as you want it?
8. a) Is it spacious and furnishable; or is it so small that walls crowd in on you and the floor spaces are cluttered? Do you have to pick up one object to get at another or shift furniture when you want to work or entertain visitors?
   b) Are the living quarters all on one floor with a minimum of thresholds and stairs? Or are they too large and spread out, too difficult to keep clean?
9. a) Does it cost too much to heat, maintain and repair?
   b) Is snow removal and yard care too much of a burden?
10. Is there sufficient closet and dead storage space?
11. Is there room for a guest or someone who comes to help you to stay overnight?
12. a) Are wiring and outlets sufficient to permit good lighting and



Ben Newby photos



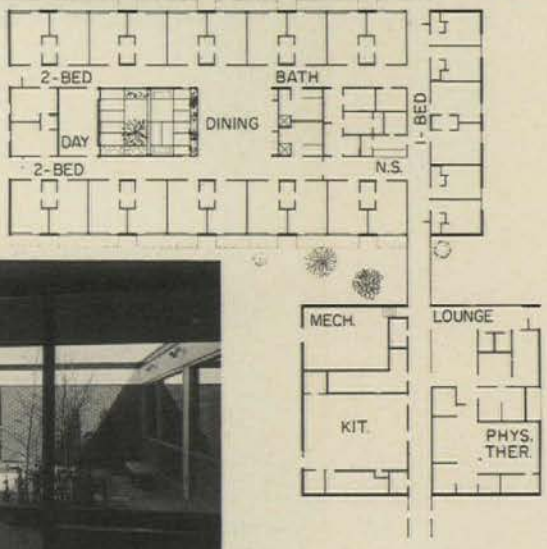
Methodist Health and Nursing Center

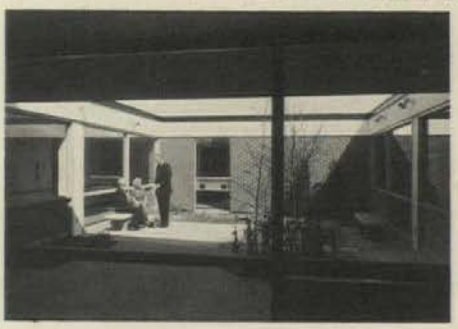
Before this health center was built, an existing multi-story institution on a 40-acre site provided retirement facilities for 80 residents. With the passage of time, it became apparent that a broader range of service was required as residents became infirm. A master plan study indicated that this nursing unit and health center of 50 beds should receive top construction priority, while a cottage and community campus was conceived as a future development.

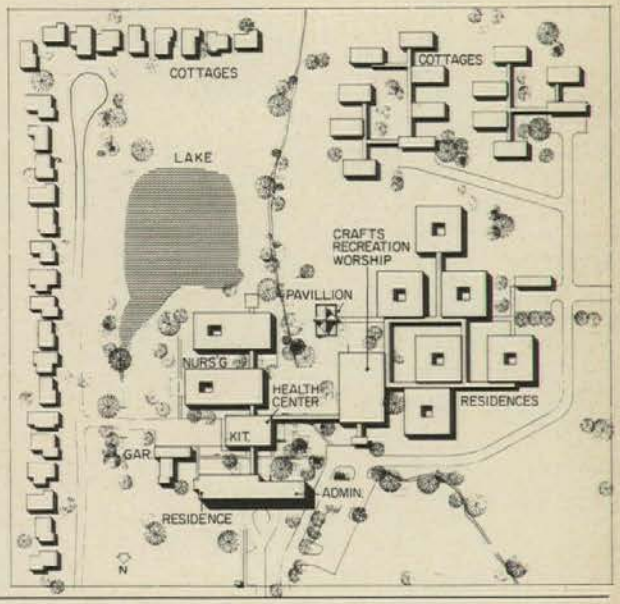
The campus concept grouped retired residents into 25 clusters, each having its own dining lounge and supporting services. Recreation, crafts, worship and health center are convenient. The health center is adjacent to the nursing unit. The latter is organized about a double corridor with a central service and utility core. Horizontal sun-control elements visually group rooms in pairs.

An interior court serves the dining and activity area.

METHODIST HEALTH AND NURSING CENTER, Tulsa, Oklahoma. Owners: Oklahoma Methodist Manor. Architects: *Murray Jones Murray;* consulting engineers: *Netherton, Dollmeyer & Solnok.*







use of labor-saving appliances?
b) Are the outlets well spaced and high enough to get at?
c) Are light control switches within easy reach near entrances and near the bed so that there can always be a lighted path from the bedroom to the bathroom?

13. Are the floors generally non-skid and grease resistant?
14. Are the doors wide enough to accommodate a shift of furniture, or a wheelchair if one is needed for a while?
15. a) Are the windows easy and safe to operate?
b) Are they at a safe height? Do they minimize the danger of falling but permit looking out of them while seated?

The kitchen

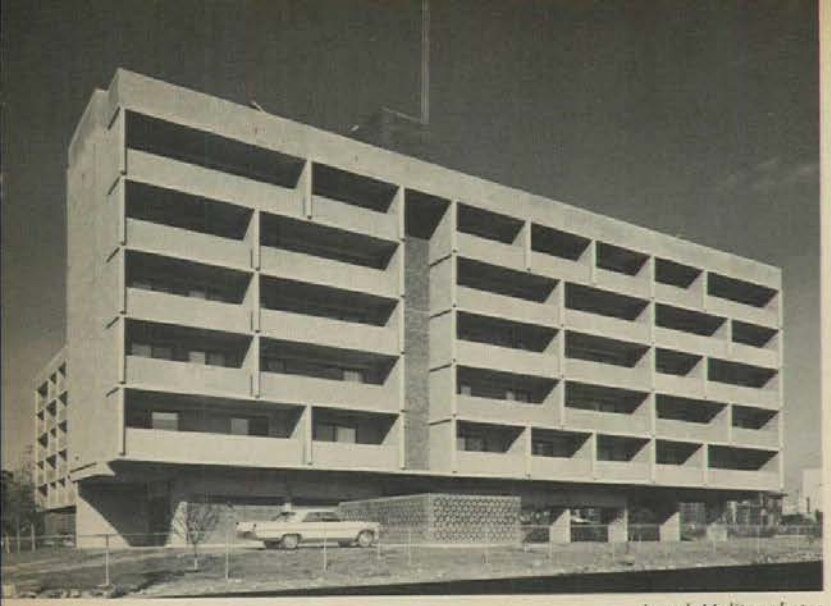
16. a) Is there enough work room and eating space, or is it necessary to carry your food to a table some distance away from where it is prepared?
b) Is there a window in the kitchen?
c) Can you reach things you need easily without too much climbing, stretching or stooping?
d) Does the gas range have automatic shut-off controls?

The bedroom

17. a) Is there a separate bedroom where you can have privacy, keep your medications handy, close the door if you do not feel like making the bed?
b) Is there enough space around the bed so that it can be put in order easily, or so that you can be better cared for if you are ill?
c) Can you look out of the window from your bed?
d) If you do not have a bedroom, is there a sleeping alcove (with a window) that can be closed off?
e) Is there a night light and telephone near the bed?

The bathroom

18. a) Is the bathroom easily reached from the sleeping quarters?



Joseph Molitor photos

Public Housing project for the elderly

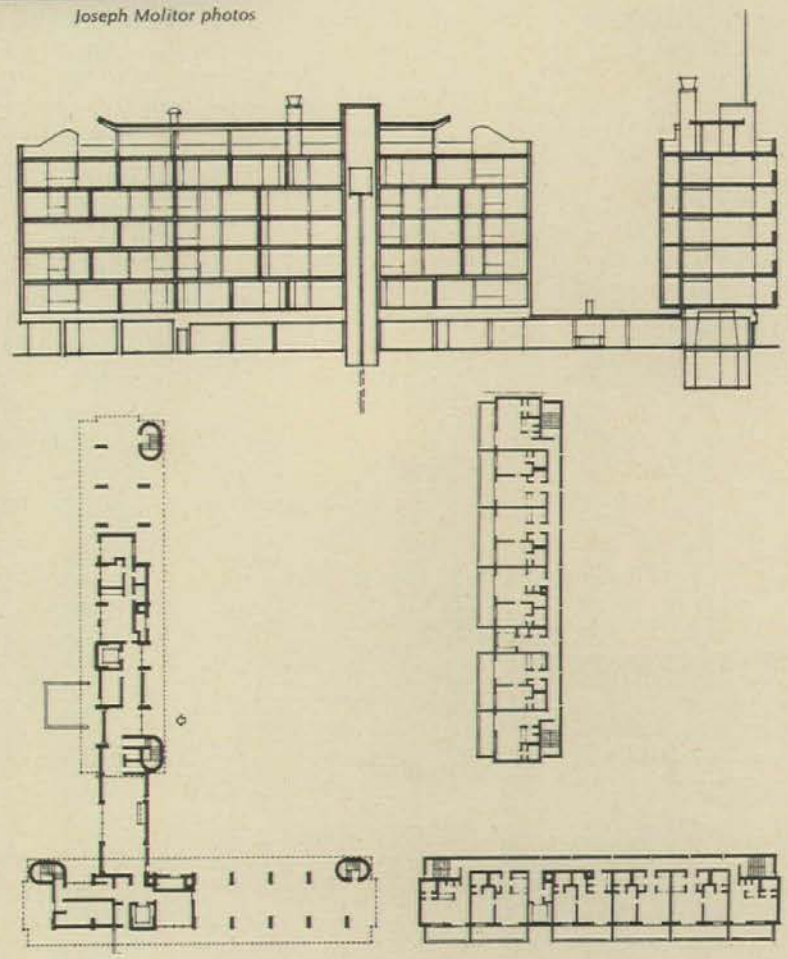
Specifically designed for the elderly, this low-rent public housing project provides one-bedroom and efficiency apartments.

Variations in the units allow individual interior arrangements. Large protective balconies function as outdoor sitting areas, overlooking the New Haven harbor and skyline. Common facilities include a community lounge with fireplaces, kitchenette, laundries and roof terraces. The site plan shows a park area, with fountain, trees and game lawn.

This project is part of an urban development project in which these buildings will define the corner of a renewed neighborhood.

Structure is concrete frame with a combination of poured-in-place, precast and post-tensioned members. A valance hot water system radiates heat from ceilings, with heating elements safely out of the way.

WINSLOW CELANTANO PARK, New Haven, Connecticut. Architects: *Granbery Cash & Associates;* structural engineer: *Rudolph Besier;* mechanical and electrical: *Fred S. Dubin Associates;* landscape architect: *Robert P. Stockmal.*

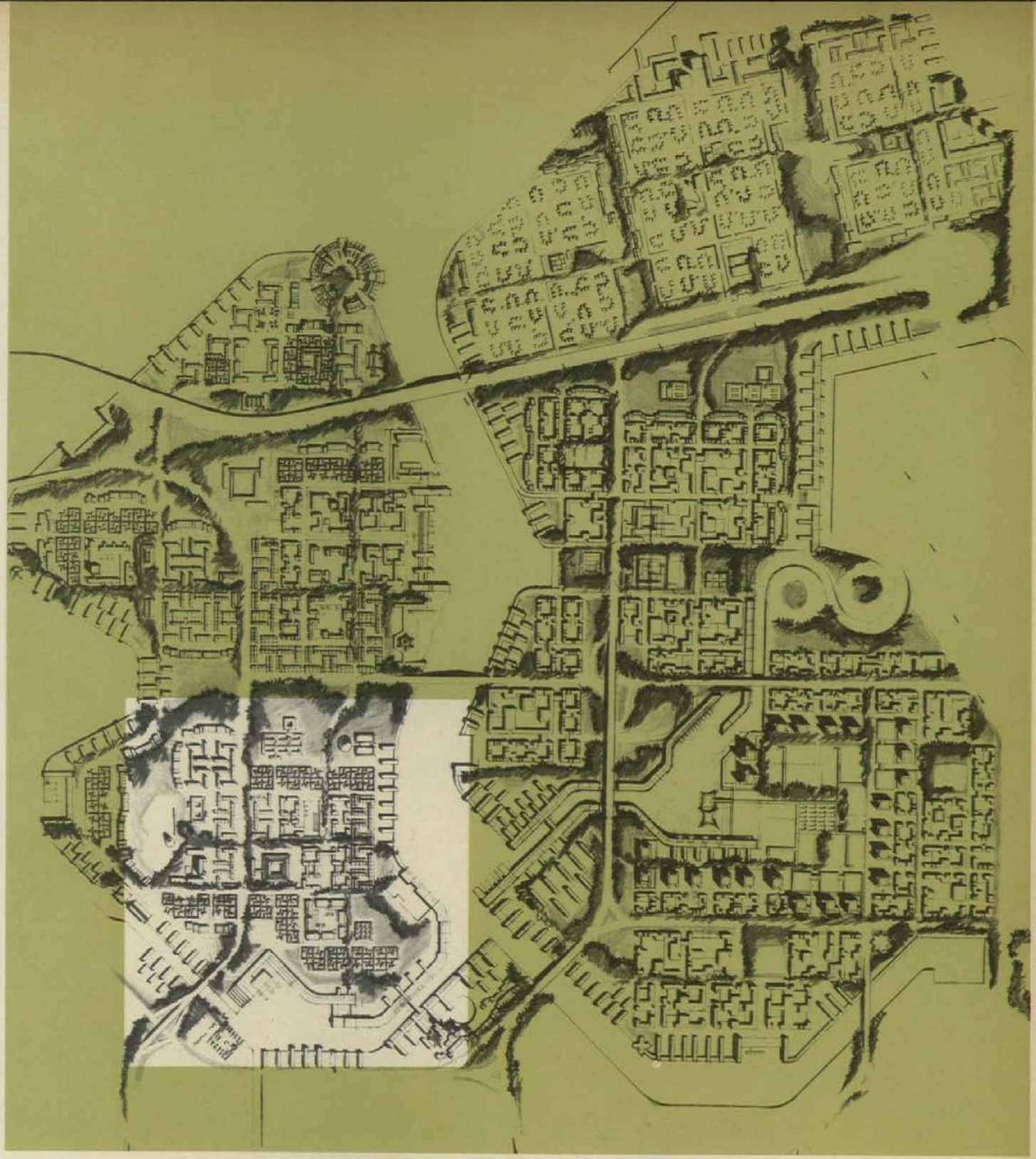


b) Is it big enough to maneuver a wheelchair if necessary?
c) Are there well-anchored towel racks?
d) Are there grab-bars around the tub and near the water closet?
e) Is the water closet low enough and far enough from the opposite wall to allow the user's legs to be stretched out full length?
f) Is the tub low enough to step into? Does it have a non-slip bottom?
g) Are faucets placed so that water temperature can be controlled before showering or bathing?
h) Is there enough ventilation in the bathroom?
i) Is there a good sized medicine and storage cabinet?
j) Is the mirror at a proper height for easy viewing?

The living room

19. a) Is there enough wall space against which to put furniture?
b) Is there enough room for your basic furniture, for display of mementos, for proper TV viewing?
c) If you need to eat in the living room, can you put a dining table near the window and still have it close to the cooking area?

The directory provides cautions and tips on choosing a place to live and reviews the various kinds of facilities available with the advantages and cost ranges of each. Housekeeping and non-housekeeping apartments, rentals, cooperatives, condominiums, retirement villages, residence clubs, hotels, multi-type or campus type facilities which provide a variety of residential quarters plus medical and nursing home facilities. It is the latter type that is of increasing interest to both prospective residents and sponsors alike. It is likely that Medicare will increase the urgency to provide this type as well as its long-term attractions. *—William B. Foxhall*



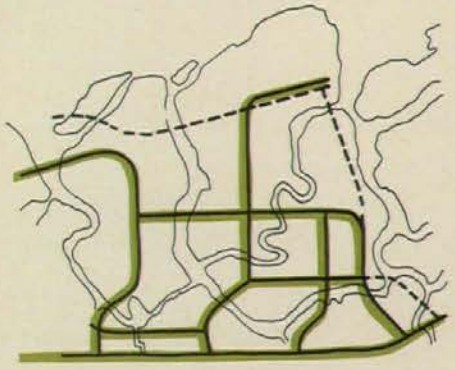
FRAMEWORK FOR NEW KIND OF LIVING

In planning Redwood Shores—a 6,100-acre addition that will more than double the population of a California city of 54,000—The Architects Collaborative has developed a civic fabric for a West Coast water- and recreation-oriented way of living that retains some vestiges of the disciplined New England way of living. In creating this framework, TAC organized and utilized the expertise of not just the usual range of consultants, but specialized knowledges such as the earth sciences and applied anthropology (see credits, page 166). Thus, this project is interesting not alone for its design and planning concepts, but for its implications for future architectural practice. This is the kind of complex, large-scale, people-oriented work which will be demanded more and more of architects.

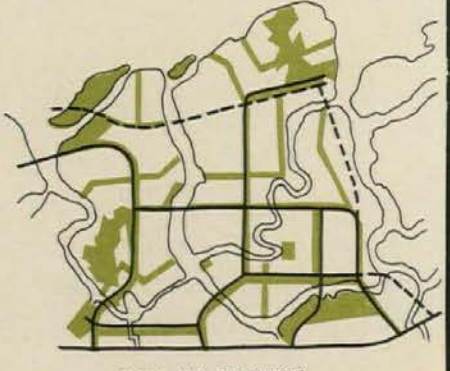




WATERWAYS: INTERNAL AND EXTERNAL

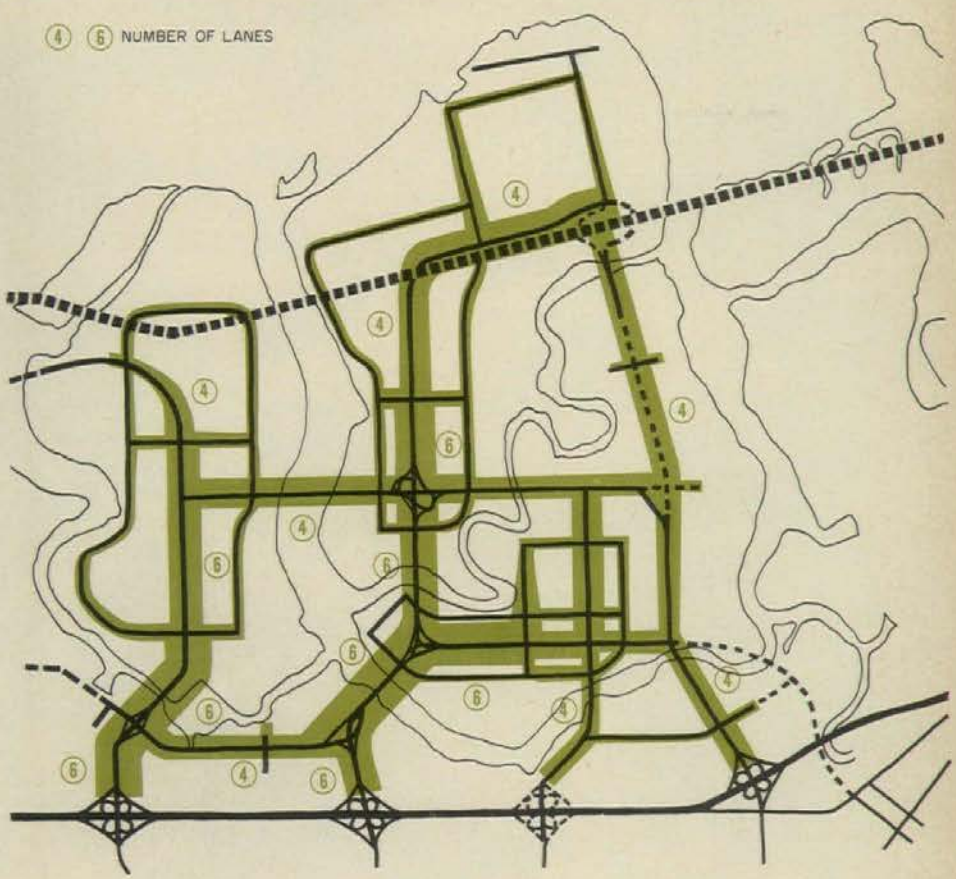


CIRCULATION



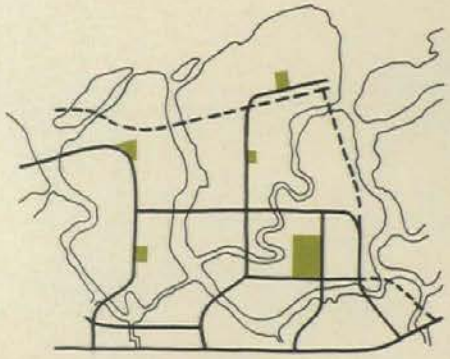
PARKS AND GREENWAYS



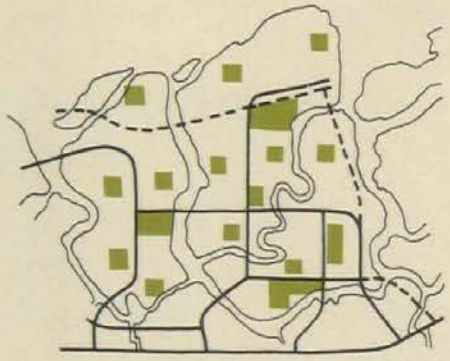


The idea behind the plan for Redwood Shores is not, as TAC explains, to create a "satellite city" or a self-sufficient "new town," but to provide an addition to Redwood City, integral in nature and offering new housing, new job opportunities and recreational access to San Francisco Bay. The site—6,100 acres—is composed of two masses of flat tidal land lying midway between San Francisco and San Jose and 30 minutes from each. Politically a part of Redwood City, the new development will make no effort to rival the present business district—now being revitalized—but is thought of as an improvement district within an over-all community.

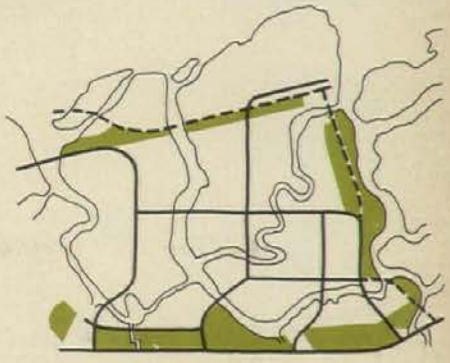
The framework for the development consists of internal traffic arteries and external waterways, offering the chance for variety in large scale design. These two elements make a super-frame for 19 neighborhoods within six communities bounded by open areas. Since main circulation arteries are internal, no area will be cut off from access to the water.



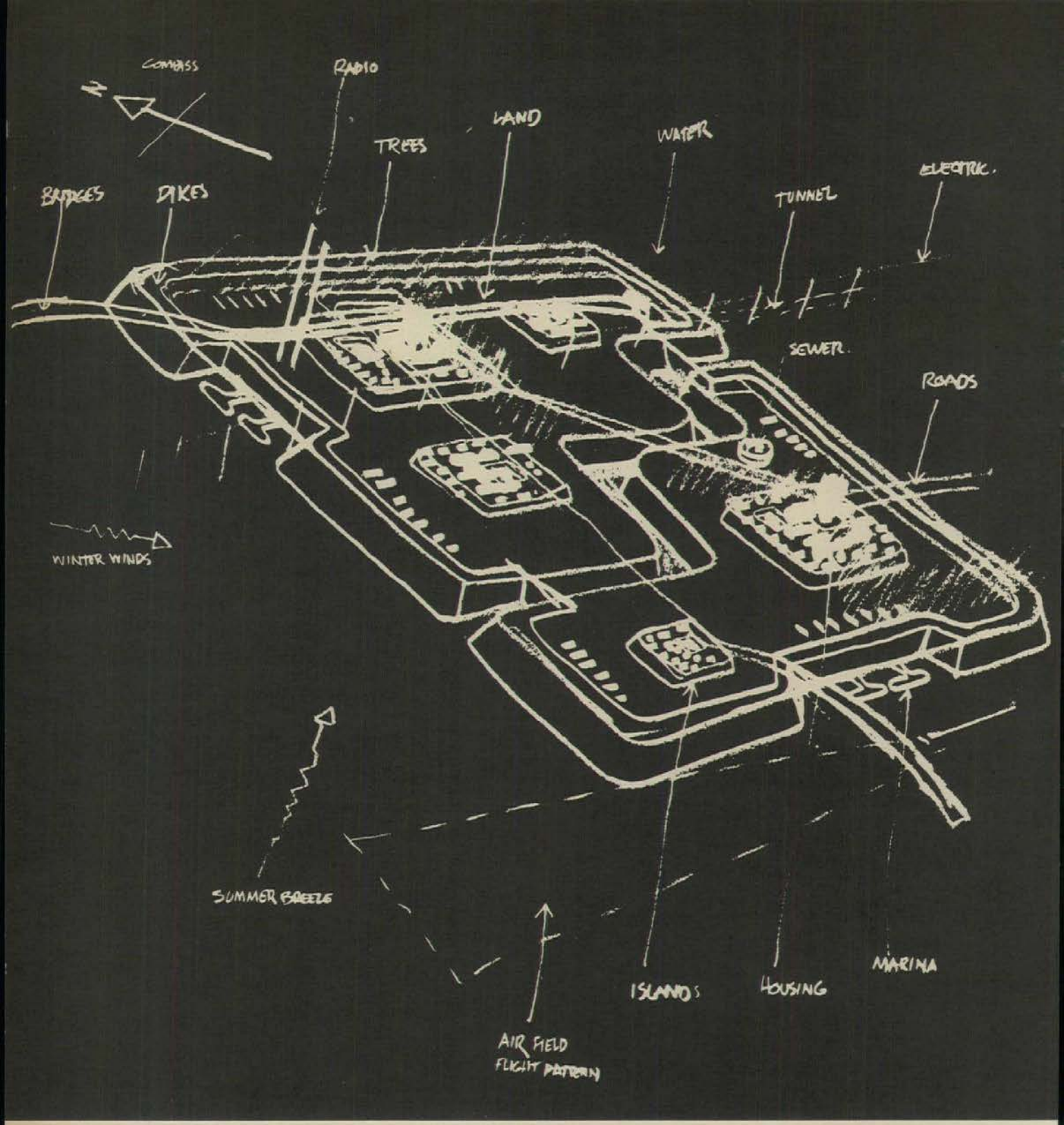
COMMERCIAL

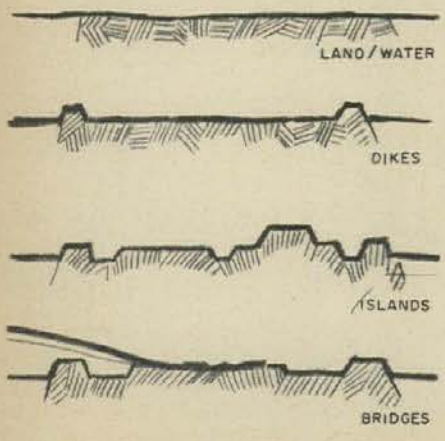


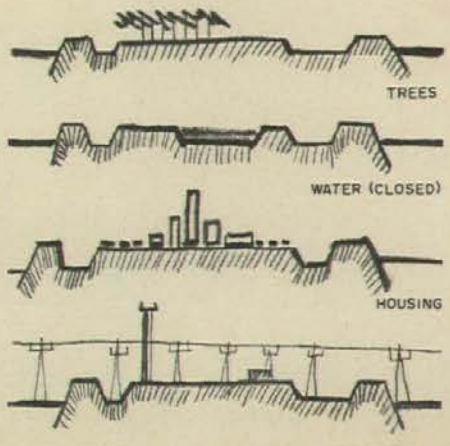
SCHOOLS



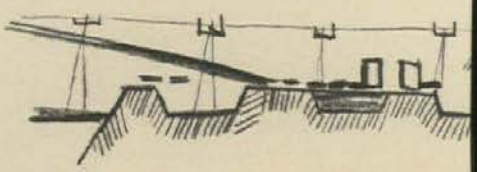
INDUSTRY





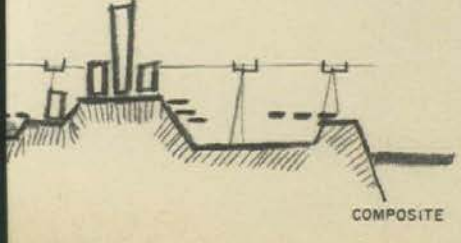


The eight small sketches at left show the basic elements that must be dealt with. Reading as two columns, the sectional sketches show: land and water; dikes (necessary at high tide); islands; bridges; trees; water (enclosed); housing; and power lines. The larger sketch below and the



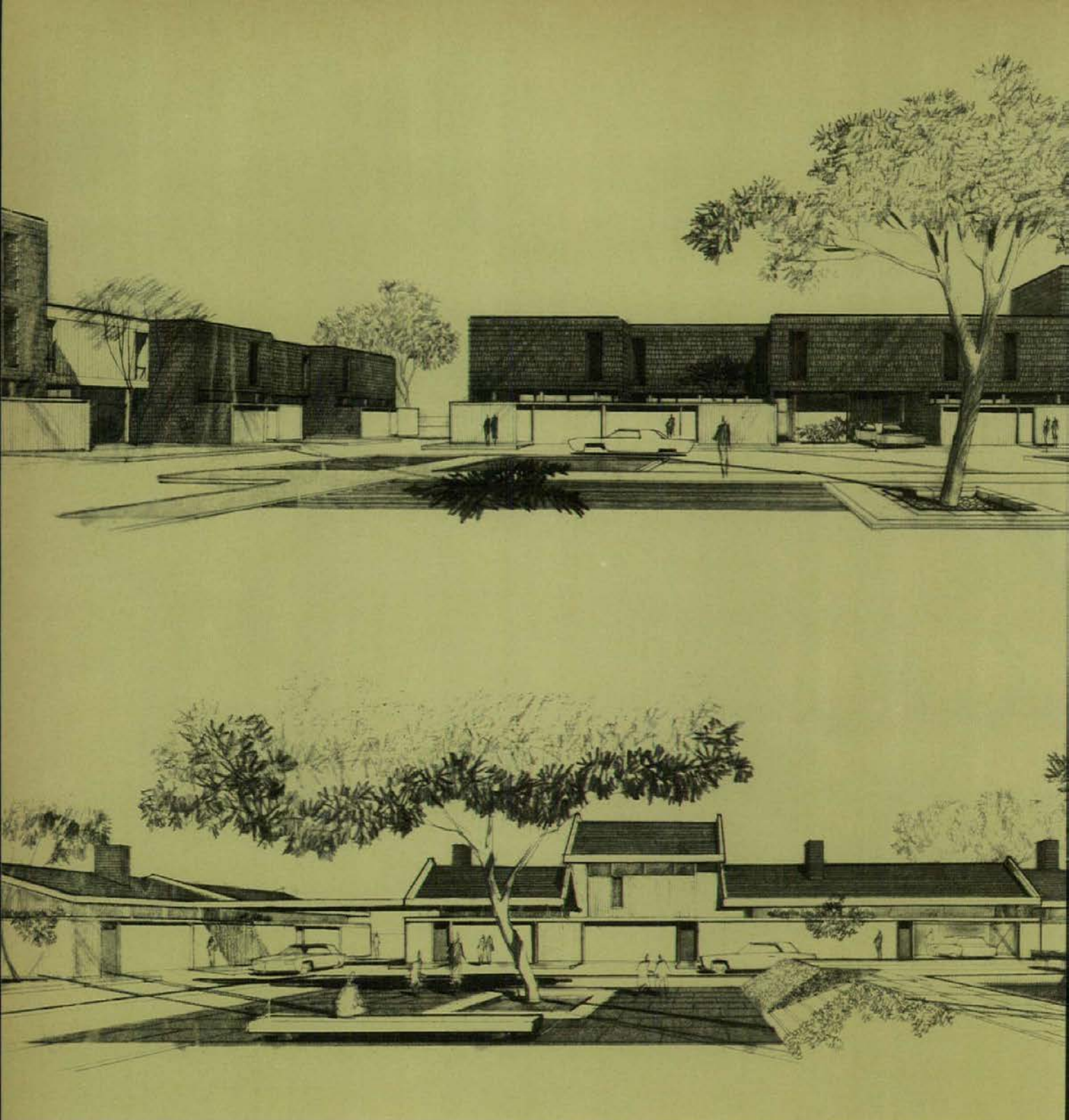


freehand perspective opposite show a composite of the elements in assembled form. The section shows the variety of possibilities; the perspective shows islands clearly defined—possible of accomplishment by dikes, also by buildings, landscaped open spaces, and other features.

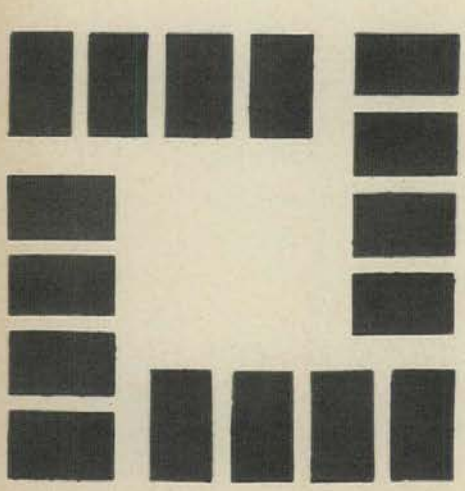


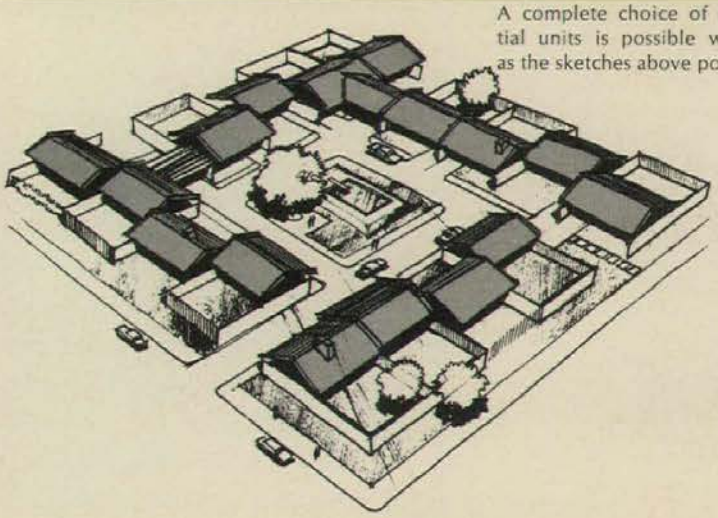
The map shown above is a schematic general plan; land uses shown are symbolic of density and use. These areas will be specifically defined in shape and location in later development plans. All plans will be periodically reviewed. Land uses shown were allocated for maximum ultimate population; a population level of 60,000 is expected to be reached by 1980.

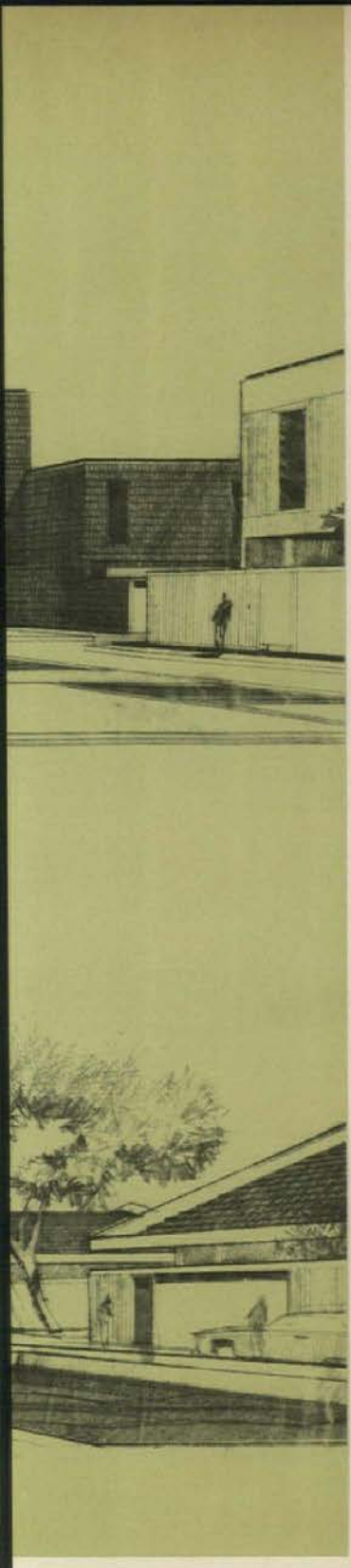
The flat character of the land, together with its bounding waterways, gives Redwood Shores a strong geographic personality. This creates the real inference that a strong urban and architectural design must be provided in order to reinforce the natural character of the area and produce a coherent and appropriate urban expression. Lacking the hills of San Francisco, the elements of urban design here will be waterways, roads and land-shaping.



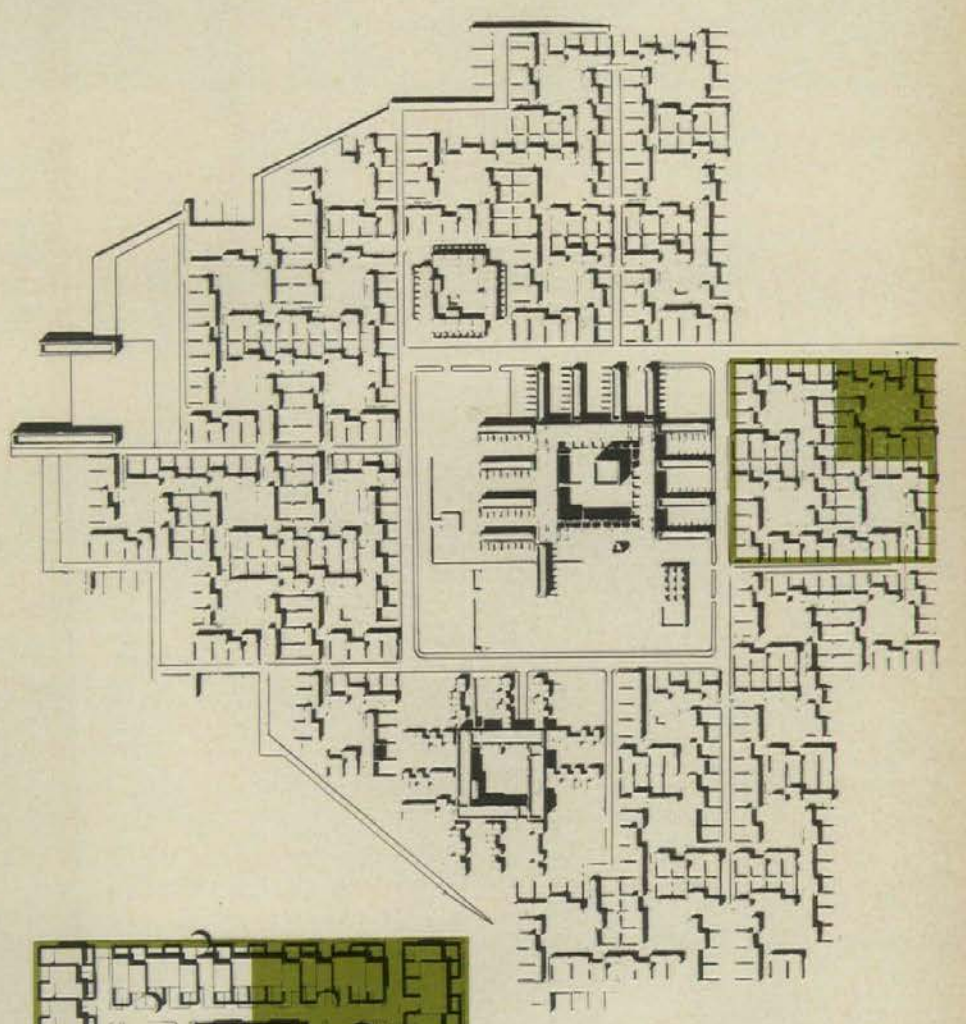
A complete choice of design for the residential units is possible within the cluster idea, as the sketches above point out.

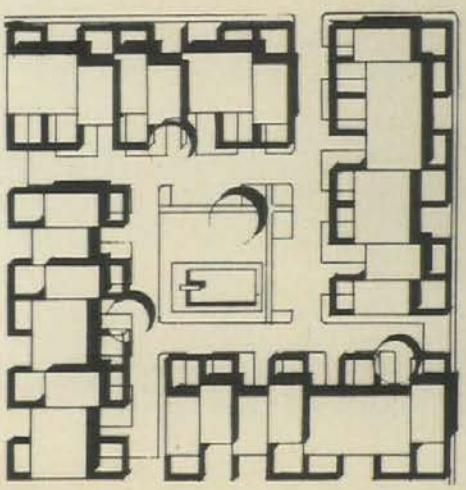


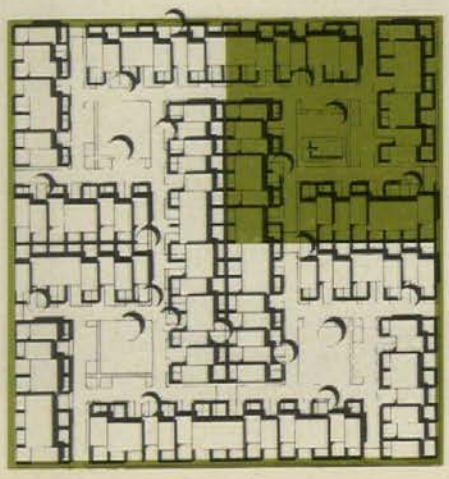




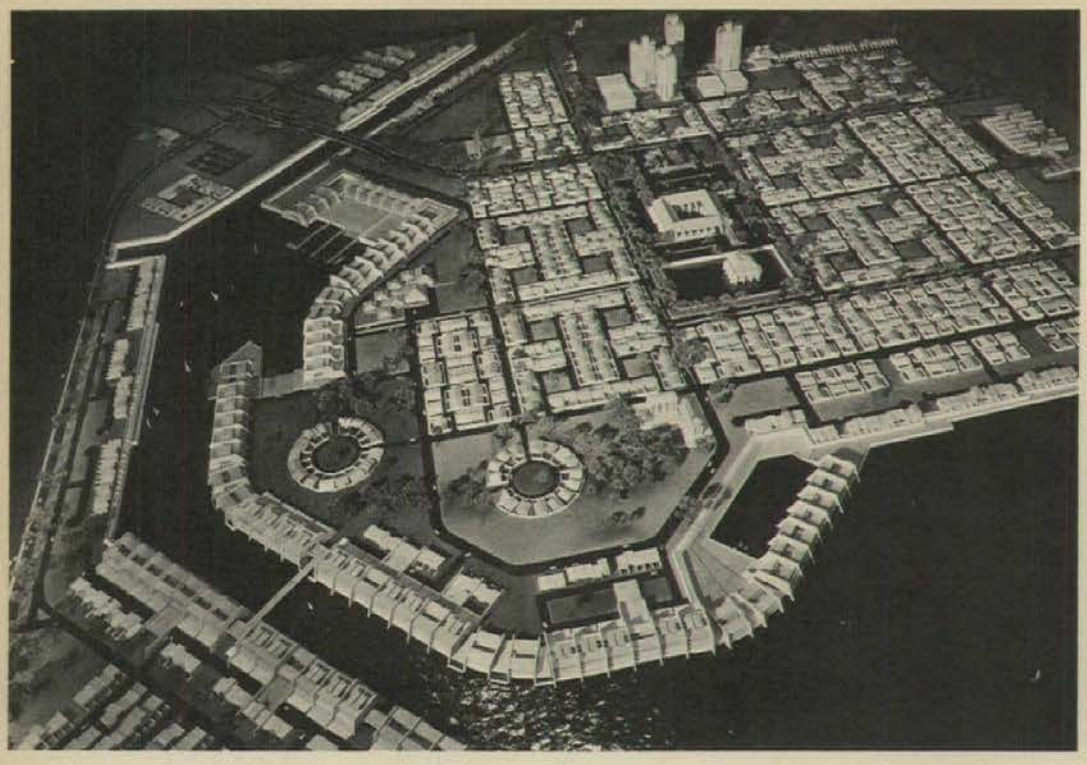
The residential plan for single family housing consists of a framework of collector streets, secondary roads and expressways, which distribute traffic and divide residential areas into neighborhoods within which a variety of blocks can be developed. The basic unit within the framework is a square cluster of 16 lots—with local street service—surrounding a common space about 150 feet square. Four such clusters comprise a block. Each lot is completely fenced, with entrance—pedestrian and auto—only at the front facing the open square. This reduces the "front" and "backyard" split in social contacts, and tends to concentrate pedestrian traffic on local, not collector, streets. The common space is conceived as recreational area, variously devoted to swimming pools, tennis courts, playgrounds, etc. Although the cluster idea avoids the monotony of a conventional street and *cul-de-sac* development, it does surround the common recreational areas with local traffic and parking, and might—in the hands of a single developer with uninspired design advice—result in a repetitive, postage stamp pattern.



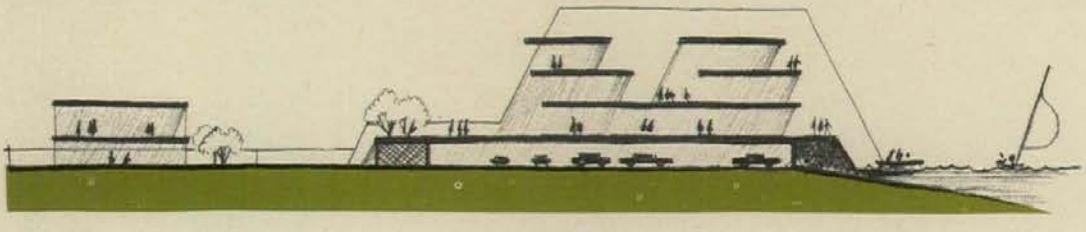




Many variations are possible within the cluster: single family detached houses of various sizes and shapes; groups of town houses; combinations of town houses and detached houses. The design or use of public space can vary widely; lot sizes and shapes can change to allow for more or fewer dwelling units, or to increase or rearrange the open space. Two clusters may be combined to form a larger central open space. The larger framework of collector streets can also accommodate other patterns: a circular cluster and loop plan have been judged possible.









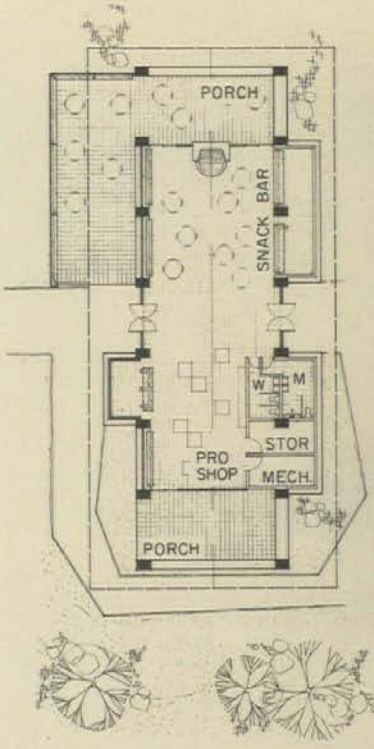
The large photo above shows the three-dimensional model of stage one in the development; the large picture below is a conceptual rendering of the total development; the two smaller illustrations above show a visualization of high-rise apartments and a section through terraced waterfront town houses.

The Architects Collaborative, Incorporated, architects and planners: *Norman C. Fletcher,* partner in charge; *H. Morse Payne,* associate in charge; *Howard F. Elkus,* project coordinator; *Elliot Paul Rothman,* chief planner; *Hirotaka Oribe,* urban designer.

Richard Grant Organization, land counselors and project management; *Larry Smith and Company,* market and real estate consultants; *Dames and Moore,* consultants in applied earth sciences; *Advance Planning Associates,* traffic consultants; *William A. Doebele, Jr.,* consultant in land planning controls; *Donald A. Kennedy,* consultant in applied social anthropology; *H. Morgan Noble,* boating consultant; *Richard M. Wilkinson,* director, Redwood City Planning Department.

FOUR BUILDINGS FOR LEISURE-TIME ACTIVITIES

Expanding population and increasing leisure have put unexpected pressure on existing recreational facilities, and new opportunities for both active and passive recreation are much in demand, especially in close-to-town locations. Here are four thoughtful—and handsome—buildings for a variety of leisure-time activities: a public golf course clubhouse; a country club near a university town; a tennis club in the middle of a community; and a faculty clubhouse for a large and growing university.



Stewart Sorey photos



Building looks large but is small. Glass walls, dark-stained-wood roof and contrasting bone-white epoxy-covered concrete columns contribute to this effect.

ADAMS COUNTY GOLF CLUB

The great gable roof of this clubhouse for a county golf course shelters the open interior from the strong sunlight of its high-altitude location, and permits the walls to be predominantly of glass. The supporting concrete columns are cantilevered from the foundation, so that the roof structure can be exposed without need for cross ties.



ADAMS COUNTY GOLF CLUB, Henderson, Colorado. Architects: *James H. Johnson & Associates;* structural engineers: *Johnson & Voiland;* mechanical engineers: *Riley Engineering;* contractor: *Blackinton & Decker.*

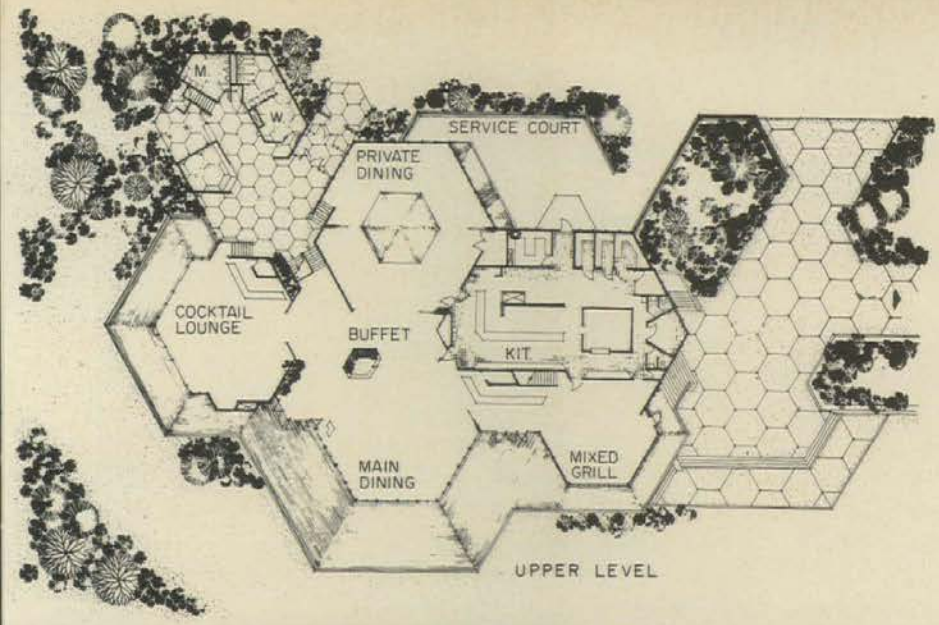
BOULDER, COLORADO COUNTRY CLUB

A cluster of hexagons—to which additional hexagons can be added as the club's membership grows and more space is needed—make up the facilities for this country club near the university community of Boulder. Each hexagon houses a separate function: main dining room; private dining room; cocktail lounge; reception and administration. All social facilities, and the main entrance to the club, are located on the upper level. Shower and locker rooms, pro shop and recreation rooms are on the lower level, where they are directly accessible to the golf course and open off a terrace which connects with the swimming pool area. The clubhouse site is a knoll overlooking the golf course. All main rooms, and the decks onto which they open, have a superb view of the Rocky Mountains. The club building, designed to serve a membership of 650 (there are now 550 members), was built in 1965 for $15 per square foot.

BOULDER COUNTRY CLUB, Boulder, Colorado. Architects: *Hobart D. Wagener & Associates—Wallace D. Palmer, associate in charge;* structural engineers: *W. B. Johnson;* mechanical engineers: *McFall & Konkel;* swimming pool engineers: *Larkin & Company;* general contractors: *Wilkinson Company, Inc.*

James H. Roberts photos



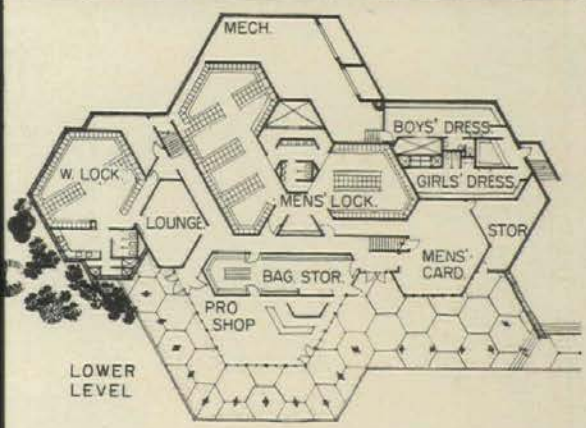


UPPER LEVEL



Each hexagon is capped by its own hipped roof—a picturesque silhouette across the green. The junction of these hexagons with each other is marked by a three-foot-wide skylight which both emphasizes the cluster concept and toplights the interior spaces. The exposed spoke-like arrangement of laminated beams for the roof to frame adds to the interest of the interior spaces, which are otherwise simple and restrained. All upper level floors are carpeted. Wood and lichen-covered stone are used throughout for texture and warmth.





LOWER LEVEL



MILL VALLEY, CALIFORNIA TENNIS CLUB

Although it has no actual resemblance to a Victorian building, this new clubhouse for the Mill Valley Tennis Club is designed to continue the tradition of the club's turn-of-the-century building which had to be torn down to make way for the new structure. The unusual roof and the pavilion-like veranda reflect this tradition and the social nature of the building's use, and the roof form makes a pleasant focus for residents of the hillsides above and around the clubhouse. The restricted site determined the location of the building between the tennis courts and the road, and the curved ends of the building fit it to the site with a minimum of crowding. A requirement of the program was that the activities of tennis players and swimmers be completely separate; hence the provision of locker rooms for tennis players and separate changing rooms for swimmers, with separate access for each to lounge and bar. The high-ceilinged lounge receives light from both sides and from a skylight at the ridge. For large parties, the veranda offers extra space as it is heated by gas units. Office and caretaker's apartment are upstairs.

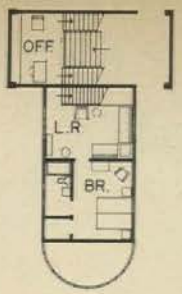
MILL VALLEY TENNIS CLUB, Mill Valley, California. Architect: *John Louis Field;* structural engineers: *Pregnoff and Matheu;* contractor: *Page Construction Company.*

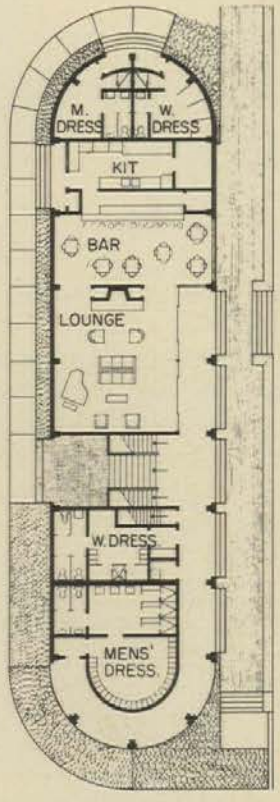
Jeremiah Bragstad



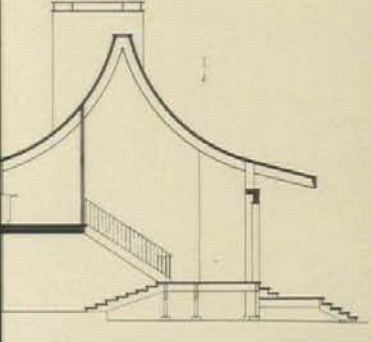


Karl Riek





Karl Riek



Roof and shingle-covered wall (or screen, to use the architect's word) do not meet; instead, a band of glass encircles the building just under the eave line, admitting light to the lounge where it would otherwise have none, and making of the lounge a singularly light space. A skylight at the ridge, which runs the length of the building, amplifies this effect. Laminated wood bents carry the roof deck which uses laminated 2 x 4's on edge along the straight portion of the roof, and bent laminated 1 x 4's at the curved end sections. The screen has arched openings toward the tennis courts but is left solid toward the road except for main entrance and service doors.

Karl Riek



Jeremiah Bragstad







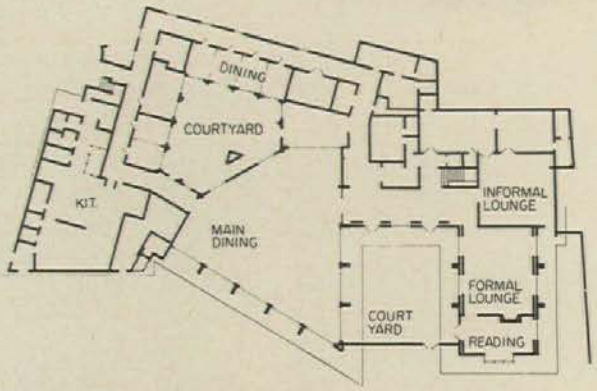
STANFORD UNIVERSITY FACULTY CLUB

For their out-of-class hours, Stanford faculty members now have a million-dollar clubhouse, completed last year. Located on the campus near the student union and alumni office buildings, and accessible from classroom and office buildings, the new clubhouse provides a long-needed meeting and eating place for professors and their guests. The building is of two stories, is finished in sand-colored brick to harmonize with the prevailing buff stone of the usual Stanford buildings, and its roof, like that of other buildings on the campus, is of red tile. Focal point of the clubhouse is the 300-seat triangular dining room on the lower level, which opens on one side to the garden court and on the other to a handsome grove of old oak trees. Five smaller dining rooms, each with a seating capacity of 20 persons, supplement the main dining room. On the upper level are six guest rooms (two with kitchenettes) and a manager's apartment.

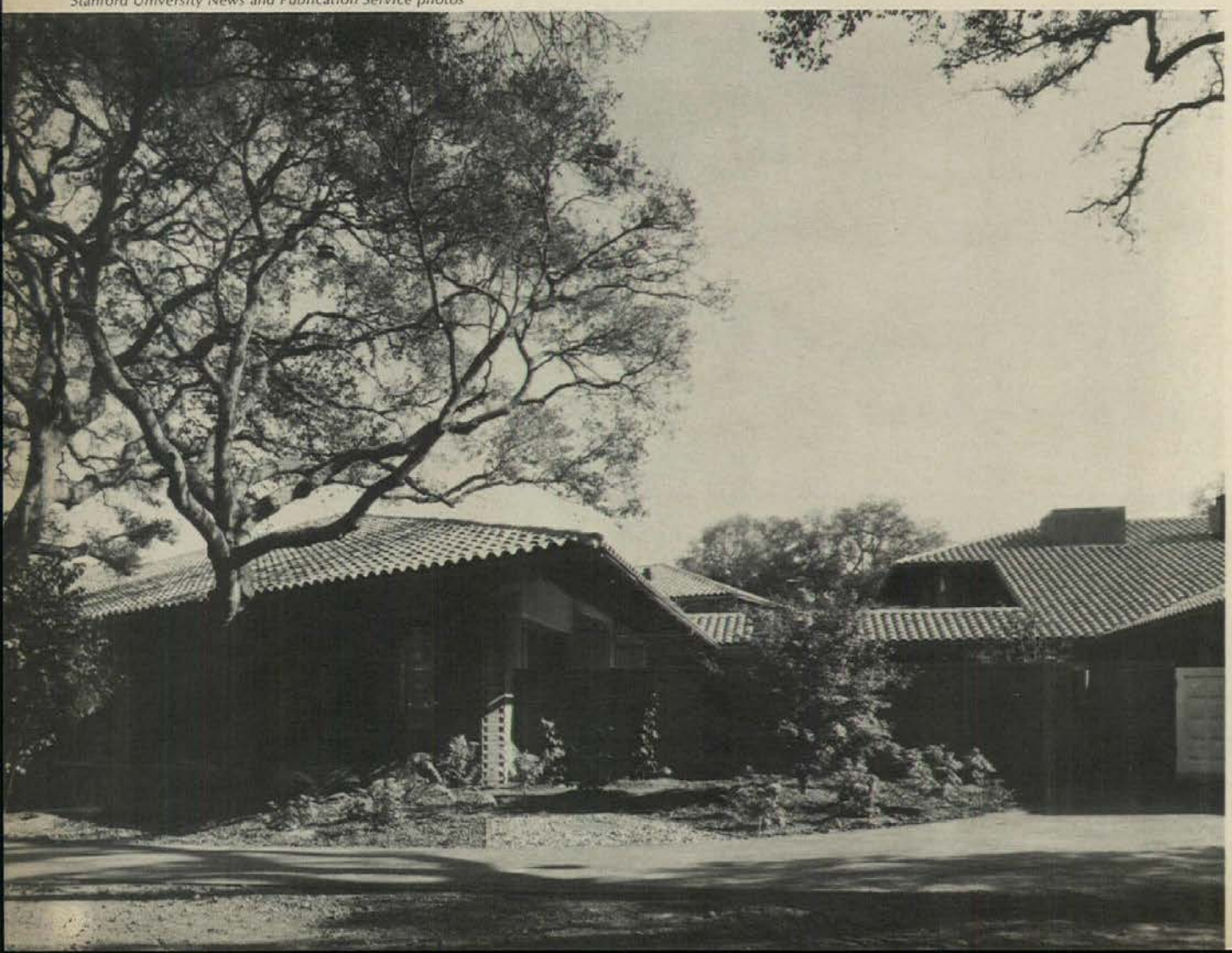
FACULTY CLUB, Stanford University, Stanford, California. Architect: *Edward B. Page;* structural engineer: *James B. Wells;* mechanical and electrical engineer: *G. M. Simonson;* landscape architect: *Thomas Church;* contractors: *Leon M. Wheatley, Inc., and Jacobsen Brothers Construction Company (joint venture).*



The new faculty clubhouse follows the Stanford campus tradition of buff-colored buildings with red tile roofs. Until completion of this building, Stanford faculty had had no meeting place. In addition to facilities for dining, the clubhouse has a number of formal and informal lounges (one of the informal lounges is shown at right), a reading room and several recreation rooms. Main entrance (top) is over the terrace; garden court entrance (below) is through gate at right.



Stanford University News and Publication Service photos



INDUSTRIAL BUILDINGS

The industrial building, like a hospital, is designed in response to the complex interaction of different needs; but it has become common-place to describe the requirements for industrial construction in terms of a large block of enclosed cubage, and associated employee facilities and amenities. The complex functions which are to take place in the building are usually designed in something like complete isolation from the construction process. It is true that production needs are always changing, and that flexibility is very important: but today, when the time available for constructing industrial buildings is becoming shorter and shorter, and the cost requirements more and more stringent, it becomes necessary to ask questions about the results produced by all this speed and cost-analysis.

The building described on page 182 is a very good case in point. In a direct comparison between an architect's design for an industrial building and a proposal by a package builder, the architect's design turned out to be much less expensive, because the package builder had not analyzed the owner's real needs. The moral of this story is clear: decisions about the building cannot really be separated from considerations of use, no matter how generalized this use seems to be.

The purpose of this Building Types Study is to bring together some of the most recent available background information that can be of use to architects designing industrial buildings. It includes a checklist of the factors involved in industrial site selection and a description of the ways in which architects can best take part in this process. There is also a short introduction to systematic plant layout, which is seen to involve space relationship problems where the architect could be helpful. In addition there is an example of a construction schedule in which prefabricated components are used, a comparison of different types of construction contracts, and a checklist of common problems of industrial building design.

—Jonathan Barnett

Selection of the site is usually an irrevocable decision...

A CHECKLIST GUIDE FOR INDUSTRIAL SITE SELECTION
(from a list published in Factory magazine.)

To use this guide: First, go through the list, checking the box marked *importance* next to all the factors that apply to the site under study. Then, evaluate the site in terms of each consideration chosen.

1. UTILITIES

ELECTRIC POWER

	IMPORTANCE	SITE
Can power system fill all needs (voltage, phase, cycles, capacity)?	☐	☐
If relocating equipment, do motor characteristics coincide with supply?	☐	☐
Can distribution lines handle a plant expansion program?	☐	☐
Is history of stoppages favorable?	☐	☐
Is complete rate picture satisfactory?	☐	☐
Are off-peak rates available?	☐	☐
Do discounts and penalties apply?	☐	☐
Are lighting allowances figured into rates?	☐	☐
Are fuel adjustment clauses provided for in the rate schedules of power companies?	☐	☐
Are you planning to manufacture part or all of your own electric power?	☐	☐
Will nuclear power be available?	☐	☐

FUEL OIL

Is oil a competitive fuel in the area?	☐	☐
Can you count on delivery regardless of method (pipeline, tank car, tank truck, barge, tanker)?	☐	☐
Will you need standby storage facilities?	☐	☐
Do all component factors look favorable? (Tappable trunk line nearby, pipeline capacity, pumping capacity, rate picture, BTU content, proximity to gas fields, etc.)	☐	☐

NATURAL GAS

Is natural gas a competitive fuel in area?	☐	☐
Is gas available on a firm basis?	☐	☐
Are rates such that it is better to arrange for interruptible basis with standby fuel oil facilities?	☐	☐

COAL

Is coal a competitive fuel in the area?	☐	☐
Any problems about delivery?	☐	☐
Have you considered costs of coal handling and storage facilities vs. competitive fuels?	☐	☐
Do technological improvements in mining and usage help tilt the balance toward coal?	☐	☐
Should lignite be considered?	☐	☐

WATER SUPPLY

Are water requirements compatible with water resources?	☐	☐
Is there an adequate public water supply?	☐	☐
If you must exploit a private source, is the quantity adequate?	☐	☐
Is quality satisfactory?	☐	☐
If water treatment is needed, are costs in line with other site locations?	☐	☐
If streams are the logical source, will the flow be adequate during dry months?	☐	☐
Is the impact of future municipal and industrial users likely to be serious?	☐	☐
If ground water is the source, are there legal restrictions on withdrawal and recharging rates of flow?	☐	☐
Is there enough water to take care of growing trend towards air conditioning?	☐	☐
Is incoming temperature of cooling water satisfactory?	☐	☐
Are municipal authorities taking a long forward look at community water problems?	☐	☐
Do technological improvements offer help in the water problem?	☐	☐

WATER POLLUTION

Will you have waste disposal problems?	☐	☐
Can streams nearby accommodate waste water?	☐	☐
Will good business practice plus local or state ordinances call for waste treatment?	☐	☐

2. TRANSPORTATION

RAIL

Do groupings of major railroad systems take advantage of natural flow of traffic and thus minimize transfers?	☐	☐
Is proposed location on or near the route of new crack merchandise trains?	☐	☐
On a rate-blanketing basis are rates to principal markets satisfactory?	☐	☐
Has pattern of differential freight rate increases been relatively favorable for your proposed area?	☐	☐
Does railroad give transit or stop-off privileges for partial loading or unloading enroute?	☐	☐
For LCL type of shipping operations, are there ample freight forwarders or car loading companies?	☐	☐
If more than one railroad serves area, do they have reciprocal switching arrangements?	☐	☐
Are there adequate truck handling facilities at freight terminals?	☐	☐
Is pick-up and delivery service available?	☐	☐
Which of these principal physical rail considerations are important?	☐	☐

a. Branch or main line.
b. Freight schedules.
c. Switchings per day.
d. Yard limits.
e. Direction of turnout to private siding from yard.
f. Orientation of site to roadbed.

Site selection: simple factors add up to a complex decision

The checklist printed above is part of a guide that has become something of a standard in the field. Compiled originally by Oswald Stewart, an associate editor of Factory, it demonstrates that the selection of a site for a new industrial building is a complex management decision; and, if the site is chosen hastily or casually, then all kinds of built-in questions have also been decided hastily and casually.

Site selection involves two types of problem: the choice of a general area or community, and the evaluation of individual tracts of land. The architect has much to contribute to both types o consideration; he should be indispensable for the second.

The general territorial area is usual ly chosen on the basis of marketing studies and analysis done by the com pany itself. At the same time, manage ment must make a thorough examina tion of the prospective labor market the living pattern of the community, and the availability of good housing, schools hospitals, and recreational facilities.

By this point in the site investiga tion, management should have sough out the services of an architect and prob

...and too often the decision is made without considering all the important factors.

IMPORTANCE SITE

g. Relative elevation of site and roadbed.
h. Potential construction difficulties, such as culvert, fill, bridge, cut.

Does prospective rail carrier favor the use of technologically improved equipment for meeting of shipper's needs? ☐ ☐

TRUCK TRANSPORTATION

For truck receipt and shipment operations, which of these factors are important: ☐ ☐

a. Natural traffic flow.
b. Specific routes.
c. Schedules.
d. Rates.
e. Transfers.
f. Common, contract, or private carrier.

Is the site at or near a "trucking gateway," to reduce in-transit times? ☐ ☐

Are state laws as to truck size and weight restrictive? ☐ ☐

Will minimum weight restrictions by truckers affect you adversely? ☐ ☐

Are there good access roads, bridges, and culverts for trucks? ☐ ☐

Is the pattern of recent truck freight rate increases reasonable? ☐ ☐

Are state gasoline taxes in line with alternate sites? ☐ ☐

Can you use newest truck shipment techniques, such as "piggy-back" and "fishy-back"? ☐ ☐

Will the new Federal Highway Program help solve trucking problems? ☐ ☐

AIR TRANSPORTATION

If your product consists of high-grade commodities or expeditable merchandise, can you ship by air? ☐ ☐

Is site near a good airport? ☐ ☐

Are rates and schedules of scheduled air lines satisfactory for air shipment? ☐ ☐

IMPORTANCE SITE

Is good non-scheduled air service available? ☐ ☐

Are there good air-freight forwarders nearby? ☐ ☐

Do needed air feeder lines exist, or promise to exist? ☐ ☐

Is airport service convenient for transport of personnel? ☐ ☐

Is there helicopter shuttle service, or (if not) can it be set up economically? ☐ ☐

WATER TRANSPORTATION

Is proximity to inland water transport important? ☐ ☐

Is proximity to overseas shipping important? ☐ ☐

Does area have an alert and progressive port authority or comparable commission? ☐ ☐

Are water transport rates and schedules competitive? ☐ ☐

Are port facilities closed down in winter? ☐ ☐

Is access to port convenient and economical? ☐ ☐

What about proximity to existing piers? ☐ ☐

Are construction costs a factor if new piers are needed? ☐ ☐

Is ample lighterage available? ☐ ☐

Do any special waterway advantages apply? (Example: "Seatrains" for loaded freight cars on oceangoing ships.) ☐ ☐

MISCELLANEOUS TRANSPORTATION

Is railway express service available? ☐ ☐

Is air express available? ☐ ☐

Are pipelines usable as common carriers for you? ☐ ☐

Does prospective community have a desirable level of passenger transportation facilities (rail, bus, air) for serving employees and families outside salesmen, visitors, etc.? ☐ ☐

IMPORTANCE SITE

Is employee transportation within the community adequate for your expected needs (commuter trains, street cars, buses)? ☐ ☐

Are there toll roads or toll bridges that will increase transport costs? ☐ ☐

Do winter conditions adversely affect transport? ☐ ☐

Does community have public or private warehouses available to help out with short-range inventory storage problems? ☐ ☐

3. RAW MATERIAL SUPPLY

Are needed raw materials close enough? (Especially if perishables, bulky, or low in value). ☐ ☐

Will they be available, or are they committed to others? ☐ ☐

Are raw material sources reliable? ☐ ☐

Are the prices satisfactory? ☐ ☐

Are terms of sale and delivery right? ☐ ☐

Is cost of transport to site reasonable? ☐ ☐

Do you see evidence of depletion or shortage of resources (minerals, timber, soil, water, others)? ☐ ☐

Are there natural transportation transfer points nearby? ☐ ☐

Are suppliers of key parts or subassembles close enough? ☐ ☐

Is rapid transportation from suppliers by truck or other means available? ☐ ☐

Are you close enough to key suppliers for easy consultation? ☐ ☐

Are existing or proposed manufacturers nearby whose byproducts you can use? ☐ ☐

Are raw materials so remote that you must consider building special facilities to create supply? ☐ ☐

Where large natural resource areas are needed (such as timber or ores) can they be leased or must they be bought? ☐ ☐

ably of a real-estate specialist as well, if there is no real-estate man on their own staff. The involvement of the architect can be extremely useful at this stage. A number of community factors come directly within his province. Code regulations, for example, often have unexpected consequences, such as a requirement that fire walls subdivide a plant or warehouse where the process makes it necessary that the floor area be unobstructed.

The physical characteristics of the site itself frequently form the most important variable affecting both the speed of construction and the cost of an industrial building; so that a preliminary evaluation of the site by the architect can save the client a great deal of time and money, and also obviate some serious design problems later.

Industry generally seeks a new site location because of expansion plans, a desire to decentralize operations, or to keep up with changes in markets or the labor force. The majority of new industrial buildings are going up in suburban or rural locations, although there may be factors suggesting an in-city site. James M. Moore, in his book, "Plant Layout and Design," suggests the following general guide lines:

1. Conditions suggesting a city location:
   a. Large skilled labor force required.
   b. Processes heavily dependent upon availability of city utilities.
   c. Multi-floor building desirable.
   d. Close contact with suppliers demanded.
   e. Public transportation available.
2. Conditions for a suburban location:
   a. Semiskilled or female labor force required.
   b. Avoidance of heavy city taxes and insurance desired.

IMPORTANCE SITE

Have you attempted to forecast new sources? ☐ ☐

Are multiple supply areas available in case of short supply from one? ☐ ☐

4. COMMERCIAL SERVICES

Does community contain a diversified amount of commercial services required by industry? (Check and evaluate separately): ☐ ☐

Major repair shops
Electric motor maintenance
Industrial distributors
Lubricants
Lumber and allied materials
Engineering department supplies
Stationery
Food and sundry vending
Local trucking
Railway express
Air freight services
Postal service
Blueprint service
Industrial repair
Air conditioning service
Janitorial service
Professional services
Testing labs

Are adequate construction services and facilities available, either in the community or near it? (Check and evaluate separately): ☐ ☐

Prime contractors
Subcontractors
Mechanical
Electrical
Piping
Carpenter
Labor
Rigger
Special equipment
Mason
Plasterer
Tile
Painting
Landscape
Paving

Do specialized shops exist in or near the community which can help maintain your special equipment? ☐ ☐

IMPORTANCE SITE

5. COMMUNITY SERVICES

POLICE

Does police department have high standards of personnel, equipment, training, morale? ☐ ☐

Is police patrol service provided for industrial properties? ☐ ☐

Are there satisfactory policing arrangements outside city limits? ☐ ☐

Are private watchmen services or uniformed detective agencies available? ☐ ☐

Is incidence of crime as low as or lower than in surrounding area? ☐ ☐

Does community have a disproportionate number of bars and taverns? ☐ ☐

Is judiciary system well organized? ☐ ☐

FIRE

Does fire department have high standards of personnel, equipment, training, morale? ☐ ☐

Is community fire insurance classification up near the top? ☐ ☐

In case of serious fire, are adjacent communities near enough to send apparatus? ☐ ☐

Is site within fire hydrant limits? ☐ ☐

If so, are mains sized adequately? ☐ ☐

Are water pressure and reserve capacity sufficient for your needs? ☐ ☐

ROADS AND HIGHWAYS

Does quality of construction and maintenance indicate an efficient highway department? ☐ ☐

Does local highway system have adequate interconnections with national network? ☐ ☐

Are roads kept free of ice and snow? ☐ ☐

Is there a well-planned highway improvement program? ☐ ☐

Is proportion of unimproved roads steadily being reduced? ☐ ☐

IMPORTANCE SITE

TRASH AND GARBAGE

Is potential site within pickup limits? ☐ ☐

If not, are private contractors available? ☐ ☐

Does Board of Health exercise supervisory inspections over garbage collection methods? ☐ ☐

SEWAGE

Is site within sewage system limits? ☐ ☐

Can system handle your requirements? ☐ ☐

Does sewage department have realistic plans for expanding its network and equipment? ☐ ☐

6. COMMUNITY LAWS AND TAXES

PLANNING AND ZONING

Does community have an active and forward-looking city planning commission? ☐ ☐

Are smoke, noise, odors, etc. controlled? ☐ ☐

Have zoning sights been properly set in connection with new Federal Highway Program? ☐ ☐

Can you expect protection against undesirable neighbors? ☐ ☐

Have building codes been adapted to newer "permissive" basis? ☐ ☐

Do building inspectors have a reputation for honesty and integrity? ☐ ☐

STATE TAXES

What is existing gross debt of state, as a partial indication of future revenue needs? ☐ ☐

Is expected trend likely to keep in line with desired increased quality of services? ☐ ☐

Do state corporate taxes compare favorably with those of your competitors elsewhere? ☐ ☐

Does state have income taxes on individuals? ☐ ☐

c. Labor force residing close to plant.
d. Plant expansion easier than in city.
e. Community close to, but not in, large population center.

3. Conditions suggesting a rural location:
a. Large site required for either present demands or expansion.
b. Lowest property taxes desired.
c. Unskilled labor force required.
d. Low wages required to meet competition.
e. Morale of working force improved by country location.
f. Manufacturing process is dangerous or objectionable.

The site selection checklist has been divided into nine categories, only two of which deal with the specific characteristics of the actual property. The others cover the ways in which the proposed industrial use of the site fits into the context of the community and region. The basic purpose of the checklist is to serve as a reminder, for most of the factors become obvious once they are suggested.

In the case of utilities, the most easily overlooked considerations involve water supply and the disposal of industrial wastes. The possibility of a restricted water supply during certain times of the year ought to be investigated, as well as the condition of the water table. Some industrial wastes are very nearly indestructable, and all of them put a strain on the ability of surrounding air and water to render them innocuous—and it must be remembered that air and water pollution controls are becoming stricter all the time, all over the country. There are situations where factors like these could determine the choice of one site over another.

Transportation of goods to and from the site is usually studied, but the

Preliminary site evaluation by the architect can save the client a great deal of time and money.

	IMPORTANCE	SITE
If so, will they attract new employees from other states? Or keep them away?	☐	☐
Does state levy property taxes?	☐	☐
Is there a state sales tax?	☐	☐
Does state grant permission to deduct Federal Income tax?	☐	☐

COMMUNITY FINANCIAL PICTURE

Does community indebtedness present a healthy picture?	☐	☐
Is community tax picture well balanced between residential, industrial and commercial sources?	☐	☐
Is pattern of community expenditures well balanced between needs and income?	☐	☐
Is total community tax picture in line with services received?	☐	☐
Do abnormally low community taxes indicate inferior schools, streets, other services?	☐	☐
Are there sizable amounts of tax-free property which make an impact upon the community tax picture?	☐	☐
Do future building plans of community government subdivisions threaten potential tax increases?	☐	☐
Does community have special taxes? (Payroll, personal income, machinery, equipment, inventory sales, franchise, municipality, county, road improvements, sewer improvement, licenses, permits, fees, etc.)	☐	☐
Are community tax inducements offered to prospective industries?	☐	☐
If so, is there evidence that high taxes later will wipe out initial tax advantages?	☐	☐
Are residential tax rates reasonable?	☐	☐

7. COMMUNITY BUSINESS CLIMATE

Is attitude of local officials sympathetic and enthusiastic towards existing and new industry?	☐	☐
Is record of local government good as to honesty, efficiency, and principles?	☐	☐
Does community have one or more good business-sponsored civic organizations devoted to improving business climate?	☐	☐
If so, have tangible results been achieved?	☐	☐
If more than one such organization, do they work together harmoniously?	☐	☐
Have you checked reaction of local industries as to business climate?	☐	☐
Have any manufacturers migrated from the community recently?	☐	☐
Is it reasonable to expect normal industrial growth in the community?	☐	☐
Are there existing or new industries in the community that help contribute to a stabilized economy?	☐	☐
Is community well diversified industrially?	☐	☐
Are community's industries dynamic and growing?	☐	☐
Is size of community geared to your needs? (quantity and quality of industrial neighbors, labor pool, etc.)	☐	☐

8. PHYSICAL CLIMATE

Has your general locational survey thoroughly explored climate conditions? Typical factors:	☐	☐

a. General weather conditions.
b. Elevation of community.
c. Temperature ranges and averages.
d. Average annual rainfall and snowfall.
e. Humidity ranges and averages.
f. Days with sunshine, rain, fog.
g. Duration of killing frost.
h. Maintenance costs – frost (building and road maintenance) snow and ice removal.
j. Velocity and direction of prevailing winds.
k. Geographical extremes? For example: unusual or prolonged dry or wet conditions; cold, heat, hurricanes, floods, etc.
l. Degree days per season.
m. Effect of weather extremes on all forms of transportation? Rail, highway, air, water.

9. SPECIFIC SITE CONSIDERATIONS

Is the product such that advertising value plays a big part in site selection?	☐	☐
Has character of site been thoroughly explored? Typical factors:	☐	☐

a. Topography.
b. Size of area available for purchase.
c. Layout and orientation.
d. Drainage.
e. Freedom from flooding.
f. Any utilities already in place?
g. Subsoil, excavation, and foundation considerations.
h. Gullies, streams, etc., to be bridged.
i. Any abnormal grading or landscaping problems?
j. Any pipelines or other utilities to be relocated?

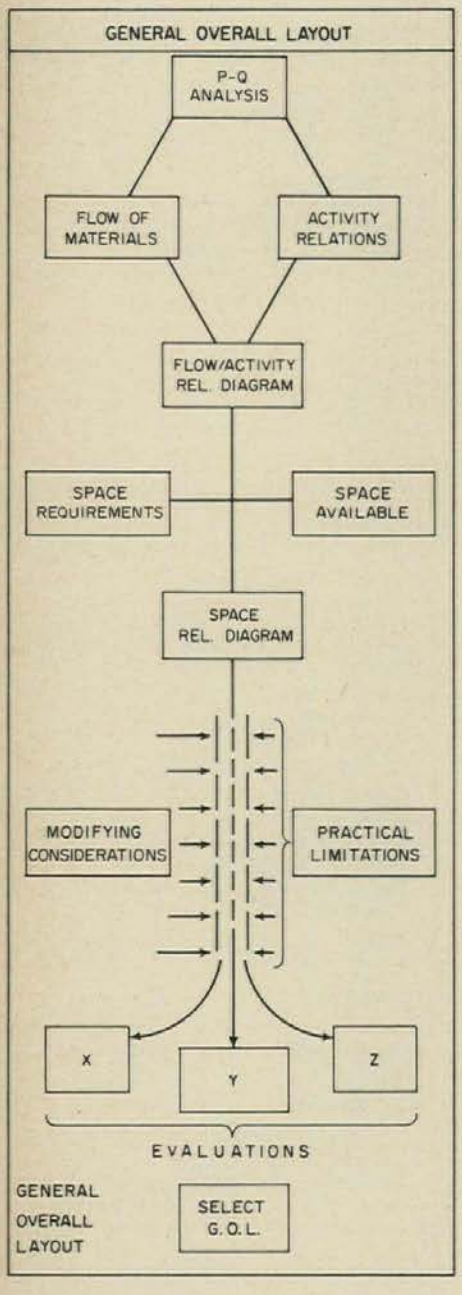
Are general construction costs competitive with those of sites?	☐	☐
Is site convenient for noon-hour shopping?	☐	☐
If in limestone country, any tell-tale sinkholes?	☐	☐
Is site near enough an airport that CAA regulations must be considered in building plans?	☐	☐
Any restrictive covenants, easements, or other legal entanglements that would interfere with use of property?	☐	☐

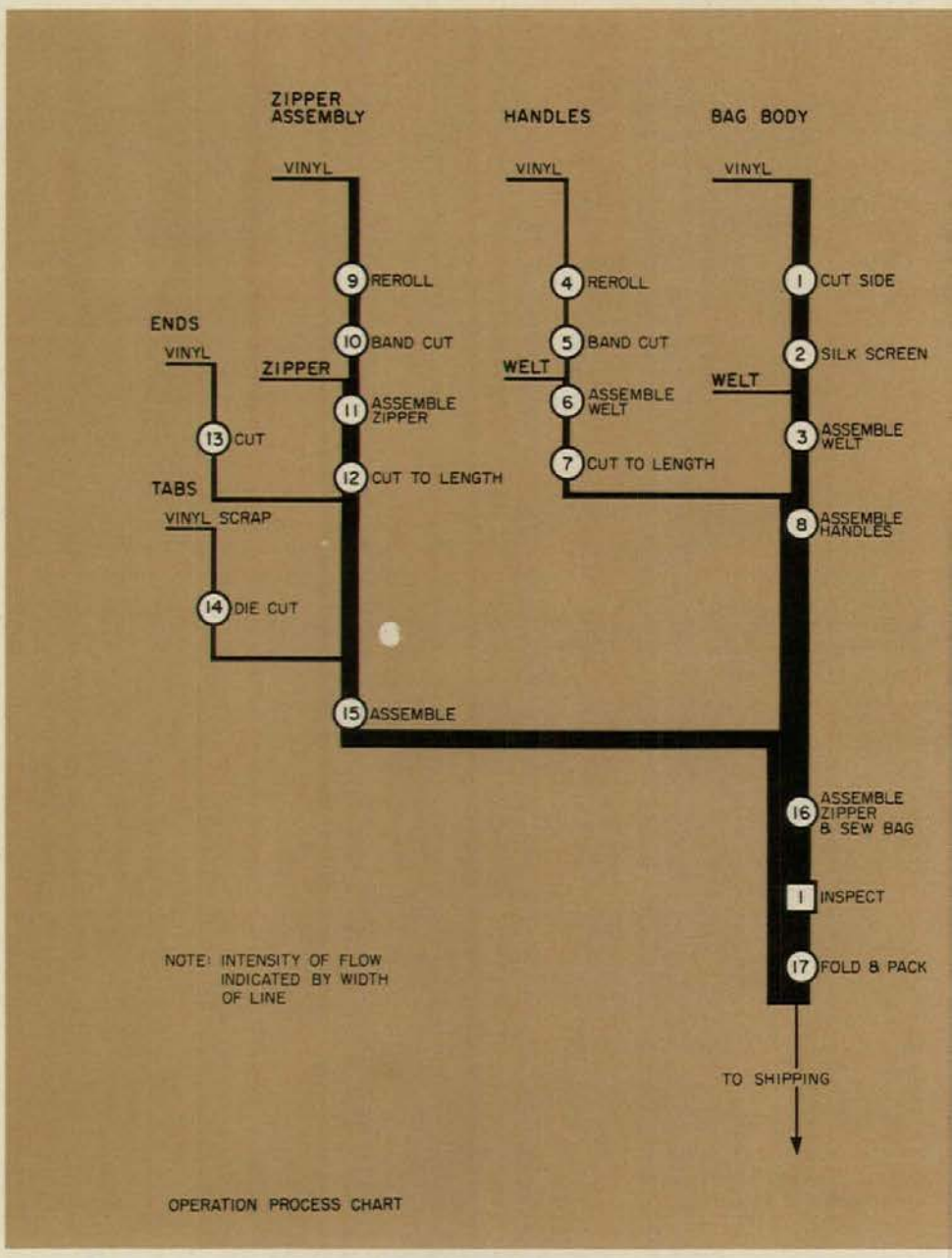
transportation of people is sometimes forgotten. Can the local road system absorb the cars belonging to employees of the projected industrial building, or will there be traffic jams at peak hours? Is there an airport near-by? Modern business involves a great deal of air travel, it may be a nuisance for executives if the airport is more than a half hour away.

Everyone knows that taking adequate site borings is a necessary step in site selection, although it is surprising how often unexpected foundation conditions do develop. Few realtors or plant managers realize, however, that other kinds of site conditions, which may look undesirable to them, can often be turned to advantage by the architect. A change in grade is a good example. If the process requires a separation of functions, or if movement of materials by gravity is desirable, then a sloping site can be a definite asset. Conversely, an architect can show that a proposed plant layout will not work well on a particular site; and that, if a certain configuration is necessary for the process, another plot of land would be better

The architect can also make a valuable contribution to site selection by predicting how future growth can take place on a particular piece of land. It may be preferable, for example, for all grading on the site to take place right away, rather than changing levels around foundations and roads at a later date. The location of parking and drainage fields is very important to expansion, and helps determine the size of the plot of land that will be necessary. An industrial facility should have from three to 25 times as much land as the building itself occupies. The rule of thumb is five times, but the figure depends on the industry involved.

The production process . . .





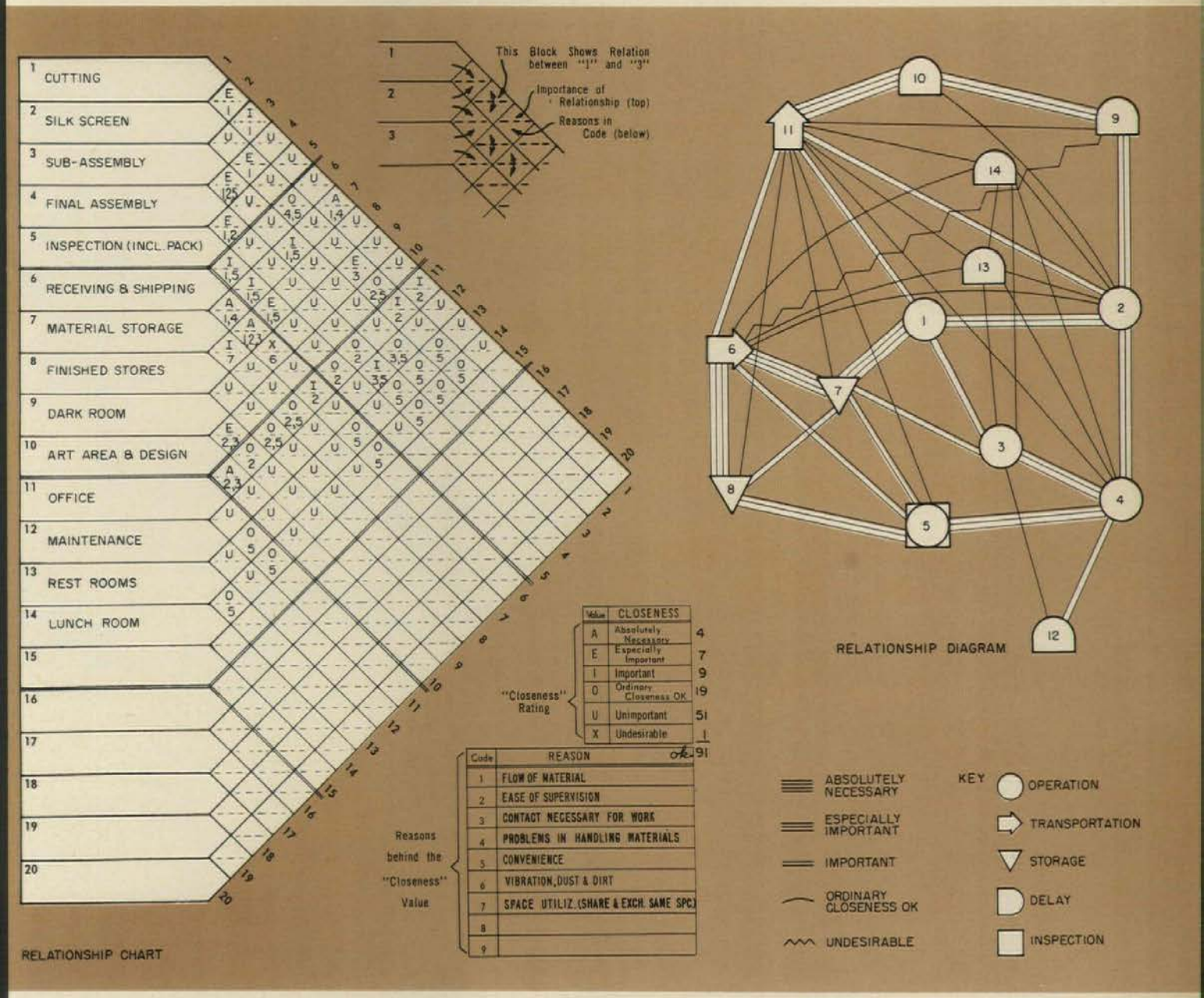
The secret of plant layout is rational analysis and evaluation

This simple and rational method for planning the layout of industrial buildings was developed by Richard Muther, an industrial engineer and management consultant, and his associate John D. Wheeler. It provides a way of analyzing the space requirements for different kinds of manufacturing processes, and it may also suggest an approach to other kinds of design problems.

The entire layout process is diagrammed above left. It begins with an analysis of the type and number of products (P) and the quantities (Q) in which each product is to be manufactured. In general, a small number of items produced in large quantities calls for production lines, or *layout by product*. When there are many items, and they are produced in small quantities, it will be more efficient to lay out the plant according to processes of forming or treating, or by fixed assembly locations, called *layout by process*.

A consideration of the movement of materials and the necessary relationships between various manufacturing activities produces a flow-activity relationship diagram. When the space requirements are added, a space-relation-

. . . is related to other functions to form a relationship diagram.



ship diagram results. This diagram can be turned into a number of different layouts, which are then evaluated according to a numerical system, and the best one selected.

The example shown here is for a layout by product that is fitted into an existing rectangular space. The product is an airline carry-on bag, and the necessary flow of materials is shown in the diagram above. Such flow diagrams are quite familiar, but the relationship matrix next to it represents a valuable new technique for correlating production flow with the other functions of the factory. All activities taking place in the building are identified and listed, the production line in this case being represented by items three and four on the chart. The degree of relationship is then posted, using a scale of six places ranging from absolutely necessary to undesirable. There is also room for a numerical code showing the reason for the relationship.

The chart can then be translated into a relationship diagram. The operations continue to have the same identifying numbers that they had on the chart, and they are now given a symbol, such as a circle, square, or triangle, following a standard method of differentiating the type of activity represented. The number of lines connecting various items indicates how important the relationship between them is to the production process. Note, for example, that operation two (silk screening) and operation three (sub-assembly) do not connect, but they both relate equally strongly to step four (the final assembly process).

The diagram looks complicated, but it is actually relatively easy to construct, if it is built up sequentially. The

Next, the space requirements are added . . .

ACTIVITIES AREA & FEATURES SHEET

Plant Plastic Bags, Inc. Project # 631 By C.H.C. with J.B.S. Date July 6 Page of

Physical Features Required: Overhead Clearance; Min. Unpitched Support Load; Min. Floor Loading; Min. Column Spacing; Water & Drains; Steam; Compressed Air; Ventilation or Fire & Explosion Hazard; Special Power; Special Lighting; Special Cleanliness; Air Conditioning

Relative Importance of Features: A – Absolutely Necessary; E – Especially Important; I – Important; O – Ordinary Importance; – – Not Required

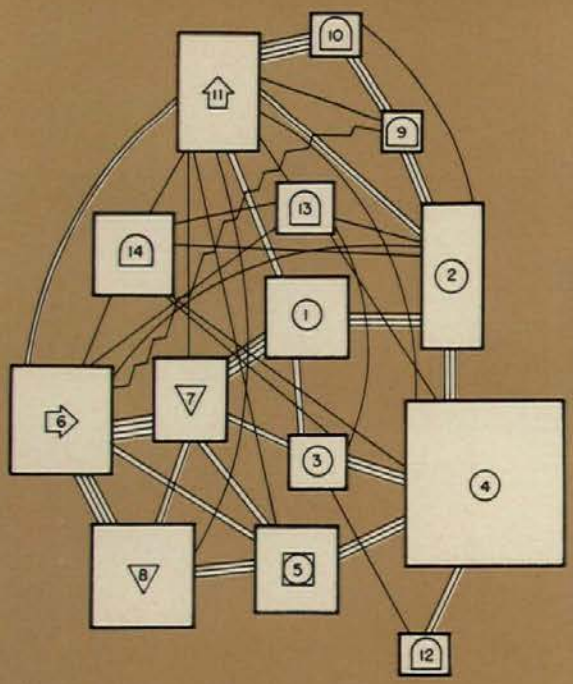
Requirements for Shape or Configuration of Area (Space)

No.	Activity Name	Area in SQ FT. Total: 24,400	Enter Unit and Required Amount under each: FT.	LBS.	Enter Requirements for Shape or Configuration and Reasons therefore
1	CUTTING	1,600	12	700	
2	SILK SCREEN	2,100			MIN. LGTH. DIMEN.-55'-0" (FOR DRYER)
3	SUB-ASSEMBLY	800			
4	FINAL ASSEMBLY	5,400			
5	INSPECT. (INCL. PACK)	1,700			
6	REC'G. & SHIP'G.	2,550			
7	MAT'L. STORAGE	1,650			
8	FINISHED STORES	2,500			
9	DARK ROOM	400			
10	ART RM. & DESIGN	500			
11	OFFICE	2,300			
12	MAINTENANCE	550			
13	REST ROOMS	700			
14	LUNCH ROOM	1,650			
15.					

SAME; NONE; 150 LBS./SQ. FT.; 220/110 VOLT

Notation References: a POSSIBLE USE OF OVERHEAD HOIST, LIGHT, – – 500 LB MAXIMUM LOAD; b SHOULD ACCEPT AUTOMATED DRYER, 55 FT. LONG AND 6FT. WIDE; c HUMIDITY CONTROLLED ROOM IS DESIRABLE; d AISLES INCLUDED

No. Activity Sheet of



SPACE RELATIONSHIP DIAGRAM

first step is to diagram the strongest relationships – those indicated by four lines–because it is obviously most important that they should be closely associated with each other. When a satisfactory relationship of the four-line connections has been established, the three-lines can be considered, and so on.

At this point, it is time to add the actual space requirements to the relationship diagram. Muther's method makes use of a chart that shows not only the areas needed for each operation but many other characteristics of the space as well, including clearance, loading conditions, and mechnical services. These requirements are then combined with the relationship diagram, and adjusted and rearranged to include modifying considerations. The ideal diagram is clearly capable of describing three or four likely solutions. All of them should be drawn, and then evaluated by an ingenious system that Muther has devised.

The considerations by which the layout will be evaluated are listed on a special evaluation chart. In the example illustrated above, six criteria are shown. The relative importance of each criterion is then established by a numerical rating system on some agreed upon scale, such as one to ten. In the example, flow of materials and handling economy is assigned more importance than cost considerations, labeled "least investment." Least investment, however, is given more importance than flexibility or ease of expansion.

Each of the columns, A, B, and C, represent a different layout. Each layout is evaluated on a five-place scale, A, E, I, O and U. The vowel letters are chosen because they are easily remembered, but they each stand for a

. . . and alternative layouts are evaluated to produce the final plan.

EVALUATING ALTERNATIVES

Plant/Area Plastic Bags, Inc. Project #631 Date July 8

Description of Alternatives: A. Split Storage Areas

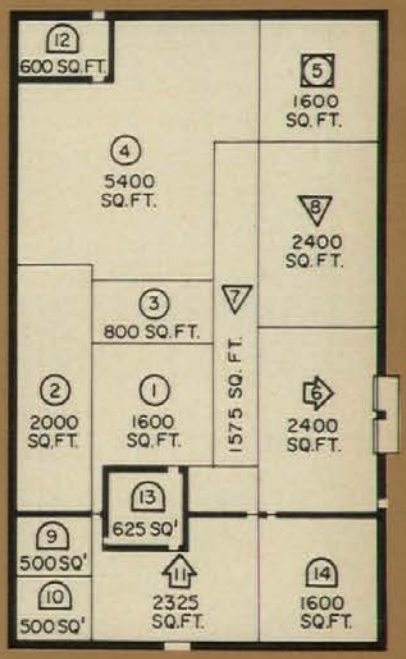
B. Extended Row Mat'l Storage C. Relocate Shipping Dock

D. E.

Weight set by J.E.H., B.E.W., C.H.C. Ratings by J.E.H., B.E.W., C.H.C. Tally by C.H.C.

FACTOR/CONSIDERATION	WT.	RATINGS AND WEIGHTED RATINGS A	B	C	D	E	COMMENTS
1 FLOW OF MATERIALS & HANDLING ECONOMY	10	E 30	A 40	I 20			
2 EASE OF SUPERVISION	5	I 10	E 15	O 5			
3 FLEXIBILITY	4	O 4	A 16	A 16			
4 CONVENIENCE OF PERSONNEL	6	E 18	I 12	E 18			
5 LEAST INVESTMENT	8	I 16	E 24	O 8			
6 EASE OF EXPANSION	5	O 5	E 15	A 20			
7							
8							
9							
10							
11							
12							
13							
14							
TOTALS		83	122	87			

EVALUATING ALTERNATIVES



OVERALL LAYOUT ARRANGEMENT

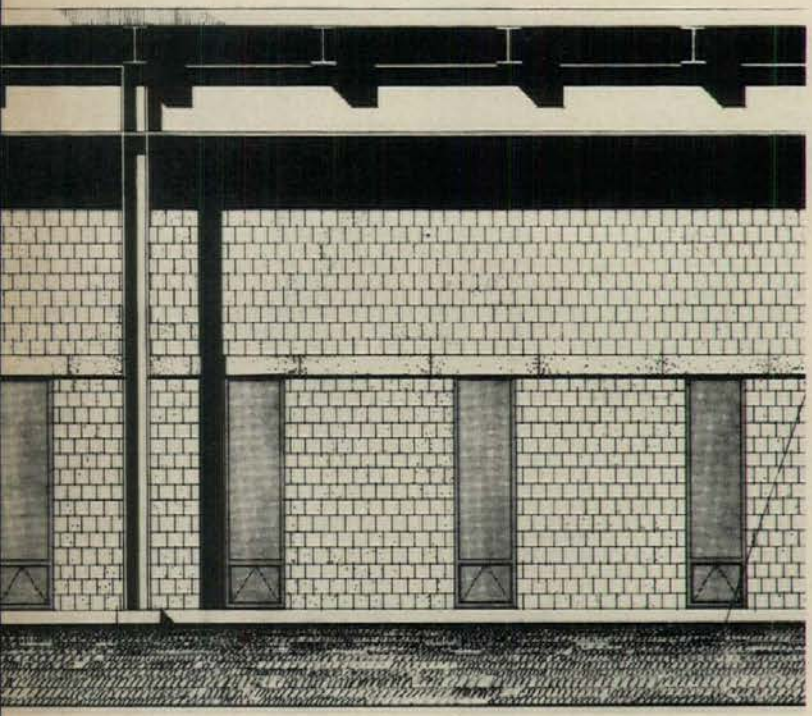
somewhat contrived description. A is almost perfect, E is especially good, I stands for important results, and O for ordinary results. A U rating is unsatisfactory. Layout A, for example, is rated E for flow of materials and I for least investment, whereas layout B receives A for flow of materials and E for least investment.

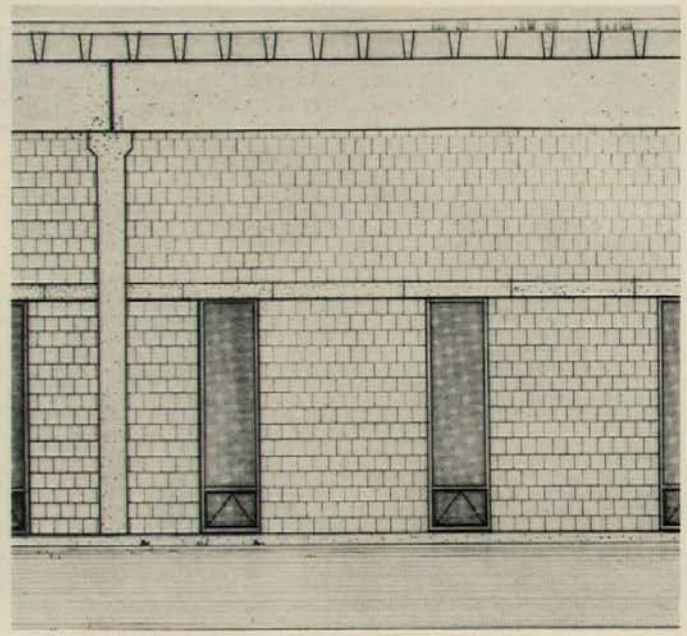
When all the people involved in the evaluation have agreed upon weights and ratings for each layout, the evaluation is really complete. It only remains to compute the score each layout has received. Up to this point, the ratings have been in letters, mostly to prevent the results from being calculated prematurely. Now, each letter is given a numerical value; A=4, E=3, I=2, O=1, and U=0. The rating is then multiplied by the weight and set down on the chart. For example, layout A receives 30 (10 x 3) points for flow of materials and 16 (8 x 2) points for least investment.

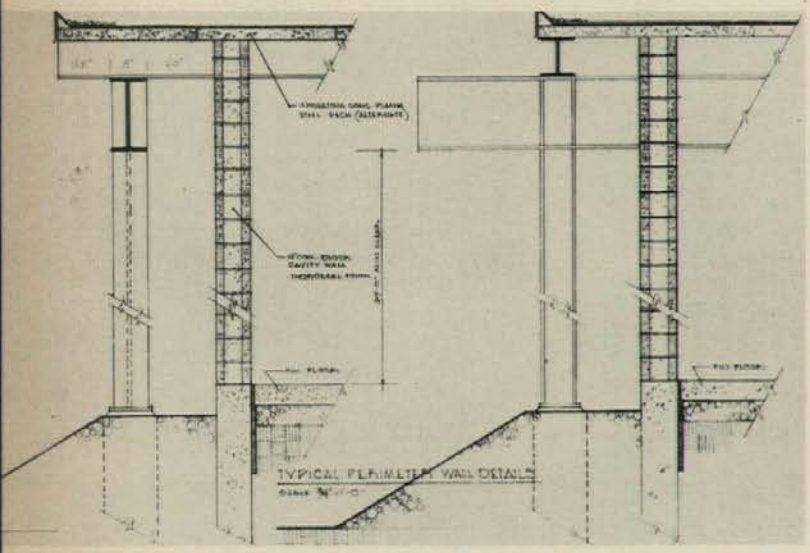
As the highest numerical score is received by layout B, it is clearly the best alternative by the standards used in the evaluation, and it is the one shown on the final plan, above.

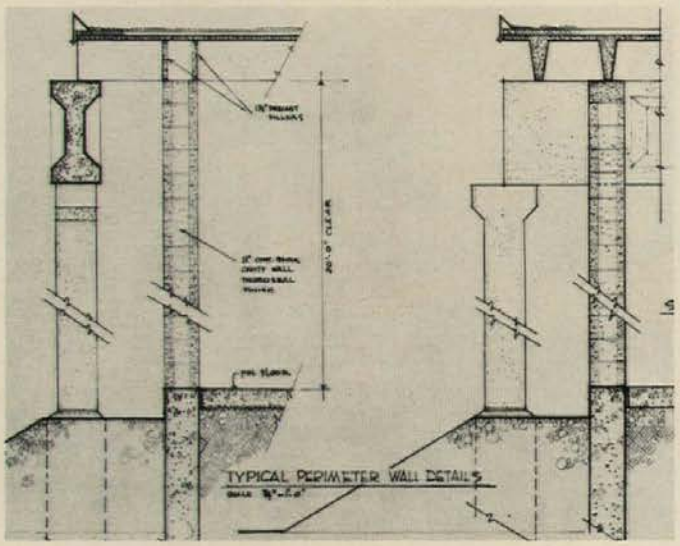
The design of an effective plant layout is thus seen to be a problem that can be defined and made to respond to analysis. It is by no means the mysterious process, based solely upon "know how," that it is sometimes made to appear. The example illustrated is naturally a simple one, and plant layout is a sufficiently complicated speciality to be a professional discipline in its own right; but the points in the process where space-relationship problems appear could profitably involve the services of an architect, who could work through the problem with the industrial engineer.

The architect's design was much less expensive than the package proposal . . .









The real key to cost control is knowing what you pay for

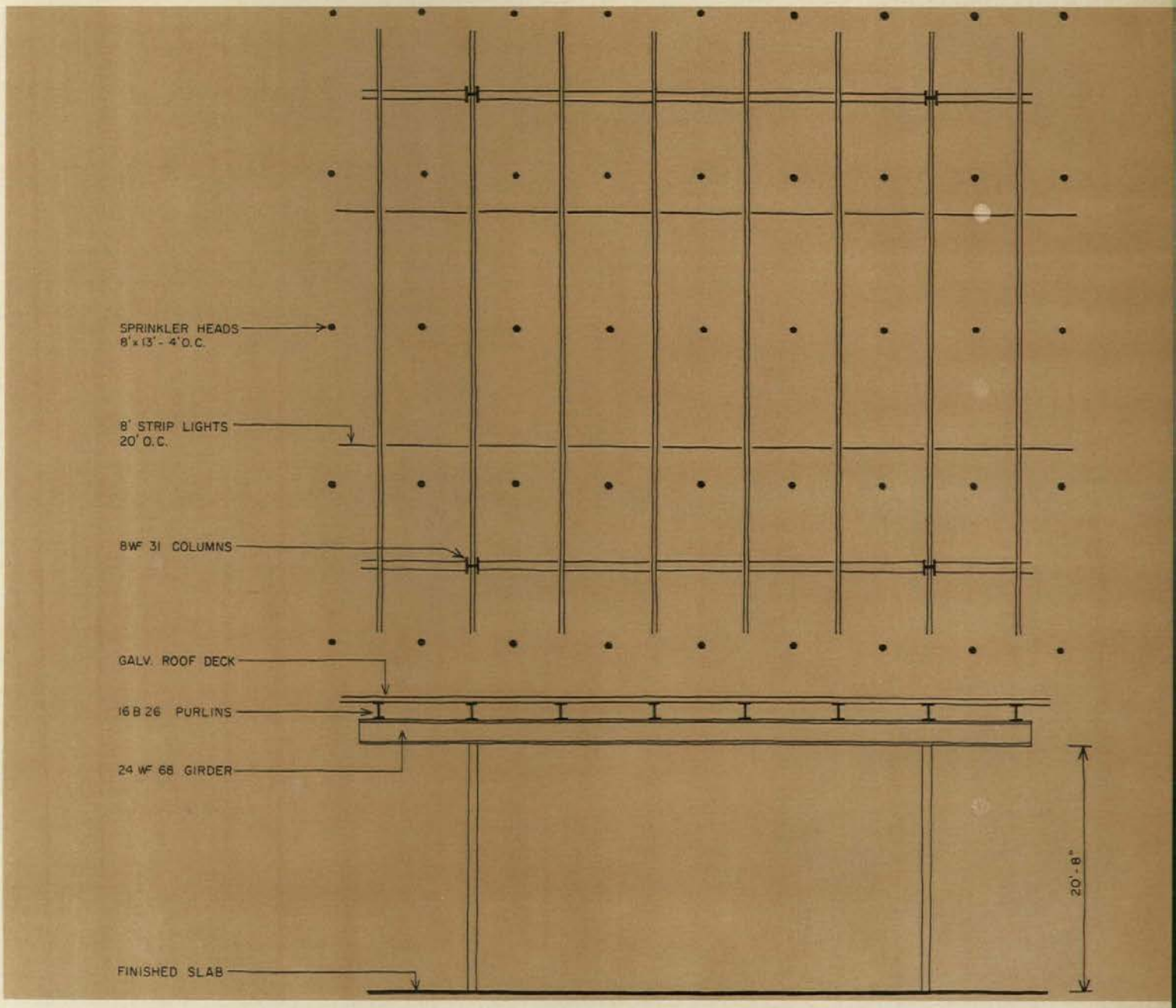
Opportunities to make a direct comparison between the cost of an architect-designed building and a design-and-construction package do not occur very often. No two buildings are alike, and, if an architect is hired, the package builder is obviously not going to be, and vice versa. However, when the architectural firm of Lundquist and Stonehill was retained by a large company to do master planning studies and design a warehouse building, the package builder who had previously been employed on the site decided to make an alternative submission.

The comparison is an instructive one: the architect's building ended by being very much cheaper than the design-and-construction package estimate, because the architect defined and examined the particular client's needs.

The client had stated the warehouse program in the most general terms, with a major requirement being to make bay spacing as large as possible; and the over-all space needs had been estimated on the basis of the company's current warehousing practice.

The package builder took these program requirements literally, used

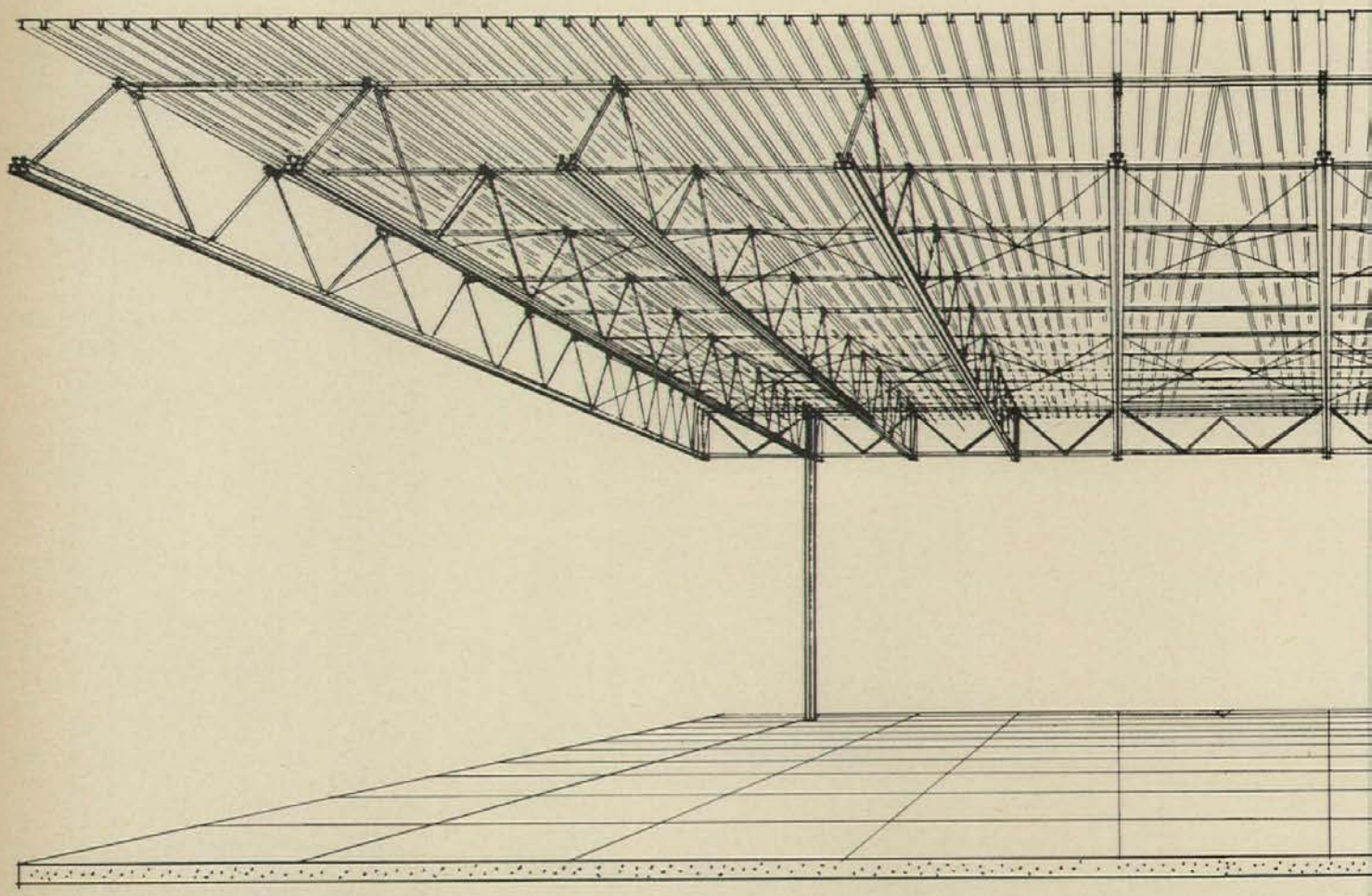
. . . because the architect analyzed the owner's real needs.



the client's square-footage estimate and designed for a 40- x 60-foot bay. The architects brought in a materials handling consultant– Dasol, Inc.–and together they determined that a 40- x 40-foot bay spacing would satisfy the client's needs as well, or better, than any larger span. In addition, the consultant recommended an increase in the height to which the pallets would be stacked, so that the building was designed to have a clear inside height of 21 feet. The increase in height substantially reduced the over-all square footage needed; and, since it is much cheaper to add height than to add more space, effected a substantial cost saving. The architects also saw that, as the building was now two stories high, the cafeteria and employee facilities could be placed above the office portion of the building. Everything could then be under one roof, a much better arrangement both economically and architecturally. The architects and consulting engineers Goldreich, Page, and Thropp worked out a cantilevered construction system, (above) to effect further savings.

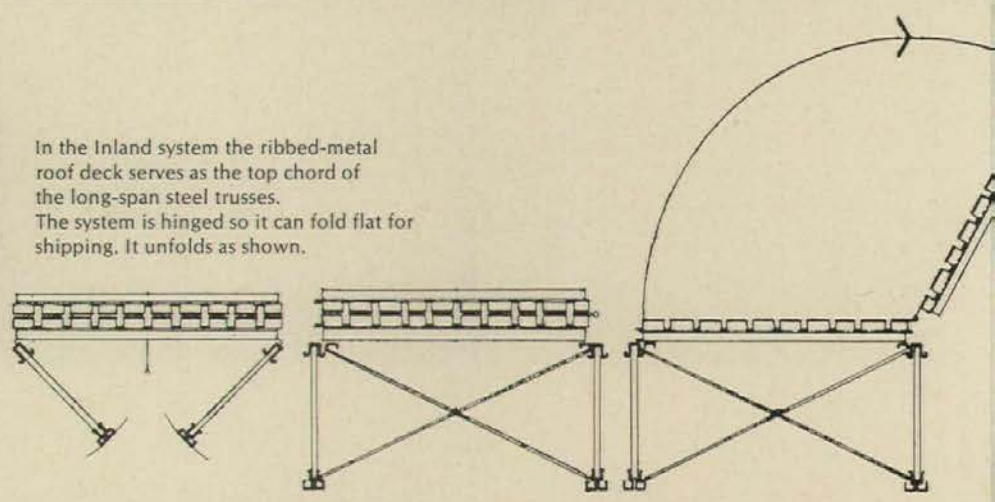
The package builder's order-of-magnitude estimate for their proposal was $2,422,000. The architects' estimate, which included some items not incorporated in the competing proposal, was $1,980,000 or $7.92 a square foot. This figure included partial air-conditioning and a 21-foot clear height. A warehouse on the same site, built by the package firm several years before, had come in at $8.50 a square foot for a 14-foot clear height and no air-conditioning. The construction contract for the architects' building was awarded on a competitive bid basis to the W. J. Barney Corporation at figure lower than the architect's estimate.

The architects received the job on August 2 . . . Construction began October 15 . . .





In the Inland system the ribbed-metal roof deck serves as the top chord of the long-span steel trusses. The system is hinged so it can fold flat for shipping. It unfolds as shown.



An industrial building that uses S.C.S.D. components to speed construction

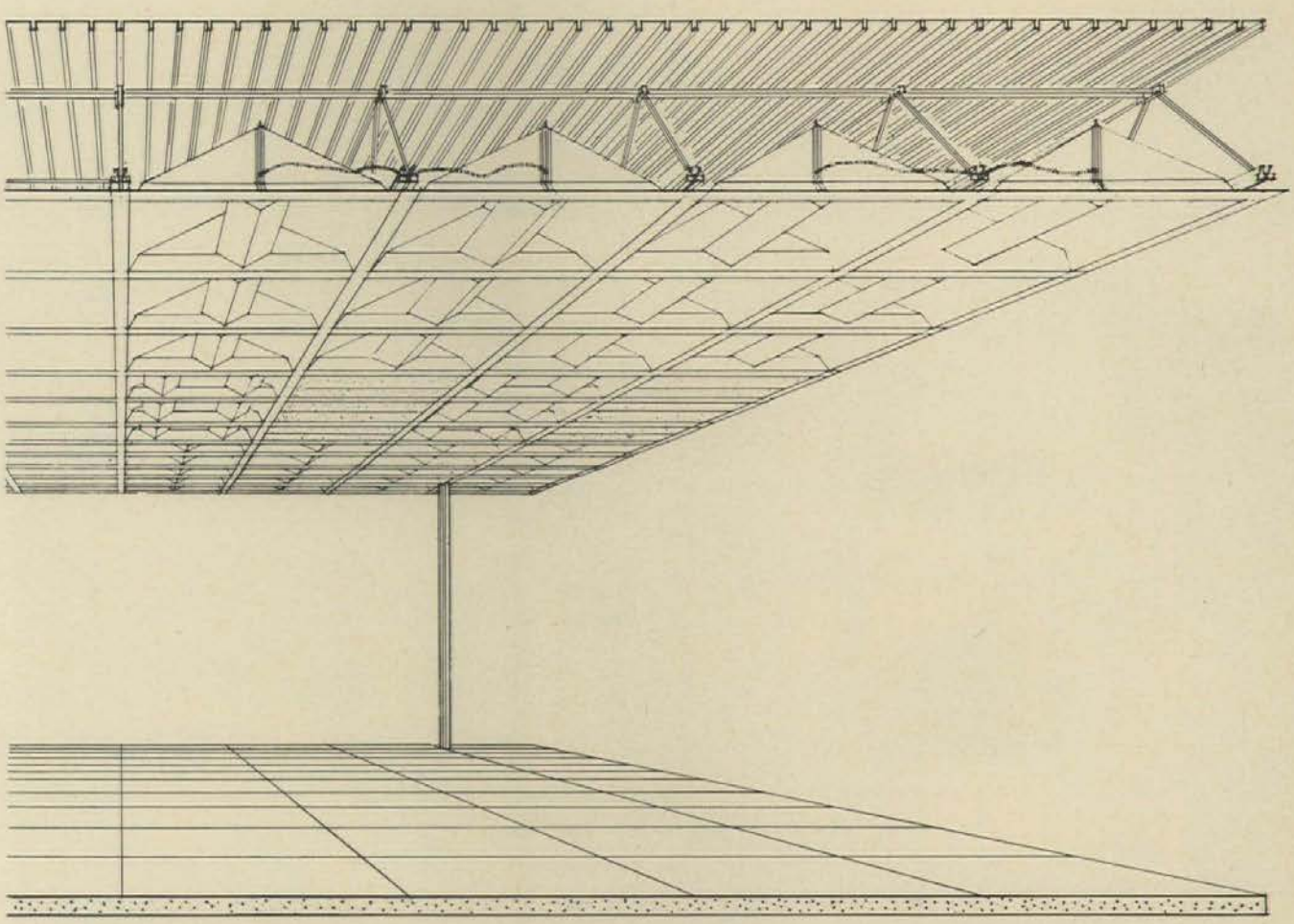
The following schedule is an example of the increasing importance given to the speed with which industrial buildings are designed and constructed.

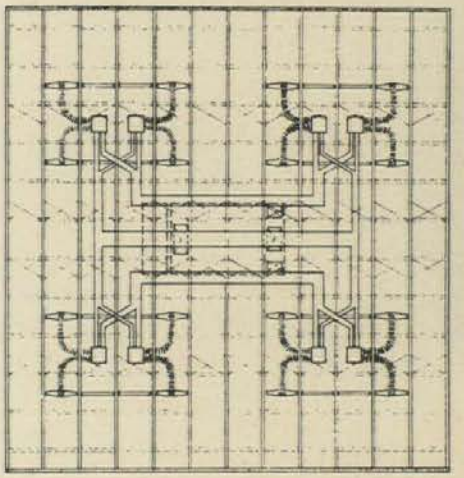
On August 2, 1965, Lockheed Aircraft contacted the office of Heery and Heery, an Atlanta architectural firm. Lockheed had made a proposal for the C-5A 700-passenger jet transport, and, if they were successful, they would need major new engineering space in a very short period of time. It would be necessary to award the construction contract by October 15, 1965, with hopes of occupancy 30 to 60 days after the first of the year. Lockheed had selected the site, and suggested the use of a prefabricated building system.

That evening the architects determined their own design and engineering schedule and talked to a major manufacturer about critical points of scheduling and delivery. The next day they negotiated an architectural contract on a flat-fee basis, with termination rights.

By August 10 the architects had completed the first diagrammatic floor plan, determined the bay spacing and obtained approval by the client. They

. . . the owner began to take occupancy on January 18.









Lennox Industries modular mechanical system uses a 15-ton cooling unit and gas-fired heater that is located on the roof. Ductwork fits into the prefabricated ceiling system.

then issued bidding documents for the prefabricated construction system.

The contract was awarded to Inland Steel on August 18, 1965. Inland had submitted the low bid and most acceptable schedule, with thousand-dollar-a-day liquidated damage provisions, for furnishing and erecting the steel frame, roof and roofing, fascia, ceiling grid, ceilings and light fixtures, using the components originally developed for S.C.S.D. (School Construction Systems Development) project in California. The contract, $1,863,000 for 300,000 square feet, could be transferred to a general contractor at a later date.

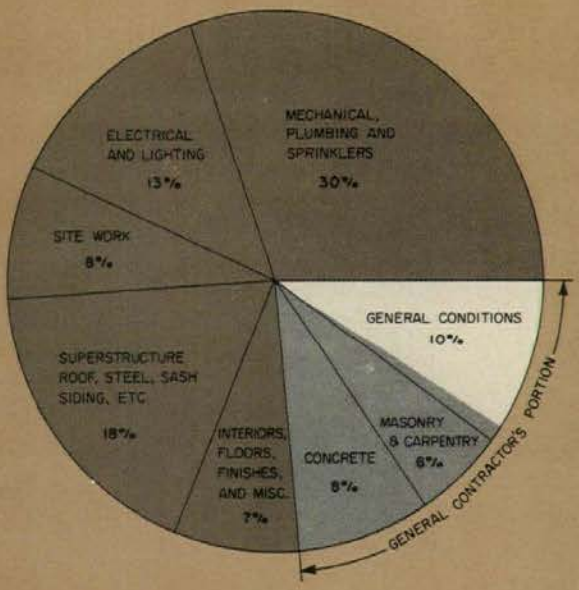
The preliminary design was completed and approved by September 1. On September 3 a $696,000 contract, with $500-a-day liquidated damages, was awarded to Lennox Industries for the complete heating, ventilating and air-conditioning system, also using S.C.S.D. components. At the same time, three general contractors were invited to submit pre-negotiation proposals and a C.P.M. consultant was retained.

The successful contractor accepted a schedule of 123 calendar days for the construction of the first 180,000 square feet and 154 calendar days for the full 300,000 square feet, with liquidated damages of $3,000 a calendar day.

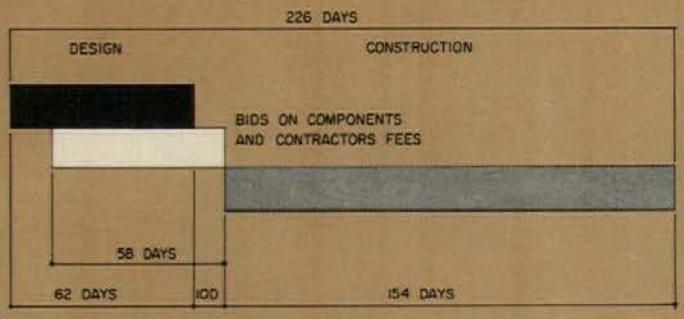
Final working drawings and specifications were completed on September 30, the day that the C-5A contract was formally awarded to Lockheed. Construction began on schedule, on October 15.

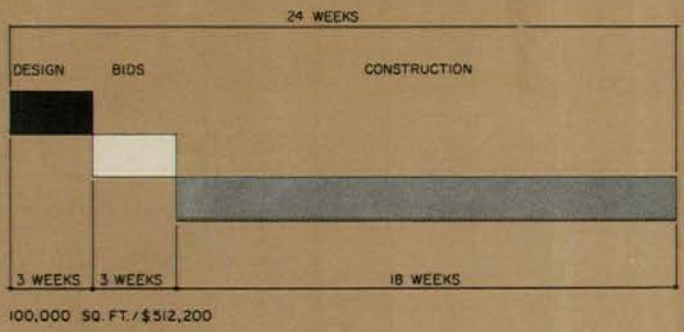
The client occupied the first 54,000 square feet on January 18, 1966, and continued to take occupancy, in increments of approximately 36,000 square feet, until, by April 20, the building was complete except for details of finishing.

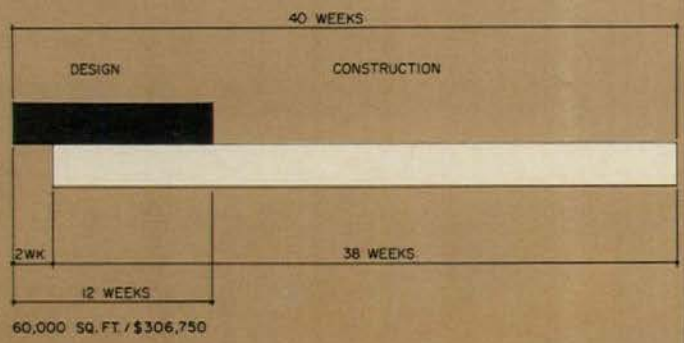
A negotiated contract duplicates the "package" schedule . . .



Only about 25 per cent of the construction is done by the general contractor's own employees.







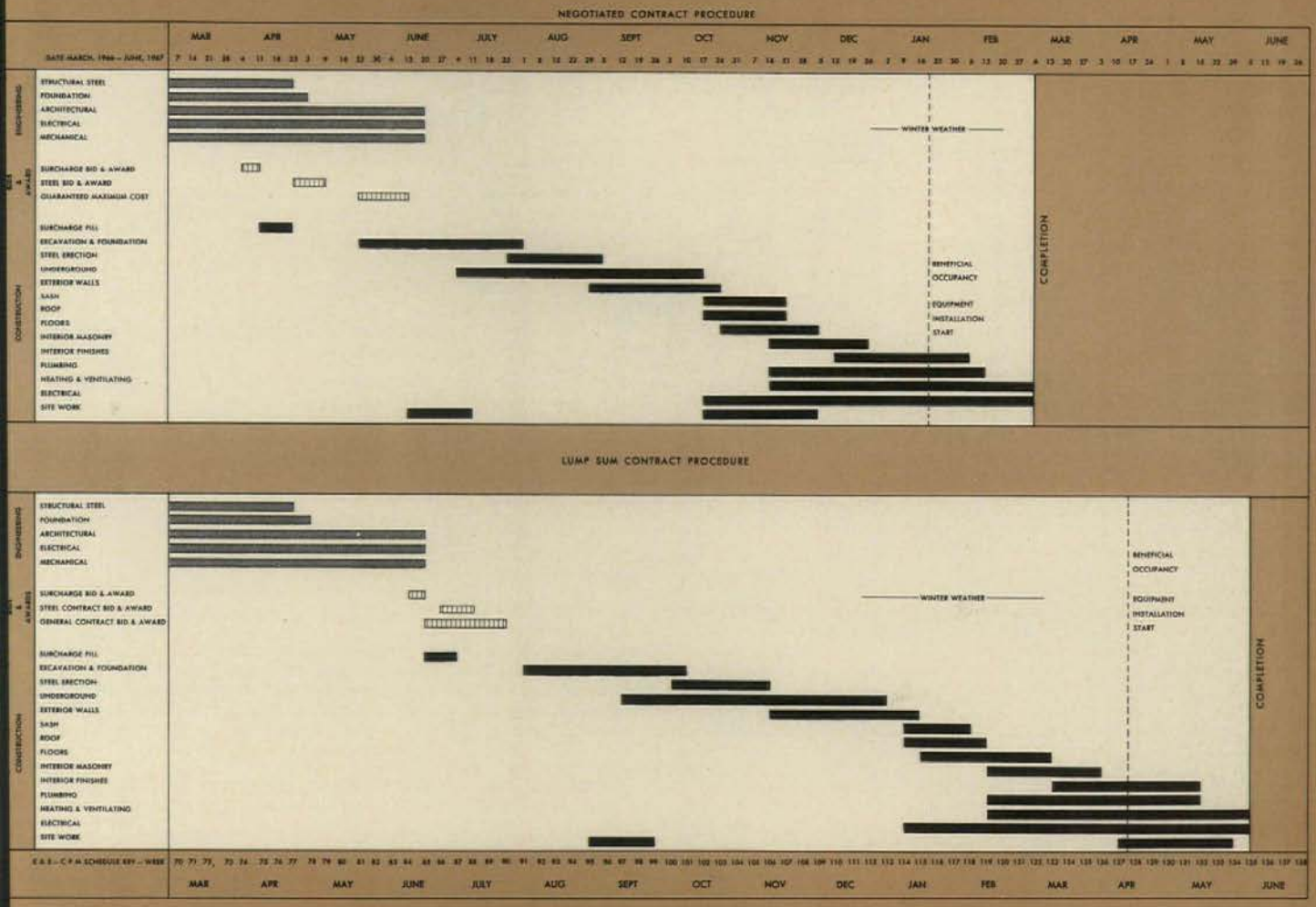
Starting work before drawings are completed can save time, but may not always be the best procedure.

Competitive bidding or negotiated contract: which opposes the package better?

The difference between an achitect-designed industrial building and one built under the so-called package procedure is often said to hinge on the presence or absence of a set of contract documents that has been competitively bid. This distinction is highly over-simplified, as all the scheduling advantages of the package can be achieved in an architect-designed building by means of a negotiated contract. The construction management fee in a negotiated contract can be "bid" competitively, by asking several contractors to submit pre-negotiation proposals.

The advantages of competitive bidding on industrial construction vary considerably, depending upon the kind of building and the conditions under which it is wanted. Frank Whitney, an architect who is president of Walter Kidde Constructors, Inc., (which does work under the "package" procedure and also bids competitively for other jobs) uses the circle graph shown above to make a very interesting point. According to Whitney, the general contractor will only expect to build about a quarter of the average industrial building with his own employees; and the

. . . and adds all the advantages of the independent architect.



rest, much of it mechanical and electrical equipment, will be subcontracted. As a result, the general contractor does not have much leeway in his bidding, and the bids will tend to be very close together, unless the contractor has made an error or is willing to take the job at a loss. Neither of the last two conditions makes for a very satisfactory construction job.

Whitney says that, in his experience, the type of contract *per se* makes little difference: "About the only difference between a negotiated contract and a lump sum contract in terms of ultimate cost is that the negotiated contract gets built quicker, with better workmanship and less bloodshed."

The consensus among architects who do industrial buildings seems to be that it is hard to beat a good set of contract documents competitively bid. However, actual construction cost may be of less interest to the owner than the occupancy date.

Most industries expect a new building to pay for itself in a relatively short period of time, such as 10 years. Under such a system, even a month's delay may have a definable cost that is larger than any possible construction cost saving. If the industry is tryng to meet a marketing schedule in a competitive situation, the cost of delay may be greater.

A detailed comparison of both kinds of construction schedules is shown, above right. Starting construction before design is completed is not always the best procedure, however. The three bar charts, above center, show that much depends on the nature of the job. In any case, construction items that take a long time to deliver should be ordered as soon as possible, and taken over later in the general contract.

Some words to the wise from an experienced industrial architect . . .

A CHECKLIST FOR BUILDING PLANNING

1. In arranging the functional elements of the plan, don't put truck shipping and receiving docks in line of proposed expansion. This is an element of the building which is expensive to relocate, and the process of relocation makes continued operation of the plant difficult.

2. In the roof design anticipate, wherever possible, future air conditioning requirements so that framing may be provided in the construction for future roof cooling towers.

3. Adequately design the roof structure for possible future suspended loads. Rolled steel sections are better for hanging concentrated equipment loads than open web steel joists.

4. Consider future floor loading. If there is heavy equipment in one portion of the building, recognize that this equipment may expand into another portion of the building which may at the present time be used for some other function. Provide increased floor loading capacity and, if foundations may be required for equipment, provide joists for easy removal of portions of the slab.

5. In the initial design stage, know the impact of the prevailing code on future growth of the plant. While the area originally planned can be open floor area, if and when additional square footage is added, the building may have to be subdivided. Or, perhaps future expansion might require installation of sprinklers which are not needed at the present time. If such is the case, plans should be made now for this facility. The same is true of emergency lighting. Recognize that it may be required later.

6. Mezzanines when required should be constructed independently of the building, so that they may be altered, enlarged, or relocated.

7. Toilet and locker facilities should be placed so that they do not impede later expansion or rearrangement of the operating department. In the initial design, careful consideration should be given to whether such facilities will expand at the present location or additional ones will be required later.

8. In providing for future expansion, design column footings along the wall which is to be expanded as typical interior footings, so that they may receive the roof load. Also, punch structural steel for future connections.

9. Consider the use of demountable panels in walls where expansion is to take place.

10. In the layout of the building, locate the offices in such a manner that they do not limit plant expansion. Remember, at the same time, that as the plant expands, the offices will need additional space.

11. Remember that cafeteria or lunchroom facilities must expand along with a large increase in plant size. We know of one manufacturer who carefully planned plant expansion but, in the initial plan, located the cafeteria in an area where it could not expand, and the expansion of the plant cut off service to the food preparation facilities.

12. Don't forget to provide access openings for the installation or replacement of process equipment.

13. In the electric system, for utmost flexibility, consider the use of plug-in bus ducts.

14. In the design of lighting, arrange lights in areas of low intensity so that if the occupancy changes require higher lighting intensity, additional fixtures may be added. It should go without saying that feeder lines and lighting and power panels must be of adequate size to accommodate future electric needs.

15. For maximum flexibility and ease of maintenance, provide central ground level space for all cooling towers. This also avoids unsightly appearance of towers on the roof.

16. Consider the use of high-strength bolts in the structural steel frame of the building. Bolting in lieu of welding or riveting not only speeds erection but, most important to flexibility, also simplifies removal.

17. Provide adequate clear height under piping, sprinklers, and lights. In taking alternate construction bids recently, we proved that two extra feet of roof height added only five cents a square foot to the building cost.

18. If small added height may be required for a particular process area, consider continuing that height throughout the plant. Cost may be minor, but flexibility will be unlimited.

19. If partitions are required in some areas, consider flexibility but don't be misled on costs.

A CHECKLIST FOR MECHANICAL PLANNING

1. Design for future estimated requirements (10 to 20-year period).

2. Install piping sized for full future estimated requirement.

3. Install equipment in multiple units. One unit to serve as standby until needed in future.

4. Design for future equipment.

a. Future boilers including related equipment and fuel oil tanks.

b. Future cooling tower.

c. Future refrigeration equipment.

d. Future equipment for services.

5. Install full-size piping loop for services with plugged tees or valved outlets. Loop permits relocations of equipment without installing new piping. Plugged tees and valved outlets permit connections without shutdown of services.

6. Install underground piping of adequate size for future expansion, to avoid future trenchwork.

7. Size air handling and ventilating systems for future load in the areas served by these systems.

These two lists were prepared by the partners of the Ballinger Company, a Philadelphia architectural firm that does a great many industrial buildings.

Flexibility and expansion must be part of original design

A most important part of any industrial building design is the need to recognize future possibilities of change and expansion. Many items which add little or nothing to the original construction cost can become very expensive if added later.

The only way in which these factors can be anticipated is through a detailed consideration of the clients actual and future needs. The architect, with his independent judgment and wider experience, can be expected to help his client with these problems, and warn of possible pitfalls.

As the checklists above show, the flexibility and expansion problems of an industrial building are analagous to such problems in other kinds of buildings. The site itself must always be considered: as the plant expands, the need for ancillary facilities can be expected to increase as well, and original grading should anticipate both new buildings and new parking areas, drainage fields, and so on. Within the building, the effect of change and expansion must be considered for every construction element, and mechanical equipment should be sized for future needs.

ARCHITECTURAL ENGINEERING

The ultimate extension of the Indian rope trick

A self-supporting, tapered cable, standing straight up and extending at least 22,000 miles into space, has been proposed by four American scientists. It would be able to perform this fantastic feat because the cable, in fact, would be in orbit. The cable would be put into place as a satellite timed to the earth's revolution, so that the cable would be, in effect, a stationary extension of the earth's radius.

Such a cable would have many valuable uses, the scientists contend, including those of hoisting large payloads into orbit mechanically, or acting as support for high altitude laboratories.

The device was proposed by John D. Isaacs and Allyn C. Vine, oceanographers; Hugh Bradner, a physicist; and George E. Bachus, a mathematician, and reported in the February issue of Science magazine.

The decision of the sober organ of the American Association for the Advancement of Science to publish what one referee describes as "a delightful idea" was made in spite of reservations about stability of the skyhook. "The majority," the editors explained, "recommended that we accept this paper in spite of their reservations."

New push for fallout shelters may involve Federal subsidy

Ten-million dollars has been requested by the President for the fiscal year beginning July 1, 1966 for an experimental program to test the feasibility of Federal payments for the inclusion of low-cost, dual-purpose public fallout shelters in new non-federal public and private buildings.

The Office of Civil Defense has developed design and construction guides for dual-purpose shelter space. The provision of fallout shelter space in such buildings as schools and office buildings is said to average 1 per cent or less of the total project construction cost, following OCD recommendations. The proposed experimental program would limit subsidy payments to 1 per cent of the project cost.

The Federal program will seek to: (1) determine whether this project is effective in meeting shelter deficits; (2) determine the reliability of program estimates and the lead times involved; (3) test management techniques; (4) identify problems and afford an opportunity to devise solutions.

Some practical new facts on air conditioning

Determining the capacity of air-conditioning equipment is sometimes made complex because of the influence of thermal storage on cooling load. That is —the building structure, partitions and equipment soak up the instantaneous heat gain from the sun, lights and people and delay the impact of these loads on the air-conditioning equipment. Since the amount of heat storage is extremely difficult to determine mathematically, Carrier Air Conditioning Company several years ago developed a procedure for determining the effect of thermal storage, based on a series of tests in actual buildings. Carrier has now included this information in a "Handbook of Air-Conditioning System Design," published by McGraw-Hill Book Company.

The handbook, which is wholly based on field-tested data and knowledge and experience gained by engineering, sales, service and construction personnel in the Carrier organization, became a standard reference work in the air-conditioning field the date it was published.

In addition to presenting data for preparing cooling and heating load estimates, Part 1 of the 776-page handbook has an application chapter which bridges the gap between load estimating and equipment selection.

Other parts of the handbook deal with practical design and layout of air-handling equipment and air-distribution components; design and layout of piping systems; applications and selection of refrigerants; selection and application of air-handling equipment, refrigeration apparatus and auxiliary equipment for air-conditioning systems; guides for selecting the proper air-conditioning system for specific applications; and descriptions of all-air, air-water and direct-expansion systems. The handbook sells for $25.

This Month's AE Section

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Continuing controversy: What size should a 2 by 4 be?

Sources close to the softwood lumber industry suggest that perhaps the differences between the producers and sellers of seasoned lumber and green lumber are irreconcilable. The primary reason seems to be that the markets for each

are just too strong for any concessions to be made. Also the resistance of the green lumber advocates to change is exceedingly strong. The implication to be drawn from this is that perhaps there might be two sets of standards—one for seasoned and one for dry.

What appeared to be a compromise last fall collapsed in March when the West Coast Lumber Inspection Bureau withdrew its support, not ostensibly on the question of sizes but on a concern for using working stresses to relate sizes.

The heart of the controversy revolves around the size of a 2 by 4. The dry lumber people favor a 1½-in. thickness for a dry 2 by 4 (less than 19 per cent moisture content). The green lumber (over 19 per cent moisture content) people want a 1⅝-in. thickness for a green 2 by 4. The compromise solution provided for a 1 35/64-in. thickness as being equivalent to a 1½-in. dry size. The reason for this given by the American Lumber Standards Committee, was that the 1 9/16-in. dimension favored by the West Coast Lumber Inspection Bureau was considered scant of a technical equivalent of the dry size, and the 1 17/32-in. size favored by the Western Wood Products Association and the Southern Pine Inspection Bureau was slightly above the technical equivalent. The green equivalent size was thus set at 1 35/64-in.—or halfway between.

Early this year the Department of Commerce announced its intention to withdraw the 1953 softwood lumber standards in September. In anticipation of this, and because the "compromise" solution appeared doomed, the Western Wood Products Association notified the American Lumber Standards Committee that it would include non-standard minimum finished sizes for dry and unseasoned lumber below 3-in. nominal size in its new lumber grading rules to be published before July. But the A.L.S. Committee meeting on March 23 voted to prohibit publication of non-standard sizes in grade rule books. W.W.P.A. counsel warned the A.L.S. Committee that he was "seriously concerned" over restraint of trade implication of any action prohibiting the publication of non-standard sizes when properly identified. The A.L.S. Committee also voted to adopt a new set of lumber sizes proposed by a representative of the Southern California retailer group for submission to the Department of Commerce. This latest proposal would leave green lumber sizes virtually the same as at present and reduce dry sizes from those authorized by the 1953 lumber standard.

Apartments install total energy system

Natural gas turbines will be used by owners of the new Canyon Crest condiminium apartments in Salt Lake City to generate their own power. The exhaust gas from the turbines will be used for heating and cooling the building, and providing domestic hot water, as well as heating an outdoor swimming pool. The three turbine generator sets being used (each rated at 218 kw) were engineered and installed by Air Research Manufacturing Company. The exhaust from the turbines is ducted to a hot water boiler rated at 4,800,000 Btu per hour. The architects were Ashton Brazier Montmorency & Associates; A. B. Paulson, consultant architect; and Sawyer Investment Company of Salt Lake City, the builder and managing agent.

Panel replaces Utzon on Sydney Opera House

The New South Wales State Government has appointed a panel of architects to replace Jörn Utzon. Under the government architect E. H. Farmer will be three firms: Rudder, Littlemore and Rudder Fty. Ltd.; Hanson, Todd and Partners; and Peter Hall, a design architect in the government architect's branch of the public works department. Hall will be responsible for design, L. Todd for contract documents and D. S. Littlemore for supervision, but Farmer will be the senior partner in matters of design, supervision and administration.

Built-up roofs get closer scrutiny

The part of the building's weather envelope that seems to be causing the most concern these days is the built-up roof. Some recent signs of this:

1. *An A.S.T.M. symposium on Engineering Properties of Roofing Systems* to be held at the organization's annual meeting, June 29 in Atlantic City. Purpose of the symposium is to present information on the nature of adverse climatic conditions and the response of the roofing systems and their components. The symposium will deal with design and construction of roof flashing and expansion joints, wind resistance of roofs, effects of moisture on roofing membranes, and methods of counteracting thermal shock. Investigations by Australia, Canada and Japan will be reported as well as studies by private and government organizations in the U.S.

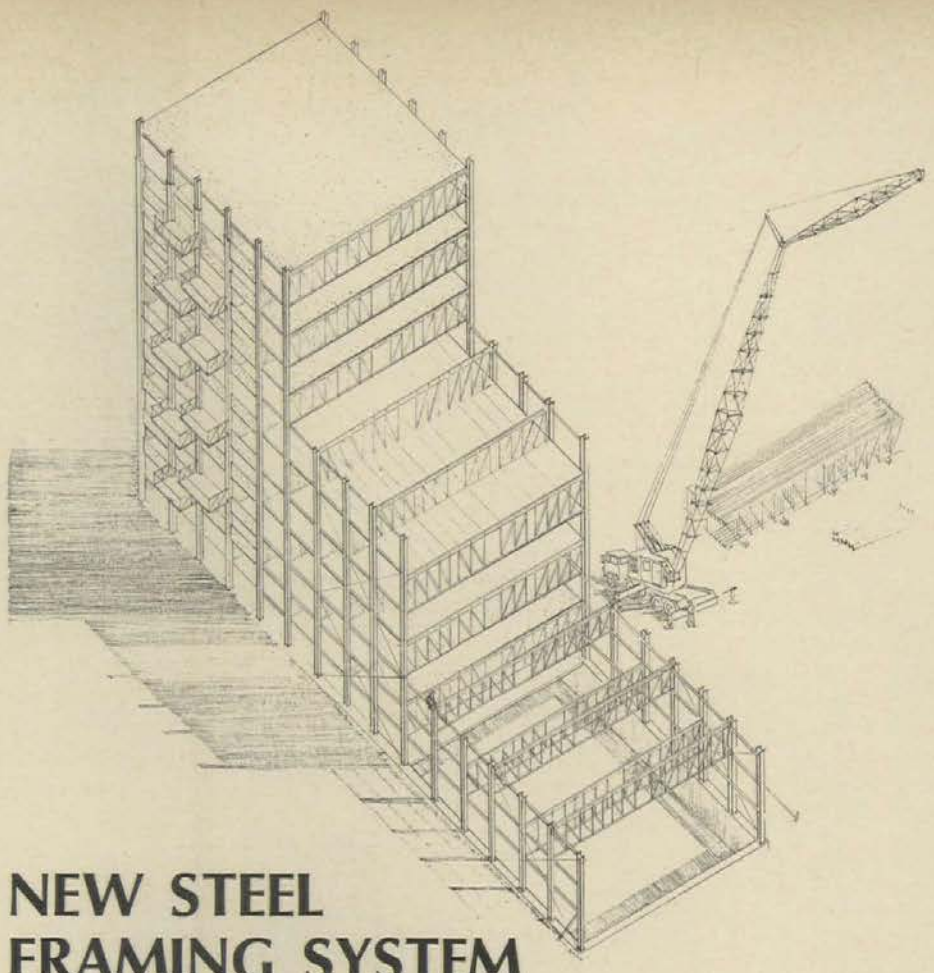
2. *A symposium for specification writers and engineers on roofing problems* sponsored by Owens-Corning Fiberglas to be held in 16 cities. Objectives of the symposium are to outline each factor in roof performance in a cause-and-effect sequence, and to show that recent advances in roofing technology can minimize roofing failures. Subjects to be covered are: (1) influence of structural layout and design on roofing system performance; (2) properties of built-up roofing and insulation; (3) flashing; (4) weathering; (5) application of roofing, and (6) specifications.

One of the speakers in the O-C-F symposium, Werner Gumpertz, points out that most splits in built-up roofing are caused by local stress concentrations or excessive temperature movements. One example he cites is the use of exposed steel beams at the roofing line. The spandrel beam exposed to the sun's heat will expand relative to interior steel, with movements being in the range of 1 in. in 100 ft. Differential movement concentrates in the joints, resulting in roofing membrane cracks.

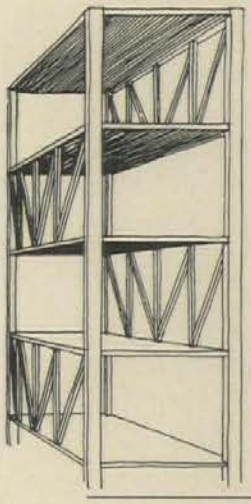
3. *A recent survey of plant engineers on roofing bonds.* The survey, conducted by Plant Engineering and published in its April issue showed "dissatisfactions with the roofing bond in general." Answers to the magazine's survey came from 161 members of the American Institute of Plant Engineers and 129 readers. The responses showed that approximately three-fourths of both groups had repaired or replaced a bonded roof. Those against the bond described it as, "generally useless; only a guarantee that the materials are good; only as good as the installer." Those for the bond described it as, "some assurance of quality; probably all right up to 10 years; is a means to assure roof inspection."

How to spare that tree

Preventing injury to trees either due to careless construction operations or any site changes such as flooding or compaction of soil is discussed in an eight-page bulletin issued by the University of Illinois Small Homes Council-Building Research Council in Urbana. The bulletin, the first in a new publication series of Technical Notes, has been prepared by plant pathologist Donald F. Schoeneweiss. He points out that tree roots may be suffocated by placing heavy machinery or building materials over the root system, or by raising the grade or water table (decreasing drainage.) Several techniques are discussed for coping with unavoidable grade changes. The publication, "Prevention and Treatment of Construction Damage to Shade Trees," costs 25 cents.



NEW STEEL FRAMING SYSTEM PROMISES MAJOR SAVINGS IN HIGH-RISE APARTMENTS

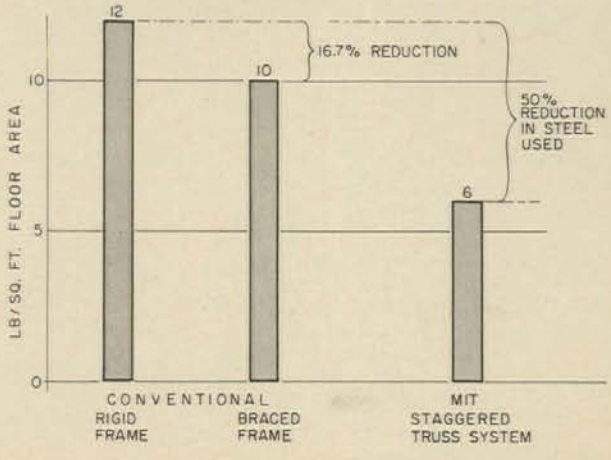


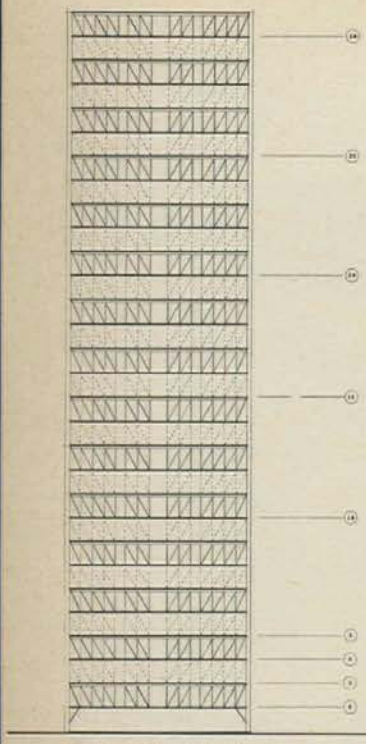
A new concept in steel framing for high-rise apartment buildings—which uses half as much steel as a conventional rigid frame and 60 per cent as much as a braced frame, without restricting planning flexibility—has been developed by an architectural and engineering team at M.I.T.

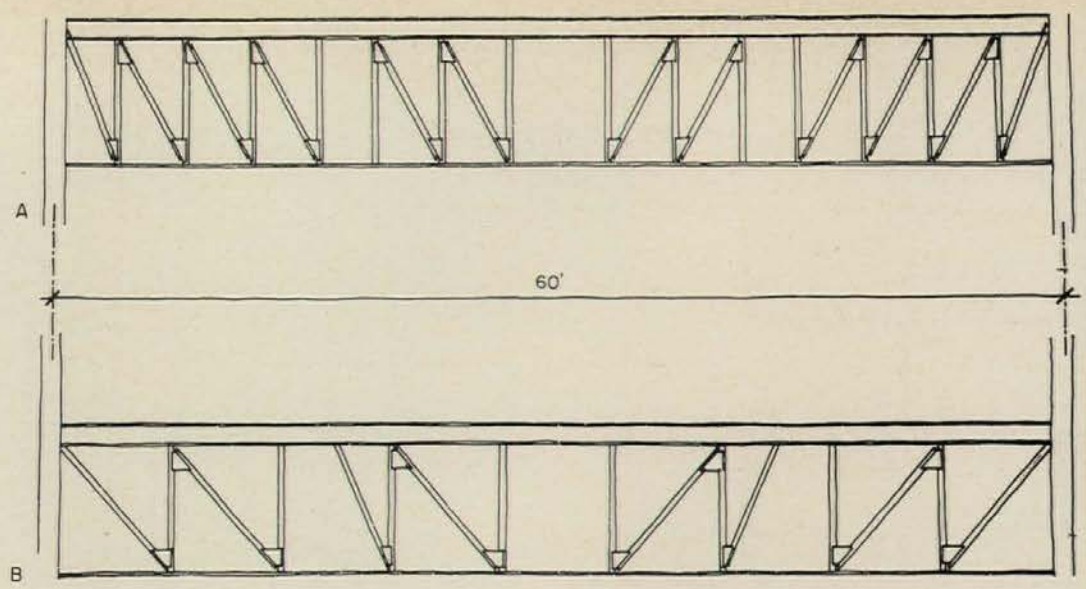
The key to the large savings is an ingenious system that recognizes that reduction in over-all structural costs could best be achieved by finding a more efficient way to resist wind loads, and by keeping floor spans as short as possible.

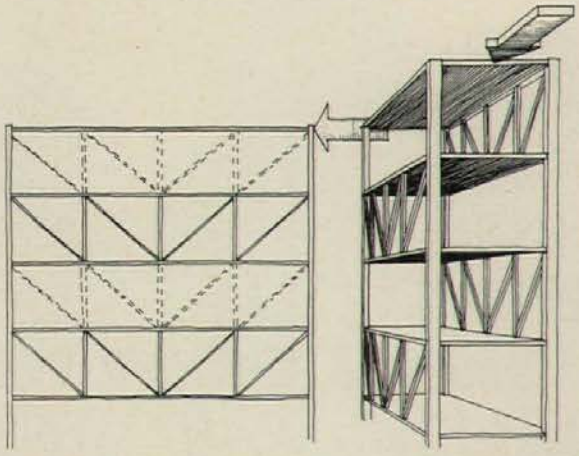
The solution: a series of story-high trusses spanning the width of the building, laid out in a staggered pattern so that while trusses on each floor are 24 ft apart, the floors still span only 12 ft. The floor rests on the top chord of one truss and hangs from the bottom chord of a truss 12 ft away on the floor above. Thus trusses on any one floor are 24 ft apart. Looking at the long side of the building, the pattern of trusses looks like the joints of brickwork. It is even possible to achieve alternating 12- and 36-ft clear spans where needed.

Costs obtained by the research









Cutting through the narrow section of the building you see a truss on every other floor. By staggering trusses, floor spans are only 12 ft, while 24 ft clear space is available for apartments. Wind load is transferred from floors to trusses. Two possible Pratt trusses are shown.

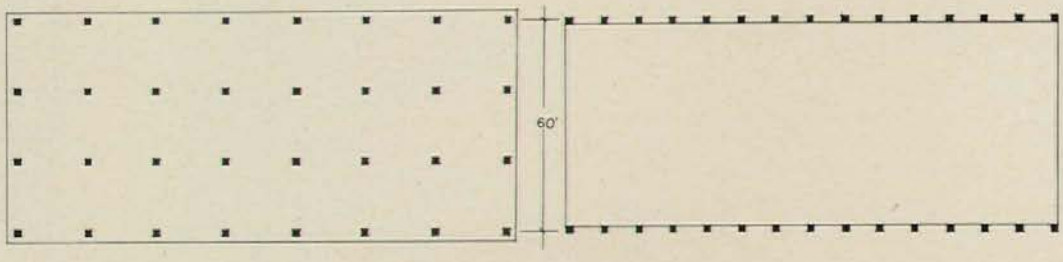
STEEL SYSTEM

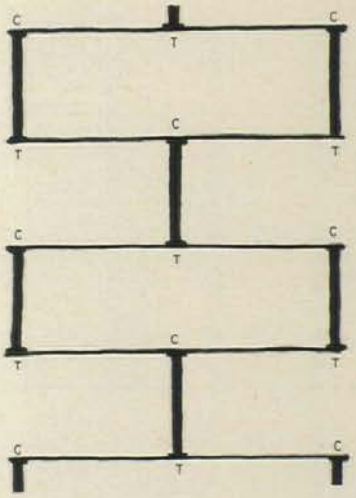
team, a collaboration between Departments of Architecture and Civil Engineering, show that the system should cost less than flat-plate construction. A Boston area fabricator has quoted the steel at $1.62 per square foot for a 30-story building, and a precast floor system was priced at $1.00 per square foot.

The trusses are of the Pratt type, with openings being provided for corridors and doorways. These trusses make the building very rigid in the short direction. Wind loads in this direction are transferred from the exterior wall to floor slabs, which act as diaphragms. The shear forces through any story are resisted by truss diagonals. The net result is that no bending-moment resistance is necessary in the columns for the short direction of the building. Thus the columns may be turned with their webs perpendicular to the trusses. This makes the columns' strong-axis strength available for resisting wind in the long direction of the building, in combination with short, stiff spandrels.

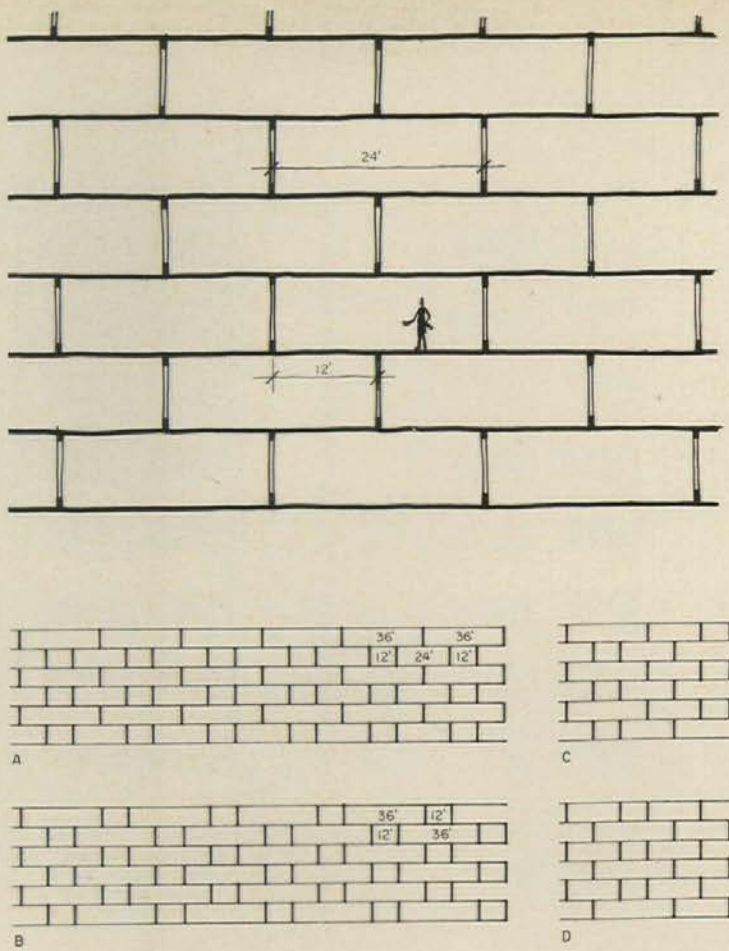
The basic thinking behind the selection of truss framing went like this: A high, narrow, slab-type building was assumed. Optimum placement for columns—to offer the most resistance to overturning forces—is of course, at the building perimeter. Thus if you think of the whole building as a beam cantilevering from the ground, you have the equivalent of concentrating all material in the "flanges." But the "flanges" must be connected by a "web," for without a practical web system, all efficiency resulting from column location is lost. This ruled out ordinary rolled beams. However, trusses having a large depth-to-span ratio can be sufficiently light to make a 60-ft span practical, as well as giving a rigid "web" system.

Floor costs are lowest with short spans—suggesting small bays. Column-and-beam framing will provide short spans, but must work inefficiently in bending in tall buildings to resist wind. However, exterior columns connected by stiff trusses need not be designed for wind moments in the short direction.





Basic truss spacing is 24 ft. But many others are possible which also give 12-ft floor spans. Since any floor contains an equal number of bottom and top chords, the floor interconnecting them cancels the tendency for shortening of an upper truss chord due to compression and lengthening of the bottom chord due to tension (see above).



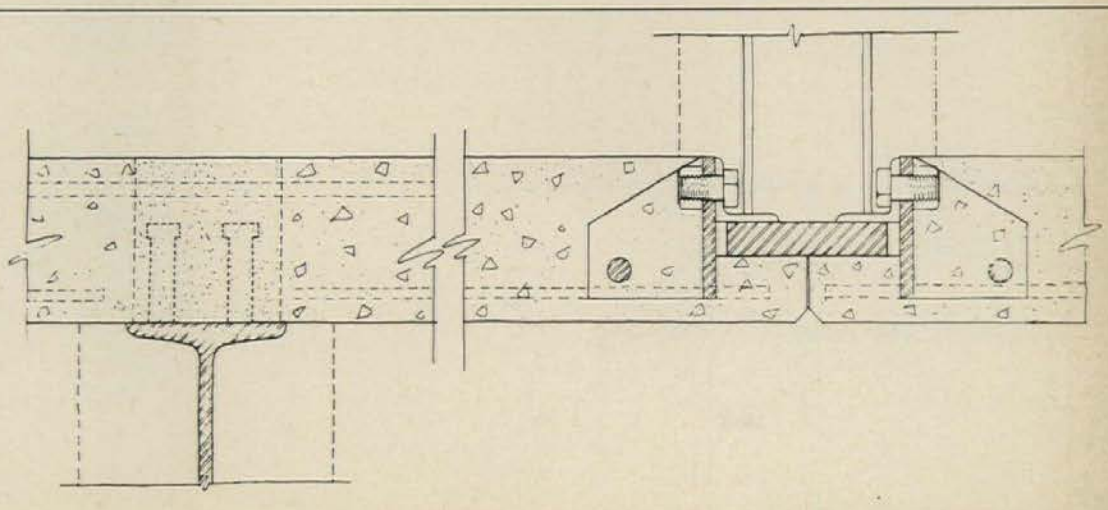
In order to make practical plans it was obvious that openings had to be provided in the trusses—for a central corridor, for doorways between rooms, and for elevator openings. While the Vierendeel shape might seem to be the best type for openings, a brief examination shows it to be very inefficient when there are only two or three openings. Thus the most promising configuration was a Pratt truss, and two types were considered. The first type has panel points close together to minimize bending in the floors in a direction parallel to the trusses. The second has fewer web members, which saves truss weight, but requires floors to span farther between panel points.

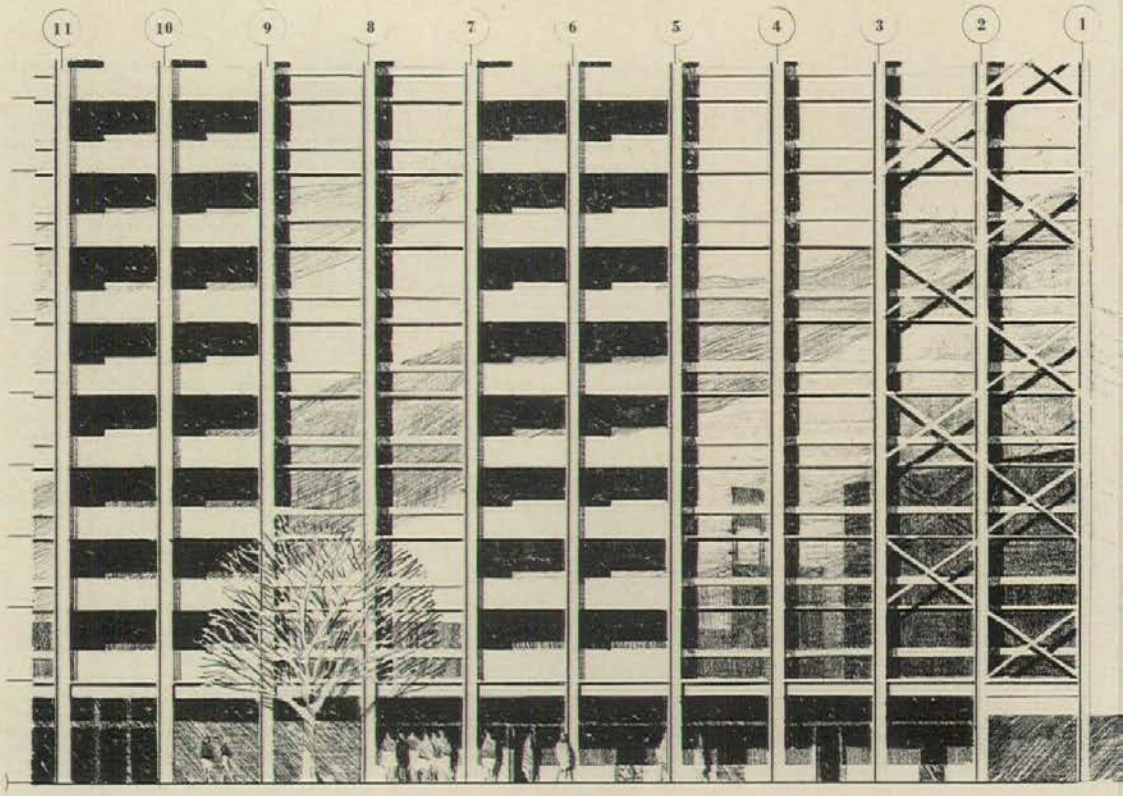
The total thickness of walls at trusses needs to be only 8 in., since web members are only 4-in. structural sections. The design calls for ⅝-in. gypsum board on furring channels over sprayed-on fireproofing.

Floor construction could be as little as 5-in. thick, since the span is only 12 ft. The bottom chord of the truss is a thin steel strip, 1 in. by 5 in., so that it will have sufficient fireproofing in a 5-in. slab at door openings.

Besides providing sufficient fireproofing, floors must also have sufficient diaphragm strength to transmit wind loads to the trusses. Several choices, all within 5-in. maximum depth were found to exist. A cast-in-place, 5-in. concrete slab can be flexible in accommodating openings and conduits and may be formed with either plywood or metal forms. A modified version is a composite 2½-in. precast concrete plank with a 2½-in. concrete topping. Such a system requires shoring but saves forms and provides necessary structure during erection. Particularly attractive

Proposed connections of precast floor slabs to the top and bottom chords of trusses are shown at right. The top chord is a 12 I 35.0, while the bottom chord is a 1-in. by 5-in. plate, so that it will have adequate concrete covering for fire protection at openings through trusses.





Exterior wall treatment can take many forms, depending on the nature of the longitudinal wind bracing. These elevations show several treatments: spandrel panels with recessed balconies, spandrel girders, exposed diagonal bracing, and projecting balconies with spandrel panels in remaining bays.

is a completely precast concrete floor of 5-in. slabs up to 8-ft wide. The advantages of erecting a completely dry system are obvious and the details necessary for fastening 8-ft by 25-ft precast slabs to the trusses have, in fact, been developed.

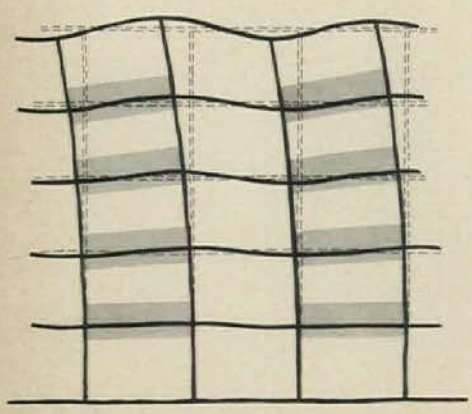
To resist wind forces in the long direction of the building, a number of approaches were studied. To achieve the efficiency of the framing in the short direction, a system of diagonals in the exterior walls would be desirable since no spandrels are otherwise necessary. Such diagonals do not need to be located in outside walls. A longitudinal section of the building shows that diagonals along corridor walls may be located with considerable freedom.

For long structures, the high efficiency of diagonals is unnecessary and spandrels rigidly attached to the columns are a practical way of providing longitudinal bracing. Since deep spandrels are impractical where balconies are added, discontinuous spandrels can be used.

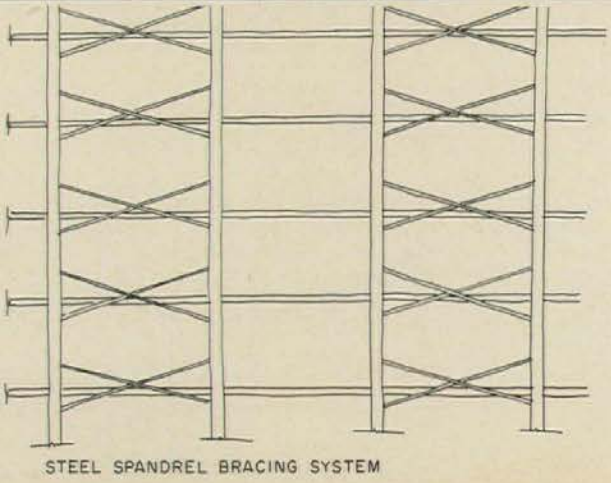
The architectural possibilities of the system have been intensively studied. In order to be certain that the design was rooted in reality, plans were developed using the system to achieve the same apartment mix and room size as presently required by the New York market. A typical plan is shown. There are no important architectural restrictions. Maximum efficiency was achieved without gimmicks.

Another scheme based on duplex apartments with skip-stop elevators takes even further advantages of the system. One half of the trusses would have no openings and the other half openings only at mid-span.

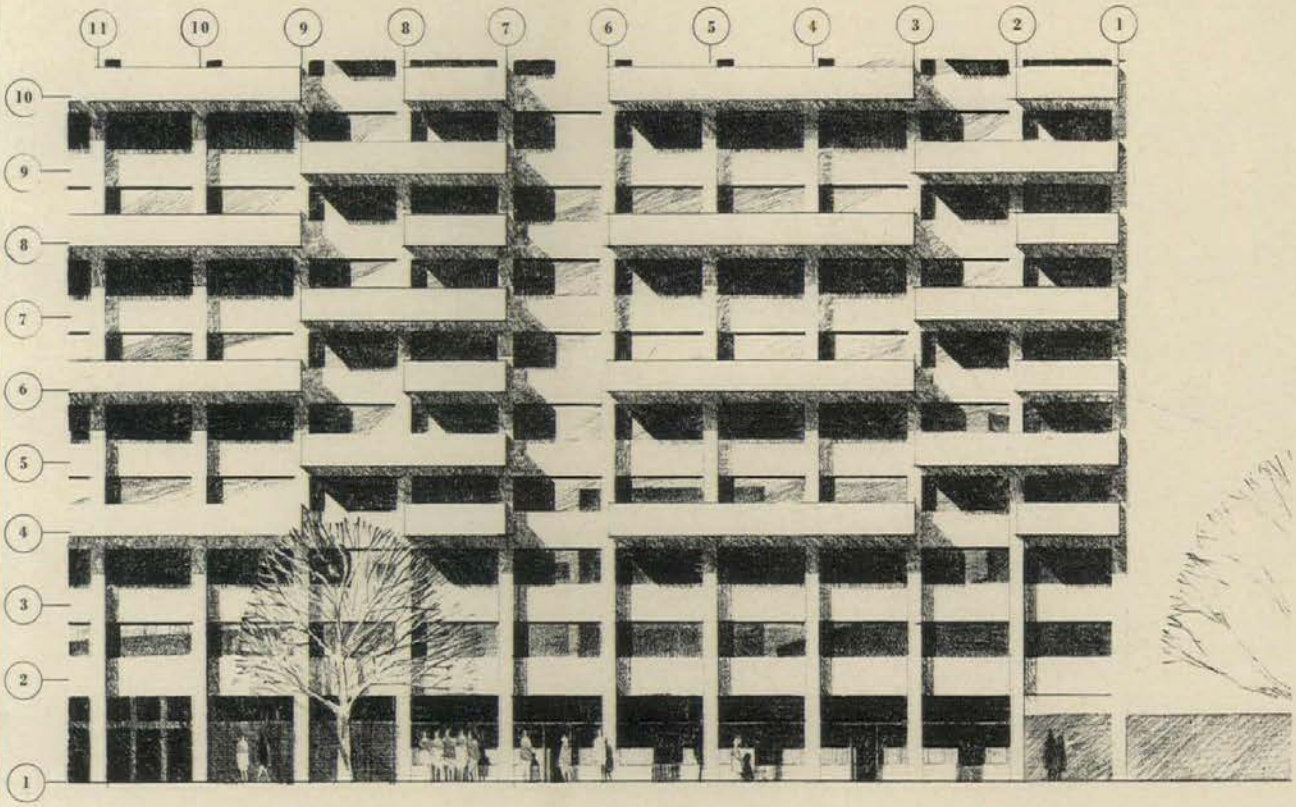
The system is adaptable to serpen-



Longitudinal wind bracing may be provided by spandrel panels in alternate bays of the exterior elevation. Frame action of this system is shown at left. Another possibility is diagonal bracing in the exterior elevation. Two other possibilities are spandrel girders (not shown) and diagonal bracing at the corridor wall, opposite.



STEEL SPANDREL BRACING SYSTEM



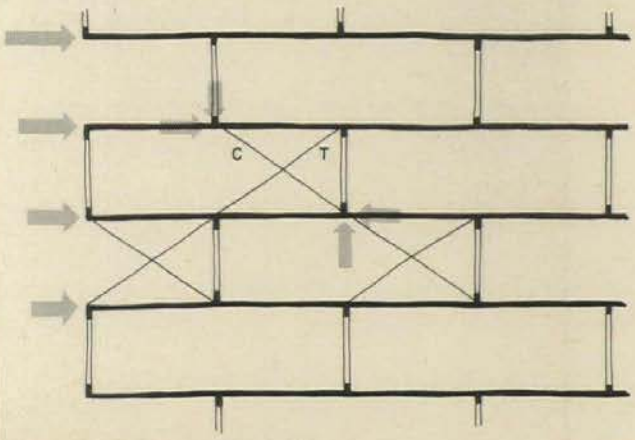
tine buildings and round buildings, as well as rectangular shapes. It is possible to imagine a round building having only exterior columns but with trusses stopping short of the center. The floor is used as a plate to resolve all chord forces.

Material quantities have been studied in some detail. For a 30-story building, 253 ft-high, 60-ft wide and 240-ft long, column steel averages 2.4 pounds per square foot. Truss steel averages 3.2 pounds per square foot. Longitudinal spandrels in alternate bays would add .40 pounds per square foot, making a total of 6.0 pounds per square foot. These quantities assume 5-in. stone concrete floors and lightweight walls.

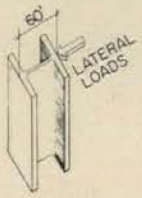
In contrast, a 30-story apartment building relying on frame action alone would require 12 lb per sq ft, while an alternate using diagonal bracing requires 10 lb per sq ft. The per-pound cost of the trusses will be higher than for ordinary beam work, but duplication should minimize this premium in large projects. The prototype building required 315 trusses, and this alone would justify assembly-line methods of fabrication.

Here are some other structural and architectural advantages claimed for the system:

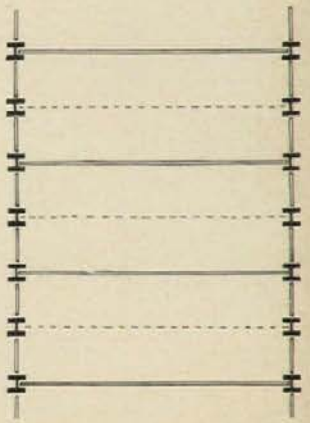
1. Column design is at optimum efficiency. Assuming 12-ft bays in a building 60-ft wide, each column supports a tributary area of 360 sq. ft. This would be a large average area in other framing schemes. But assuming a 6-ft corridor in a 60-ft-wide building, a typical clear space is 24 ft by 27 ft, or 650 square feet.
2. Since columns can be outside, it is possible to anticipate that fireproofing could be eliminated in the future, based

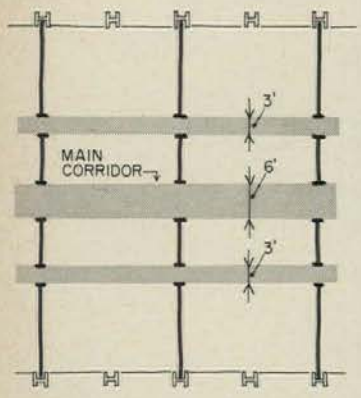


CORRIDOR BRACING SYSTEM

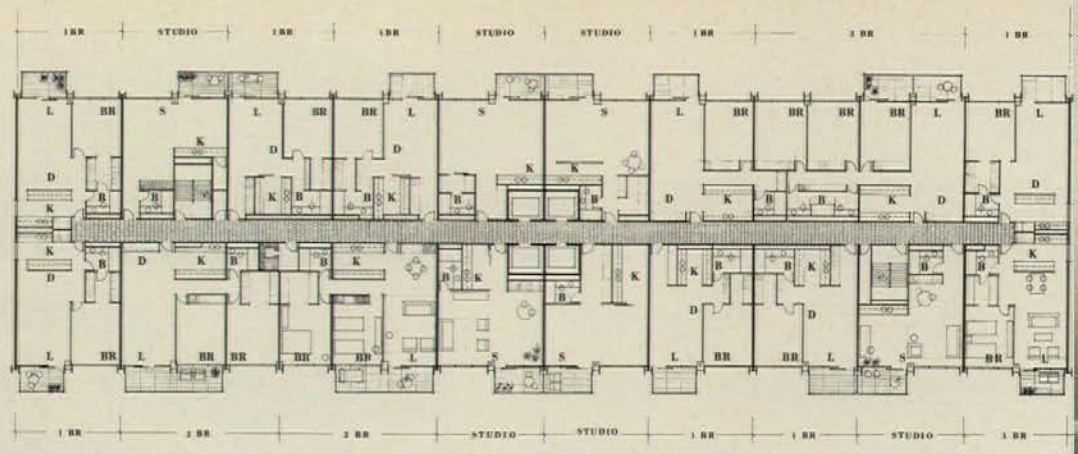


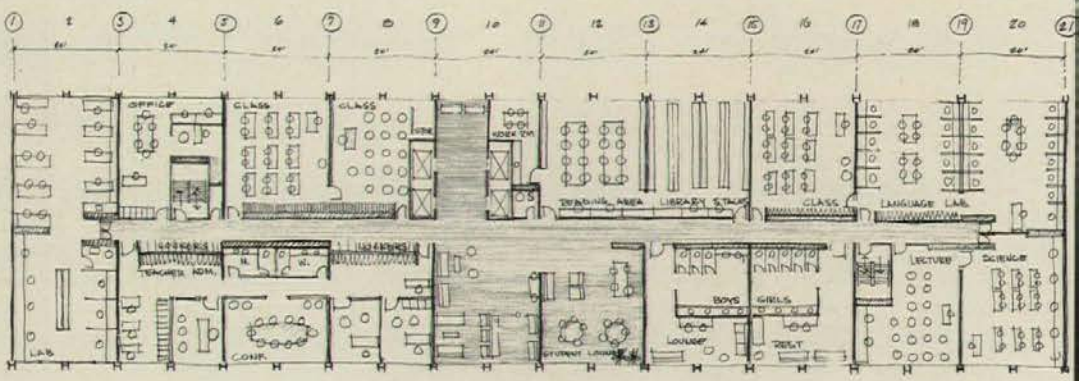
Strong axis of the columns is aligned in the long direction of the building, where the strength can be utilized to take some of the wind load in this direction. No bending moments are necessary in the columns to resist wind in the narrow direction, since all this load is resisted by trusses.





Flexible space planning is a strong feature of the staggered truss system. A typical apartment plan is shown above right. Several floors in a high-rise apartment could be used for school classrooms, as shown at right. Truss openings for corridor and doors are shown above.





on American and European research now in progress.

3. Even with all columns outside, no thermal insulation is required to control movement due to temperature changes. Thus it would be possible to use bare steel columns in a 30-story building achieving substantial economy and esthetic integrity.

4. A 60-ft-wide building can be easily built above a clear-span parking garage or in air rights over a highway.

5. Since loads are accumulated along two lines of closely spaced columns, foundations on poor soils may consist of two strip footings stiffened by basement walls.

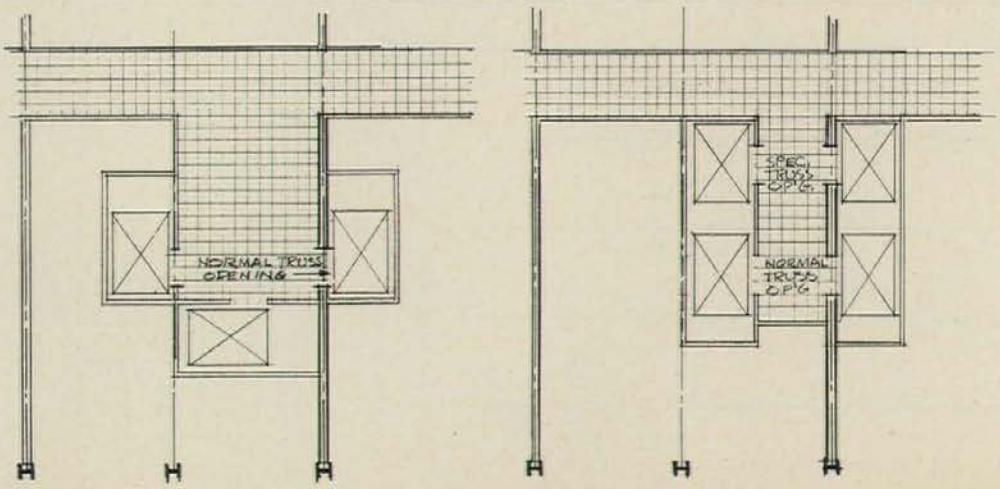
Exterior treatments can vary considerably depending on whether the longitudinal wind bracing consists of deep spandrel panels, center corridor wall bracing, exterior exposed bracing or uniform spandrel girder bracing. Examples of each wall treatment are shown in the drawings.

The proposed framing system is aptly suited to multi-use occupancy. Schools, particularly nursery schools and the lower grades, could easily be accomodated since floor spans up to 36 ft are possible—although this plan shows only 24-ft spaces being used.

This project, which was sponsored by United States Steel Corporation, was conducted by the following M.I.T. personnel from the Departments of Architecture and Civil Engineering: *Marvin E. Goody*, supervisor, associate professor of architecture; *Robert J. Hansen*, professor of civil engineering; *William J. LeMessurier*, associate professor of structures in the Department of Architecture; *Peter J. Pahl*, assistant professor of civil engineering, and *Robert J. Pelletier*, research associate.

Also, *Calvin F. Opitz*, *Ranier Schildknecht* and *Kenneth W. Schwarz* of the Department of Architecture, and *John S. Sarno* of the Department of Civil Engineering.

Openings for elevator doors present no problem. In many cases the normal truss openings provided for apartment doors may be used. If the elevator location demands it, special openings can be provided in the truss, far right.



HOW MATERIALS REACT TO SOLAR ENERGY

By **JOHN I. YELLOTT** *Director of the Yellott Solar Energy Laboratory in Phoenix, lecturer in the College of Architecture at Arizona State University and chairman of the A.S.H.R.A.E. Technical Committee on Fenestration*

When sunlight falls on unshaded windows, the heating effect is many times greater than that for opaque surfaces, and the time lag is generally very brief or nonexistent. This, as we know, can cause problems in human comfort and air conditioning unless something is done to screen out the sun's rays. The various materials and techniques developed to lessen the sun's effect include heat-absorbing and solar-reflective glasses; external, internal and between-the-glass shading devices.

External shading devices such as louvers, screen walls or overhangs which block out all direct rays of the sun will reduce solar heat transmission for fenestration by about 80 per cent. (Some of the diffuse and reflected solar radiation still gets through.)

Heat-absorbing glasses can reduce solar heat gain by 30 to 50 per cent depending on their absorptances. But even when glass is opaque, solar gain will still be 30 per cent of that for unshaded glass. Mirror-like reflective glasses can cut solar heat gain down to 30 per cent of clear glass.

Single glass with indoor shading will admit from two-thirds to one-third as much solar gain as clear glass depending on the absorptance of the glass and the reflectance of the shading.

Between-glass shading using either venetian blinds or louvered screens will bring down solar gain to between 40 to 30 per cent of that for clear glass.

When solar radiation strikes a sheet of glass or plastic it is either reflected, transmitted or absorbed. For ordinary glazing materials, the reflected portion is quite small until the incident angle exceeds 45 degrees. At higher angles, the reflectance increases rapidly. Also special coatings are available which increase the reflectance up to the point where the glass has mirror-like qualities.

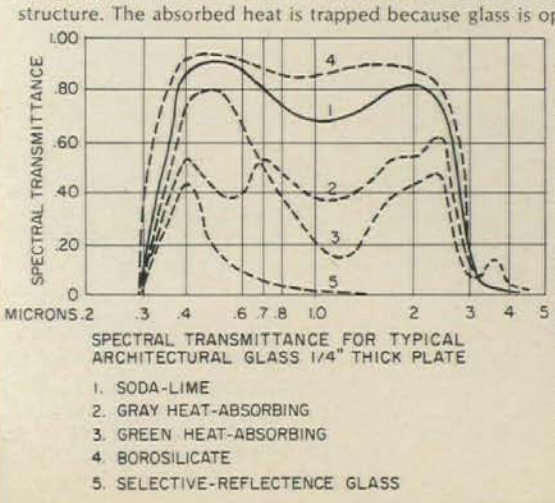
The transmitted portion of the radiation remains within the glazed space and becomes a part of the cooling load unless it is intercepted by a surface which reflects it back outdoors before it can be absorbed and converted into heat. Once the solar rays have been absorbed, this heat cannot be re-radiated out because glass is opaque to the long-wave radiation which the heated object gives off. This phenomenon is known as the "greenhouse" effect. How rapidly the transmitted radiation becomes part of the air-conditioning load depends on the thermal inertia of the heated surfaces. The effect upon people sitting near the glass, however, is immediate, and generally unpleasant. The storage effect of the structure and its contents tends to reduce the actual cooling loads below the maximum calculated peaks.

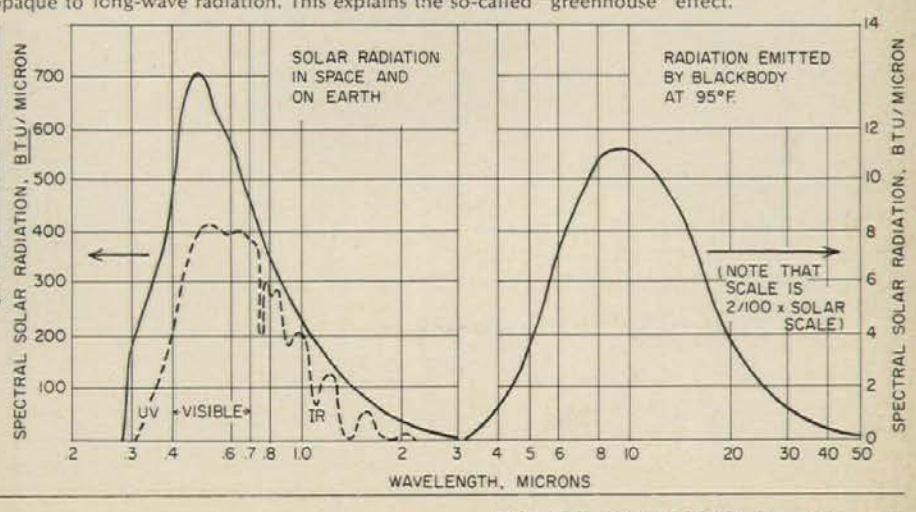
The absorptance of glass depends on its thickness and its chemical composition, with high iron content generally meaning high absorptance. The absorbed sunshine is converted into heat within the glass and its temperature rises until the additional energy can be dissipated by radiation and convection from its surfaces to the outdoor atmosphere and the indoor air. From 60 to 75 per cent of the absorbed heat flows outdoors, while 25 to 40 per cent flows indoors. Thus heat-absorbing glasses are effective in sun-control because they reduce the transmission of solar radiation into the glazed space and in the process they reject some two-thirds of the intercepted energy outdoors. Under summer conditions, the combined effect of high outdoor air temperature and intense solar irradiation can produce very high glass temperatures, however, and these can cause discomfort to individuals seated near the window, even when the sun does not strike them.

What determines heat gain?

Total heat gain through glass is equal to the solar radiation transmitted through the glass, plus the inward flow of absorbed radiation, plus the heat flow

Special glasses have low transmittance to the sun's infrared heat. The transmitted radiation will be partly reflected, partly absorbed by furnishings and structure. The absorbed heat is trapped because glass is opaque to long-wave radiation. This explains the so-called "greenhouse" effect.





due to the indoor-outdoor temperature difference.

The transmittance and absorptance of glass will vary with the incident angle of the sun. At low angles of incidence (when the sun is perpendicular to glass the incident angle is said to be zero degrees), the transmittance and absorptance of all kinds of glass is high and the reflectance, low. As the incident angle increases, the reflectance begins to increase rapidly, and the absorptance increases up to 60°, because of the longer optical path through the glass. Above 60° the increase in reflectance is very rapid and transmittance and absorptance drop off.

The ratio of absorbed heat that goes inside to that lost to outside air will depend on whether or not there is a breeze outside and a flow of air inside. The worst condition will occur when the air is calm outside and high velocity air is blowing up the glass inside.

Glass in the sunlight can reach quite high surface temperatures. With extreme summer conditions, such as those in the Southwest, the temperature of heat-absorbing glass can soar up to 150 F when the outdoor air temperature is 115 F or so.

Minimizing solar heat

The most effective way to reduce solar heat gain through fenestration is to reduce or eliminate the direct solar radiation by means of external shading.

Heat gain can be reduced to manageable proportions by use of shading devices such as highly-reflective, tightly-woven drapes. The relative value of drapes, Venetian blinds, and heat-absorbing glass can be determined by selecting the season of the year and the time of day when each exposure will have its most severe conditions, and then finding the total hourly gains through the systems under consideration. Generally when no external shading is used, both single and double glass requires drapes or Venetian blinds. Special solar reflective glasses can do an excellent job of sun control, but none has been yet developed which can alone reduce to an acceptable value the heat gain and glare from an unshaded west window in summer or south window in winter.

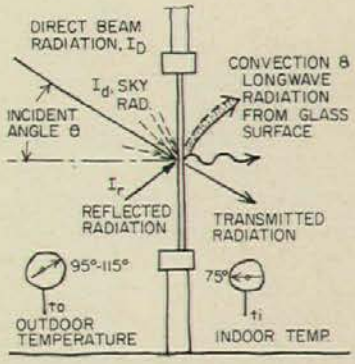
Miniature louvered screens used as exterior shading are effective as long as the solar altitude is above the cutoff angle of the screen, that is, above 30°. The dark screen colors are better since these will not reflect the sun's rays to the interior, and they will lose the absorbed heat to the outside air.

The best internal shading is that which reflects a large part of the sun's rays back outdoors before they can be absorbed and converted to heat. Tightly woven, highly reflective drapes are exceptionally effective. Some of the new drapes woven from synthetic fibers can attain solar reflectances in the range of 70 per cent, with relatively low solar transmittances. They can reduce solar heat as much as 60 per cent in comparison with clear glass.

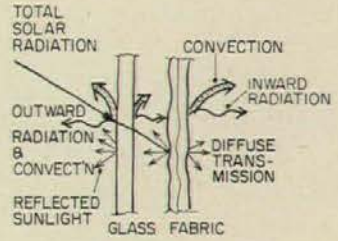
The amount of heat that eventually gets into the room is the sum of the radiation transmitted by the system (which usually is diffuse rather than direct) plus about 22 per cent of the heat absorbed by the glass and 75 per cent of the heat absorbed by the drape.

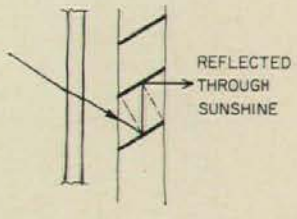
There is little to be gained by using a heat-absorbing glass in combination with a high-performance drape, since the drape plus clear glass will cut heat gain to 40 per cent of clear glass while the heat-absorbing glass will reduce it by only 3 per cent more. On the other hand, the tinted glass may be desirable for glare control.

With Venetian blinds none of the rays can pass directly through the barrier when the sun is above the cut-off angle; but a considerable amount of reflected-through radiation passes inward (see sketch this page).



Representation of solar energy input to a sunlit window and inward heat flow, window to room.





The most efficient draperies are those that are light colored and tightly woven. Some radiation comes through venetian blinds by reflection.

Between-glass shading

Quite a few European buildings, and, lately, a number in the U.S. are glazed with insulating windows which have adjustable Venetian blinds between the two lights. Miniature louvered screens can also be used between the lights. While these screens are effective in reducing the transmitted component of the solar heat gain, they also absorb heat because of their darker color which results in high glass temperatures.

New glazing materials

Heat-absorbing glasses were introduced some 40 years ago, and there were few other changes in the glass-making art until the beginning of the present decade. Since then, a number of new types of glass have recently been introduced which give a promise of improved sun-control capability.

▪ *Selective-reflectance glasses.* During World War II, semi-transparent metallic oxide coatings were developed which are electrically conductive and which can be used to heat and thus defrost aircraft windscreens. These coatings have a high reflectance for the longwave radiation and so, when such a coating is applied to the *inner surface* of a window, the inward-flowing fraction of the absorbed heat is reduced by one-third.

A companion coating has also been developed which has a relatively high solar reflectance, but a low long-wave reflectance and hence a high long-wave emittance. When applied to the *outer surface* of a suitable glass, these coatings produce solar reflectance of about 0.20 but they do not impair radiation of absorbed heat to the atmosphere.

▪ *High-reflectance films.* Solar-reflective glasses can be produced by vacuum-deposition of very thin metallic films. These coatings are generally highly susceptible to damage by washing, scratching, etc., and so it is not feasible to expose them to either the indoor or the outdoor environment. However, they can be put to good use by coating one surface of an otherwise clear glass and then laminating this to a light clear.

▪ *Reflective insulating windows.* Thin metallic coatings can be deposited on glass by various processes to produce surfaces which are reflective to both solar and longwave radiation. Such films require protection from weathering, washing, etc., but when applied on the air-space side of an insulating window they can be very effective. One such window has a visible transmittance of 0.20 and a total solar transmittance of 0.09.

No snap, crackle... or pop!

STEEL'S SYMBOL OF STRENGTH, LONG LIFE AND ECONOMY.



No flaking or peeling, either.

Flaking is out, in galvanized steel for structural work. And continuous hot-dipped JalZinc is in. You can roll it, stamp it, crimp it,—even bend it double—and JalZinc keeps its coat on. That's a big point, if you make air conditioning units, ductwork, wall partitions, heating systems, door or window frames or any structural product using galvanized steel. Add to it JalZinc's low initial cost, strength, corrosion resistance, easy fabricating, minimal maintenance and bright good looks. Now... make a note to try JalZinc, next time you order. No boxtops required.

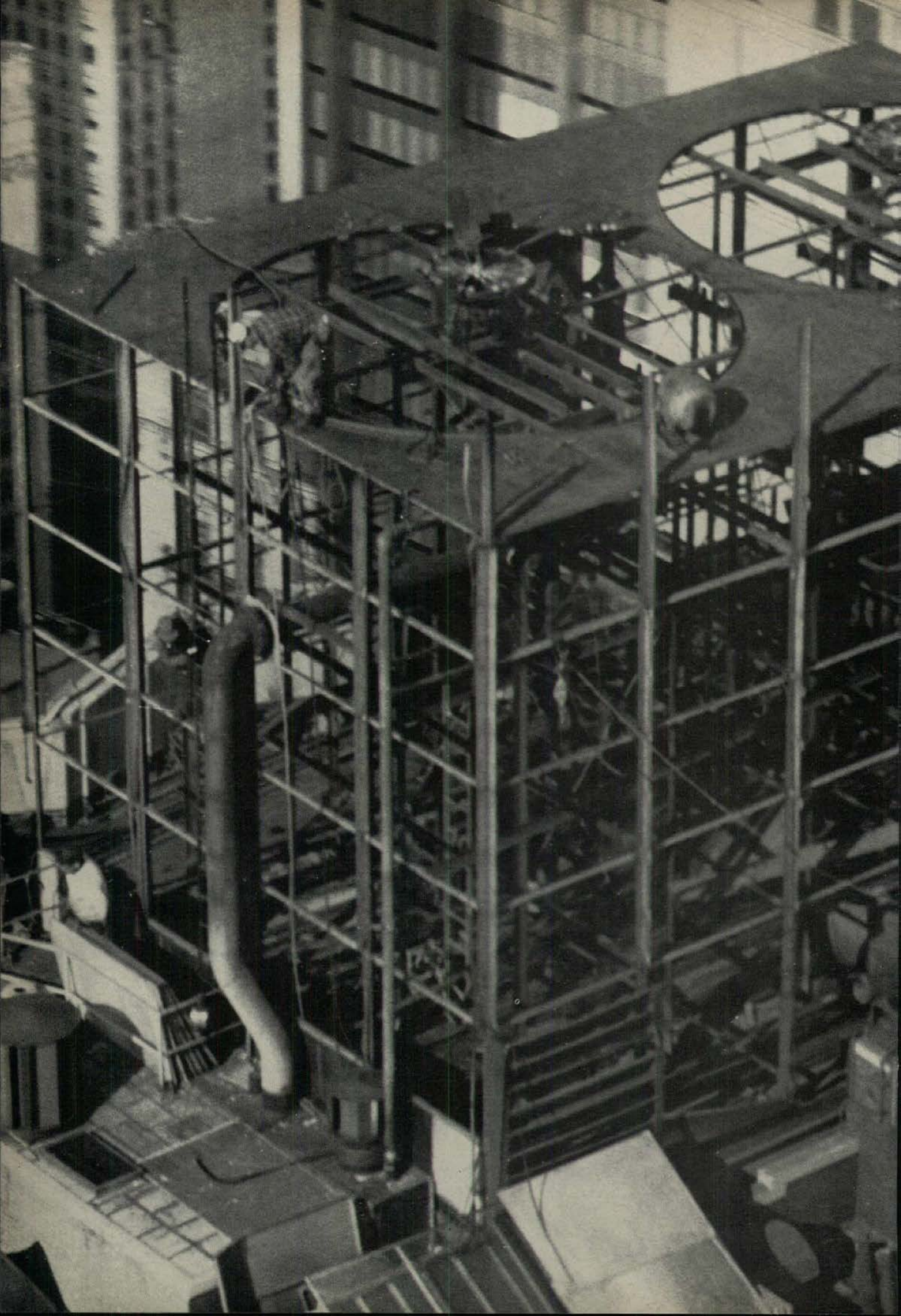
As further food for thought, consider the fact that J&L offers a whole wide line of steel building products to feed creative architects and builders.

Jones & Laughlin Steel Corporation
3 Gateway Center, Pittsburgh, Pennsylvania 15230

Put Up With The Best...use J&L Building Products

J&L STEEL

For more data, circle 88 on inquiry card





A four-pipe system
isn't always the answer.

Wouldn't you rather have a rooftop you could rent?

You can—with a G-E Zoneline heating/cooling system. It does everything a four-pipe system does. But it eliminates pipes, ductwork, compressors, cooling towers.

And that not only saves on first cost. It frees space, both inside and on your rooftop—for a pool (William Penn House, Philadelphia) or penthouse offices to increase income (Peoples Savings Bank, Bridgeport).

Other advantages with G-E Zoneline:

ROOM-BY-ROOM CONTROLS allow a tenant who is chilly to turn on the heat, even though everyone else has the air conditioning on.

CHOICE OF GRILLEWORK is one you make. G-E Zoneline grille comes in two standard designs or can be treated architecturally to blend with building appearance.

INTERIOR FLEXIBILITY allows you to fit units over doors (Marina Towers, Chicago) or under window seats (Century House, Lincoln, Nebr.).

From motels to high-rise construction, Zoneline systems can make dramatic economies in space and first cost. Call your General Electric Zoneline Air Conditioning Representative for the facts.

GENERAL ELECTRIC

Air Conditioning Department, Appliance Park, Louisville, Kentucky

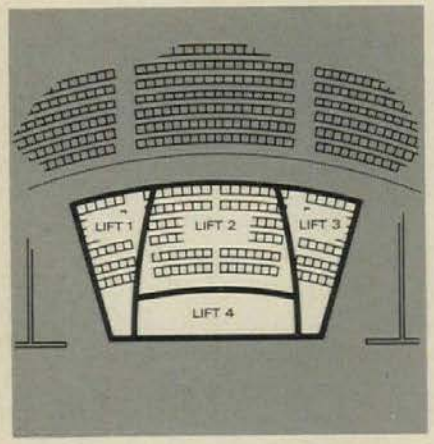


G-E Zoneline heating/cooling unit

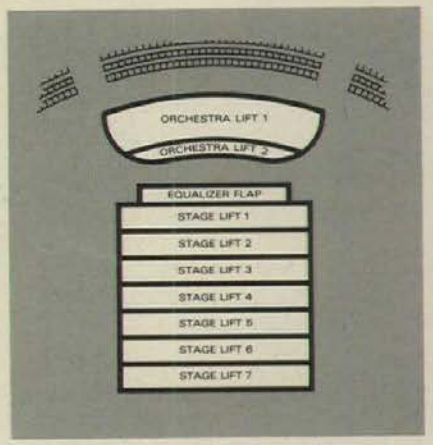
For more data, circle 89 on inquiry card

stars of stage, opera, and nightclubs

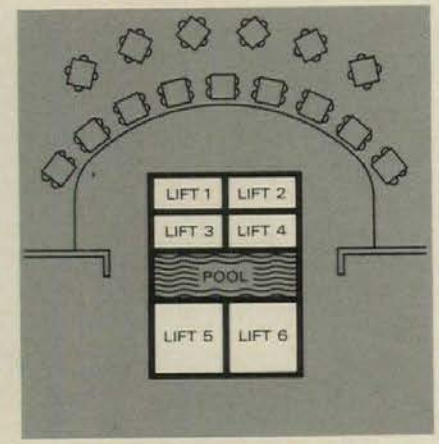
DOVER STAGE LIFTS



Loeb Drama Center, Harvard University—Four Dover Stage Lifts are used to create a theatre that easily converts for three different kinds of staging.



Metropolitan Opera House, New York City—The new home of the Metropolitan is equipped for fabulous stage effects with seven Dover Lifts on stage and two in the Orchestra.



Stardust Hotel, Las Vegas—Six Dover Stage Lifts, operating in combination or independently, bring performers and sets into view from below stage level.

These diagrams illustrate three of the more than 100 entertainment centers equipped for flexibility with Dover Stage Lifts. Dependable, smooth-running Dover hydraulic lifts produce elaborate theatrical effects, save valuable floor space, and help in the design of multi-use halls. There are practically no limitations on platform size, lifting capacity and systems for controlling combinations of lifts. For theatres, concert halls, opera houses, auditoriums, night clubs, wherever you need a rising stage, specify Dover Stage Lifts. Send your preliminary requirements for analysis and recommendation.

DOVER

DOVER CORPORATION, ELEVATOR DIVISION
Dept. L-3 P.O. Box 2177, Memphis, Tenn. 38102—Toronto, Ont.

For more data, circle 90 on inquiry card

CONSTRUCTION TECHNOLOGY: CAN NEW LIFTING SYSTEMS CUT CONSTRUCTION COSTS?





Lift-slab construction has provided about a decade of demonstration of economy in ground-level fabrication. Shown is St. John's nursing home in Milwaukee, Charles Haeuser, architect.



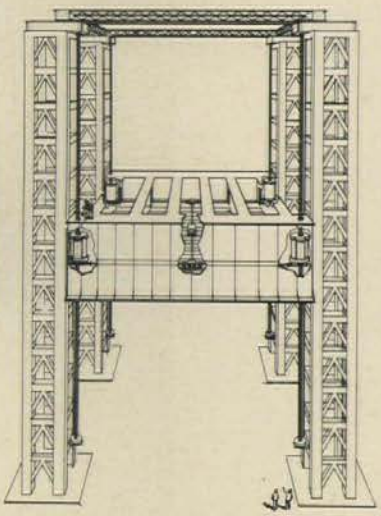




Jack-block system, developed by Richard Costain, raises a 17-story block of flats at Coventry, England. Hydraulic jacks are being withdrawn above, left.



Suspension system uses a central mechanical core from which floors are hung—beginning from the top. Shown is the 23-story Kleinwort-Benson building in London.



Maroth actuators were developed to lift a 2,000-ton cross-head to any position within the 135-ft towers of NASA's Saturn V testing structure. Principle is adaptable to building.

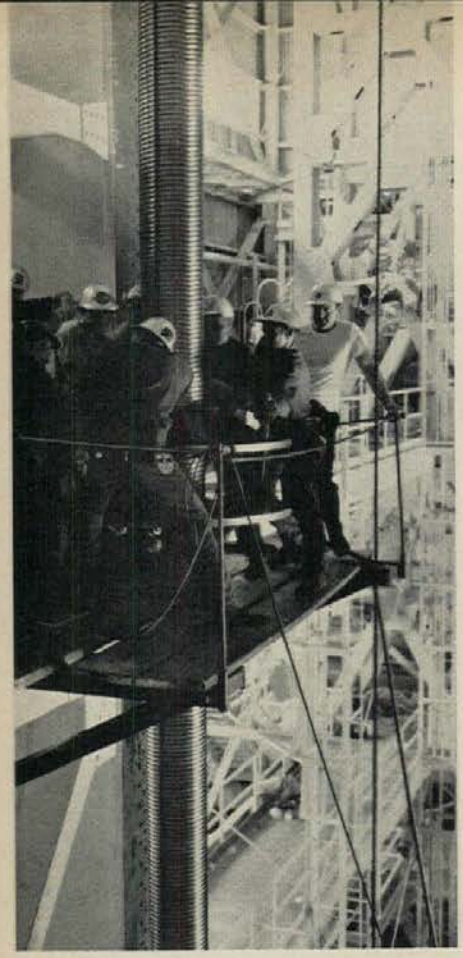
The soaring costs of conventional construction have generated some intriguing innovations in construction methods—indeed, some of the new handling devices and systems have enabled architects and engineers to think along radical new lines.

▪ Lift-slab and tilt-up construction, no longer new techniques, have demonstrated the feasibility and frequent economies of building components on the ground and raising them into place by jacking or other lifting methods.

▪ A direct descendant of the lift-slab concept is the jack-block system, by which whole floors and their enclosures are assembled at grade level and hydraulically jacked into place. An example of this kind of construction is the 17-story apartment house shown at left, growing out of a three-story "factory" in Coventry, England. By this method, after the foundations have been put in, the roof is built at ground-floor level and then lifted on hydraulic jacks to first floor level. The ultimate top floor is then constructed underneath and lifted in turn. This process is repeated until the building is complete.

▪ Another unusual system of construction is the "suspension" system, by which a central concrete core, containing all elevators, stair wells, and mechanical services, is built to the full building height. An umbrella floor is then constructed at the top level, and other floors are suspended from this, working from the top downward. This method has been used in this country and abroad with floor spans as long as 36 feet out from the tower.

▪ Perhaps a breakthrough in the development of enabling devices has been the Maroth mechanical actuator, which was built in 1963 for NASA in conjunction with the dynamic testing program of the Saturn V rocket. NASA specifications required a means of lifting a platform weighing 2,000 tons in a continuous lift of 120 feet. Four actuators were installed in the test stand and accomplished the required lift. The device was developed by Arthur M. Maroth of



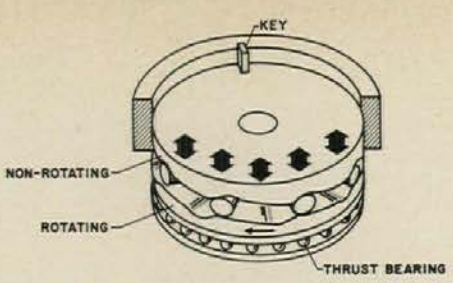
Scale of the NASA actuator installation.

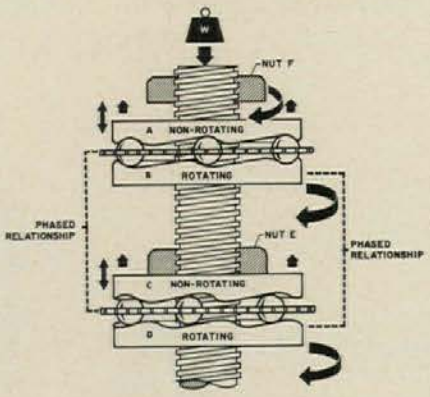
Wilton, Connecticut, and has been licensed to Philadelphia Gear Corporation and Hamilton Standard Division of United Aircraft, in the United States, Rotax, Ltd., in England, and Pintsch Bamag, A. G., of Germany.

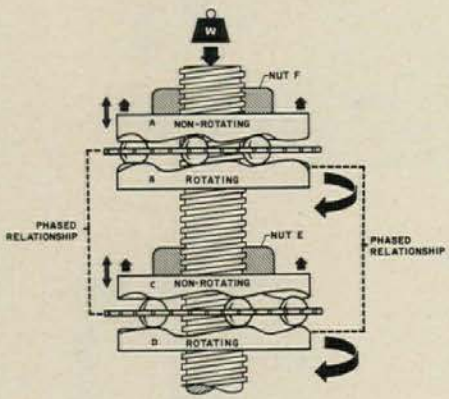
The work done by the four actuators in the NASA installation at Huntsville, Alabama could, with some imagination, be converted into the lifting of a 10-story building. Basic to the application of the device is the fact that it can operate over a continuing thrust of any desired length, and can either move itself along a threaded shaft carrying attached components with it, as it does in the Saturn test stand, or it can be fixed to some base and push the shaft itself against the moving load.

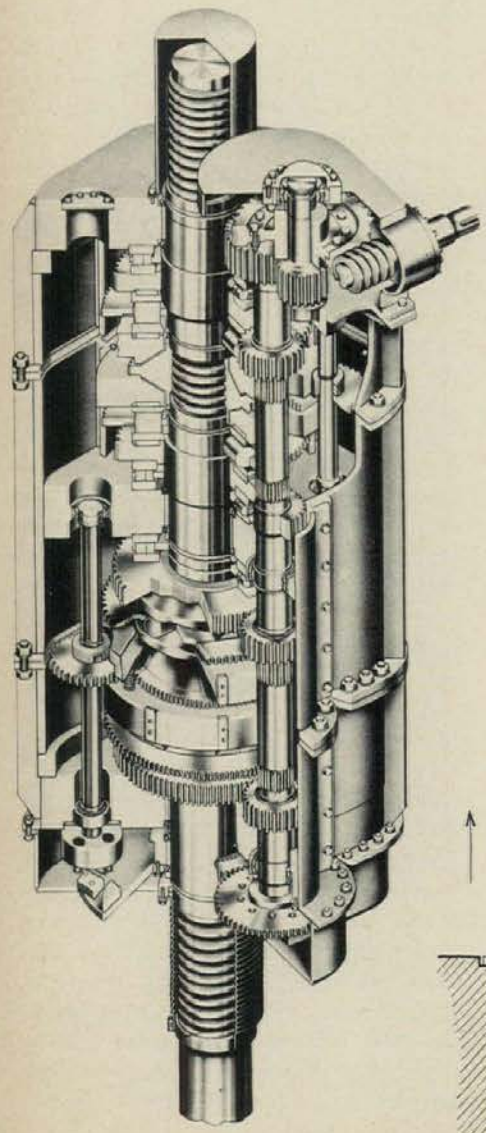
The principle of the device is as simple as the inclined plane. The means by which this principle is applied to the threaded shaft are best understood through the accompanying diagrams. The device can be manufactured in any required capacity. Those now being built vary from 750 tons to up to 2,000 tons. A typical unit develops 2,000,000 lbs. of thrust at a shaft speed of 8 in. per minute.

Mr. Maroth estimates that the cost of several thousand dollars each for a complement of a dozen or so actuators that might be required to lift a sizeable building into place could be amortized over about 15 buildings.

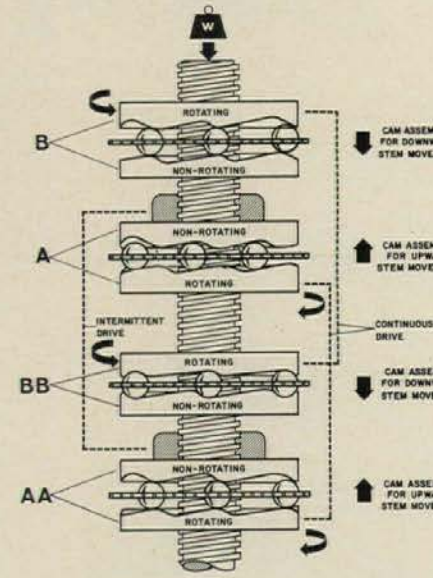


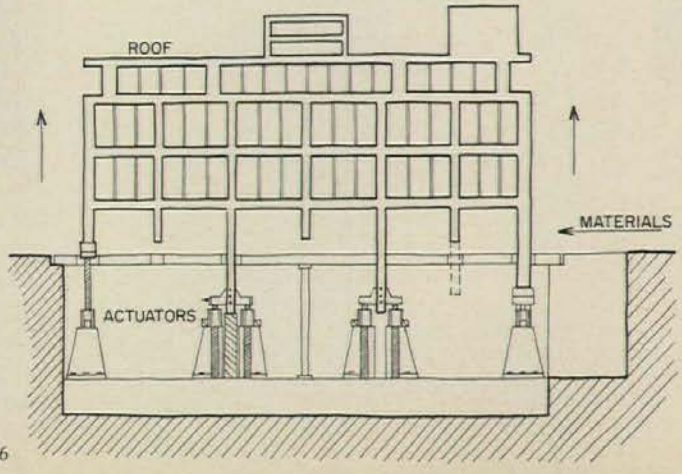






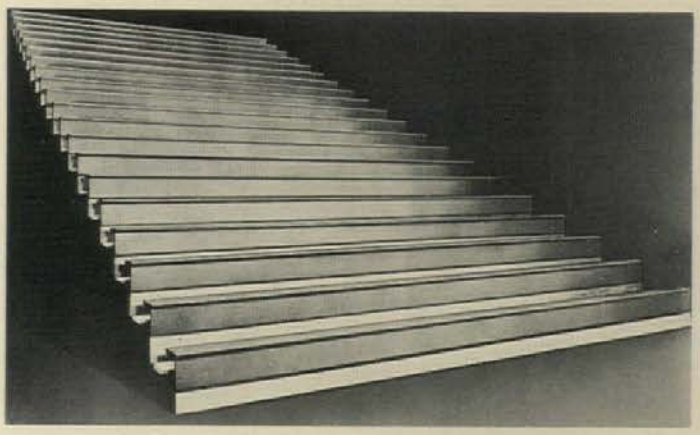
How the actuator works . . . In the diagrams at right, only the nuts E and F engage the threads of the shaft. The paired discs with rollers between constitute inclined planes wrapped around the shaft. The fixed disc in each pair is pushed up (or down) against the nut by action of the rollers squeezed by rotation of the shaped channel. The nut thrusts the shaft upward. As the non-rotating disc recedes, following the rollers when they drop into channel pockets, the nut is tightened against it by a gear intermittently actuated by cams. Channels are phased so that one nut is constantly under thrust. Gearing action is shown in the cut-away at left.

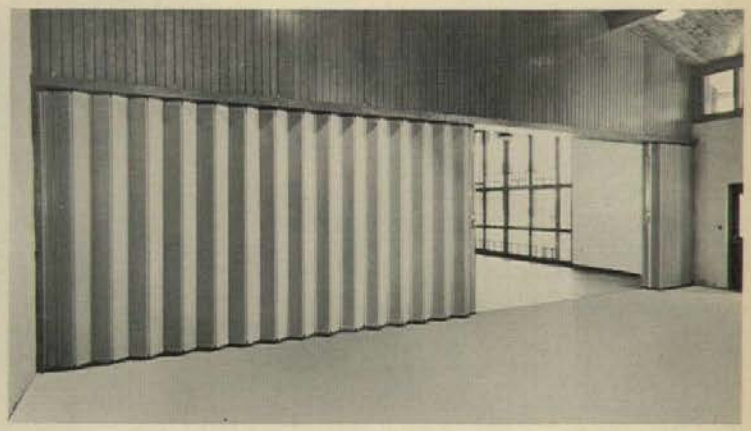




for more information circle selected item numbers on reader service inquiry card, pages 295-296

New and versatile equipment for school or college application





1. Brunswick's School Equipment Division has recently introduced a new line of gymnasium seating which it reports is extremely durable, easily cleaned and never needs refinishing. The new *3/D Simpliscope* line features one-piece, combination seat and skirt boards of heavy gauge steel with a bonded finish of tough, leather-grain vinyl.

A simplified, telescoping understructure assures trouble-free operation and incorporates a safety locking mechanism which automatically locks each row as it is pulled out. ▪ School Equipment Division, Brunswick Corporation, Kalamazoo, Mich.

Circle 300 on inquiry card

2. This new *Modernfold* folding wall, which provides efficient sight and sound division for large areas, is available in single widths up to 150 ft, and heights up to 30 ft, making it particularly suitable for use in school gymnasiums, auditoriums and large classroom areas. The new *Audio-Wall* has a sound transmission class rating of 44, and its sound barrier effectiveness is said to equal that of a fixed wall of 8-in. concrete blocks. The steel frame is encased in vinyl-clad, steel panels. ▪ New Castle Products, Inc., New Castle, Ind.

Circle 301 on inquiry card





3. *Vistabase* library shelving has been specially designed to co-ordinate with contemporary interiors and to complement the modern furniture now being introduced in many school and general libraries. The metal shelving stands on feet of polished, high-strength cast aluminum. End panels are available in wood or metal. ▪ Estey Corporation, Red Bank, N. J.

Circle 302 on inquiry card

4. Dormitory furniture which provides considerable design flexibility because of the wide variety of standard units available in different combinations of size, shape and finish is suitable for both large and small-scale installations.

Included in the *System 70* line are desks, study carrels, chests, wardrobes and correlated headboards for built-in or free-standing applications.

Steel frames are welded wherever extra strength is required; surfaces are of *Fiberesin* or other laminates as specified. Standard *Melamine* surfaces offered are rosewood, English walnut, cherry and butternut. Hardware is formed steel with a bright abrasion resistant chrome finish. ▪ The Troy Sunshade Company, Division of the Hobart Manufacturing Company, Troy, Ohio.

Circle 303 on inquiry card

more products on page 212

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Cards, pages 295-296

SOUND CONTROL / Methods of controlling sound in a number of industrial, institutional and testing environments are set out in a 4-page brochure, which covers products such as anechoic wedges and chambers, industrial acoustic panels and enclosures, audiometric rooms, reverberation rooms, noise attenuating doors and silencers for gas turbines, power plants and exhaust systems. Sound control properties and applications of all the products dealt with are discussed and construction features shown where applicable. ▪ The Eckel Corporation, Cambridge, Mass.*

Circle 400 on inquiry card

ILLUMINATED CEILINGS / "The Case for Illuminated Ceilings" is the title of a new brochure which discusses the factors involved and the reasons for installing luminous ceilings. Cost comparisons, code requirements, visual effects, footcandle percentage, relevant considerations in the selection of lighting panels are all dealt with in a concise and easily understandable way. ▪ Wilson Research Corp., Erie, Pa.*

Circle 401 on inquiry card

ENTRANCE FOOT GRILLES / Latest improvements in the design of recessed entrance foot grilles, intended to trap dirt, snow and moisture at the entrance to buildings, are explained in a recent brochure. A full description is given of the grid system of serrated vinyl strips, which draws dirt and moisture into a recessed trench to be simply drained away. The *Pedigrid* system can also be supplied in a specially adapted form for use in food service areas, swimming pool entrances and industrial plants. ▪ E-L Corporation, Williamsport, Pa.

Circle 402 on inquiry card

X-RAY PROTECTION / Details, specifications and drawings on lead core partition blocks, lead insulated lath, lead insulated panels, lead lined doors, control windows, pass-through boxes and many other items are included in a 32-page catalog, which is intended for all concerned with the design of hospitals and laboratory facilities. ▪ Ameray Corporation, Kenvil, N. J.*

Circle 403 on inquiry card

CONCRETE ADMIXTURES / Among the products featured in this 16-page catalog are: *Pozzolith,* a water-reducing set controlling agent; *MB-VR,* an air entraining agent; *Stearox* water-repellant for concrete and mortar; *MB-HC* water-reducing retarder; and *Omicron Mortarproofing,* a water-reducing, plasticizing admixture for masonry mortar. Charts and graphs give performance data of these products, including their effect on strength, durability, volume change, watertightness, uniformity and appearance. ▪ Master Builders, Cleveland.*

Circle 404 on inquiry card

LIGHTING / The 1966 catalog, "Contemporary Lighting by Heifetz," features some newly developed designs and materials. The catalog is designed to give a quick cross-reference system to assist in the selection of the appropriate combination of decorative and functional units. Each category of product is clearly defined with the aid of full-color and black-and-white photos. Charts and illustrations are specially set up to cover most typical requirements for commercial, institutional and residential needs. Letterhead requests to ▪ The Heifetz Company, Clinton, Conn.

WALL PANEL SYSTEMS / Bulletin no. T-CDL-63 describes the company's wall panel systems for office, hotel, school and commercial applications. Surfaced with *Textolite* textured laminated plastic, these panels are available in a wide variety of wood grains and solid colors. Three different systems—spline, batten and tongue-and-groove—are described in the brochure, which includes physical properties, design criteria, installation drawings and photos in color of typical installations. ▪ General Electric Company, Laminated Products Dept., Coshocton, Ohio.*

Circle 405 on inquiry card

OIL-LESS VACUUM PUMP / The advantages of this pump for evacuating and dehydrating refrigeration and air-conditioning systems using the triple evacuation method are set out in a recent bulletin, No. K. 70. ▪ ITT Bell and Gossett, Morton Grove. Ill.*

Circle 406 on inquiry card

ARCHITECTURAL GRILLES / A wide range of exterior and interior aluminum grilles and louvers, in both standard and custom designs suitable for new buildings and renovations, are the subject of a recently revised 8-page brochure. The booklet reviews applications of various types of grille in several new constructions and gives a case history of the projects, illustrated by photos and schematic drawings. A new cost-saving louver package, known as the *Spandrelouver* assembly, is also presented in the catalog. ▪ Bohn Aluminum and Brass Company, Department SW, Detroit.*

Circle 407 on inquiry card

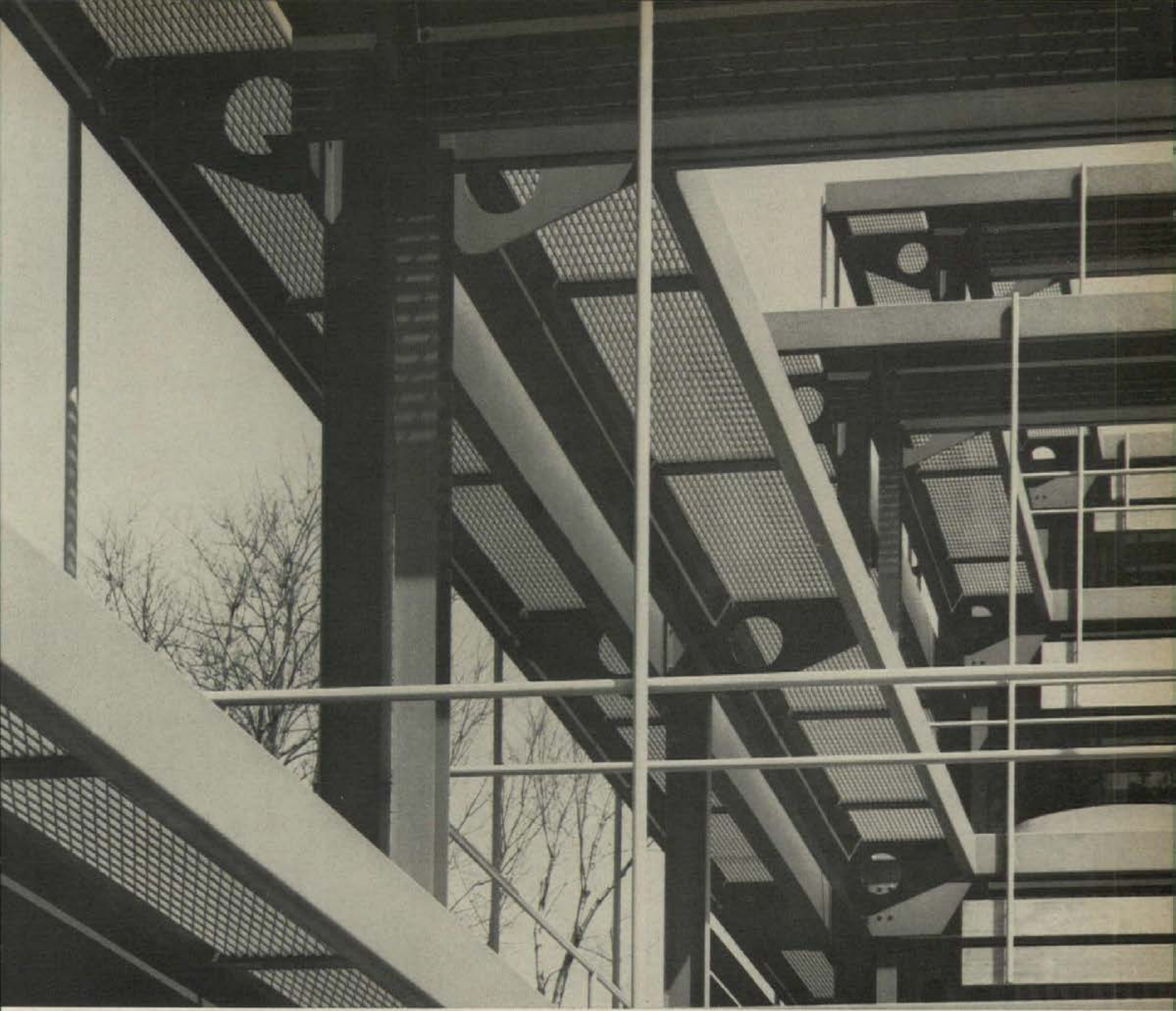
STEEL BUILDING SYSTEM / Components and assembled buildings are on display in a binder containing an impressive series of colored catalogs which show examples of commercial, institutional, recreation, storage and industrial buildings fabricated from Pruden steel components. A special section gives detailed product descriptions and specifications for the various structural units, spans, purlins, girts and covering systems. The catalog is aimed at helping architects incorporate these components into independently planned buildings as well as showing how the system can be used for different types of all-steel buildings. Letter requests to ▪ Paul Kuck, Pruden Products Co., Evansville, Wis.

NEW CENTRIFUGAL FAN / A 12-page brochure has been released to cover the new CTB centrifugal tubular fan, which makes use of a recently developed aluminum non-overloading airfoil wheel fitted into a steel tubular flanged housing to give maximum capacity at minimum h.p. and low noise level. Designed for Class I applications up to 3 in. S.P., this new fan is intended for ventilating systems with supply or exhaust duct work and is particularly suitable for use with air-conditioning systems. Dimensions are given, and capacities at various pressures are set out in chart form. ▪ ILG Industries Inc., Chicago.

Circle 408 on inquiry card

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

more literature on page 254



VERSATILE BORDEN PRESSURE LOCKED GRATING

Borden's Pressure Locked steel grating is used extensively as the flooring of the continuous balconies surrounding the new Washington, D. C. German Chancery building shown here. An integral part of the design of this striking 95,000 sq. ft. steel-and-wood-framed structure, the grating adds the practical advantages of sun shading, ease of window cleaning, and requires no maintenance.

Available in many subtypes, Borden's Pressure Locked Type B, approved for all general purposes, was chosen for the above application. For complete information on this and other grating types, including Riveted and All/Weld in steel or aluminum, write for . . .

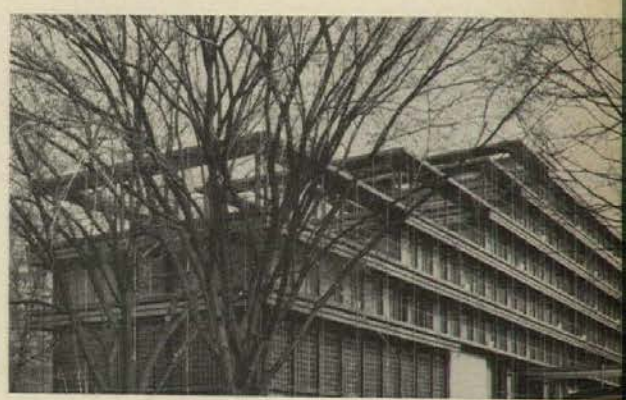
a free copy of
The 16-page Borden Grating Catalog

BORDEN METAL PRODUCTS CO.

MAIN OFFICE: 822 GREEN LANE, ELIZABETH, NEW JERSEY
• *Elizabeth 2-6410*

PLANTS AT: LEEDS, ALABAMA; UNION, NEW JERSEY; CONROE, TEXAS

When in New York City, see our exhibit at Architects Samples, 101 Park Avenue



For more data, circle 91 on inquiry card





It's never had a power failure.

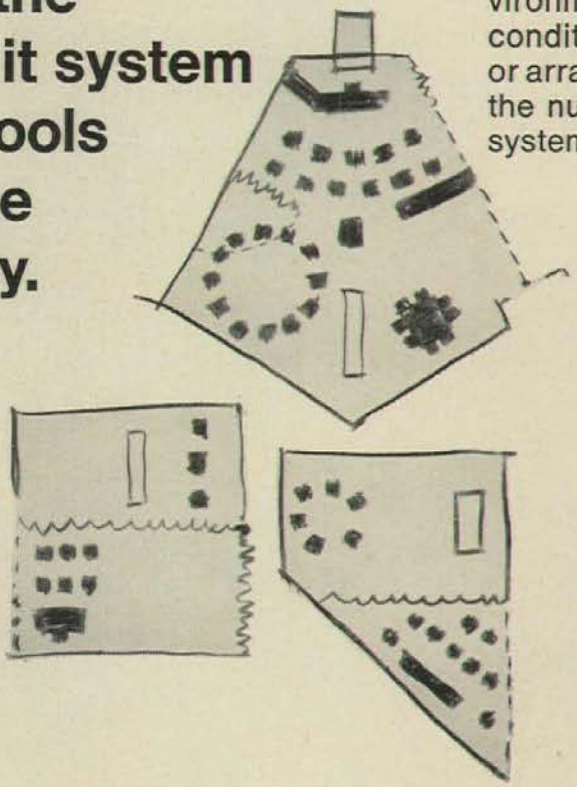
Can you think of a better reason for windows?
The next time you hear some school board "economist"
touting the idea of a windowless school,
tell him about that God-given stuff called daylight.
And more power to you.

Libbey·Owens·Ford Glass Co.
Toledo, Ohio

LOF GLASS

For more data, circle 92 on inquiry card

If you're designing flexible learning spaces for 10, 20, 50 or 100 students, read how the Nesbitt unit system heats or cools each space individually.



This is the new climate control problem created by today's flexible learning spaces—the ideal thermal environment for 100 people is not so ideal for 10. To solve it, the Nesbitt year-round unit system was never more appropriate.

The case for the unit system is this: it allows individual control of indoor environment—heating, ventilating and air conditioning—whatever the shape, size or arrangement of the learning space or the number of students in it. No other system does it so economically.

For more data, circle 93 on inquiry card

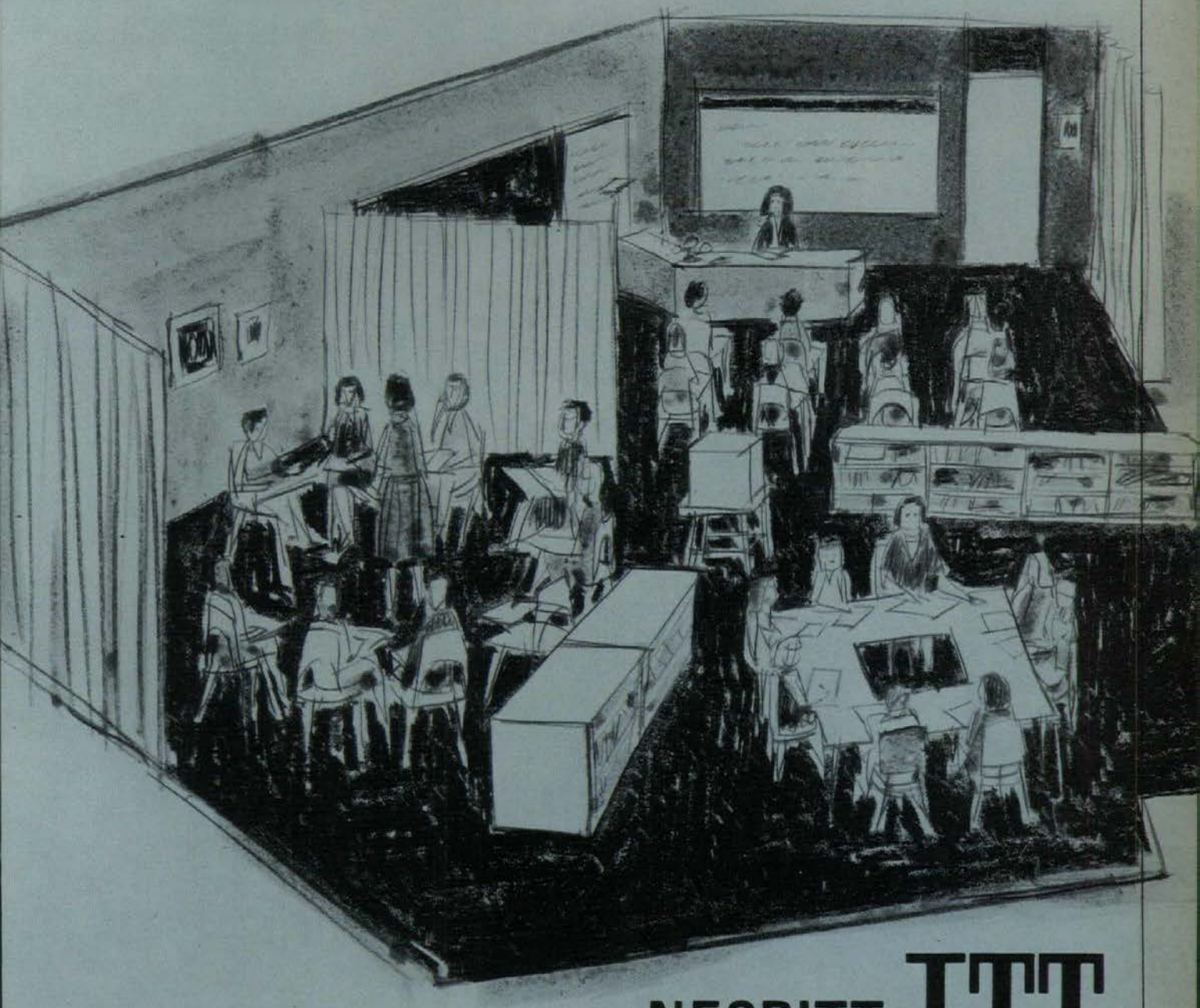
What's more, the Nesbitt unit system looks good. Because small pipes go where large ducts can't, you have the freedom to put the pipe-fed unit ventilator almost anywhere—floor or ceiling—concealed or exposed. What could be more fitting?

Nesbitt is styled to work right along with your designs. Where you want the equipment visible, Nesbitt colors, textures and patterns form an integral part of the line so that each unit blends with the room, with the building, with each other.

It's no accident. The entire Nesbitt line was styled by Paul McCobb, one of America's leading contemporary designers. Now you can organize many arrangements of Nesbitt classroom cabinets, selecting the units that unify all your design elements.

Whether you're designing new buildings or renovating, a Nesbitt representative will tell you the whole story about the versatile unit system that fits with the flexibility and new shapes in modern schools.

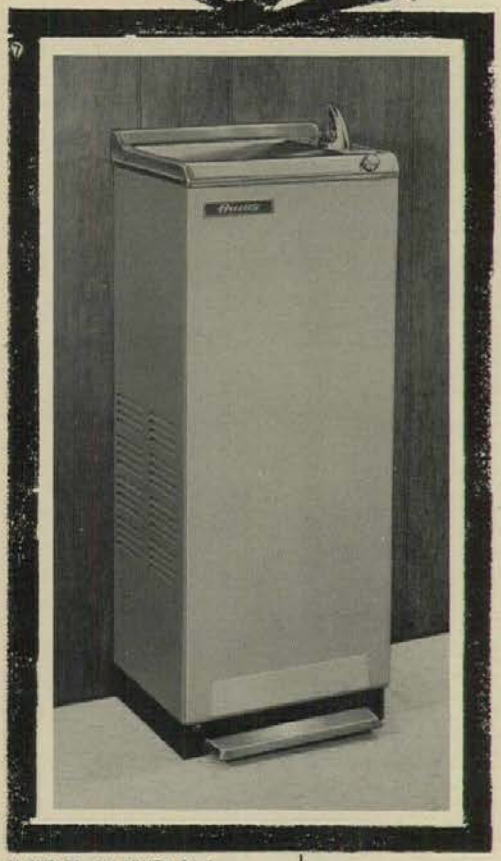
Write Nesbitt, Environmental Products Division, International Telephone and Telegraph, Philadelphia, Pennsylvania 19136.



NESBITT ITT

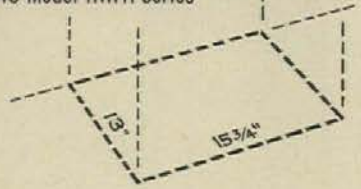
A MEMBER OF THE HEATING AND AIR CONDITIONING GROUP

HAWS WATER COOLERS



HAWS Model HWFA Series

put refreshment in a compact package



High output and space-saving design join naturally in this Haws floor-mounted cooler. It projects just 13" because it's flush-wall mounted, and occupies less than 1.5 sq. ft. of floor space.

Trim as it is, this Haws cooler offers capacities up to 22 gph—enough cool refreshment for 264 people an hour, hour after hour. Specify a Haws cooler for your next project. In Cool Mist Grey enameled finish and stainless steel receptor, they complement every modern decor. Haws coolers are also available with vinyl-covered front panel in grey or tan, or finished entirely in stainless steel. Write or call:

HAWS
Since 1909

HAWS DRINKING FAUCET COMPANY

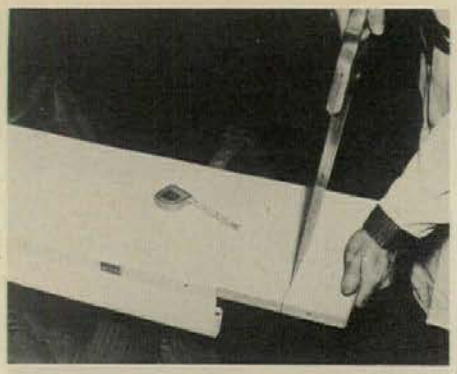
1441 Fourth Street • Berkeley, California 94710

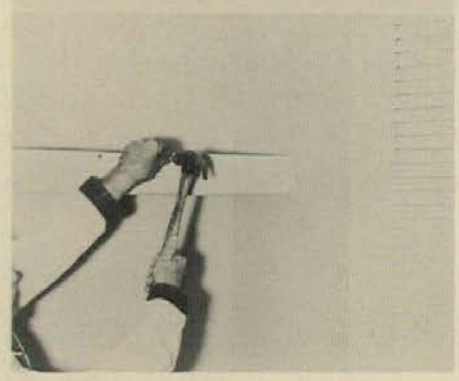
For details and information on other Haws products—see your Haws catalogs on drinking fountains, emergency eye/face-wash fountains, drench showers and decontamination equipment; and dental fountain/cuspidor units.



For more data, circle 94 on inquiry card

continued from page 205





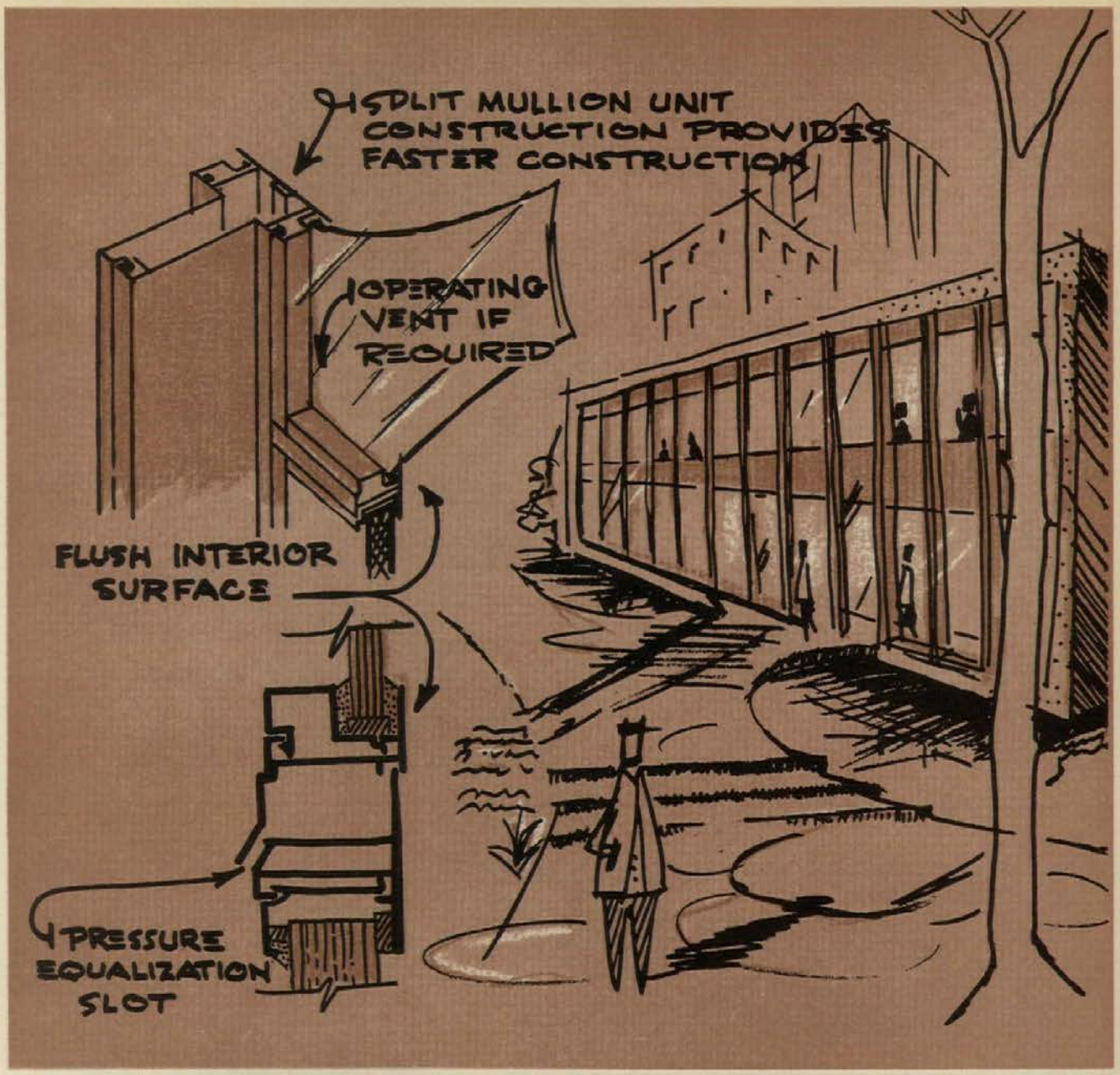
SHELVING / A closet shelf installation system for dry wall or plaster requires only two end brackets, yet an 8-ft *Novo-shelf* is reported to support 50 lb per lineal ft. The shelving, available in six adjustable sizes, comes sanded smooth on both surfaces, has no knots and cannot check, crack or grain raise, warp or bend. A steel hanger bar provides reinforcing and eliminates the need for center or back shelf supports. The shelf and the supporting end brackets are finished in a matching off-white prime coat. Installation requires merely driving the self-contained end cleats of the brackets into the wall and inserting screws in pre-drilled holes. The shelf, which has been cut to the desired length, is tapped lightly into place onto the bracket spurs and the adjustable section of the hanger bar is screwed easily into place. Each package contains two shelves, end brackets and necessary screws. ▪ United States Plywood Corporation, New York City.

Circle 304 on inquiry card

COLD APPLIED ASPHALT CEMENT / Suitable as a ply and lap cement for all types of cold-process smooth built-up roofs or slag surfaced roofs, *Adhesive No. 378* contains *Carey* asbestos fiber, and can be applied by brush or spray to all types of coated or uncoated fibre roof insulation boards, concrete or steel decks, cement felts and fabrics. ▪ Philip Carey Mfg. Company, Cincinnati.

Circle 305 on inquiry card

more products on page 220



the Kawneer 1200 curtain wall system that solves leakage problems!

EXCLUSIVE PRESSURE EQUALIZATION SLOT PREVENTS SIPHON ACTION; HENCE, NO LEAKAGE—EVEN WITH OPERATING VENTS!

■ You needn't worry about water damage to the interiors of buildings. There's no way for water to leak through because we've sealed off every approach. Each Sealair Vent has an exclusive pressure equalization slot that keeps water out! Pressure within window sections is equal to pressure outside the building. This precludes siphoning action. Hence, no leakage. Controlled thermal expansion. Split mullion construction takes thermal expansion stresses away from joint sealants, preventing possible leakage. ■ *Permanodic** hard color finishes. Your choice of Kawneer hard color anodic finishes adds warmth to your designs. They resist abrasion, corrosion, fading, and the ravages of weather and industrial climate. The Kawneer 1200 Wall System is ideal for one- and two-story applications. ■ For high rise construction (over two-story), consider the 1250 curtain wall system which provides a stacking arrangement engineered to channel water out of the system at each level. ■ Write for File No. WS-65. Address: Kawneer Products Information, 1105 N. Front St., Niles, Mich.

* Trademark of Kawneer Company, Inc.
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Kawneer

Kawneer Company, Inc., a Subsidiary of American Metal Climax, Inc.
Niles, Michigan • Richmond, California • Atlanta, Georgia • Kawneer Company Canada, Ltd., Toronto, Ontario • Kawneer de Mexico, S.A. de C. V., Mexico City, Mexico • Kawneer Company (U. K.) Ltd., London • Kawneer GmbH, Rheydt, Germany • Showa Kawneer, Tokyo, Japan

For more data, circle 95 on inquiry card



Pictured here is just one of a large variety of wood closure designs. Whether your closure problem is for counter, partition or cabinet closing, specify Wilson Rolling Wood Closures.

WILSON ROLLING WOOD CLOSURES

When appearance makes the difference!

Wilson Rolling Wood Closures do make a difference in appearance by complementing and adding to the beauty of the installation's setting.

Standard wood is fir. All woods are selected for quality only and not for color or grain. Optional features include special woods such as oak and birch, coil boxes, locking devices (bronze slide bolt and hasp or cylinder lock), chrome plated hardware and pilasters (recommended for installations over 12 feet wide).

COMBINE THE BEAUTY OF WOOD WITH PROTECTIVE SECURITY

The J. G. Wilson Corporation combines the highest grade of raw materials, skilled craftsmen and practical construction designs, in the engineering and production of rolling wood closures. The result is that Wilson Rolling Wood Closures have occupied an enviable position in the esteem of architects and real estate managers for over half a century.

WRITE FOR COMPLIMENTARY BROCHURE

The J. G. WILSON Corporation

QUALITY PRODUCTS SINCE 1876

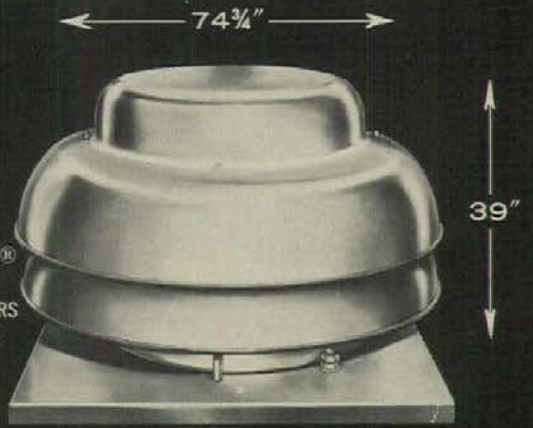
P. O. Box 599, NORFOLK, VA.

SERVING A GROWING AMERICA

Other Products: Standard Rolling Service Doors / Wilson Weather Doors / Underwriters' (Label) Service Doors / Midget Slat Closures / Overhead Doors / Rolling Wood Closures / Tee-M / Special Products

For more data, circle 64 on inquiry card

YOU CAN'T HIDE IT...



COOK SPUN-TIER® ROOF VENTILATORS Type TCB with 48" wheel

SO WE MAKE IT LOOK GOOD

COOK SPUN-TIER® Roof Ventilators range from 11" to 39" from curb to top. That is low, by any standard of comparison. But they are still noticeable on a roof line. Which is why the modern styling of Spun-Tier ventilators is preferred by architects and builders. Spun-Tier ventilators perform as well as they look. Tiered design provides positive motor ventilation. Heat is no problem. All aluminum construction, belt or direct drive.

See our catalog $\frac{20c}{Co}$ *in Sweet's, illustrating 24 ventilators, blowers or accessories.*

LOREN COOK COMPANY
640 N. ROCKY RIVER DRIVE
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Now! Organize 2400 drawings in one 3′ cabinet



Plan Hold® Pivot System Speeds Filing

The cabinet top lifts . . . doors swing out . . . up to 2400 drawings pivot into full view. Sets or single sheets up to 60" long hang wrinkle-free in the Plan Hold Patented Friction Binders. The binders pivot on brackets, swing apart for quick identification and removal. And you have lock and key security in a rugged 36" steel cabinet. Send for 16-Page Catalog of Plan Filing Systems: Dept. R62, Box 3458, Torrance, Calif. 90510.

®PLAN HOLD CORP. • World's Largest Manufacturer of Plan Filing Systems
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For more data, circle 86 on inquiry card

For more data, circle 96 on inquiry card

Authenticity of detail and adherence to proper proportions as well as correct material choices and true craftsmanship are the important elements in column manufacturing. It is why we are still, after 65 years, the largest custom-manufacturer of classical columns.

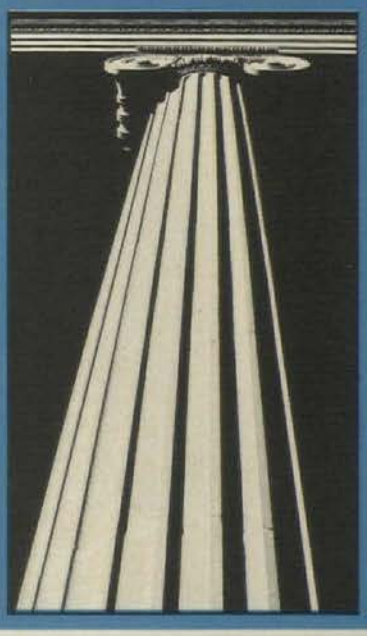
Equally important to the success of the total concept are the design and construction details of the other traditional components: the cornice; the portico; or entablature.

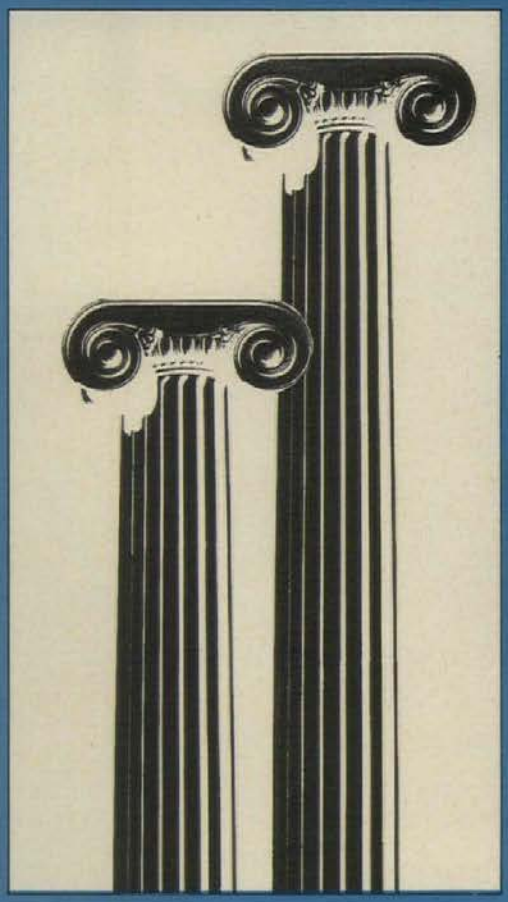
While we are well aware of the architect's historic design prerogative, our exposure to and detailing experience in the classical architectural forms may be of some help to you.

At your request a Hartmann-Sanders Company representative will be happy to consult with you, our design staff will review your details or if necessary assist in their development. Production responsibility for these items may be assigned to anyone you choose.

This service is provided wherever Hartmann-Sanders columns are used and costs no more than a phone call or a five cent stamp. Our column brochure is, of course, available upon request.

IN JUST 14 SECONDS YOU CAN DIAL AUTHENTIC DESIGN SERVICE THAT WILL SAVE HOURS OF YOUR TIME



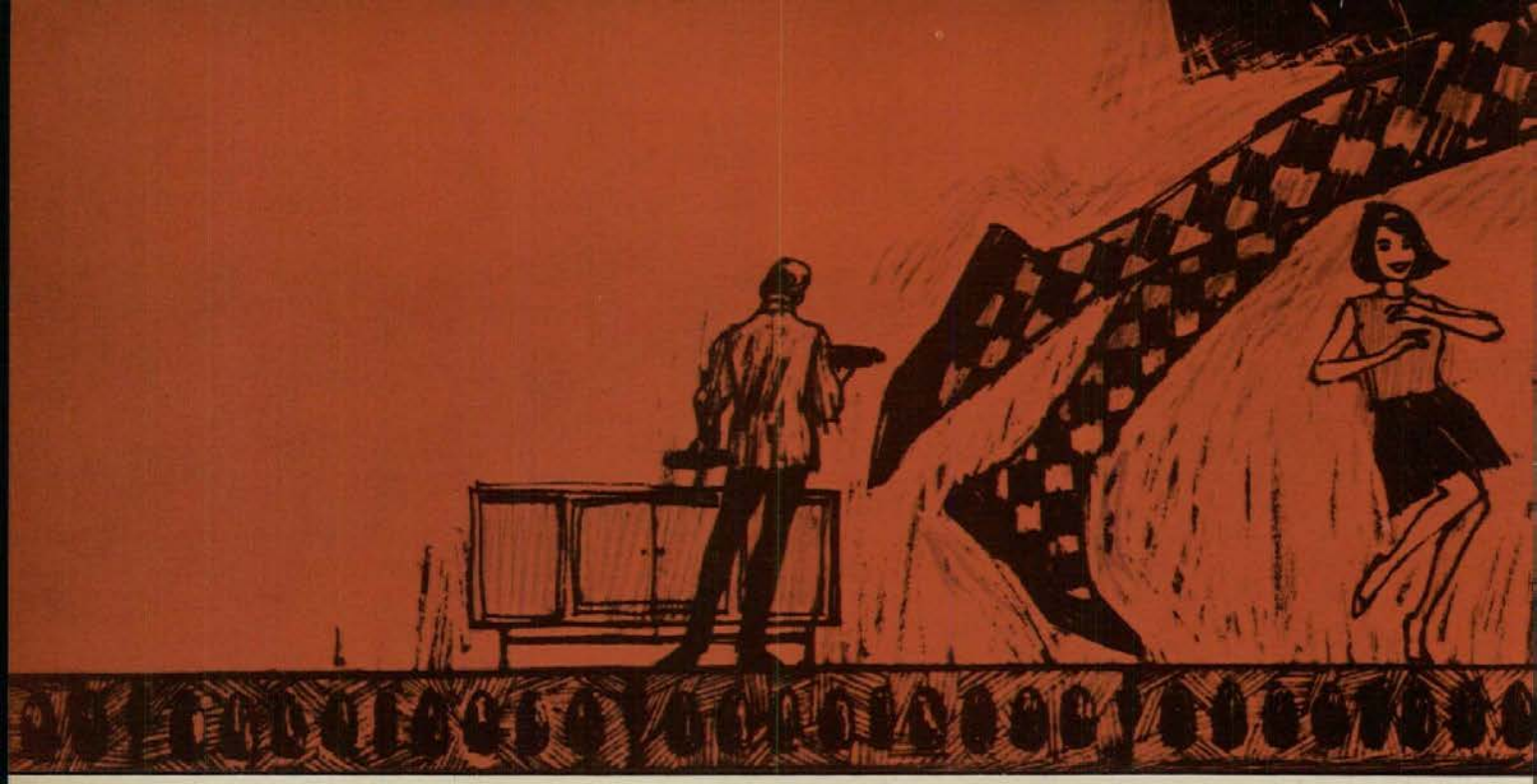


It's a service provided by Hartmann-Sanders, world's leading manufacturer of classical columns. Dial 312-439-5600 and see.



HARTMANN-SANDERS COMPANY 1717 Arthur Avenue, Centex Industrial Park, Elk Grove Village, Illinois, Phone 312-439-5600

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spancrete:

Precast Prestressed Concrete Plank for Roofs and Floors

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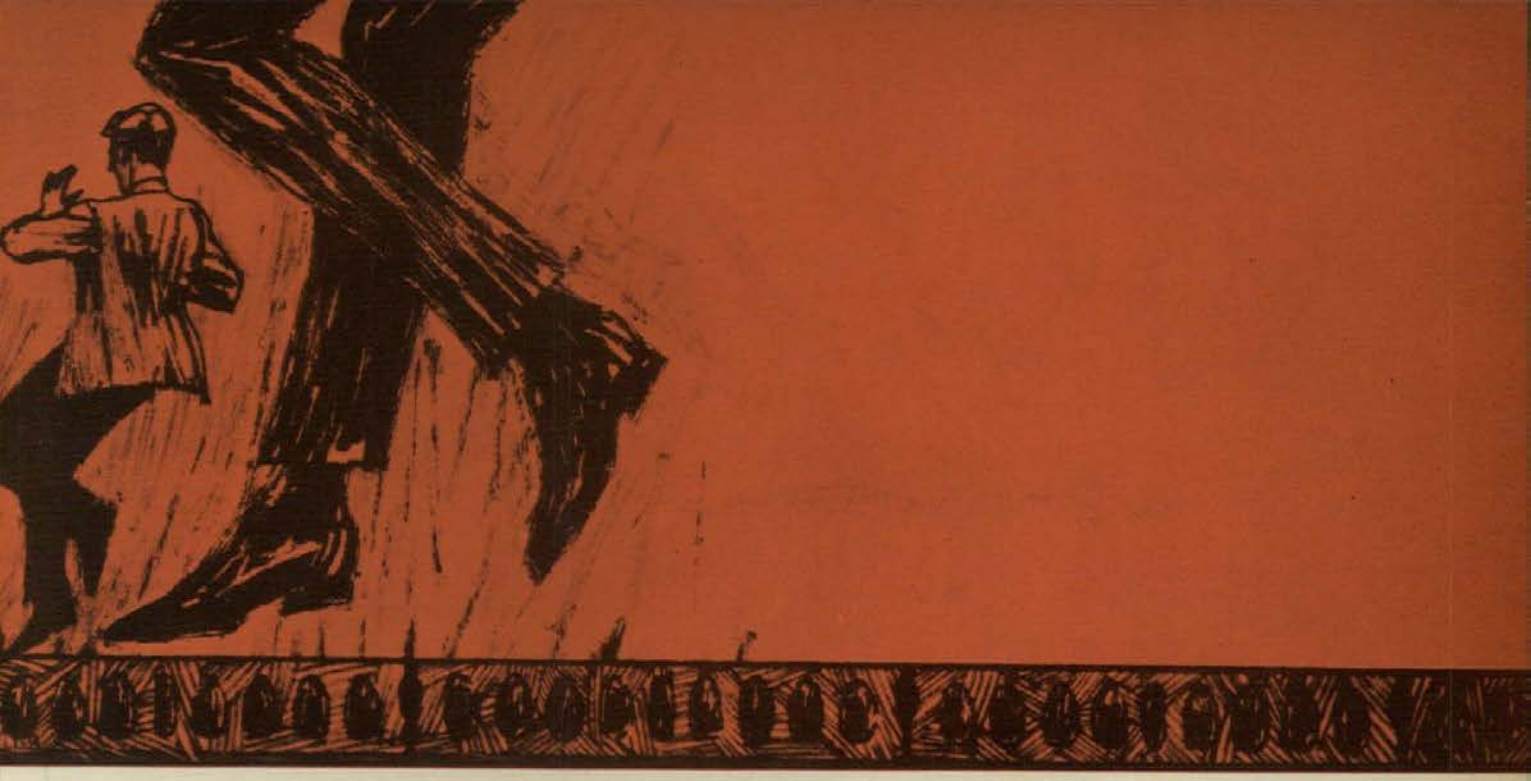
PRE-CAST CONCRETE PRODUCTS CO.
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sound barrier

Acoustically-tested, sound-isolating hollow core flat plank in 40-inch widths; 4, 6, 8 and 10-inch depths; and spans up to 48 feet. Excellent sound transmission loss ratings of 49 to 55 decibels (nine-frequency averages in Riverbank Acoustic Laboratory tests). Maximum noise control through roofs and between floors of motels, apartments, nursing homes or any structure where acoustic environment, such as proximity to airports, is a specification factor. Factory-manufactured and cured under rigid temperature and humidity standards. Year-round, all-weather application, fire ratings and fine textured surface are a few of the other reasons why architects and engineers specify Spancrete. For full information, write your nearest Spancrete manufacturer listed below.

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Canada

SPANCRETE LIMITED
P.O. BOX 20
Longueuil, Quebec

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Your clients will be perfectly happy with lighting panels that cost less than K-S-H K-Lite...

If you don't turn on the lights!

But you do! And then you see for sure that K-Lite prismatics are worth specifying. Our K-12, for instance. Unlighted, the clean, sharp prisms in a diagonal pattern have the "feel" of crystal.

Flip the switch. See! Soft brightness, even if you've put in a hundred footcandles. Here's task illumination that defines and complements architectural details . . . makes your space psychologically pleasing.

And as years go by, K-Lite prismatics stay first-day new. Color stability is twice as good as industry specifications. Tensile and impact strength, hardness and thermal expansion . . . every quality factor in every panel is right. We guarantee it. Does anyone else?

How much more do they cost? Maybe an extra $250 on a thousand fixtures. Maybe less. They're standard with many fixture manufacturers.

You're the boss. Specify K-Lite. And insist on comparisons from "or equal" bidders. Ask for our MRQC Brochure.

K-LITE® LIGHTING PANELS

K-S-H PLASTICS, INC. • 10212 MANCHESTER • ST. LOUIS, MO. 63122

For more data, circle 99 on inquiry card

Weis solid brass recessed latch releases by merely lifting door upward. No delay in reaching an emergency situation fast.



This Weis feature is especially important in hospital, school, and other institutional locations.

Compact demonstration kit shows action... display brought to your office upon request.

WEIS

HENRY WEIS MFG. CO.
ELKHART, INDIANA

r more data, circle 100 on inquiry card

continued from page 121



HEDRICH-BLESSING PHOTO

10 YEARS EXPERIENCE

by CARLISLE in manufacturing Rubber Waterproofing is one reason why...

CARLISLE

Sure-Seal

WAS SPECIFIED

The EQUITABLE BUILDING
Chicago, Illinois

Architects:
Skidmore, Owings & Merrill

Carlisle Sure-Seal is specified time and time again, for both above and below grade waterproofing, for installations that demand top product integrity.

In the Equitable building complex, Sure-Seal was used in many ways . . . as roof flashing, plaza expansion joints, planter linings and in the reflecting pool.

Ten years experience in manufacturing rubber waterproofing has not only qualified Carlisle as a leader in this field, but has built an outstanding portfolio of construction applications employing Sure-Seal.

Write today for complete information and list of Carlisle Sure-Seal installations.

Special Products Department
CARLISLE TIRE & RUBBER DIVISION
Carlisle Corporation • Carlisle, Pennsylvania 17013

Please send me additional information on Carlisle Sure-Seal Rubber Waterproofing and a list of Carlisle installations.

NAME_____ POSITION_____

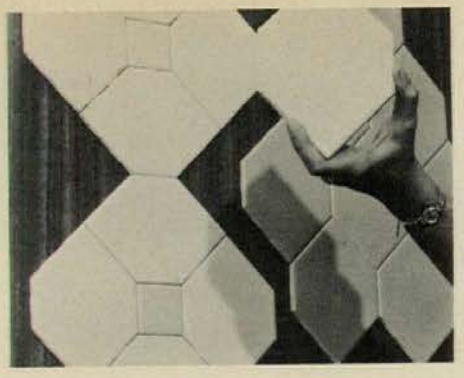
COMPANY_____

ADDRESS_____

CITY_____

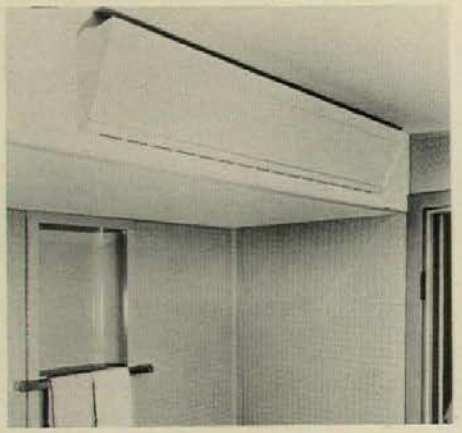
STATE_____ ZIP_____

For more data, circle 101 on inquiry card



HEXAGONAL TILES / A new line of ceramic tiles features an elongated hexagon. The photograph illustrates two patterns which can be created from the ceramic tiles. Individual tiles measure 6-in. from point to point and 4¼-in. across. A 2-in. by 2-in. insert is available as well as trim shapes for finishing installation. This non-vitreous tile is available in a wide variety of colors. ▪ The Mosaic Tile Company, Cleveland.

Circle 306 on inquiry card



HEATING / A new valance heating system features Cornice Heaters with porcelainized steel elements and housing installed at junctions of ceilings and walls. Direct radiant heat is beamed from the faces of the heaters, and at the same time a warm air layer is set up by convection at the ceiling. The warm ceiling radiates additional heat to the room, resulting in floor temperatures comfortably warmer than the room air temperature. Fluctuations of temperature are said to be minimized because there is little overshooting or undershooting of the thermostat setting. The heaters may be installed in new or existing houses, as a complete system or as individual heaters. They are particularly useful where wall space is limited, over cabinets or window walls. ▪ Vitratherm Corporation, 132 South Main Street, South Norwalk, Conn.

Circle 307 on inquiry card

more products on page 234

For more data, circle 102 on inquiry card

EXTERIOR DECORATOR

The things behind a door could very well be fashionable, elegant and breathtaking. So Yale felt what goes on the door should be the same. And Yale did something about it. With the simple elegance of a perfectly round knob. Now the oohs and aahs start at the door.

YALE® LOOKS AS GOOD AS IT LOCKS

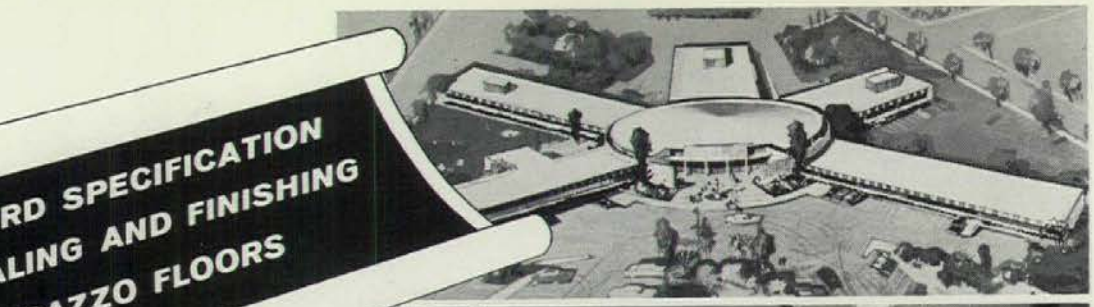
THE FINEST NAME IN LOCKS AND HARDWARE

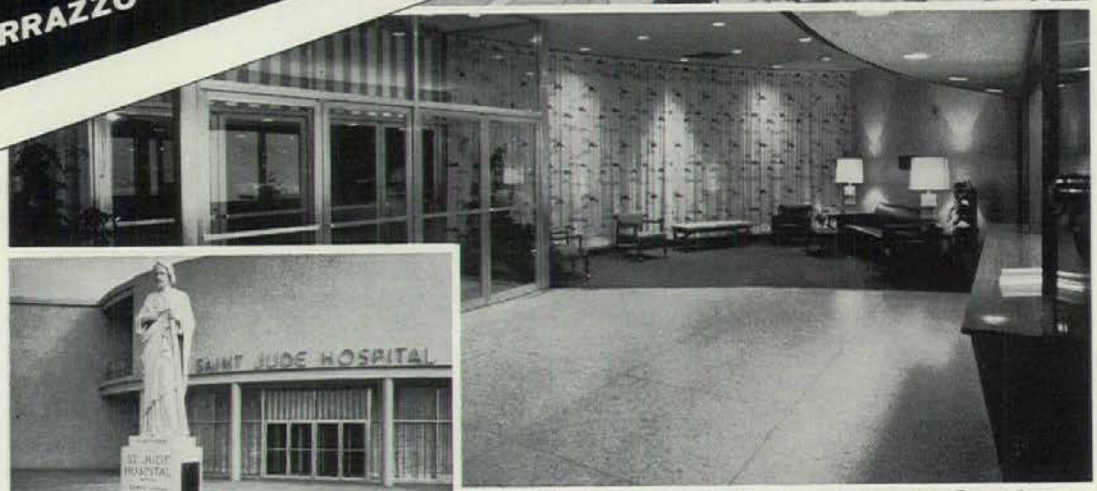


Yale Copenhagen mortise lock in dark bronze finish.

EATON YALE & TOWNE INC

A HILLYARD SPECIFICATION FOR SEALING AND FINISHING TERRAZZO FLOORS







St. Jude Hospital in Memphis, Tennessee, founded by Entertainment Star Danny Thomas for the study and care of children's diseases. Architects: Mahan-Shappley, Memphis.

YEARS AFTER ORIGINAL SEALING WITH **SUPER ONEX-SEAL,®** ST. JUDE FLOORS LOOK LIKE NEW

Super Onex-Seal protects and enhances the beauty and life of terrazzo-protects against penetration of moisture, dirt and bacteria into the floor. Thus, the high degree of sanitation required in a hospital is easily achieved through a simple daily maintenance program.

PRODUCT DESCRIPTION: A modified ester penetrating sealer that buffs to a hard, wear-resistant, lustrous finish. For Portland Terrazzo, other synthetic binder types of Terrazzo, Magnesite and other masonry surfaces.

SPECIFICATION AND HOW TO APPLY: Onto a perfectly clean, stain-free floor, apply in thin, even coat with lamb's wool applicator. Let dry until pressure of fingers pulled across the surface produce a squeaking sound. Buff after application. Apply second thin coat and buff for added lustre.

COVERAGE: 600-900 sq.feet per gallon depending on porosity of floor.

TECHNICAL DATA: NVM—10.5% minimum. Film properties: Drying time—45 minutes maximum. Appearance—free from particles; semi-transparent. Tackiness — none. Water resistance — no loosening of film; no removal of gloss. General Appearance: Color—light, contains no pigments or dyes. Odor—non-objectionable at any time. Viscosity—heavy bodied liquid mixture.

GUARANTEE: When applied in accordance with manufacturer's directions, it is guaranteed to meet all claims made for it.

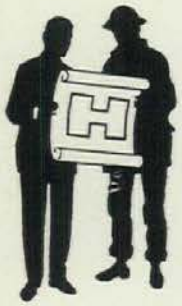
MAINTENANCE: Sweep daily with a Super Hil-Tone treated dust mop (do not use an oily mop dressing). Buff periodically. When floor is soiled, clean with Super Shine-All or with Clean-O-Lite (if a sanitizer is desired). Traffic lanes may be patched in and buffed to blend in with the rest of the floor. Reseal as needed, depending upon traffic and usage.

APPROVALS: This is the type of penetrating seal recommended by the National Terrazzo and Mosaic Association. U/L listed as to slip resistance and fire hazard.

EXCEPTIONS: Where conductive terrazzo is specified, consult your Hillyard representative for treatment specifications.

REFERENCES: Sweet's Architectural File, A.I.A. Building Products Register, Hillyard A.I.A. File No. 25G.

IN SWEET'S ARCHITECTURAL FILE



HILLYARD
FLOOR TREATMENTS
ST. JOSEPH, MISSOURI U.S.A.
TOTOWA, NEW JERSEY
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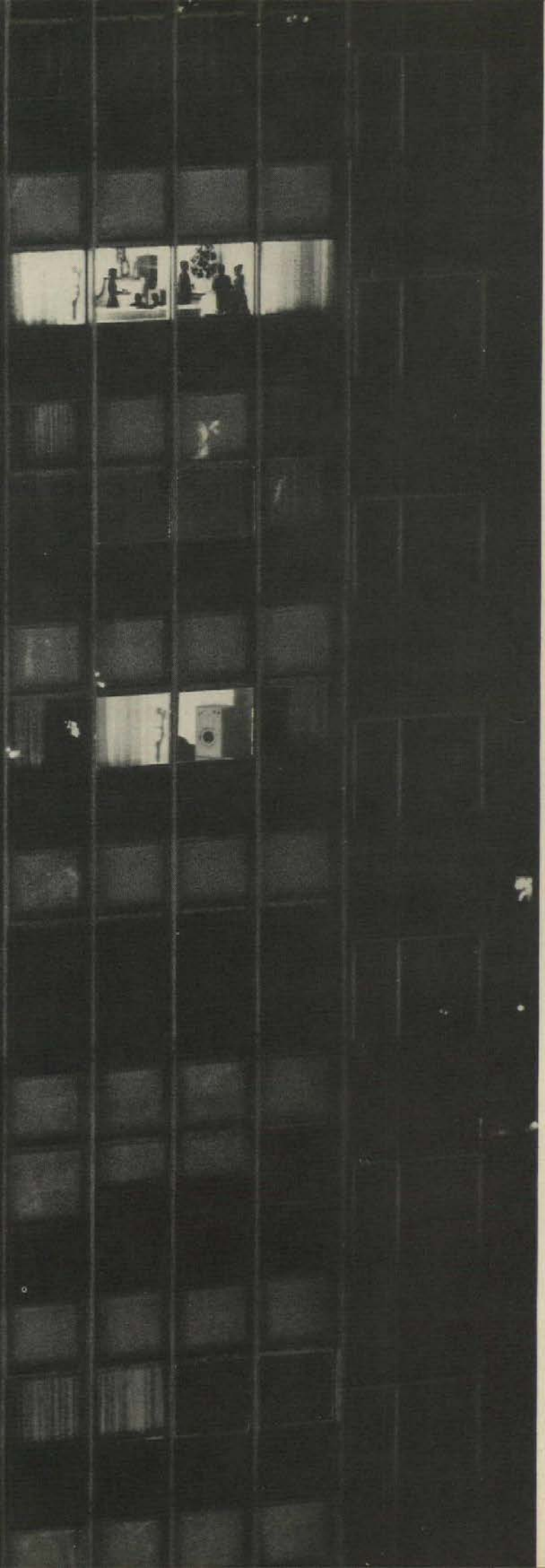
SINCE 1907

A certified Hillyard Architectural Consultant will gladly discuss with your specification writers the proper, approved procedures and materials for the original treatment of any type floor you specify. He'll also provide free follow-up "job captain" service to protect your specifications. Write, wire or call collect.

The most widely recommended and approved treatments for every surface

For more data, circle 103 on inquiry card

For more data, circle 104 on inquiry card



Cissell dryers like to live it up, too!

The Cissell Petite Dryer is specially designed for high rise apartments. It's as easy to install on upper floors as it is in a basement or ground floor service room. Convenient size (48″ high, 28¾″ wide, 30″ deep), light weight and easy venting simplify installation. And the Cissell Petite has all the features tenants want. Two temperature settings — 150 degrees and 185 degrees. Non-wrinkling cool-off period. Fast drying — ten pounds in twenty minutes. Big 16-pound dry weight capacity basket with 28″ drop to assure soft, fluffy drying. No-snag perforations to protect the most delicate clothes. Available for gas or electric operation . . . in any color to match your decorative schemes. Want bigger capacity for special applications? Cissell makes a full line of laundry dryers, including the 25-pound dry weight capacity Compact. W. M. Cissell Mfg. Co., Inc., Louisville, Ky.



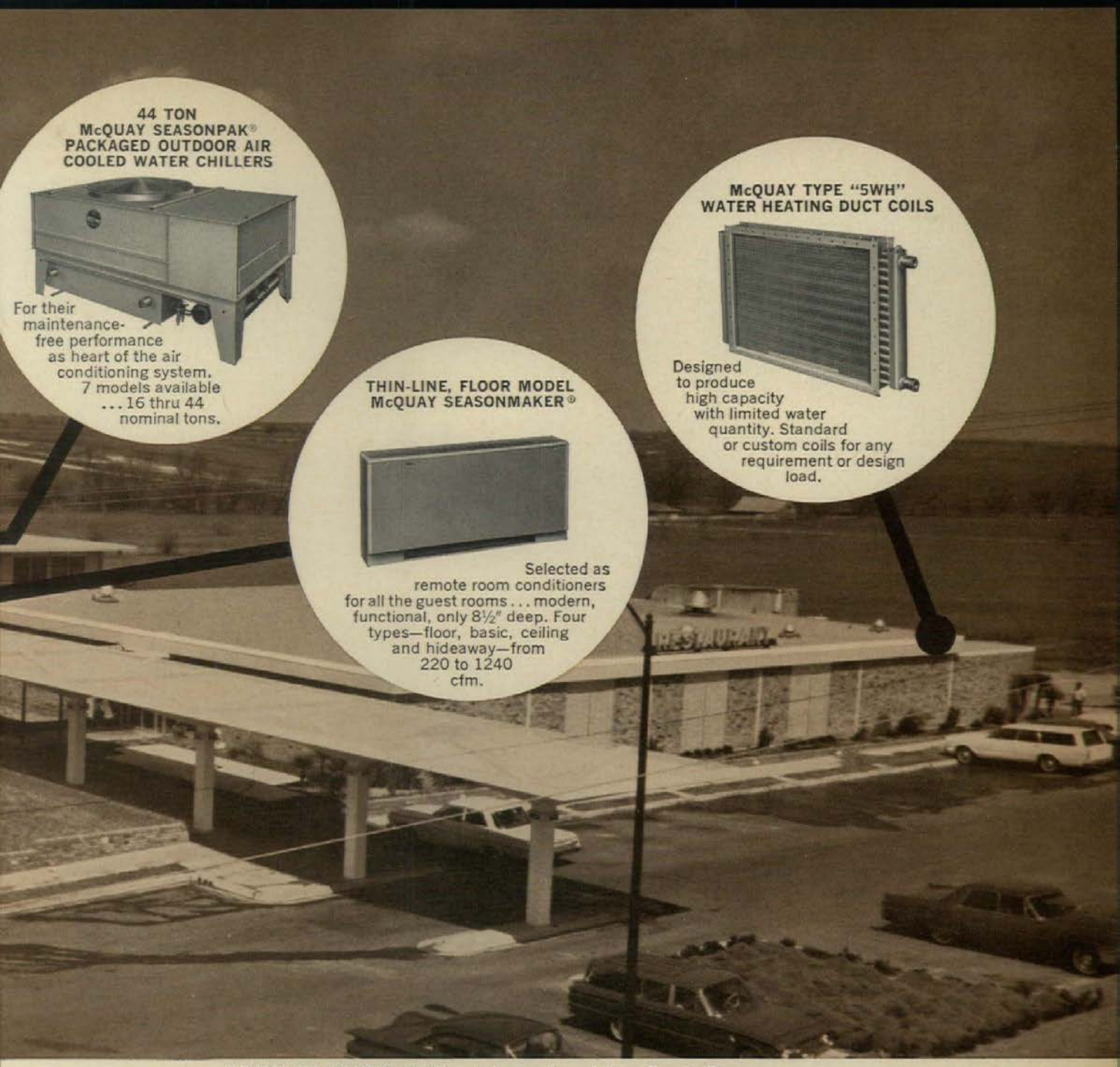
Petite *Compact*

CISSELL®



For maximum efficiency and economy in your air conditioning system, all components must be compatible. That's why Holiday Inn of Temple, Texas selected a matched system including the McQuay Seasonpak® Packaged Outdoor Air Cooled Water Chillers, Duct Water Heating Coils and the Thin-Line Seasonmakers. They're engineered for each other—designed for quick installation and ease of maintenance. McQuay's exclusive HI-F Ripple Fin Duct Coils are available for any application in the widest range of sizes and materials in the industry . . . for water cooling, direct expansion, steam and water heating. McQuay is the world's largest manufacturer of heat transfer coils. For air conditioning equipment in almost unlimited types and sizes for any application, specify McQuay ...for single-source, single responsibility systems. For complete information call your McQuay Representative or write direct.





HOLIDAY INN, TEMPLE, TEXAS Innkeeper: Harry F. Lane, Temple, Texas.
McQuay Rep.: J. P. Ashcraft Co., Lubbock, Texas

Holiday Inn® OF AMERICA
THE NATION'S INNKEEPER®
REG. U. S. PAT. OFF.

Many Holiday Inns throughout America are McQuay equipped. Here are some of them....

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Greenville, N.C.
Greenville, S.C.
Joliet, Ill.
Lawrence, Kans.
Lorain, Ohio
New Bern, N.C.
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Paducah, Ky.
Pine Bluff, Ark.
Rockford, Ill.
Roswell, N.M.
Sandusky, Ohio
Seymour, Ind.
Spokane, Wash.
Topeka, Kans.
Waycross, Ga.

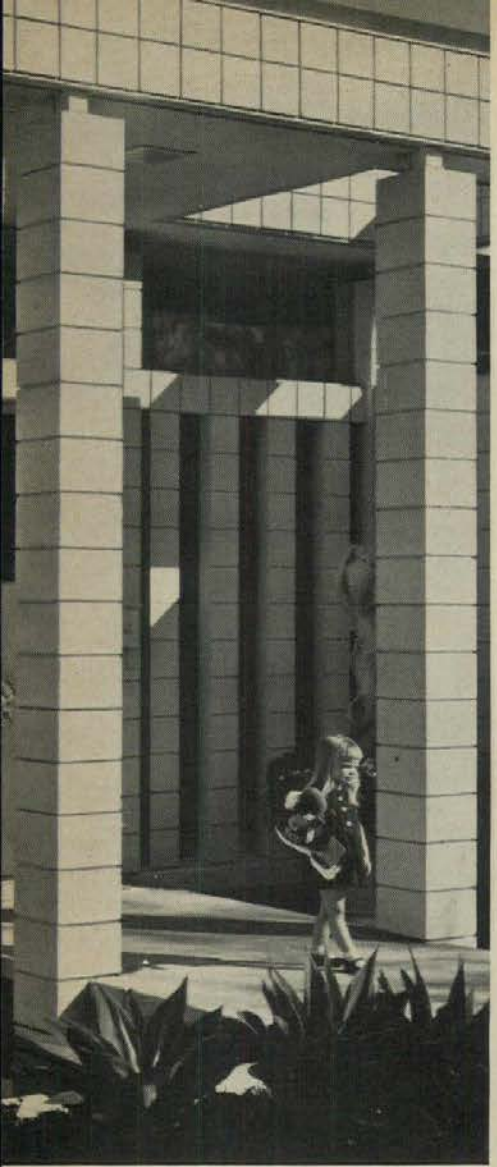


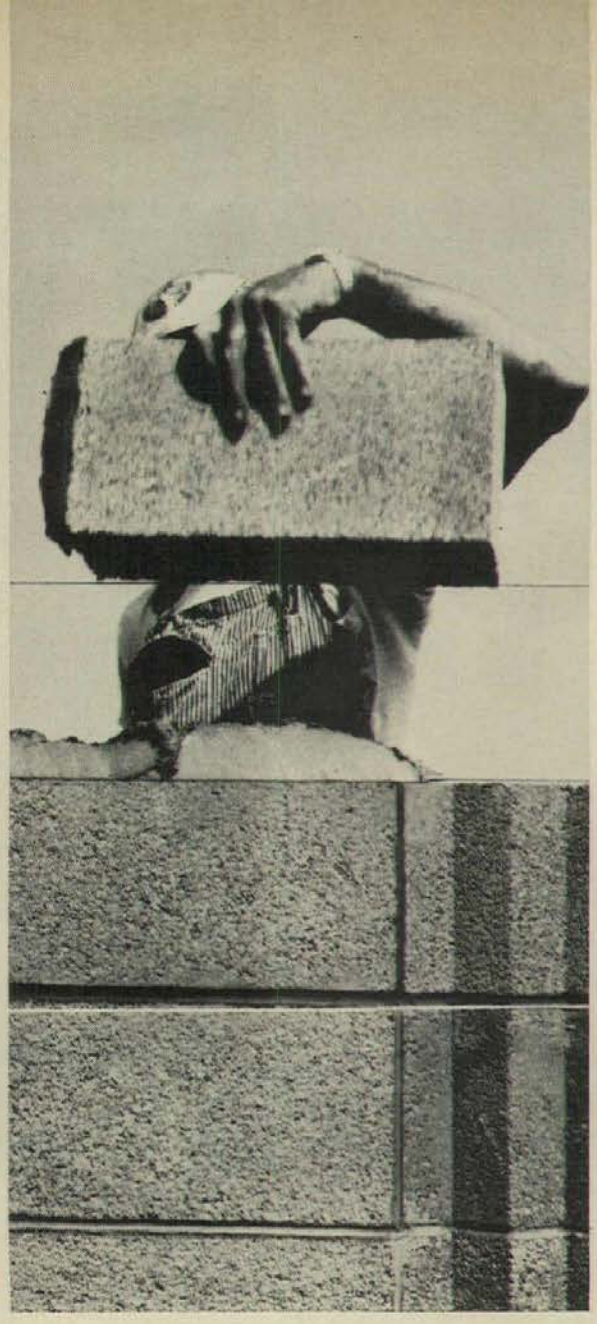
McQuay INC.

Box 1551, 13600 Industrial Park Blvd.,
Minneapolis, Minnesota 55440
AIR CONDITIONING • REFRIGERATION
HEATING • VENTILATING

MANUFACTURING PLANTS AT FARIBAULT, MINNESOTA • GRENADA, MISSISSIPPI • VISALIA, CALIFORNIA

For more data, circle 106 on inquiry card







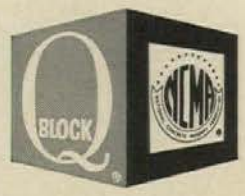
The Q BLOCK® Program stacks everything in your favor

WHEN you're working with quality, things just naturally fall into place. Take the new Q BLOCK program for example. It wasn't long after block producers across the country adopted this national quality control program that building professionals were also eyeing its advantages.

These new standards, set forth by the block industry itself, give architects and builders the opportunity to design and build with maximum assurance of product quality. They have demonstrated their acceptance by *specifying* concrete block produced under the Q BLOCK quality control program—as it reflects all the high standards that modern research and technical development can provide, backed up by regular product testing to guarantee that these standards are consistently maintained.

Concrete block, made to Q BLOCK specifications, is concrete block at its best. And better concrete block will always mean wider opportunities and more confidence for the modern user of building products.

Members of the National Q BLOCK program are identified by this registered mark. Look for it wherever you specify or use concrete block.



National Concrete Masonry Association · 2009 14th Street, North · Arlington, Virginia 22201

Guth
LIGHTING
since 1902

MERCURY VAPOR &
INCANDESCENT

CYLINDRICALS

SYMMETRIC AND ASYMMETRIC
LIGHT DISTRIBUTIONS
5″ and 7″ PRISMATIC CYLINDERS

Beautiful new CYLINDRICALS . . . by Guth. Matching units for Surface, Pendant, Wall and Post Top. Emeried ALZAK* housing, matte black cast bases, sparkling water-white, engineered Prismatic Cylinders for symmetric and asymmetric light distributions. Write for Folders 7 and 8, Guth File 5, Section H.

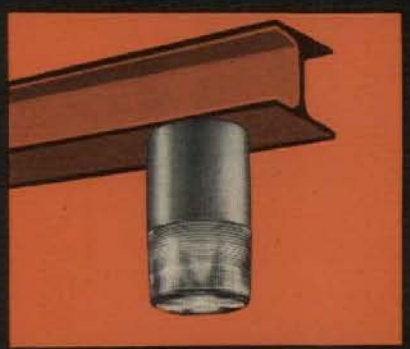
*T. M. Alum. Co. of America



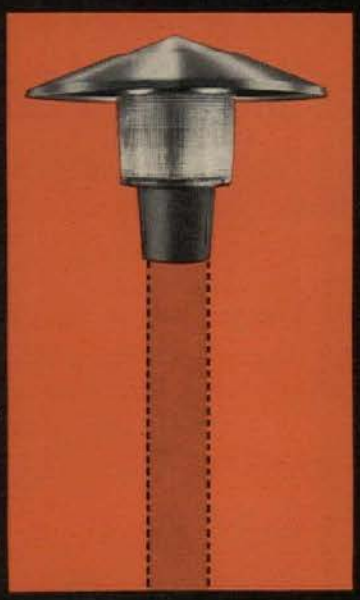
PENDANTS



BRACKETS



SURFACE UNITS

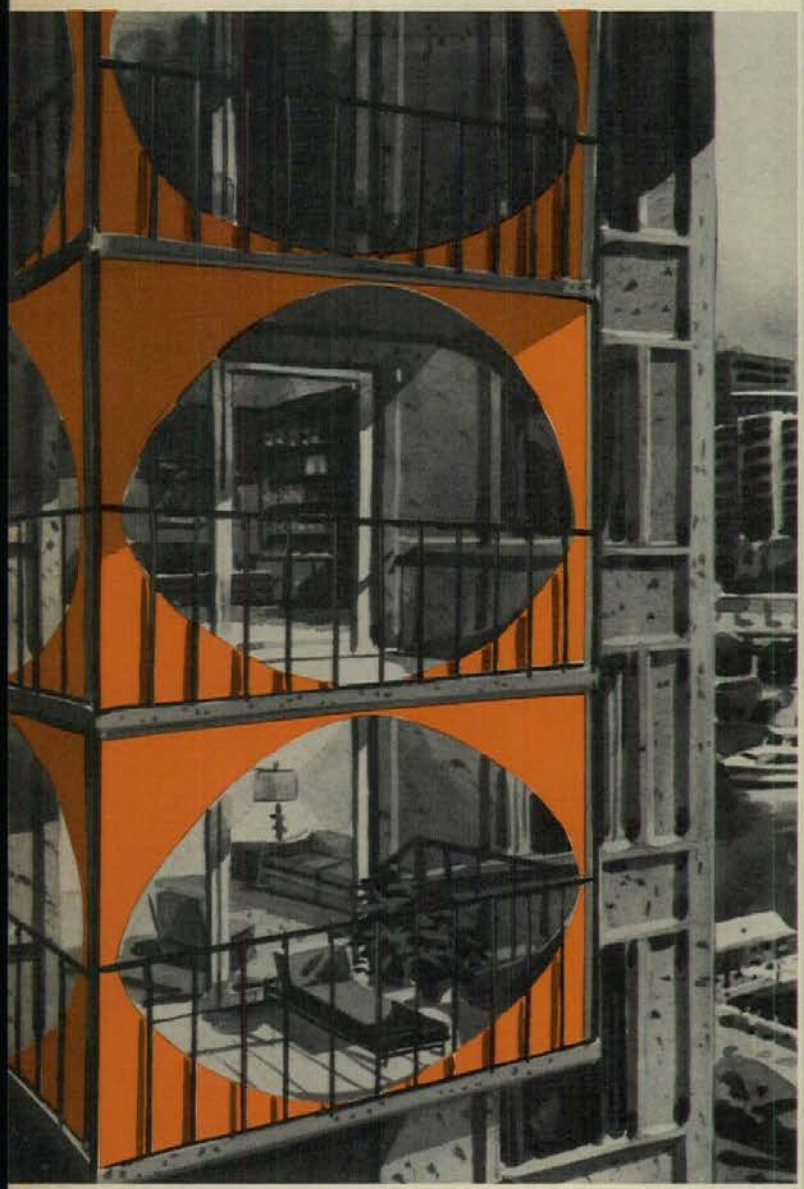


POST TOP

THE EDWIN F. GUTH COMPANY · P.O. BOX 7079 · ST. LOUIS, MO. 63177

For more data, circle 108 on inquiry card

Colorful
NEW IDEAS IN
canvas



LATEST COLLECTION of imaginative new canvas designs by Ving Smith, A. I. D., includes ideas for apartment balconies, commercial buildings, poolside and patio. Free, 16-page color booklet available on request.



Canvas Awning Institute, Inc.
and National Cotton Council
P. O. Box 12287-JJ
Memphis, Tennessee 38112

Please send free copy of canvas design booklet.

Firm name_____

Address_____

City_____ State_____ Zone____

COTTON . . . THE FIBER YOU CAN TRUST

For more data, circle 109 on inquiry card



Sand blast test proves armor-plated Raylon overhead type doors last 3 times longe

Sand blasting (at 80 PSIG with 2,000 GM) leaves Raylon overhead-type doors virtually unchanged. The same test on ordinary fiberglass doors erodes the surface and exposes fibers to moisture and rapid deterioration. Only Raylon has an armor plating of acrylic resin that resists weathering and abrasion 300% to 400% better. Only Raylon has an ultraviolet absorber three times as effective in preventing yellowing, sun fading and loss of light transmission — the only fiberglass guaranteed in writing for a full 15 years. Raynor also makes industrial, commercial and residential doors in wood, steel and aluminum in all price ranges. Raynor is the brand you and your customers can depend on.

RAYNOR
The Brand You Can Depend On

Raynor Mfg. Co., Dept. H, Dixon, Illinois
I'd like to learn more about the profit opportunities in Raynor overhead-type doors.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

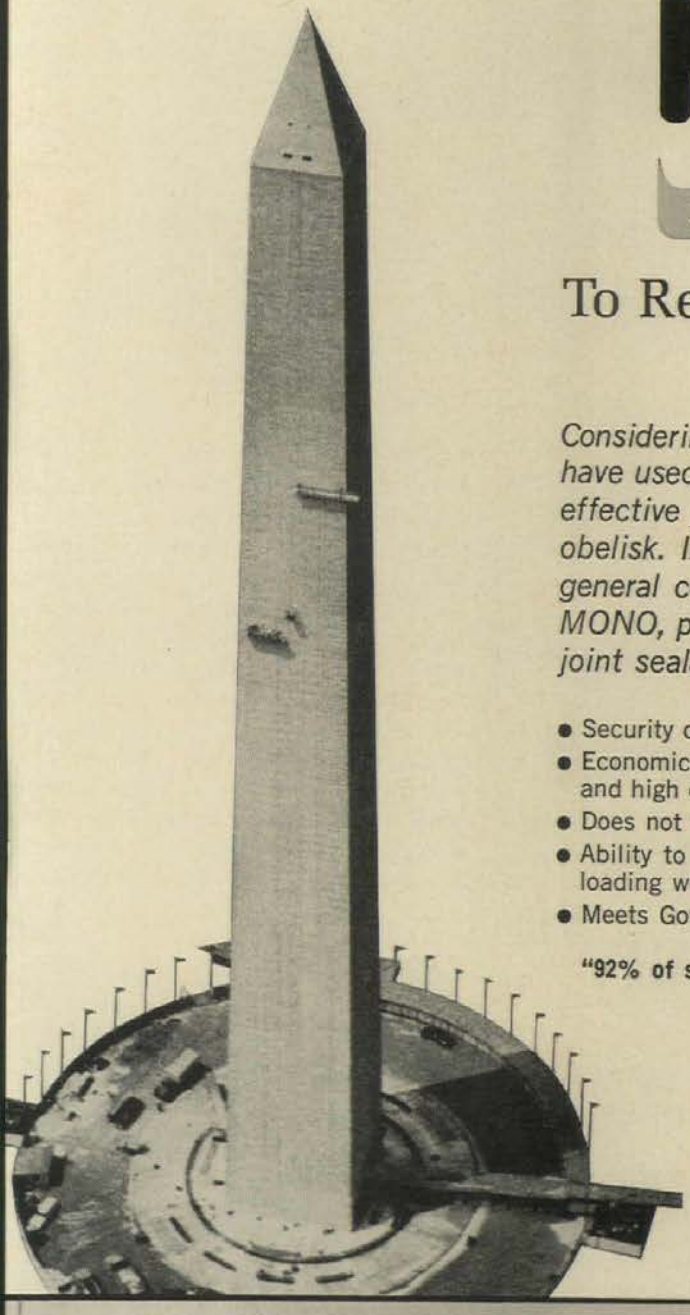
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WHY THEY SELECTED

MONO®

LASTO·MERIC

1-Part Acrylic Terpolymer Sealant



To Re-seal The Washington Monument

Considering labor and scaffolding costs, they might have used gold if it would have resulted in a more effective joint sealing job on this world famous 555 foot obelisk. Instead, The National Park Service and general contractor, D. C. Taylor agreed upon using MONO, proved most powerfully adhesive construction joint sealant known. Here's why:

- Security of Performance; 20 year minimum life expectancy.
- Economical and safe; 1-part factory-mix eliminates hazards and high cost of job site mixing.
- Does not require primer or surface conditioner to secure adhesion.
- Ability to match structural material without excessive pigment loading which often results in sealant failure.
- Meets Government Specifications: U. S. TT-S-00230; Canadian 19-GP-5

"92% of sealant failures result from loss of adhesion"– TMC SURVEY

To prevent this, those concerned with rehabilitating the famous landmark relied on Tremco. Let the record speak for itself:

In 1934, monument sealed *with a Tremco Caulking & Pointing Compound,* considered the best at that time.

In 1964–30 years later–re-sealed with Tremco's revolutionary MONO!



Cost of re-sealing the Washington Monument can be astronomical if sealant fails. Those concerned didn't take chances. They decided MONO would provide optimum security at minimum cost.

Some modern structures made weathertight with MONO

4-Penn Center Plaza, Philadelphia, Pennsylvania
Architect, Emery Roth & Son, New York City

Georgia Mental Health Center, Atlanta, Georgia
Architect, A. Thomas Bradbury, Atlanta, Georgia

Le Cartier Apartment, Montreal, Quebec
Architect, Menkes & Webb, Montreal, Quebec

Liberty Mutual Building, Boston, Massachusetts
Architect, Perry, Shaw, Hepburn & Dean, Boston, Massachusetts

Mayo Clinic, Rochester, Minnesota
Re-sealed by Surety Waterproofing Co., Rochester, Minnesota

Toronto City Hall, Toronto, Ontario
Architect, Viljo Revell and John B. Parkin Assoc., Toronto, Ontario

Equitable Life Assurance Society Building, New York City
Architect, Skidmore, Owings & Merrill, New York City

Farmer's & Mechanic's Savings Bank, Minneapolis, Minnesota
Architect, McEnary & Krafft, Minneapolis, Minnesota

For information on Tremco Sealants Check Sweet's

THE TREMCO MANUFACTURING COMPANY 10701 Shaker Blvd., Cleveland, Ohio 44104

TREMCO

PRODUCTS AND TECHNICAL SERVICES FOR BUILDING MAINTENANCE & CONSTRUCTION

For more data, circle 111 on inquiry card



"Fire/Chek prevention is worth a pound of cure"

Take it from the Chief: Fire-Chek Vapor Barriers are *permanently* noncombustible. There's nothing better.

The fire protection stays put. No matter how humid the air, no matter how severe the condensation, moisture can't affect it.

U/L ratings? "25 or less" for flame spread, as low as 10 for smoke. And you have nine different Fire-Chek grades to choose from.

Next time you specify vapor barriers, specify the permanently noncombustible vapor barrier made by the people who know vapor barriers best — the people who have the only complete line.* Specify Fire-Chek — and protect against fire-spread wherever you use insulation.

For literature, write Ludlow Corporation, Industrial Papers Division, Netcong, New Jersey 07857.

Ludlow Fire/Chek

*Ludlow also has fire-resistant Fire-Ban, plus a complete selection of standard vapor barriers.

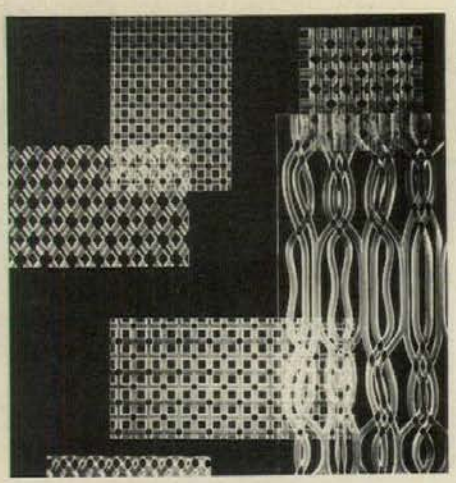
For more data, circle 112 on inquiry card

continued from page 220



FOOD WASTE DISPOSER / A new jam-proof unit with dual-shredding action features a two-lipped seal that provides double protection against water entering the bearings. An outboard drain allows any water passing the seal to be slung out of the bearing area and to drain out of the side. A generous oil reservoir assures life-time lubrication. The disposer, which has a blue and white baked enamel finish, has a stainless steel shield that prevents foreign objects from wrapping around the rotor shaft and attacking the seal. ▪ American Standard, New York City.

Circle 308 on inquiry card



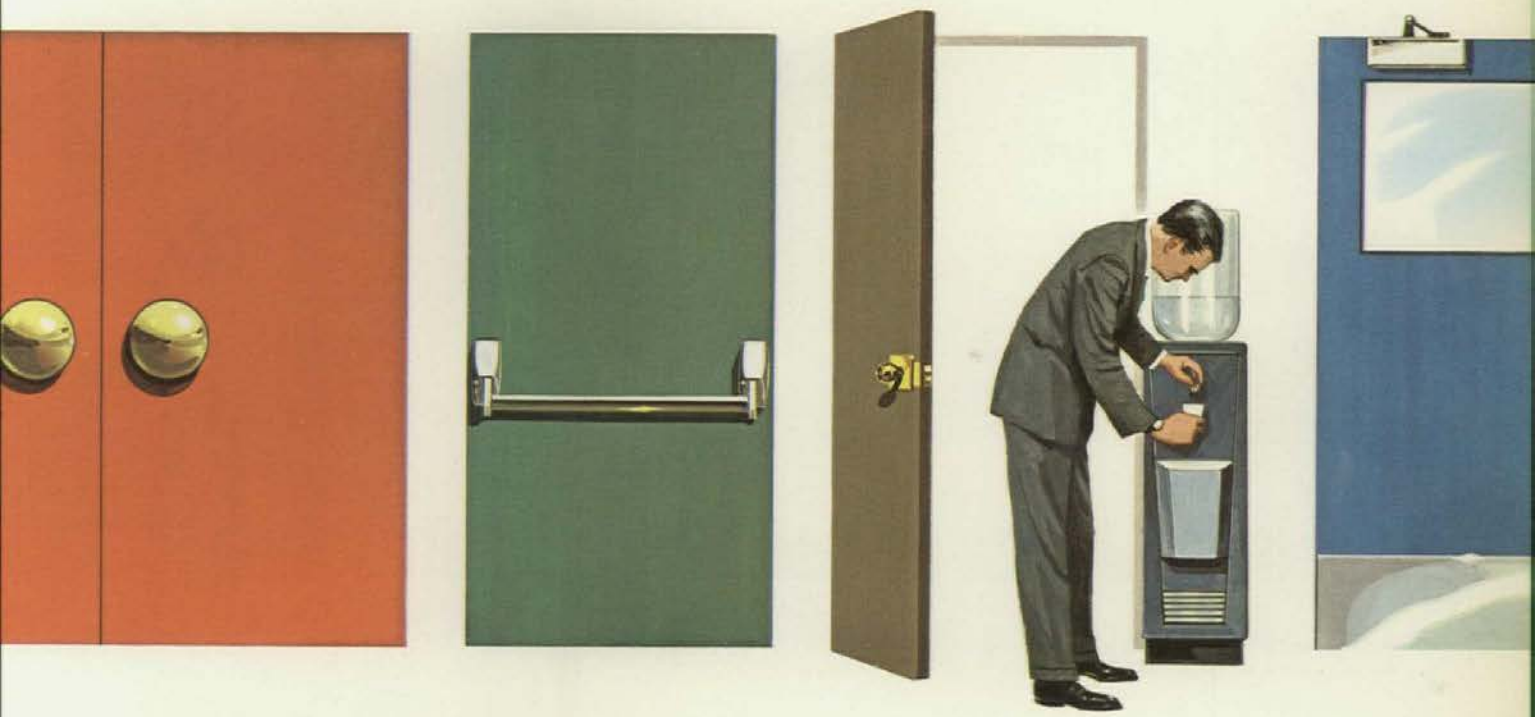
NON-REPEATING MOTIFS / New designs, both in plywood and acrylic, have been added to the *Customwood* collection of architectural carved wood grilles. Panels with non-repeating motifs are available in *Filiwood* plywood. These can be had in various colors. New designs carved from clear acrylic are also available (photo). These can be had in the traditional repetitive arrangement of motifs. ▪ Customwood Manufacturing Company, Albuquerque, N. M.

Circle 309 on inquiry card

more products on page 246

For more data, circle 113 on inquiry card





Americans will never lose their love for the Great Indoors

. . . refresh their spirits with Corbin Hardware!

Hardware, particularly door hardware, is among the chief articles viewed and handled countless times in the day-to-day life of the average American. That is precisely why it is important to surround our Indoorsmen with door hardware that provides both beauty and security. Make it Corbin hardware . . . a name they know and trust.

But just specifying Corbin hardware is not enough. Accept no Corbin copies. *Insist* on Corbin hardware!

Send for an illustrated brochure on Corbin architectural hardware to: P. & F. Corbin, Division of Emhart Corp., New Britain, Conn. 06050

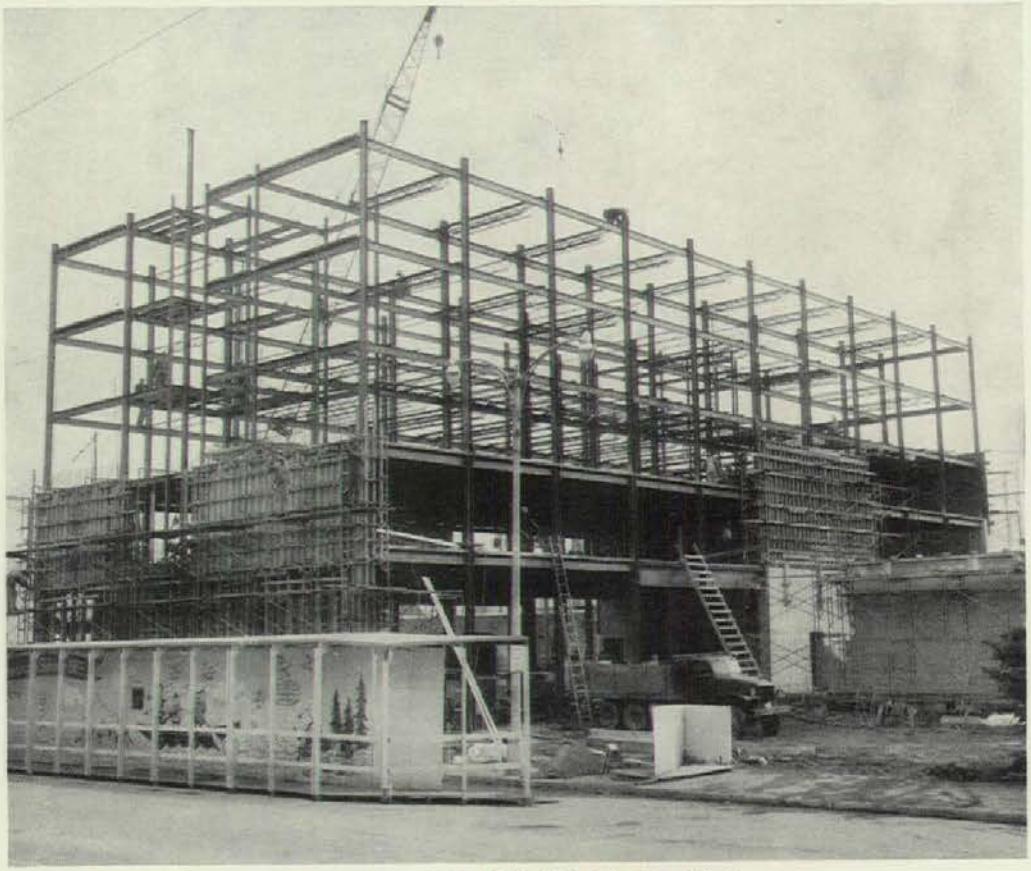
CORBIN

P. & F. CORBIN

DIVISION OF EMHART CORPORATION

NEW BRITAIN, CONNECTICUT 06050

Captain Cook Hotel, Anchorage, Alaska
OWNER: Hickel Investment Co., Walter J. Hickel, Principal
ARCHITECTS: Edwin Crittenden Architects & Associates, Anchorage, Alaska; Lovegren & Helms, Seattle, Washington
STRUCTURAL ENGINEERS: Kelly & Pittelko, Seattle and Anchorage
STRUCTURAL STEEL CONTRACTOR: Leckenby Company, Seattle, Washington
STEEL ERECTION: York Steel Company, Anchorage Alaska
SUPPLIER SHEFFIELD JOISTS: Zesbaugh, Inc., Seattle, Wash.



Captain Cook Hotel is shown under construction in late Fall, 1964. Selection of Sheffield Open Web Joists helped meet demanding construction timetable. Use of all-steel structural system permitted good progress even in severe weather.

Captain Cook Hotel...

Sheffield Joists helped keep construction on schedule in Anchorage

Steel

Less than four months after the devastating March 27, 1964 earthquake in Anchorage, Alaska, construction was started for the new 10-story Captain Cook Hotel. Owners wanted the Hotel ready for the tourist season in the spring of 1965—a tall order considering the severity of the weather and total of 86,000 square-feet in the structure. Yet the construction schedule was met!

To help achieve this goal, designers specified floor support of open web steel joists. Sheffield H-Series Joists got the assignment. Total amount used in this application was 85 tons, principally in 12- and 14-inch joists depths.

Sheffield H-Series Joists are based on chord design stress in tension of 30,000 psi and use chords made of 50,000 psi minimum yield point steels.

Sheffield Joists, including the J- and H-Series, LA- and LH-Series, DLJ- and DLH-Series, are readily available through leading fabricators and constructors. For complete data on Sheffield Joists, write for our latest catalog, or see Sweet's Architectural File. Armco Steel Corporation, Department W-2086A, 7000 Roberts Street, Kansas City, Missouri 64125.

ARMCO STEEL ARMCO

For more data, circle 114 on inquiry card

For more data, circle 115 on inquiry card



Residence, Lake Oswego, Oregon
Architect: Edgar Wilson Smith
Certigrade Shingles, #1 grade, 16" Fivex with 6" to the weather, and stained driftwood gray.

Red Cedar Shingles: Adding dimension to a dimension.

Red cedar shingles have dimensions of warmth and richness that complement and fill out stark, bold dimensions of line. The combination makes for a structure that's as livable as it is striking. Red cedar provides other important dimensions, too—those of toughness and reliability, wind resistance and insulative capacity. Qualities you might expect from one of the world's most durable woods. More detailed information on Certigrade shingles (and Certi-Split handsplit shakes) may be found in our Sweet's catalog listing, 8d/Re. For prompt answers to questions, just give us a call, or write.

RED CEDAR SHINGLE & HANDSPLIT SHAKE BUREAU
5510 White Building, Seattle, Washington 98101
(In Canada, 1477 West Pender Street, Vancouver 5, B.C.)

For more data, circle 120 on inquiry card

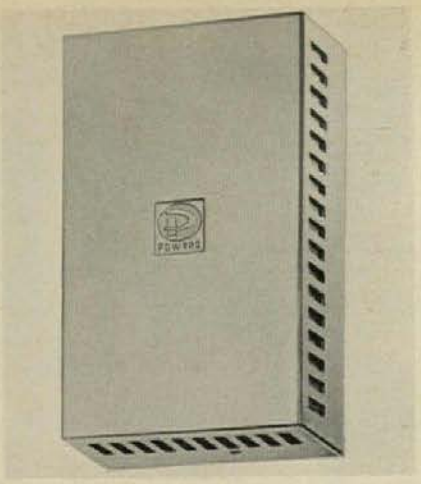
continued from page 234

NEW FIRE HOSE VALVE / A 1½-in. combination pressure restricting and angle valve, said to be the only one of its type presently available, features a calibrated adjusting ring which permits reduction of water pressure at the nozzle end of the interior hose to allow anyone to safely handle a loaded hose. Intended for pressures up to 300 pounds, the brass valve has received UL and FM approval. ▪ W. D. Allen Manufacturing Co., Broadview, Ill.

Circle 310 on inquiry card

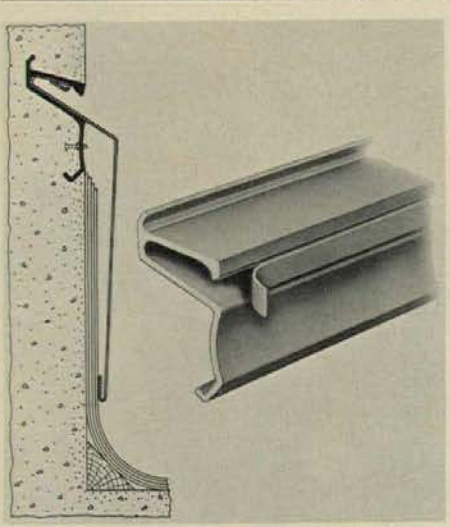
DISHWASHERS / Four new undercounter models feature quiet operation, increased capacity and great flexibility of loading. Three of the four have a four-way washing action that eliminates prerinsing. All of the units have a reversing motor drain that flushes away food soil, eliminating the need for a food strainer. Pushbutton controls on the top-line dishwasher provide special cycles for short washes, rinsing and holding small loads. ▪ Frigidaire Division — General Motors Corporation, Dayton, Ohio.

Circle 311 on inquiry card



THERMOSTAT / The *Powerstar* miniature pneumatic thermostat, said to be the smallest on the market, measures 1⅞-in. by 3-in. and can be easily mounted on 2-in.-wide mullions. The company claims that the unit is sensitive to a room air temperature change of as little as 0.1 deg. Control sensitivity is adjustable from 1 to 4 psi per degree temperature change. The unit can be equipped with concealed or exposed temperature adjustment and concealed or exposed thermometer, and is available for either horizontal or vertical mounting. ▪ The Powers Regulator Company, Skokie, Ill.

Circle 312 on inquiry card



PLASTIC REGLETS / A new counterflashing reglet, known as *Cushion-Lock Type B4*, has a completely enclosed design to prevent concrete from entering during the pouring operation in concrete construction. Just before counterflashing is installed, the integral protective strip is zipped off, exposing a clean recess ready to receive the counterflashing. This special snap-in lock-in feature is said to guarantee a leakproof joint. ▪ Superior Concrete Accessories Inc., Franklin Park, Ill.

Circle 313 on inquiry card

more products on page 250



New **TALK-A-PHONE**

HOME INTERCOM-RADIO SYSTEM

Fully Transistorized. Everyone in the family will enjoy the comfort, convenience, and peace of mind this system provides. From any room in the house you can . . .

- Listen-in on baby, children, or sick room.
- Answer outside doors without opening door to strangers.
- Talk to anyone—upstairs and downstairs, inside and out.
- Enjoy radio in every room with the simple flick-of-a-switch.

Distinctively styled. Beautifully finished in richly blended gold, polished and satin silver tones. Easily installed in any home. Built-in and surface-mounted models available.

•

TALK-A-PHONE . . . "Has Everything. Does Everything." The accepted standard of quality and dependability in Intercommunication for over a third-of-a-century.



Intercom For Apartment House. Provides instant and direct 2-way conversation between any Apartment and Vestibules—in buildings of any size. Greater performance with these exclusive Talk-A-Phone features: • Ample volume without "boom" • Automatic privacy • Individual volume selection for each apartment • Built-in Buzzer.

Intercom For Office and Industry. Saves thousands of man-hours, simplifies office routine. Distinctively styled, ruggedly built to withstand continuous day and night use. From 2-station systems to elaborate installations, you can do it better and more economically with Talk-A-Phone. Pays for itself many times over.

Send for Free Catalogs... Dept. AR-6

TALK-A-PHONE CO., 5013 N. Kedzie Ave., Chicago, Illinois 60625

For more data, circle 121 on inquiry card

For more data, circle 122 on inquiry card

How do you measure comfort?

In inches of Styrofoam.

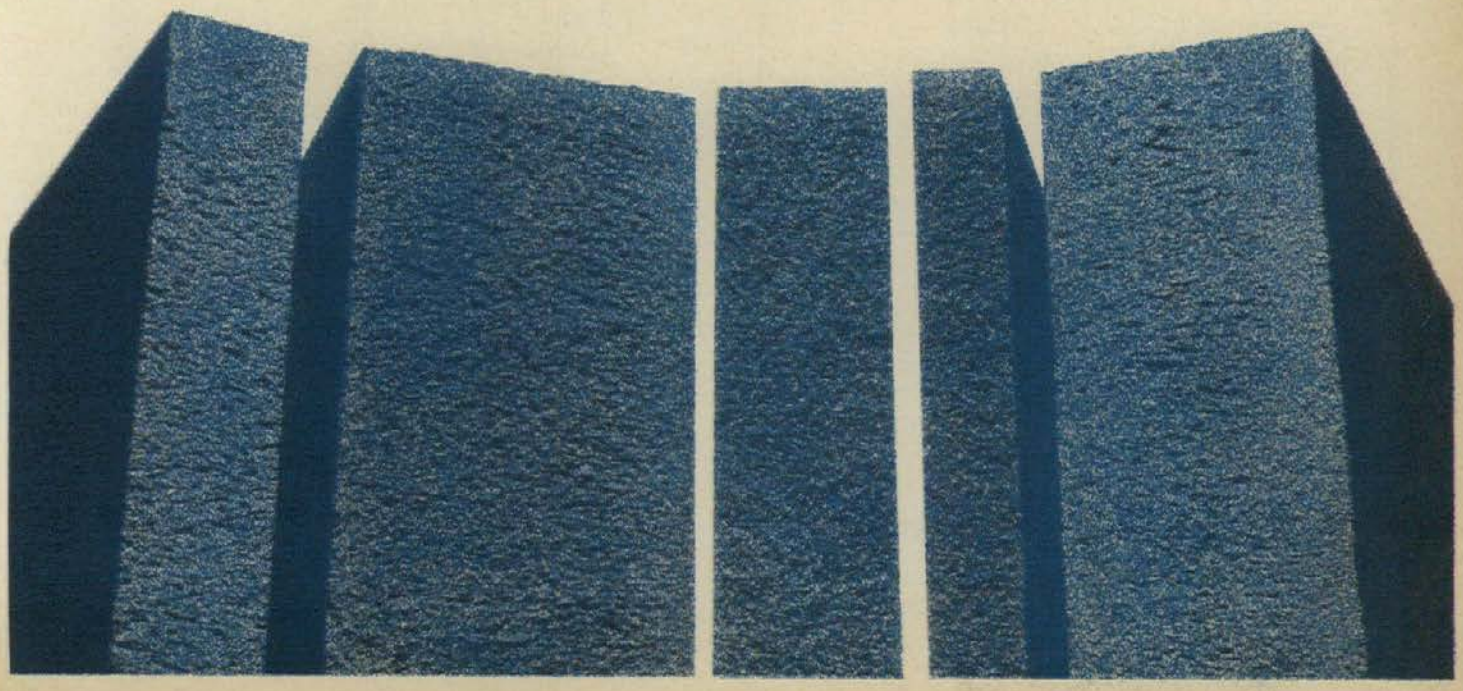
Compared to other insulations, a little Styrofoam® brand insulation board goes a long way. Little is needed for the comfort level you want, the economy you expect. Styrofoam not only gives superior insulation efficiency, but it is moisture-resistant and requires no vapor barrier. Specify Styrofoam in one of your buildings now and it's comfort is available for years. It won't rot, mold or deteriorate. It's light as well as easy to install.

And Styrofoam insulation is versatile. Use it over masonry construction, in perimeters or forms. Then give it any finish you like—gypsum wallboard, wood paneling or plaster.

There's a good way to learn more about Styrofoam. Check Sweet's Architectural File 10a/Do. Or write The Dow Chemical Company, Plastics Sales Department, Midland, Michigan 48640.

Styrofoam is Dow's registered trademark for expanded polystyrene produced by an exclusive manufacturing process. Accept no substitutes... look for this trademark on all Styrofoam brand insulation board.

DOW





Selectra installation in the offices of Kingston Products Corp. Vacuum Cleaner Division, Bronson, Michigan

LOOK AT THE INSIDE STORY...

the Kingston Products Corp. did – and found **Workwall Selectra movable partitions** gave them all the benefits they required and more.

They wanted partitions that would install easily, quickly and economically and be maintenance free. Selectra gave them all this – plus an unlimited choice of paneling.

To voice their approval they have again specified Selectra for a new building now under construction in Kokomo, Indiana . . . **proof** that Selectra partitions offer plus benefits that add up to client satisfaction.

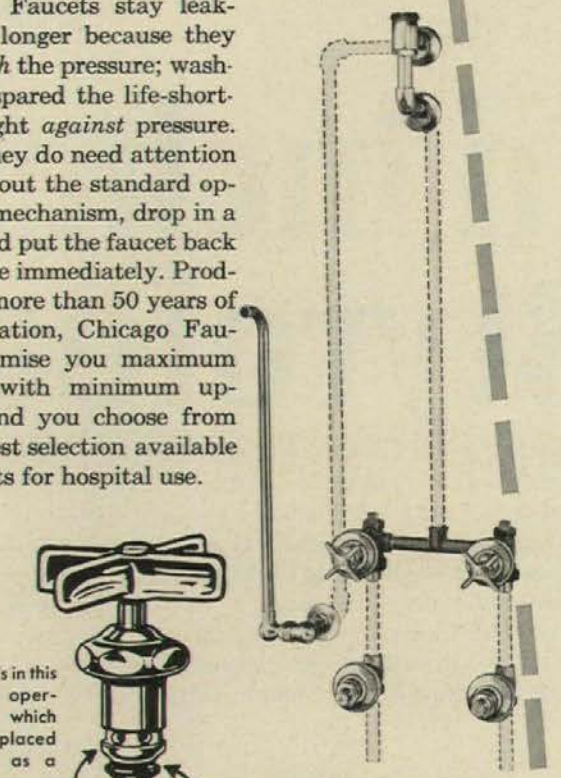
See us in Sweet's Architectural File 22a/Da or write for complete details.

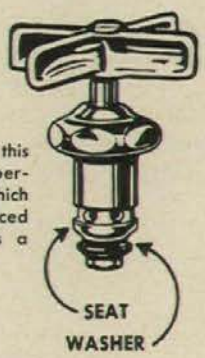
WORKWALL SELECTRA MOVABLE PARTITIONS

DIVISION OF L. A. DARLING COMPANY
Box 130, Bronson, Michigan

Why Chicago Faucets ask less "*time-out*" for repairs

Operating records prove it. Chicago Faucets stay leak-free far longer because they close *with* the pressure; washers are spared the life-shortening fight *against* pressure. When they do need attention just lift out the standard operating mechanism, drop in a spare and put the faucet back in service immediately. Products of more than 50 years of specialization, Chicago Faucets promise you maximum service with minimum upkeep. And you choose from the largest selection available of faucets for hospital use.

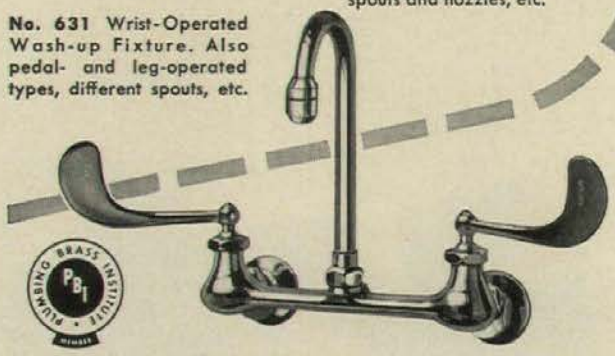




The secret's in this standard operating unit which can be replaced as easily as a light bulb.

No. 958½G Bed Pan Flusher with concealed piping, integral vacuum breaker, vertical swinging spout. Other types with exposed piping, different spouts and nozzles, etc.

No. 631 Wrist-Operated Wash-up Fixture. Also pedal- and leg-operated types, different spouts, etc.



The Chicago Faucet Co.
2100 S. Nuclear Drive, Des Plaines, Ill.
(A suburb of Chicago)

HERE'S HELP—
If you buy or specify faucets for hospital use write for complete catalog . . . or new Sketch Book of engineering data on special faucets.

CHICAGO FAUCETS®
Last As Long As the Building

Distributed through the plumbing trade exclusively

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For more data, circle 107 on inquiry card



LOCKWOOD Hardware Graces PHILADELPHIA'S NEWEST COMMUNICATIONS COMPLEX

WFIL-TV

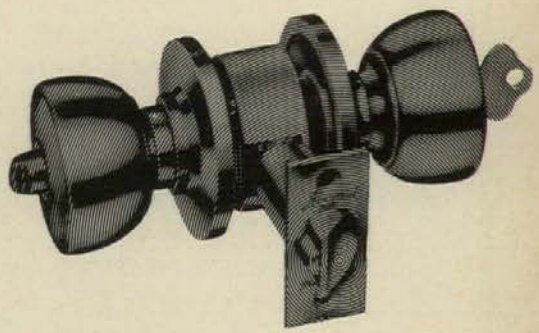
WFIL-AM

WFIL-FM

From 4100 City Line Philadelphia, Radio—TV Station, WFIL, beams its signal to an audience of millions. A newly constructed building, as up to the moment as tomorrow's news, serves as the headquarters for the complex which has been called one of the outstanding broadcasting facilities in the world.

In a Radio—TV Station, or in any building where split-second schedules must be met, every consideration must be given to quality of construction. The door hardware was of particular importance to the architect, and Lockwood's Heavy Duty Cylindrical Locks more than met the requirements of design, dependability and functionalism.

There is a Lockwood lock to meet the specifications for that building on your boards right now. May we discuss it with you?



LOCKWOOD

LOCKWOOD HARDWARE DIVISION

INDEPENDENT LOCK COMPANY ILCO

Fitchburg, Massachusetts

Architect: Vincent Kling, AIA

Contractor: John McShain, Inc.

Hardware Supplied by: Taylor Davis, Inc.

For more data, circle 124 on inquiry card

continued from page 246

SOLID STATE CONTROL / Developed to improve the operation of air-conditioning systems in cold weather, a new solid state control is said to be particularly suitable for use in computer rooms, restaurants and department stores where cooling is required even in freezing weather. The new control varies the fan speed to control the rate of heat rejection from the outdoor section of the air-conditioning unit and maintains constant temperature and pressure in the outdoor coil. This assures an adequate flow of refrigerant and prevents freeze-up of the indoor heat absorbing section. The control weighs only 4 pounds, and will operate over an outdoor temperature range of -20 F to +115 F. ▪ Carrier Corporation, Syracuse, N.Y.

Circle 314 on inquiry card

MODULAR DORMITORY ROOM UNITS / Modular dormitory room units with built-in furniture and equipment, said to provide ease of assembly and disassembly and economy of maintenance, have been



developed for installation in educational institutions. The rooms consist of acoustical-paneled walls with steel skins and foam plastic core, acoustical tile ceilings, including fluorescent lighting with air diffusing devices and floors of asphalt tile. Variations of the design may be obtained as well as different combinations of built-in and movable furniture. ▪ General Fireproofing Company, Youngstown, O.

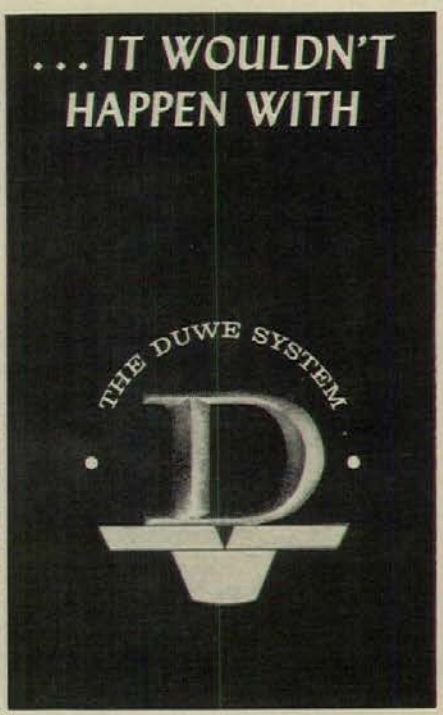
Circle 315 on inquiry card



STORE FURNITURE / The *Av/Aweso* display hardware system no. *2500* combines heavy load-carrying capacity with slender appearance, making it suitable for display of all kinds of merchandise. The arm bracket can be quickly fitted to any of the display uprights allowing rearrangement of merchandising areas and considerable versatility of the system. ▪ Albert Voigt Industries, Inc., Hicksville, Long Island, N. Y.

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PREVENTS COSTLY FIRE LOSS WITH DUWE SYSTEM 2-HOUR FIRE RATING

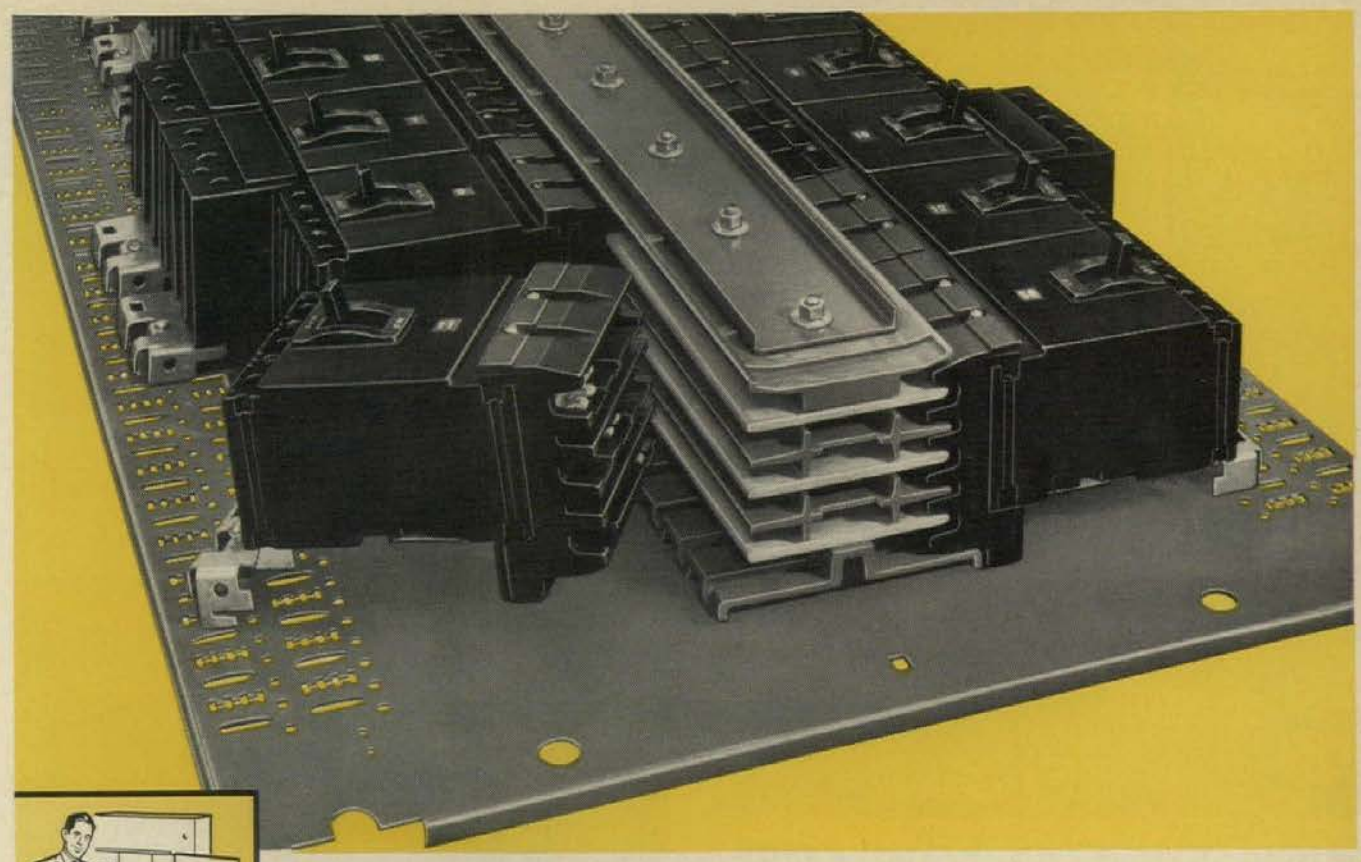
The 2-hour underwriter's fire rating is another reason the popular Duwe system is showing up on more and more building specifications. Everyone appreciates the continuing savings on insurance premiums. Other good reasons for selecting DULITE for a roof system are . . . exceptional insulating value . . . money saving construction . . . resistance to moisture and deterioration . . . greater maintenance economy.

There's more to tell. Write for catalog

DUWE

PRECAST CONCRETE PRODUCTS, INC., Box 1277, Oshkosh, Wisconsin

For more data, circle 125 on inquiry card





Introducing the I-LINE® *power panelboard –*

the safest panelboard ever built!

It is the first circuit breaker distribution panelboard to have integrated equipment ratings. This means that the entire panelboard, with breakers installed, has been tested for its full short circuit rating with any combination of breaker frame sizes.

Instead of testing only the individual circuit breakers in separate steel enclosures, short circuit currents were applied to each branch breaker while installed in the I-LINE panelboard. All combinations and arrangements of circuit breaker frame sizes were tested in this way to make sure that the highly conductive ionized gases would not vent directly onto the bus bars, causing destructive arcs.

The I-LINE design makes certain that such gases will be dissipated harmlessly. A labyrinth of insulating barriers cools gases and prevents arcs between bus bars. Also, the bus structure is continuously supported to withstand the magnetic forces of short circuit currents. The absence of loose parts or connectors is an added safety feature.

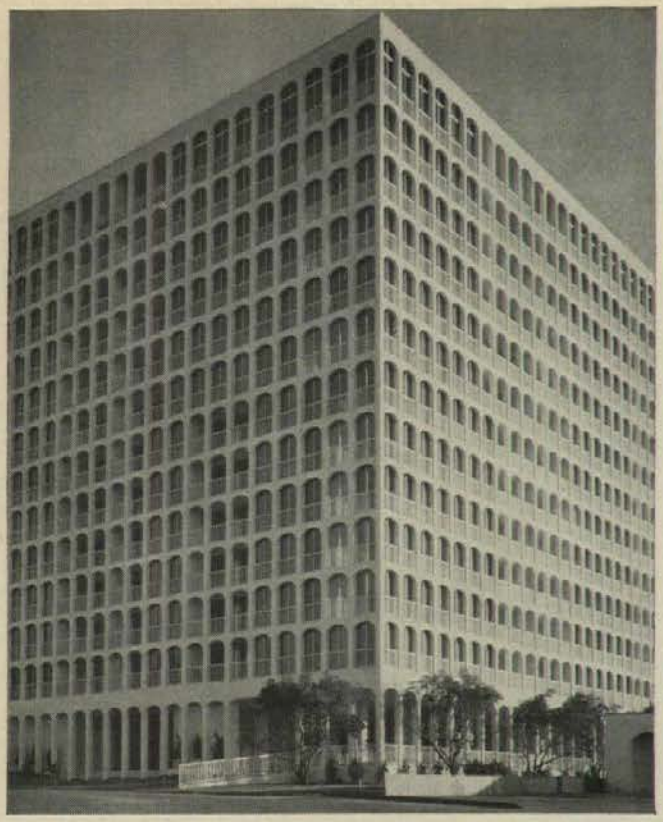
With the panelboards, Square D also offers a new line of FA, KA and LA breakers including the high interrupting capacity I-75,000 breakers (75,000 amps) to match the panelboard. These breakers have been tested up to their maximum interrupting capacity mounted in the I-LINE panelboard. You can choose bolted or plug-on line side connections. Breakers of different frame sizes can be mounted opposite each other. And for maximum versatility, rearrangement of breakers has been made particularly easy.

Ask your Square D distributor or Field Engineer for details on I-LINE power panelboards
Or write Square D Company, Dept. SA, Lexington, Kentucky 40501

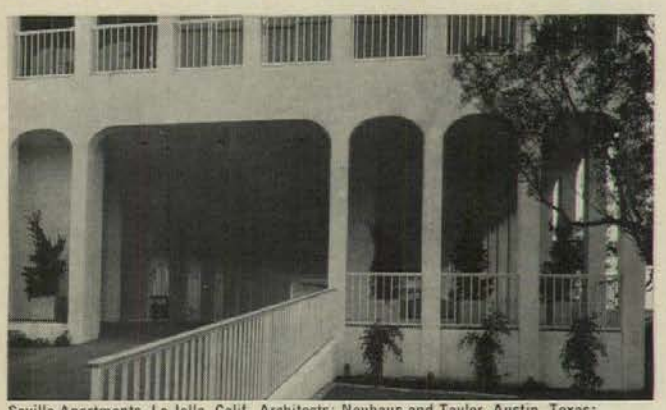
SQUARE D COMPANY

wherever electricity is distributed and controlled

For more data, circle 126 on inquiry card



HIGH STYLE AT LOW COST:



Seville Apartments, La Jolla, Calif. Architects: Neuhaus and Tayler, Austin, Texas; Assoc. Architects: Livingstone & Brown, AIA.

ANCHOR® RAILING SYSTEMS

Styled for protection, styled to perfection, Anchor Railing Systems can enhance the beauty of your building . . . at low initial cost and with the low maintenance advantages of all-aluminum. Ideal for balconies, divider panels and sun decks.

Whatever style you have in mind, you'll find it in the Anchor line: vertical square pickets, colored panels and Modernmesh®—all beautifully made of rust-proof aluminum.

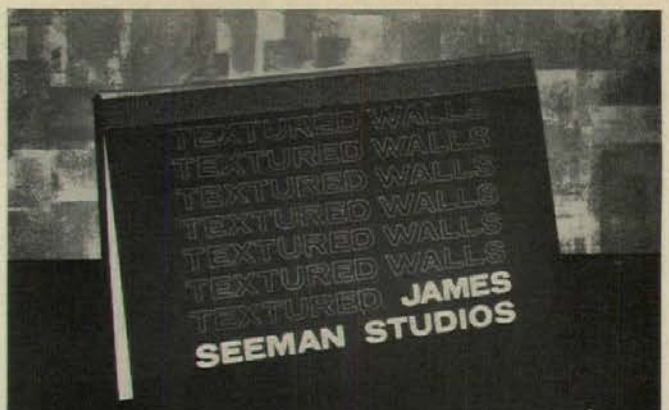
Anchor's national network of expert erectors will install Anchor Railing Systems anywhere in the United States . . . fast and efficiently.

For style, quality, protection and beauty, be sure with Anchor. For detailed information, call your local Anchor man. Or, for 4-color catalog, write: Anchor Post Products, Inc., 6230 Eastern Avenue, Baltimore, Maryland 21224.

ANCHOR POST PRODUCTS, INC.®

Plants in Baltimore, Houston, Los Angeles. Sold direct from factory branches in principal cities.

For more data, circle 127 on inquiry card



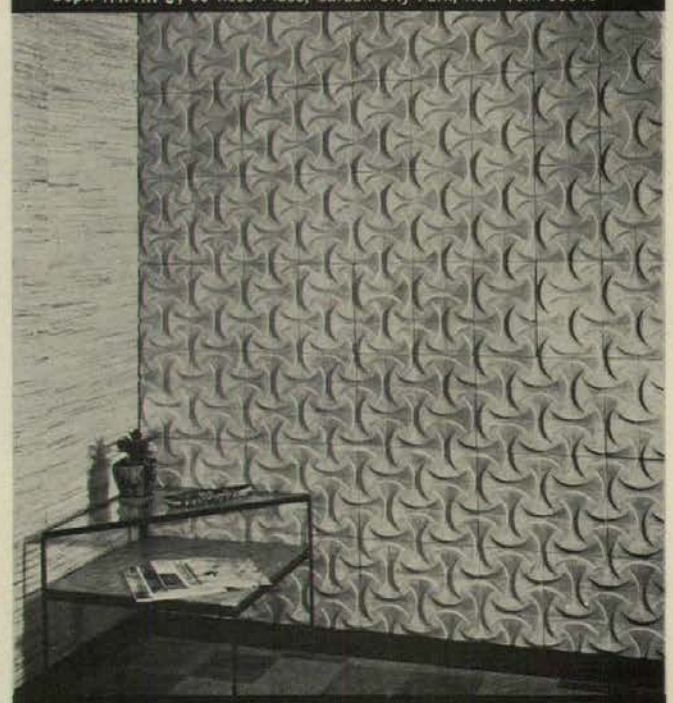
Introducing

ARCHITECTURAL WALLCOVERINGS

Vinyl-coated, gravure-printed wallpapers designed to provide textural qualities on flat surfaces
Over 70 homogeneous textural designs in over 250 colorways of unparalleled range and depth

James Seeman Studios, Inc.

Suite 1010, 979 Third Ave., New York, N. Y. 10022, Tel: 212 759-5860
For free 250-page sample book, write:
Dept. A R AW 6, 50 Rose Place, Garden City Park, New York 11041



Introducing
14 new Stone Sculptural Facings designed by Perli Pelzig and Erwin Hauer in concrete and the new, light-weight (approx. ¾ lbs. per sq. ft.)

NOVA-STONE®

Uniquely effective sculptural wall treatments for exterior and interior use

Arts for Architecture, Inc.

Suite 1010, 979 Third Ave., New York, N. Y. 10022, Tel: 212 759-5860
For free brochures, including full details on all 48 Stone Sculptural Facings designs, write:
Dept. AR N6, 50 Rose Place, Garden City Park, New York 11041

For more data, circle 116 on inquiry card

For more data, circle 128 on inquiry card



1866 1966
CARADCO ®
WOOD
Casements

. . . designed for America's finest. The consistently "right" window treatment for better homes of any style in any climate.

For a Hundred Years Architects Have Specified CARADCO Creative Building Products

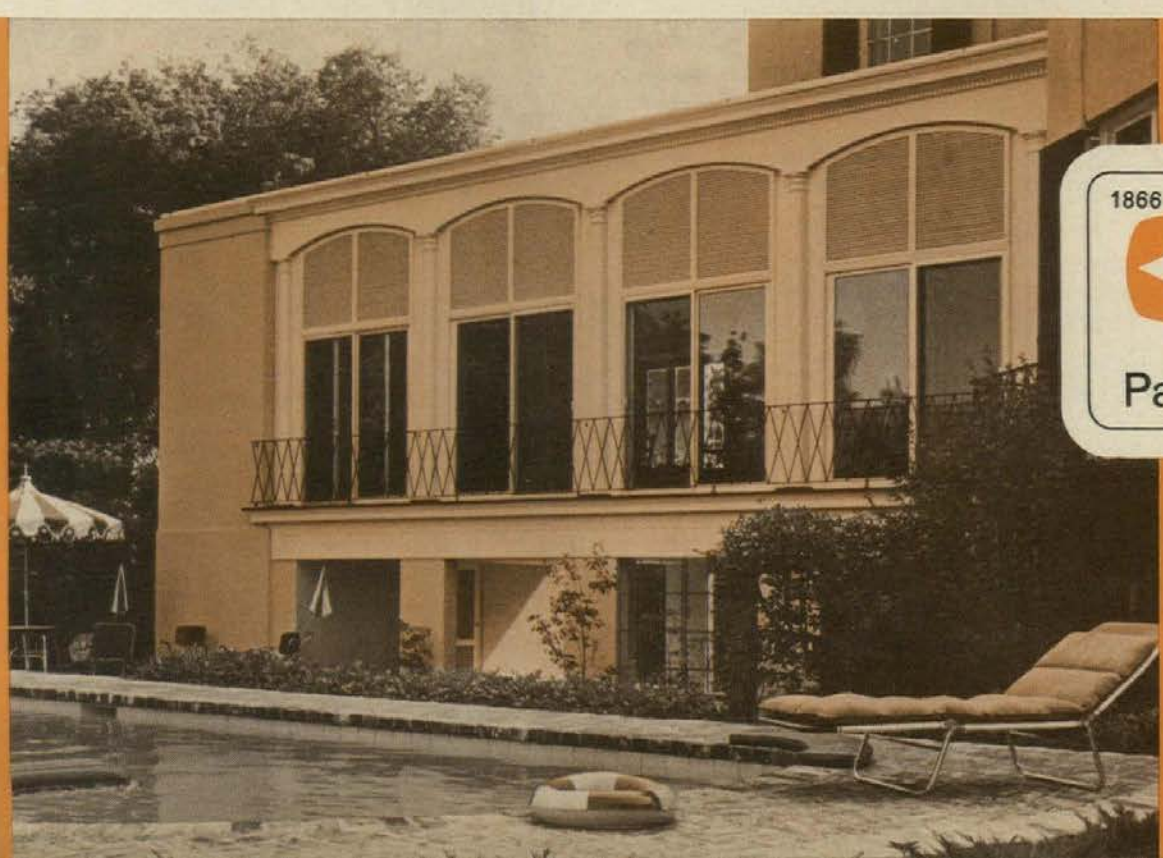

Casement

In sash with insulating glass, a premium vinyl gasket tightly grips both wood and glass, making leaking and around-glass infiltration virtually impossible.


Patio Door

Better 8 ways: Wood Construction • ⅞" Insulating Glass • Dense Woven Pile • Thermal Barrier Sill • Floating Action • Hidden Reinforcers • Nylon Rollers • Jump-proof Screen

Awning, Sliding, C-100' Double Hung Windows; Entrances, Doors **CARADCO INC.** *Dubuque, Iowa*



1866 1966
CARADCO ®
WOOD
Patio Doors

. . . make a house at home with elegance or informality . . . with cocktails or cookouts. And they're built for trouble-free comfort and efficiency all year 'round.

continued from page 206

ROLLING GRILLES / Designed to provide an effective method of closing off building openings without sacrificing the passage of light, air or vision, the *Kinnear Rolling Grille* or ornamental curtain is available in a choice of three designs manufactured in steel, aluminum or stainless steel. Methods of installation, details of operation, and photos of typical installations are set out in an 8-page brochure. ▪ The Kinnear Manufacturing Company, Columbus, Ohio.*

Circle 409 on inquiry card

DOOR OPERATORS / Electro-hydraulic door operators available in a range of sizes to suit a variety of door types are shown in a series of brochures. *Tormax* operators, which contain the whole hydraulic and electric equipment in a single compact unit, require no hydraulic connections or separate power units. When switched off, or in case of power failure, the operators act immediately as hydraulic door closers. Details of application and installation of the different types of models are set out in the brochures. Swing and sliding solid or glass doors with timber or metal framing can all be accommodated. For details write to: ▪ Holm's Automatic Door Unit Co., 177 Arbour Glen Crescent, London.

THEATRICAL EQUIPMENT / Two well-presented brochures give details of a range of acoustical shells, risers, stages, storage trucks, conductors and musical equipment for all branches of the performing arts. Notes on the correct design and use of acoustical shells are accompanied by a series of diagrammatic drawings. ▪ Wenger, Inc., Owatonna, Minn.

Circle 410 on inquiry card

FANS AND HEATERS / A two-color brochure contains photos and descriptive information on a range of models for residential and commercial use. A kitchen ventilator with a low-silhouette roof mounted blower is one of a number of new products featured. The catalog is punched for insertion into a standard three-ring binder. ▪ Emerson Electric Co., St. Louis.

Circle 411 on inquiry card

DESKS AND TABLES / The *I-frame* series of co-ordinated desks and tables is presented in a new catalog, which gives details of ways in which this line may be adapted for use in banks and libraries as well as for use in standard executive offices. ▪ Hugh Acton Company, Pleasant Ridge, Mich.

Circle 412 on inquiry card

SEWAGE TREATMENT / A series of five, 4-page, illustrated brochures describes and illustrates a range of sewage treatment plants, pumping stations and sewage ejectors. Diagrammatic drawings are included for each model and details of appropriate use, capacity, installation and operation are given. ▪ Davco Manufacturing Corporation, Thomasville, Ga.

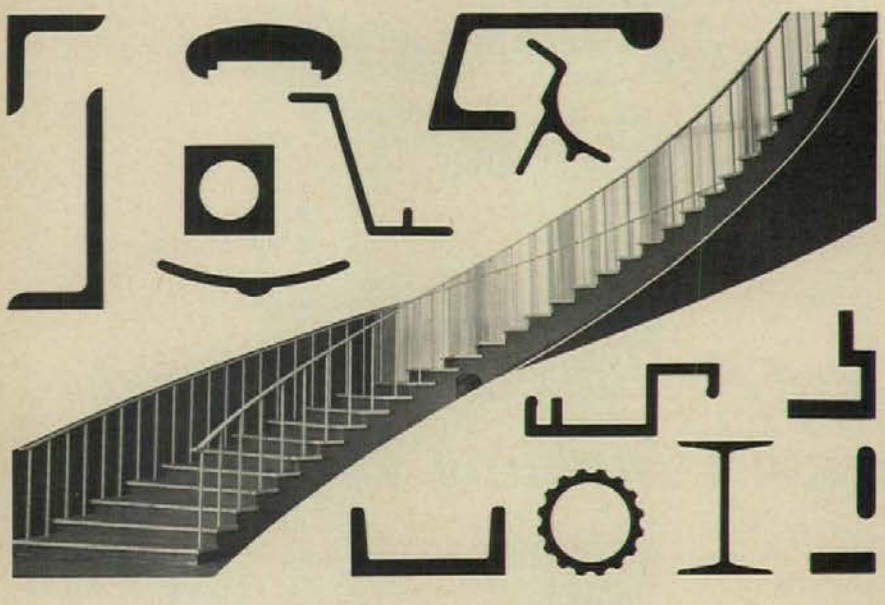
Circle 413 on inquiry card

CABINET HINGES / This new specifications catalog is published to assist architects in the correct selection of heavy duty cabinet hinges for commercial applications. Dimensional information and sketches of typical applications—including lipped doors, overlay doors with shadow spacing, recessed panelized doors and sliding panels—are given in the brochure. ▪ Dept. CB-18, Lawrence Brothers, Inc., Sterling, Ill.

Circle 414 on inquiry card

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

more literature on page 258



Another example of Harper extrusion versatility . . .

Now, thinner-than-ever stainless steel extrusions!

Now you can get thinner custom and standard *extruded* stainless steel shapes than ever before commercially available—shapes with sections as thin as ⅛ inch! As a result of a dramatic equipment-and-facilities expansion program, Harper can now furnish custom stainless steel window and door sections, thresholds, handrails, curtain wall members . . . as well as thinner-than-ever standard, in-stock structurals.

Harper extruded stainless steel standard shapes in a growing range of sizes are available from selected steel service centers and Harper mill stocks.

Your request for a quotation or feasibility recommendation will be welcomed, and will be answered promptly. Meanwhile, write for Technical Bulletin No. 201-A, which has full data on Harper extrusion facilities, custom and standard shapes, plus helpful design suggestions.

HARPER®

Harper shapes materials that shape the future
THE H. M. HARPER COMPANY
ALLOY MILL PRODUCTS DIVISION
8244 Lehigh Ave., Morton Grove, Illinois 60053, U. S. A.

For more data, circle 129 on inquiry card

For more data, circle 130 on inquiry card

Our wallboard scores quickly, fits easily:

Bestwall is the original glass fiber reinforced gypsum wallboard. Boardhangers who use it report application goes rapidly and accurately. Let our salesmen tell you about Bestwall wallboard systems, ceilings and partitions available for every specification.

GEORGIA-PACIFIC / BESTWALL GYPSUM DIVISION

2 INDUSTRIAL BOULEVARD, PAOLI, PENNSYLVANIA



"VIM" goes High...Wide...and LAMSON with Selective Vertical Conveyors

The Post Office has developed a farsighted Vertical Improved Mail (VIM) System for fast, continuous service in high-rise buildings. At the heart of this system is the selective vertical conveyor.

LAMSON, pioneer in mechanized communications systems, has designed, built and installed a large majority of the world's vertical conveyors, including the highest and largest systems.

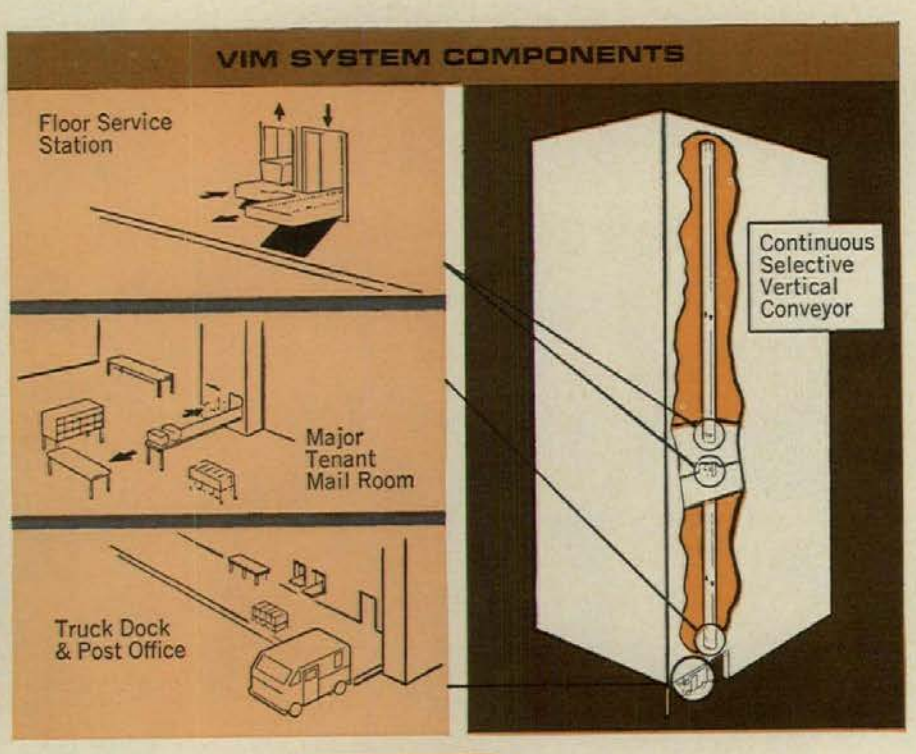
In addition to the selective vertical conveyor, a VIM System also includes a truck dock and a Post Office operated mail room at street or basement level. Here, incoming mail is sorted and locked in tenants' trays for automatic dispatch to all floors via the conveyor. Tenants pick up trays at floor service stations. Outgoing mail may also be sent down to the Post Office mail room from these points.

VIM offers many advantages: mail is delivered early to all floors . . . security is improved . . . congestion from bags and carts in building is relieved . . . day-long mailing permits faster processing to and through the main Post Office . . . contract messenger service is reduced. Equally important: major tenants occupying several floors can use conveyors for their own interoffice distribution of mail, supplies, EDP tapes and cards, etc.

Continuous, high-speed mail service is the lifeline of any business. In building or moving to new office space, carefully evaluate provision for VIM facilities. For additional details on selective vertical conveyor systems, consult your architect or write to: LAMSON CORPORATION, 183 Lamson Street, Syracuse, New York 13201.



First VIM Installation:
Crown Zellerbach Bldg., San Francisco



LAMSON CORPORATION
A DIVISION OF DIEBOLD, INCORPORATED

Lamson Street, Syracuse, New York
Also: San Francisco and Toronto, Canada
Offices in All Principal Cities

For more data, circle 131 on inquiry card



National Bank of Commerce, San Antonio, Texas — Electrical Contractor: Allen Electric Co.

When you specify building lighting like this you can save your client $6,000 a year!

The new Wide-Lite* SW fixture gives more light from fewer fixtures—and the National Bank of Commerce Building of San Antonio proves it dramatically.

The 21-story building formerly was lighted by 252 1000 watt incandescent floodlights, but the building management wanted additional light. So the 252 incandescent floodlights were replaced by just 124 1000 watt "Wide-Lite" SW floodlights using GE Multi-Vapor lamps.

The results are obvious—the National Bank of Commerce building dominates the city's skyline. And another result is also pleasing to management—operating, lamp and maintenance costs for the new floodlighting are projected to be $6,000 a year *less* than for the former incandescent installation!

Want more facts about how the "Wide-Lite" SW floodlight gives more light (with lower operating costs) for buildings, parking lots, and other installations? Just ask your "Wide-Lite" distributor, or send the no-obligation coupon.

WIDE-LITE.

FLOODLIGHTS • POLES • INDOOR LUMINAIRES • BALLASTS • TRANSFORMERS

WIDE-LITE CORPORATION A Division of Esquire, Inc.
4114 Gulf Freeway, Houston, Texas
Also manufactured in Australia, Belgium, Canada and Mexico.

*Trademark of Wide-Lite Corporation

WIDE-LITE CORPORATION Dept. 24A-275
4114 Gulf Freeway, Houston, Texas 77001

Send more information on "Wide-Lite" floodlighting for a

_____

NAME_____

COMPANY_____ TITLE_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

For more data, circle 132 on inquiry card

continued from page 254

RIGID VINYL / *Kayrex* steel-reinforced, rigid vinyl, which is available for use as glazing, corrugated roofing and siding panels, is discussed in a 22-page brochure. Typical applications illustrated in the brochure include cooling tower siding, light-transmitting roofing for industrial buildings and glazing for warehouses and railroad stations. Among the advantages claimed for this product are non-combustibility, light weight, good resistance to water and chemicals, thermal and acoustical insulation, and resistance to breakage and shattering. Instructions for installation are included in the brochure. ▪ Kaykor Products Corporation, Yardville, N. J.

Circle 415 on inquiry card

WATERPROOFING MEMBRANE / *Sure-Seal* synthetic rubber membrane, which can be used as an effective water barrier for basement walls and floors of any building type, is described and specified in a 4-page brochure. Other products detailed in the brochure include *Sure-Seal* color-coated roofing, and *Ply-o-glas* neoprene-hypalon liquid roof coating systems. Physical properties of the products are set out in tabular form. Other information includes: notes on surface preparation, installation data, and details of the company's guarantee. ▪ Special Products Department, Carlisle Tire and Rubber Division, Carlisle, Pa.*

Circle 416 on inquiry card

DRAINLINE SYSTEM / The complete line of *Kimax* tempered glass drainline system components, hardware and accessories which are used extensively in industrial, hospital, college or university laboratories or wherever corrosive wastes present a problem, are covered in a 24-page brochure. Installation details, specifications, photos of typical installations and a list of buildings in which *Kimax* glass drainlines are in use are included in the information given. ▪ Owens-Illinois, Inc., Toledo, Ohio.

Circle 417 on inquiry card

STRUCTURAL TUBING / The structural and architectural advantages, chemical and mechanical properties and other design data on a new line of square and rectangular structural tubing are set out in a 6-page catalog. This new tubing is manufactured to ASTM 500 Grade B—46,000 psi minimum yield strength. ▪ Phoenix Steel Corp., Claymont, Del.

Circle 418 on inquiry card

PATIO DOORS / A recent brochure sets out the advantages of the new *Insul-Dor* made of wood and reinforced with steel channels. The inside sill is vinyl-covered and adjustable wheels insure easy operation during the life of the door. This new door is said to be completely weathertight eliminating floor condensation. ▪ R.O.W. Window Sales Company, Ferndale, Mich.*

Circle 419 on inquiry card

STEEL FOR CONSTRUCTION / A comprehensive 16-page booklet describes and gives specifications for a complete line of steel products for the construction industry including welded and rolled flange beams, H-piles, standard beams, carbon steel plates and *4-way* safety plate. Also shown are typical properties and specifications for a variety of high strength steels and INX high strength, low alloy steels. Other structural steel products covered are sub-purlins, and Hi-Bond reinforcing bars. ▪ Inland Steel Company, Dept. SPC, Chicago.*

Circle 420 on inquiry card

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

CONCRETE SHAPES come ALIVE with COLORFUL hydroment® HARDENS, DENSIFIES and COLORS CONCRETE

These oval concrete "pads" of terra cotta and black are still terra cotta and black six years later! How's that for lively, colorful concrete? Unlike other methods of coloring concrete, HYDROMENT does not lie on the surface. It penetrates and becomes an integral part of the concrete.



In 10 popular colors
- Tile Red
- Tan
- Terra Cotta
- French Gray
- Erin Green
- Brown
- Sand Beige
- Blue Gray
- Black
- White and Natural

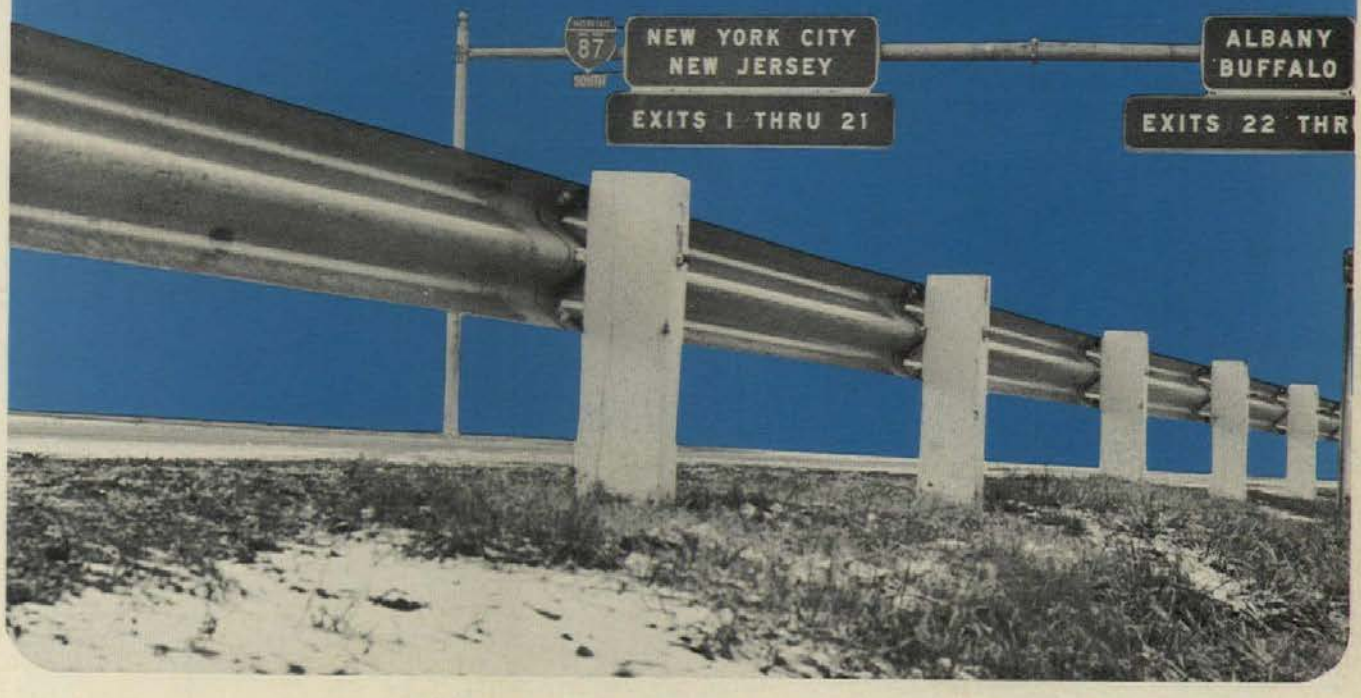
HYDROMENT is applied by the dust coat method when slabs are poured. With HYDROMENT on concrete, you get the esthetic advantages of color and the physical advantages of high compressive strength, greater density and corrosion resistance. Ideal for garage floors, hospital halls and service areas, church, school, motel, and shopping center floors and concrete shapes of all kinds! For additional information, please write us or see Sweet's.

THE UPCO COMPANY 4805 Lexington Ave. • Cleveland, O. 44103

a subsidiary of USM United Shoe Machinery

For more data, circle 133 on inquiry card

NEW YORK THRUWAY TAKES THE GALVANIZED ROUTE TO LOWER MAINTENANCE COSTS



Hot dip zinc coated steel is replacing painted steel guard rail on the New York State Thruway for one basic reason — it costs far less in the long run.

The initial cost of galvanizing today is surprisingly close to that of a proper paint system. When you consider that galvanizing **eliminates** maintenance for 20 to 50 years, there's no question about its greater economy. Even when gouged through to the base metal, the tough, adherent zinc continues to protect by sacrificial action.

On more and more of our highways, steel guards human life and zinc guards steel's life. No other metal has the combination of strength, corrosion resistance and economy found in galvanized steel. Its unsurpassed practicality accounts for its great and growing use in construction and in manufacturing.

ST. JOE

ST. JOSEPH LEAD COMPANY

St. Joe is a Major Supplier of Zinc to the Galvanizing Industry

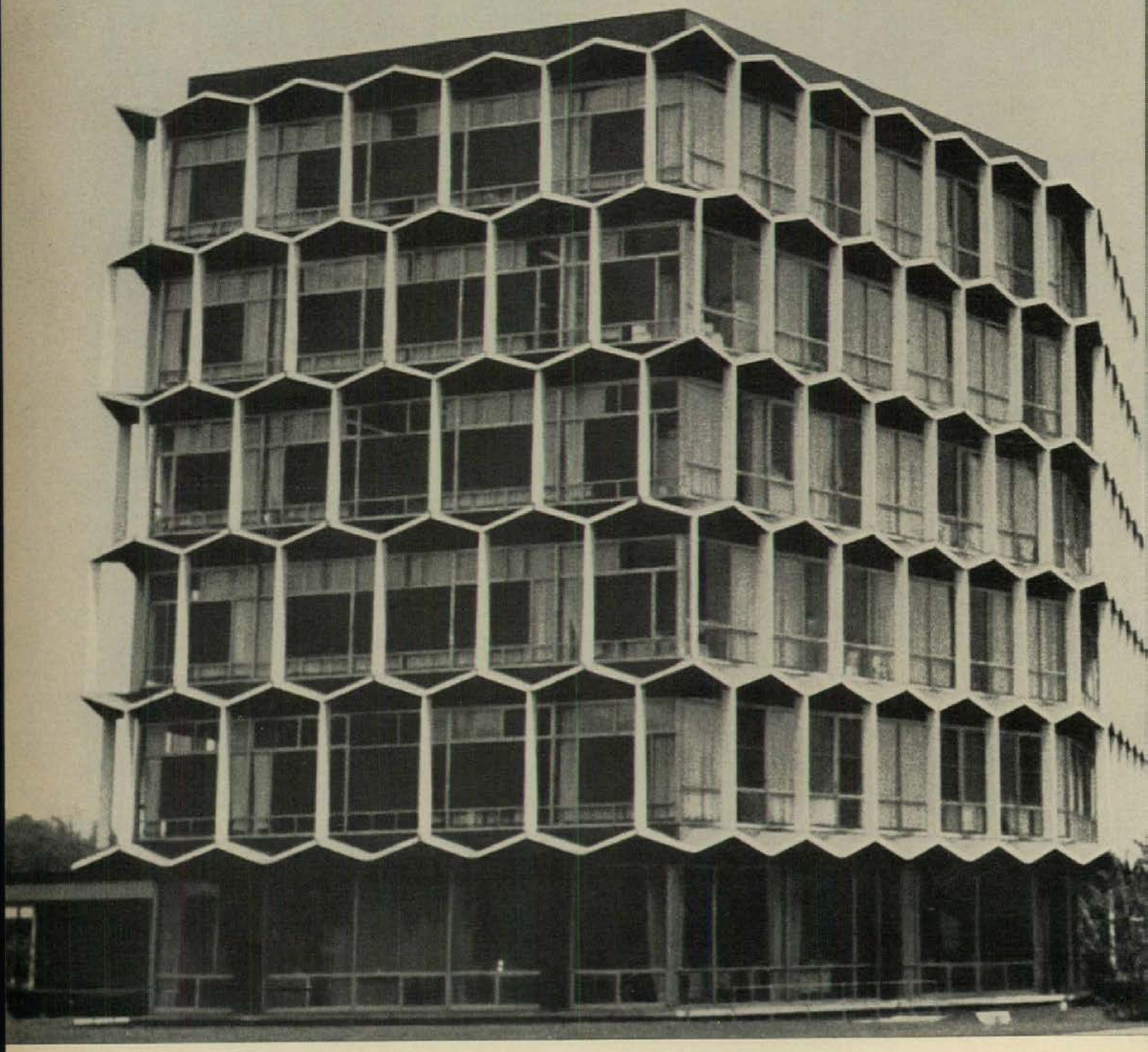
250 Park Avenue • New York, New York 10017

ZN-288

for versatility and

reinforced concrete is the architects' design material

■ The versatility of monolithic reinforced concrete lets architects design with complete freedom for the achievement of structural beauty and individuality. In this school administration building, the architects utilized a reinforced concrete frame with elongated hexagonal openings to create a building of unusual architectural interest. Reinforced concrete's versatility also permitted the carrying out of the building's hexagonal motif into class room shapes. Use reinforced concrete in your next building. It eliminates the many design restrictions imposed by other construction methods.



style!



CRSI
FOUNDED 1924

Chicago Teachers College, Chicago, Illinois
Architects: Perkins and Will, Chicago
General Contractor: Chell and Anderson, Chicago
Structural Engineers: Perkins and Will, Chicago

CONCRETE REINFORCING STEEL INSTITUTE

5-65

228 North La Salle Street • Chicago, Illinois 60601

We were very pleased to see that the design of our emergency power system is being shared with other institutions in need of such systems through the medium of the excellent article by Frank J. Walsh in the February and March issues of your highly esteemed journal. We found Mr. Walsh's design for our installation to have many advantages over the more conventional types of emergency plant. We hope that what is now a unique system will set a new standard for emergency power plants of this type. It is to be hoped, also, that government will help institutions to bear the cost burden of such installations in a more effective manner than has been available until now.

A. P. Trewhella
Assistant Administrator
Beekman-Downtown Hospital
New York City

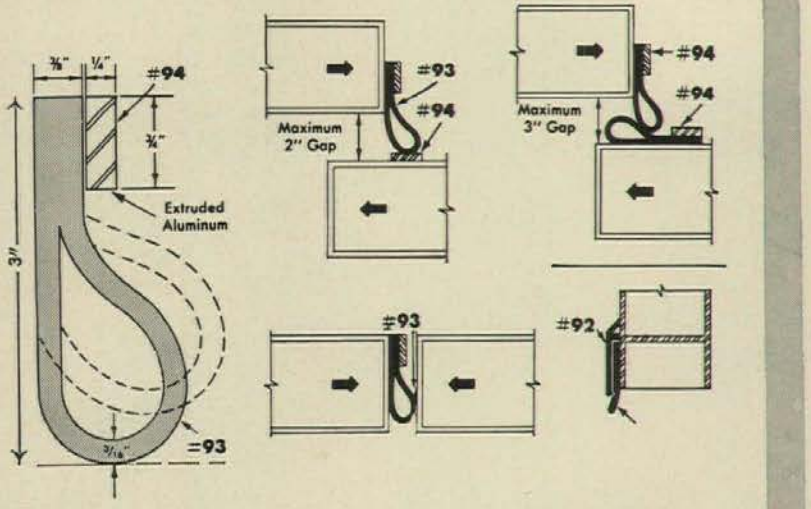
The Building Types Study 356 in the March issue is of particular interest to us. One of the continuing projects of our organization is the development of space planning criteria for all the various departments and services which make up the entire hospital. These criteria, many of which are used by all Federal agencies, serve as a "tool" and incorporate factors and methodology for translating anticipated workloads into scope of construction.

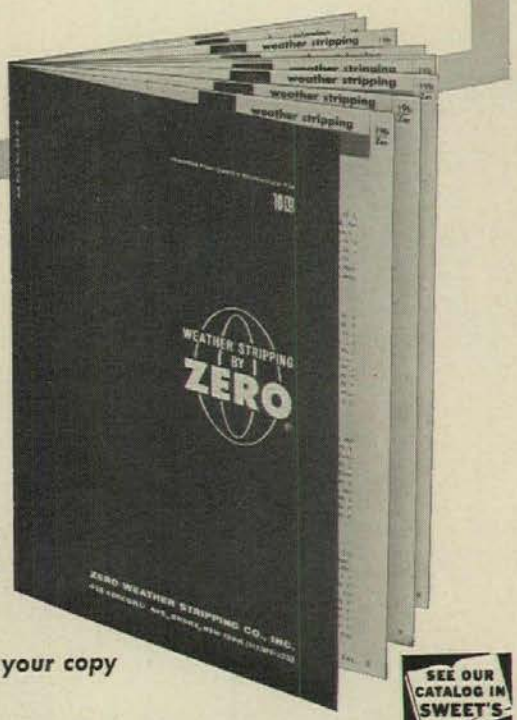
In the process of periodic evaluations of the criteria, significant published articles such as those in the Building Types Study can often contribute to a testing or checking procedure.

Earl C. Gluckman, M.D.
Director
Hospital Construction Service
Washington, D. C.

— our 42nd year

hangar door equipment





the most complete and authoritative guide for—

- **WEATHER STRIPPING**
- **SOUND PROOFING**
- **LIGHT PROOFING**
- **THRESHOLDS**

Zero's 1966 Catalog shows many new products, contains 175 full size drawings.

Write today for your copy

SEE OUR CATALOG IN SWEET'S OR WRITE FOR COPY

ZERO WEATHER STRIPPING CO., INC.

Our 42nd year of service to architects

415 Concord Avenue, Bronx, New York 10455 • (212) LU 5-3230

For more data, circle 134 on inquiry card

Nothing new under the sun department



ARCHITECTURAL RECORD, December 1939, pp. 41-44



ARCHITECTURAL RECORD, January 1966, pp. 162-163

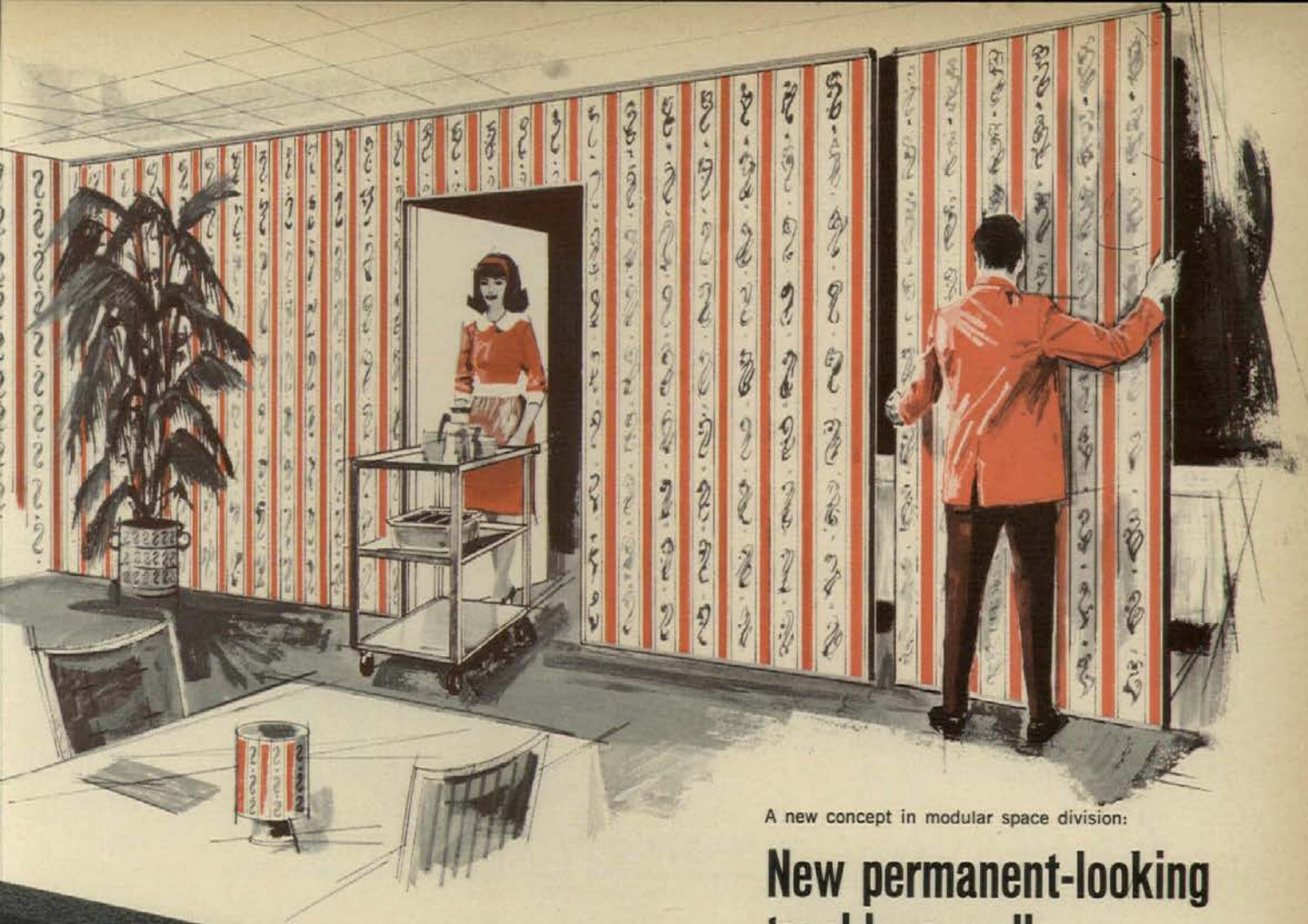
I thought this photo from an old *Record* (left) might be of interest. Preparations for World War II and the interim that followed prevented further development of this idea.

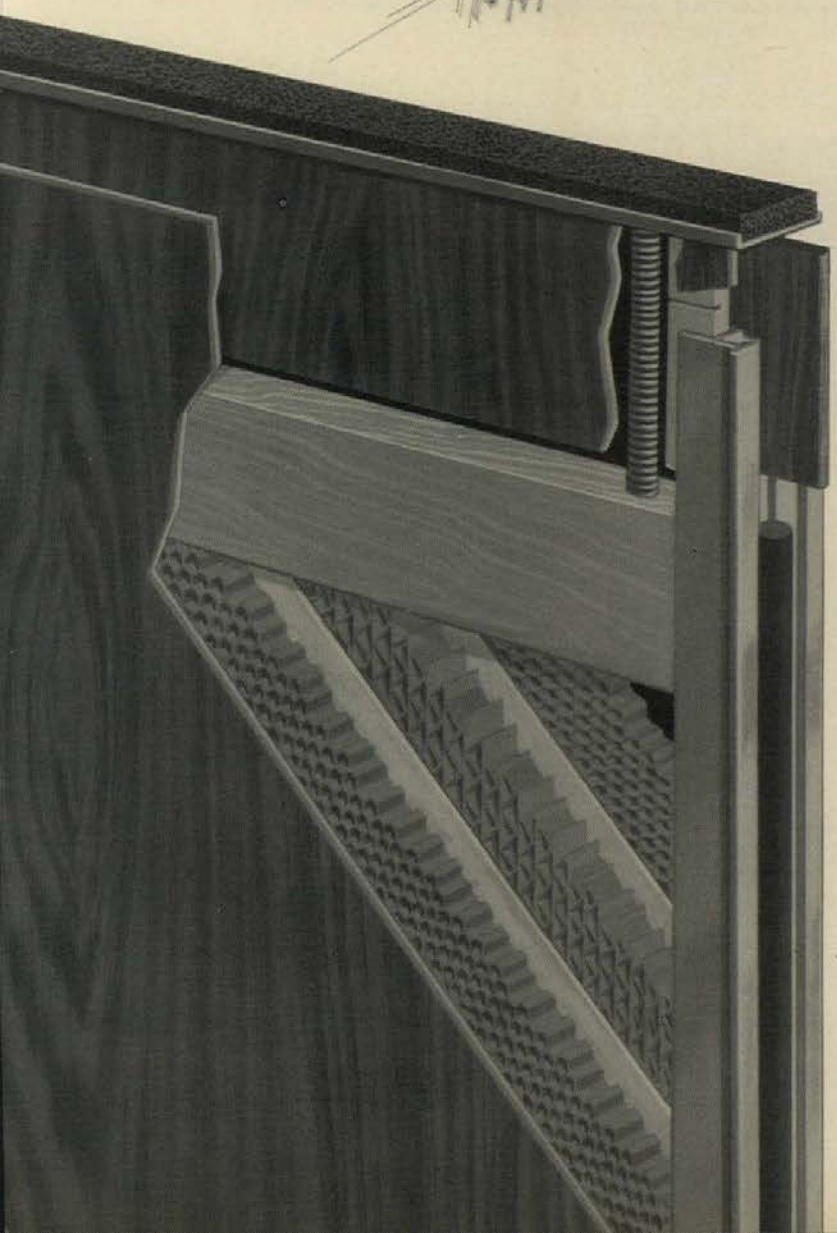
Edwin A. Koch, A.I.A.
Fort Lauderdale, Fla.

"In spite of noteworthy advances in recent years in both elevator and escalator equipments, the problem of transportation that follows the angle of a steep-sloping site on which a structure is built has not been widely explored. Here is an arresting proposal for such a scheme, designed by Edwin A. Koch for an apartment-house group on the New York City river front." ARCHITECTURAL RECORD, December 1939, pp. 41-44.

The generalities of "Let's Make It Real" (January) I have heard discussed and seen in print for more than 20 years or since my own student days at the Graduate School of Design at Harvard. Unfortunately Mr. Thompson does not have one single positive answer or concrete suggestion. Why then does the RECORD devote three pages to state-

continued on page 270





A new concept in modular space division:

New permanent-looking trackless walls form private rooms anywhere--in minutes

Create profitable smaller rooms quickly with Kwik-Wall portable walls that give you all the advantages of permanent **and** movable walls. Install or store anywhere (no tracks). Permanent look (including walk-thru doors). Lightweight and strong (air frame-type construction). Simplified installation (one-hand locking). Sound retarding. Kwik-Wall portable walls are available in your choice of 1526 decorator facings — laminates, vinyls, prefinished hardwood, print grains, and unfinished ready-to-paint. Kwik-Wall is also offered in panels that glide on ceiling-mounted tracks. Send in coupon today for more details.

KWIK-WALL

KWIK-WALL CO., Box 319, Dept. A
Springfield, Illinois 62705

Please tell me more about KWIK-WALL movable walls.

Name _____

Title _____

Company _____

Address _____

City _____ State _____ ZIP _____

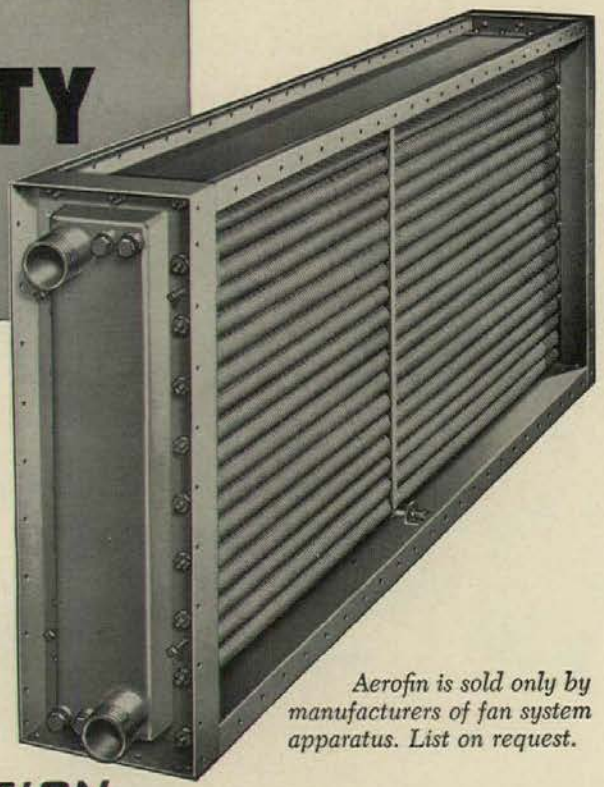
☐ New construction ☐ Remodeling

Room(s) dimensions: _____

Construction date: _____

☐ Send literature ☐ Have representative call

BIG CAPACITY IN *Small* SPACE



AEROFIN *Smooth-Fin* Heating and Cooling Coils

High ratio of surface area to face area

High air velocities without excessive friction or turbulence

Write for Bulletin S-55

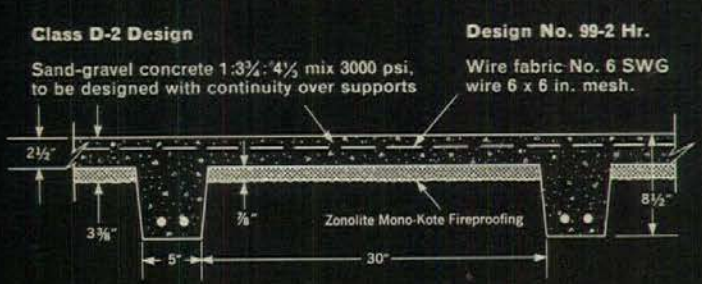
Aerofin is sold only by manufacturers of fan system apparatus. List on request.

AEROFIN CORPORATION

Engineering Offices in Principal Cities

Lynchburg, Virginia, 24504

NEW LIGHTWEIGHT PAN-JOIST SYSTEM UP TO 28 LBS. PSF LIGHTER!



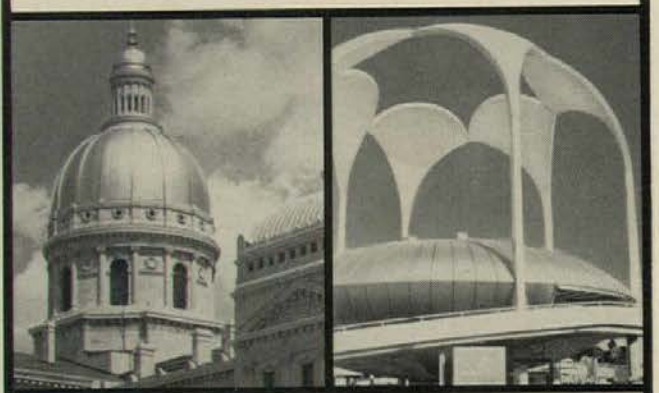
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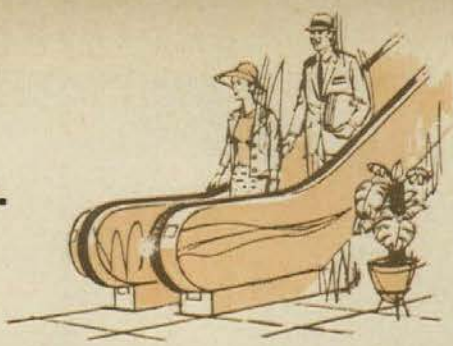
Specify Duragold for bright, economical, durable gold exterior and interior coatings. Shown above, the Indiana State Capitol dome and the Johnson's Wax Golden Rondelle at the New York World's Fair, both covered with coatings containing Duragold pigments. For the names of manufacturers using Duragold, plus a free gold spray can, write or call...

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♦ *For more data, circle 136 on inquiry card*

Just add people.
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Beautifully.





Architects: Welton Becket & Associates, Albert C. Martin & Associates, Paul R. Williams & Associates;
Contractors: J. W. Bateson Company, Inc. and J. W. Bateson Construction Company, Inc.

You're looking at the compact, space-saving Haughton Escalators in Los Angeles' new Federal Office Building. Beautiful to see? Yes. And, equally important, they incorporate a number of exclusive design advancements that make them exceptionally beautiful performers, too.

For example: The handrail is positively-driven at a speed synchronized with the steps. Positive drive eliminates the "creeping" associated with traction-drive handrails . . . enhances passenger comfort and confidence.

What's more, the handrail extends *beyond* the inside panel mouldings. Passengers with children or an armful of packages can lean against it without fear of being upset. And the handrail has a clean, "live" feel that inspires complete confidence.

We've made boarding a Haughton Escalator easy and comfortable, too, by enlarging the track radii at the lower end. This makes the transition from horizontal to the 30° incline smooth and gradual.

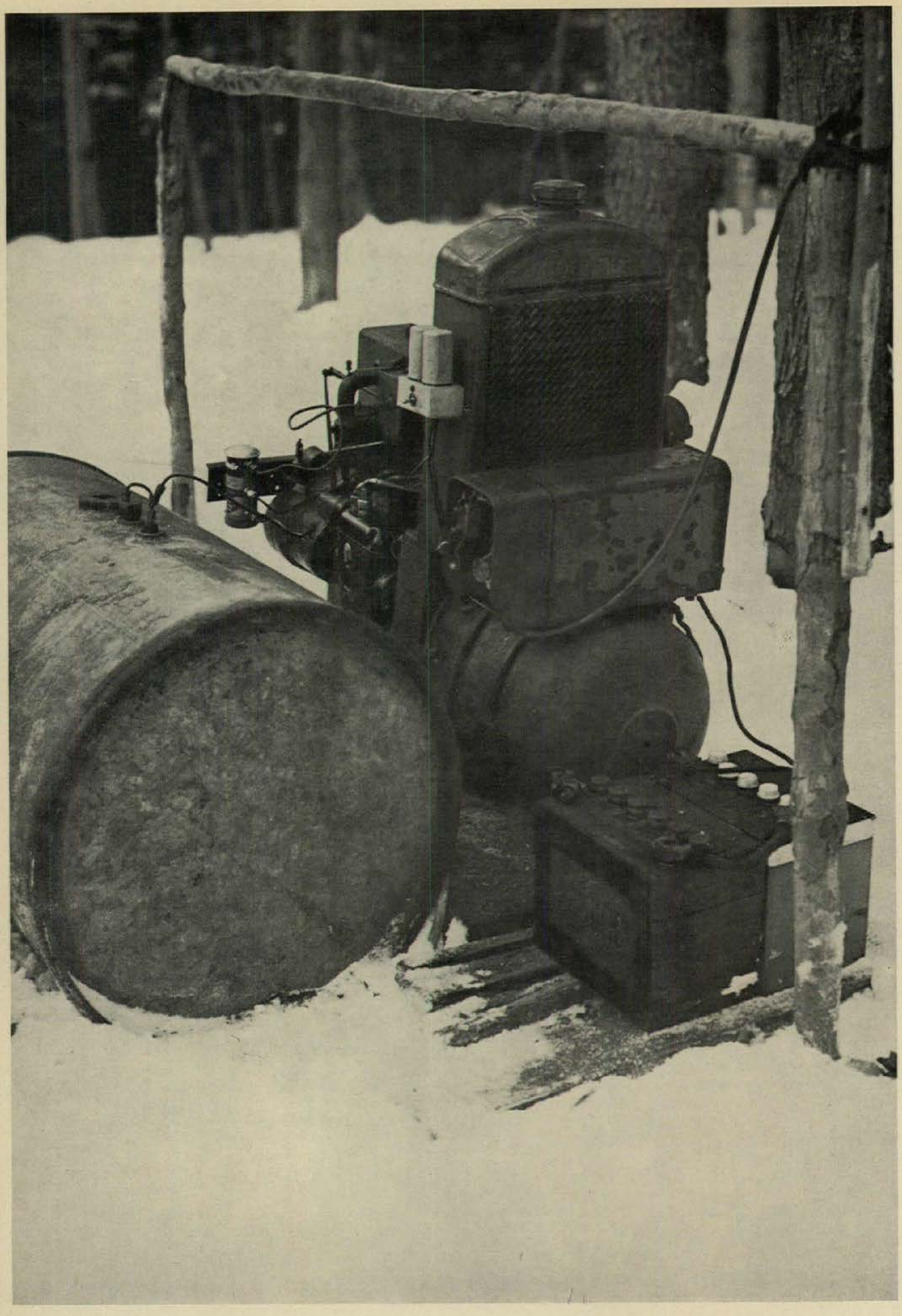
There are a lot more reasons for including Haughton Escalators in your new construction or modernization plans, when you want to move up to 8,000 people per hour with comfort, safety and reliability. You should know about them. Ask your Haughton representative for details. He's listed in the Yellow Pages. Or, write us.

The new Los Angeles Federal Office Building is also served by 16 Haughton Passenger Elevators and 2 Haughton freight elevators.

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Kohler built this electric plant in 1922.

R. W. Twaddell bought it second hand in 1935

He'll probably never need to buy another.

Mr. Twaddell, of Sidney, New York, bought this 1922 model 1500 watt, 110 volt Kohler electric plant second hand in 1935. Today, after 44 years of service, it's still performing ...supplying power for house lighting, a water pump, toaster, vacuum cleaner, electric drill and radio. Occasionally it's also used as a battery charger.

Exceptional story? No. Exceptional electric plant. And the Kohler you buy today is just as exceptional. The same dependable performance and long life, whether you use it for home lighting, as a portable-mobile, standby source or for marine applications.

Says Mr. Twaddell, "This only serves to give you positive proof as to the quality of Kohler products. Whether 1922 vintage or current production models, we are definitely *sold* on the name of Kohler."

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- ✓ **Automatic voltage and speed regulation**—maintain power at even level.
- ✓ **Units from 500 to 230,000 watts**—Gas, diesel and gasoline fuel options.
- ✓ **Integral exciter starting**—quickest, simplest, most positive, trouble-free engine starting available.

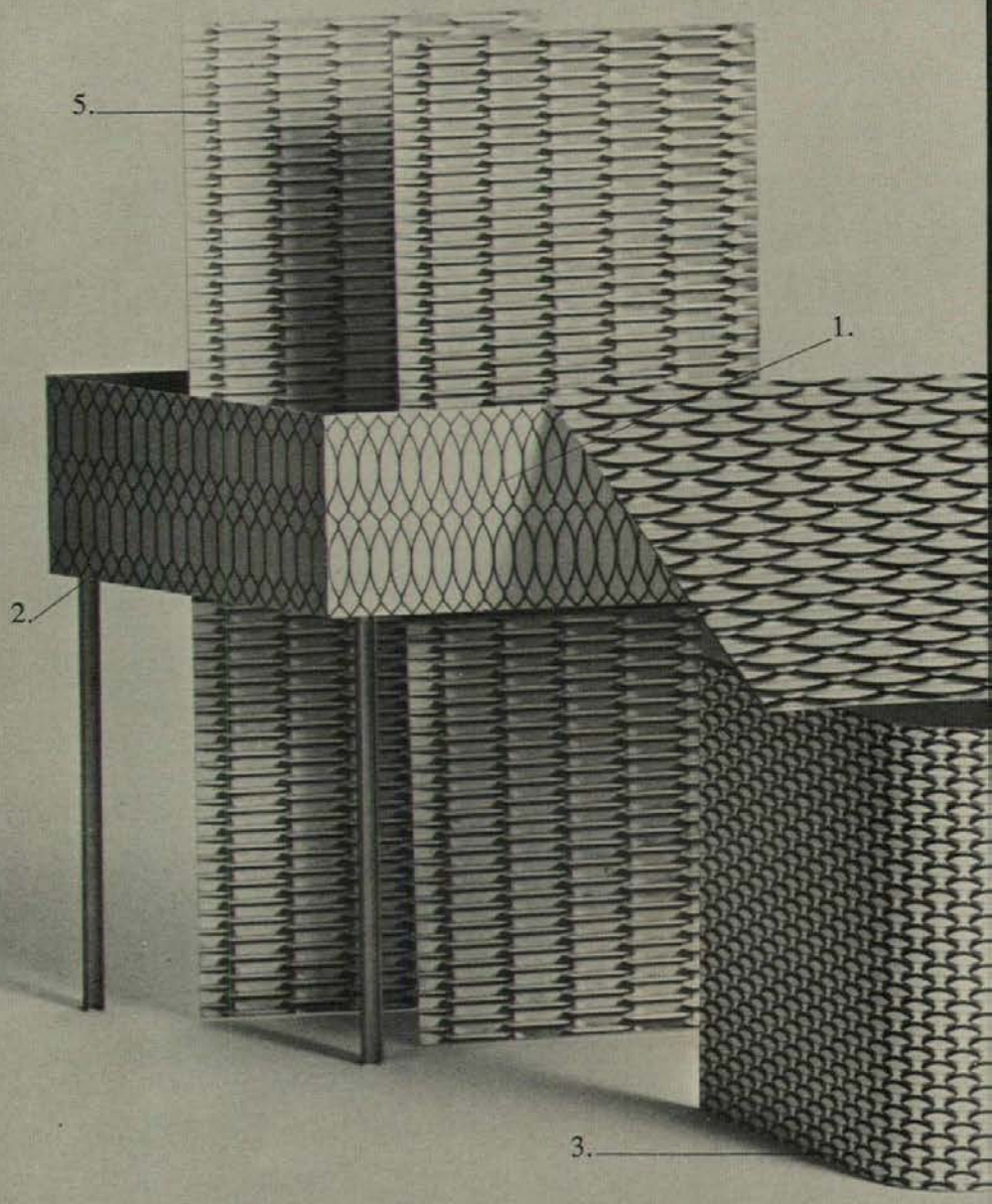
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1. Cadet 2. Arrowline 3. 1½" Facade 4. ½" Facade. 5. Louvermesh 6. No. 4 Facade 7. Castle 8. Drape Mesh.

Architects across the country have already found many striking uses for them.

In new buildings as room and area dividers, stairway enclosures, and ceilings. Outdoors, as dramatic balcony railings an as shading materials on patios.

And on older buildings to create uniqu contemporary facades.

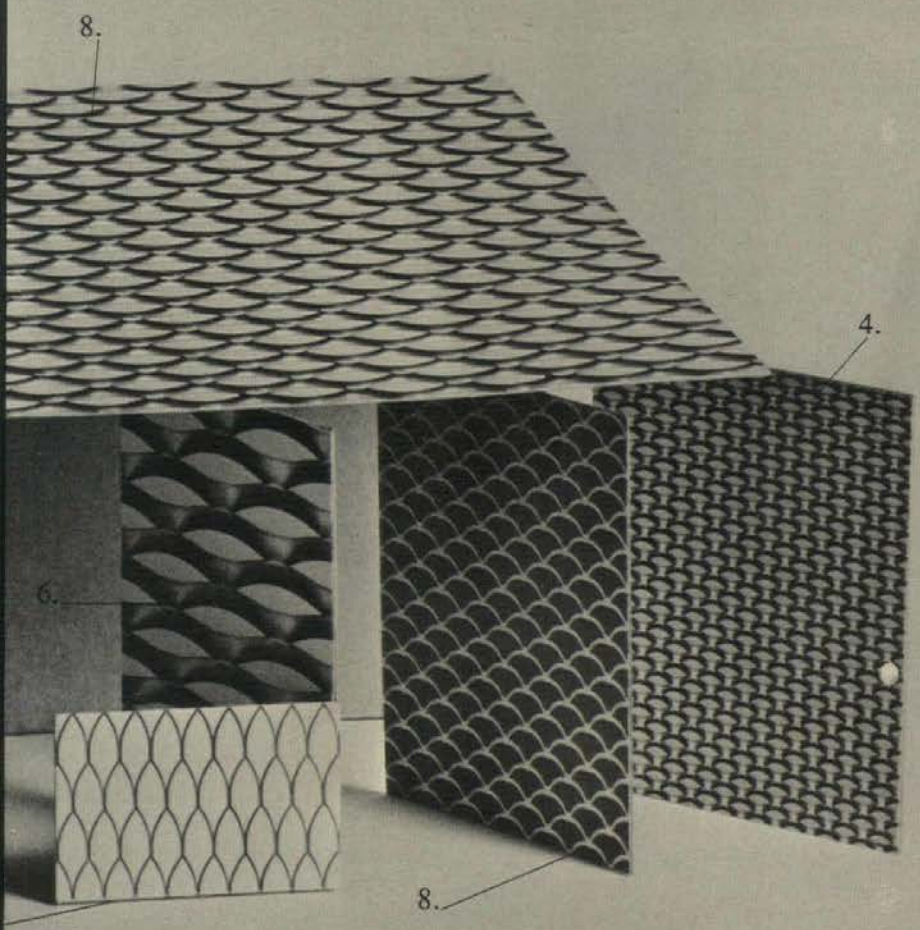
Now we'll tell you why our expande metals are better than someone else's.

Because Wheeling has been expandin metal for over thirty years.

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you in a mesh the likes never specified.



nd the equipment. The most up-to-date quipment.

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Wheeling

Wheeling Corrugating Company/Wheeling Steel Corporation, Wheeling, West Virginia

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continued from page 262

ments which can only be classified as: "I'm for motherhood and against crime," which culminate in this observation: "I am prepared to say I don't know further how to do it beyond the clear fact that it can be done if we want it." If Mr. Thompson is prepared to say that he doesn't know, why then take three pages to tell us?

"Ode on the Faire Environment" (my apologies to Mr. Keats) might be a more appropriate title for Mr. Thompson's other piece, "Reflections on Environment," though I doubt that it would make the grade in a poetry magazine. Perhaps one of the prolific women's magazines (complete with pretty colored pictures from Design Research, Mr. Thompson's shop) might be the answer. But what is this doing in a professional publication?

In our change-dominated times, architectural education is a very difficult and time consuming job. One thing, however, is clear: It must be done from the broader or urban point of view. Surely this new approach is urgently needed before the profession finds itself entirely excluded from the more pressing problems of today for lack of preparation. The future of our environment is being decided now: But where are the architects?

Franziska P. Hosken
Architectural Critic
Boston Sunday Herald
Associate, Boston Society of Architects

This is a belated but no less enthusiastic thank you for printing Benjamin Thompson's beautiful essay, "Reflections on Environment," in your January issue. May I enter a plea for more pages devoted to this kind of thing.

Shirley J. Vernon, R.A.
Vincent G. Kling and Associates
Philadelphia

The architectural magazines, for many years now, have neglected their professional role in having selected material for publication on the basis of novelty rather than quality. This is particularly unfortunate during this aimless era as they are the guide to students, faculty and impressionable architects.

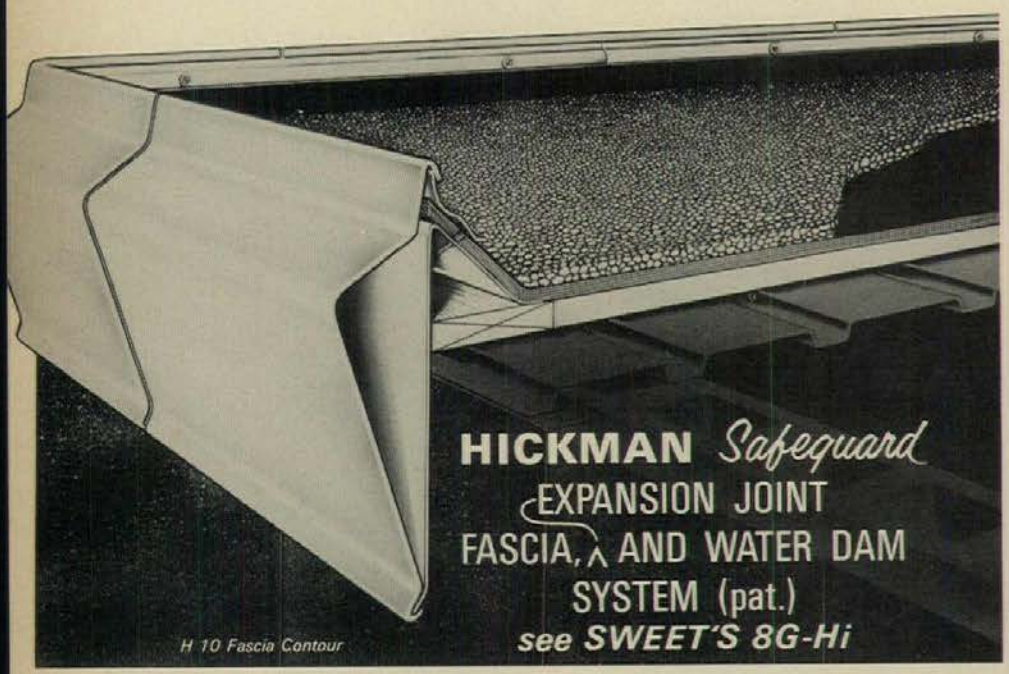
Instead of judging work by the standard of Vitruvius: "commodity, firmness and delight" or le Corbusier: "serenity, joyfulness, and efficiency" they publish works of architects who are capable but misguided or cynical, whose work is accidental, haphazard and unresolved, who dream of the day when mechanical elements will take the place of sculpture, who reject architecture as a fine art, a thing of good taste or of beauty.

Viollet le-Duc said: "Architecture cannot be Barbarous for the simple reason that it is Art. It is Barbarous only in ceasing to be Art when it degrades itself by belying and violating its own principles; when it slavishly follows the caprices of Fashion; when it becomes the plaything of people without fixed ideas or convictions."

The work published is not that of Architects but Anti-architects. At best these reflect the worst aspects of a troubled age. But architecture should reflect man's aspirations, not his despair. Architects should create Beauty not Ugliness.

George Nemeny, architect
New York City

ARCHITECTURAL RECORD and Record Houses have published seven of Mr. Nemeny's buildings in recent years. We thought they were beautiful.



ROOF PERIMETER TROUBLES

SUCH AS: LEAKS AT EAVES—TAR DRIPPINGS AND WATER STAINS ON FASCIA AND WALLS

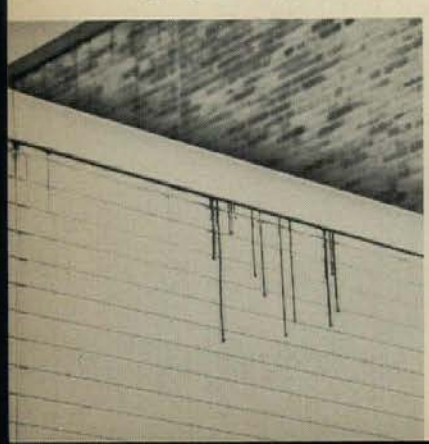
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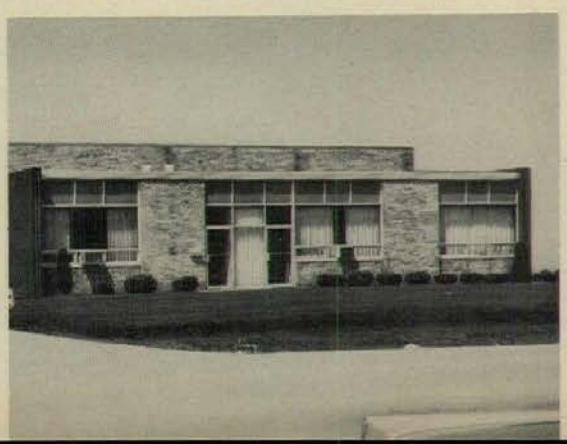
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*some typical owners are listed in Sweet's.

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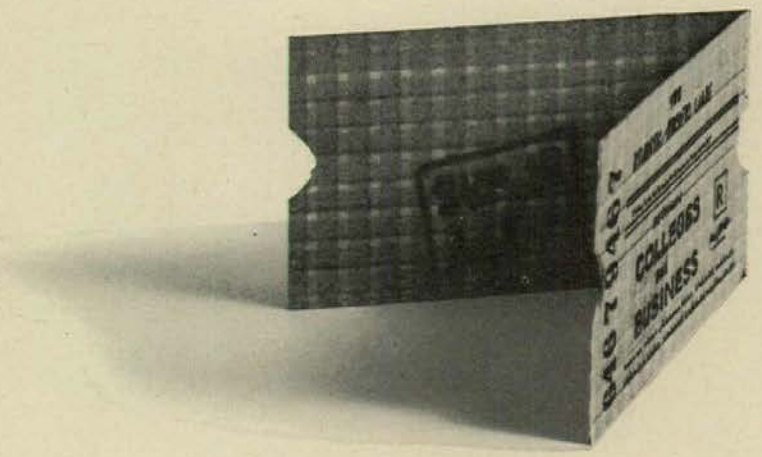
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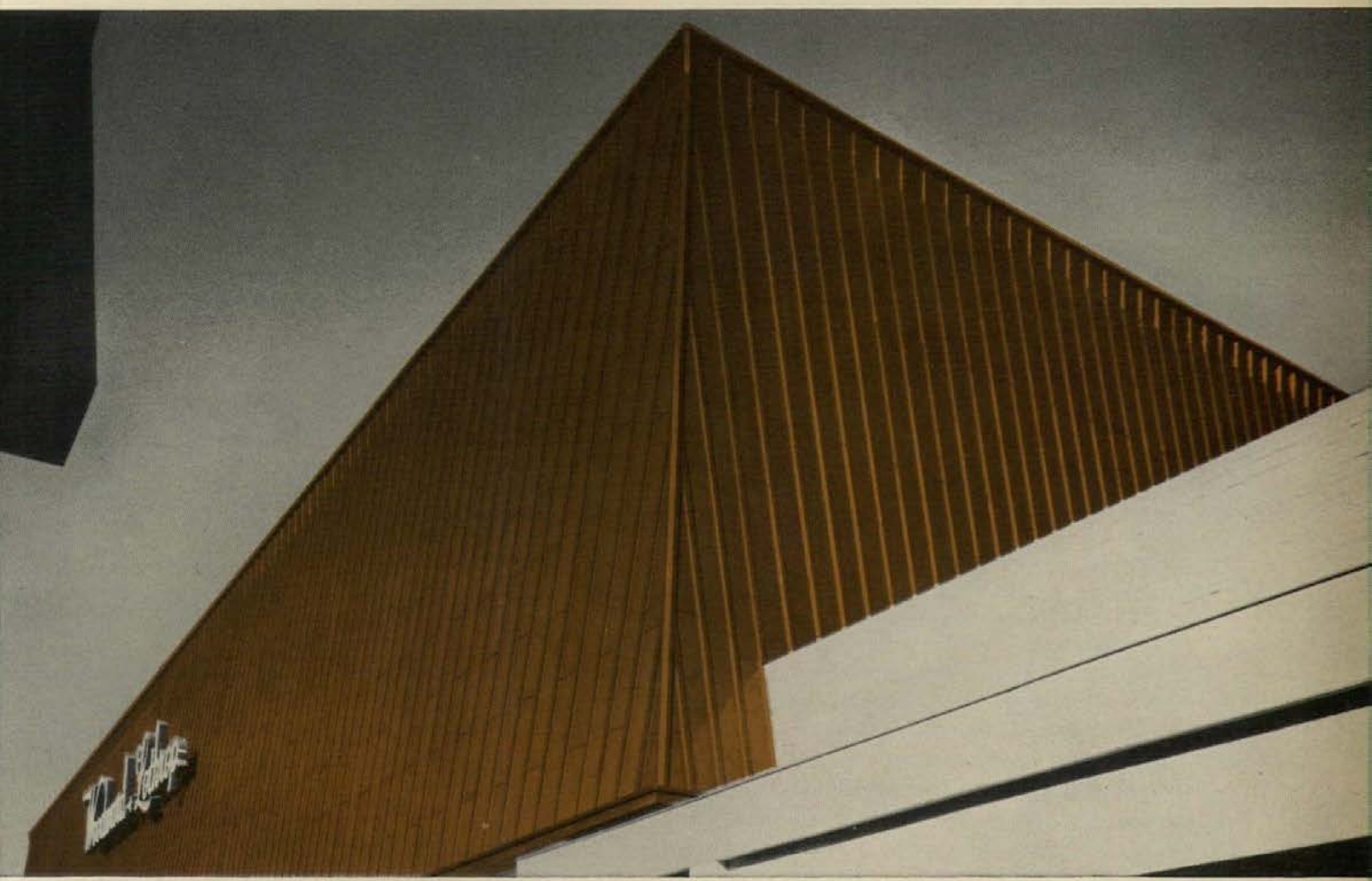


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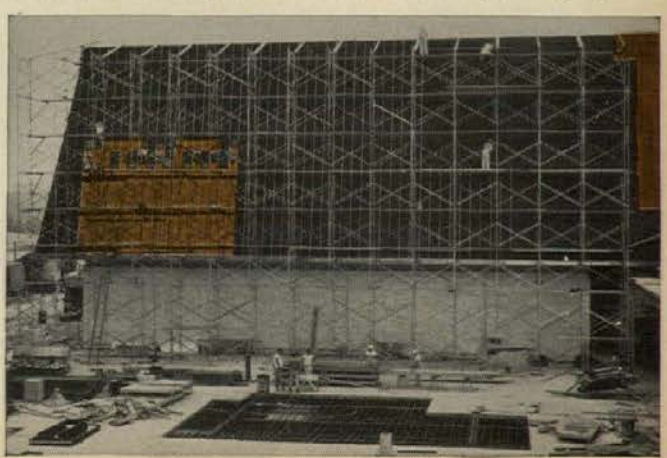
In conceiving the design for the new Woodward & Lothrop Department Store, part of the Landmark Shopping Center, Alexandria, Virginia, the architectural and engineering firm wanted a structure that would dominate . . . a shape that would shout, "Big!" without being blatant. The result was this unique, windowless structure, the only glass being at the two entrances.

Then, after the big shape, what material with which to cover it? Revere Copper, 70,000 lbs. of 20 oz. cold rolled, was selected to cover the facade and roof, using batten seam construction. Other materials were rejected because they did not have the right texture to give the desired effect. In addition, copper is one of the natural materials, with character, that eventually will wear a natural patina.

Also, cost studies revealed copper to be no more expensive than a good masonry wall, and much more effective from a design standpoint. Add to this the versatility and the long life expectancy of copper and you have the reasons why architects who dare, DESIGN WITH COPPER IN MIND . . . Revere Copper, oldest name in the business.



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General Contractor — Munro, Burns and Jackson Brothers, Honolulu, Hawaii.

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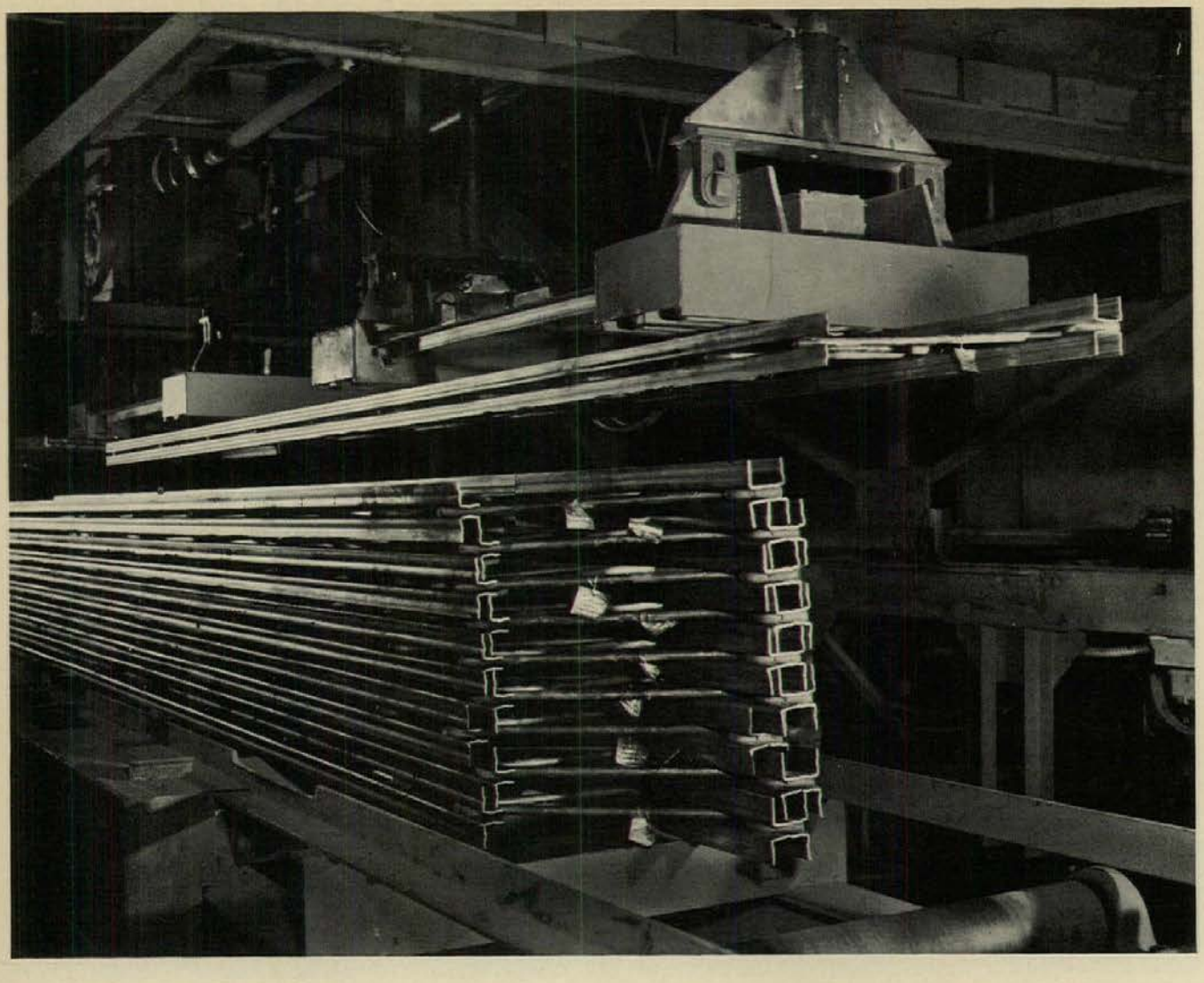
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continued from page 124

affiliation with **Benham-Blair and Affiliates,** architects - engineers - consultants, Oklahoma City, Phoenix, Ariz., Little Rock, Ark., and Washington, D. C.

Burns and Roe, Inc., a New York City consulting and engineering firm, has promoted **Michael Zizza** to assistant director.

Raugland, Entrikin, Domholt and King, Inc. is the new name for **Lang, Raugland and Brunet, Inc.,** Minneapolis architectural and engineering firm.

The Houston architectural firm of **Neuhaus and Taylor** has appointed **William C. Blackstone** and **William T. Cox** associates.

The Perkins & Will Partnership, architects of Chicago, White Plains, N.Y. and Washington, D.C., have elected **Morton Hartman, A.I.A.** a partner. The firm has named the following 12 members senior associates: **Harry Anderson, William Cummings, Donald Halamka, Roman Korwin, Harry Laman, Robert Larsen, Norman Millett, Thomas Sturr, Stanley Tursman, Richard White, John Macreery** and **Maurice Perreault.** There are 24 new associates: **Neil Baker, James Caron, Stanley Gordon, Kiyoshi Kikuchi, Kenneth Kloss, Phillip Kupritz, James Maeda, John Michaels, Charles Morison, Harry Patterson, Carl Schwebel, Robert Sullan, Roger Tinney** and **Raymond Watson.**

Conover Fitch Jr., a new partner of **Perry, Dean, Hepburn and Stewart,** will manage the firm's new department of preservation and restoration.

Roy C. Neumann, A.I.A. has joined **Stanley Associates** which is affiliated with **Stanley Engineering Company** of Muscatine, Iowa.

Stevens & Wilkinson, architects of Atlanta, have appointed **William H. Barnett, A.I.A., Minton V. Braddy Jr., A.I.A.** and **Preston Stevens Jr., A.I.A.** partners. New associates are **Paul F. Jeffries** and **William C. Womack,** senior associates, and **A. Clark Hudson, A.I.A., Chester O. Fischer, William P. Miller Jr. and Robert A. Meier.**

Tarapata-MacMahon Associates, Inc., architects, engineers and planners of Bloomfield Hills, Mich., have promoted **Christopher Z. Wzachy** to an associate.

Wurster, Bernardi and Emmons, Inc., San Francisco architects, have appointed **Allen F. Rosenberg, Robert A. Towle, Joseph L. Bourg** and **Gerald Taylor** associates.

NEW ADDRESSES

Alex Danin A.I.A. Architect & Associates, 1841 Broadway, New York City.

Michael J. De Angelis, architects-engineers, 507-524 First Federal Bldg., 328 East Main Street, Rochester, N. Y.

Laurel E. Carlsson, Architect A.I.A., Valley Professional Building, E. 9822 Sprague Ave., Spokane, Wash.

Jack Knighton A.I.A. Architect, 1514 Sherman St., Arlington, Tex.

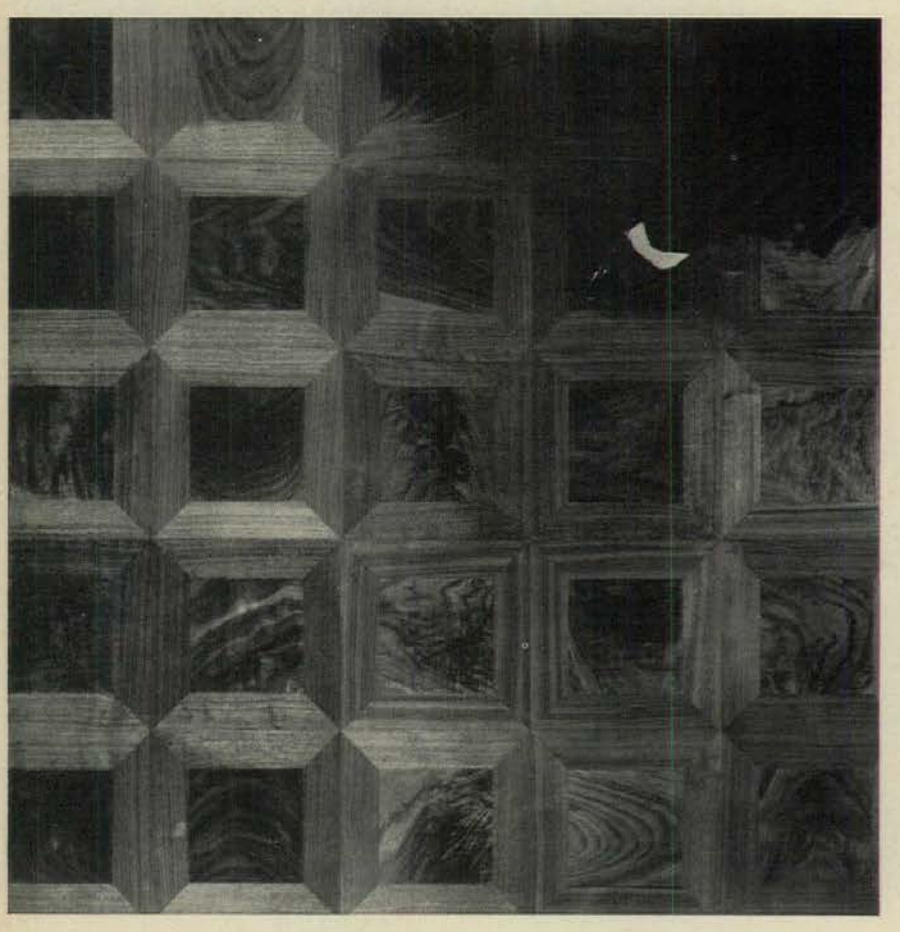
Otto Paul Poticha Architect, 756 W. Park St., Eugene, Ore.

Shriver and Holland, Architects, 9th Floor, Professional Arts Building, Norfolk, Va.

Wiss, Janney, Elstner and Associates, 330 Pfingsten Rd., Northbrook, Ill.

ADDENDA

The RECORD deeply regrets that in the news story "Louisiana dormitory will accommodate 400," April, page 130, the names of the architects were inadvertently omitted. Proper credits for the building are: Thompson B. Burk and Associates Architects, Inc; working drawings by the office of Luther Frink, Architect.



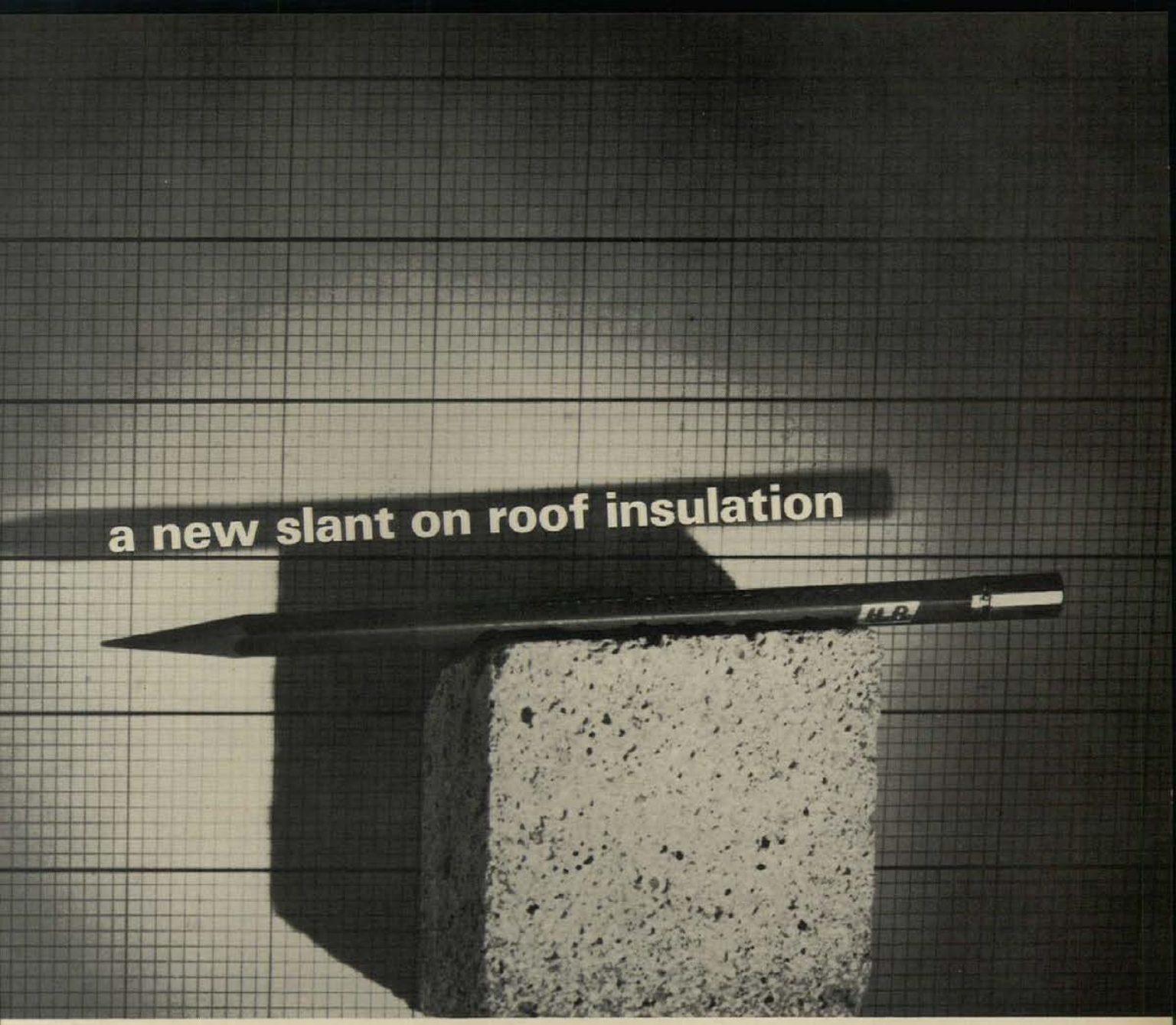
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For more data, circle 148 on inquiry card



Actual size cube, cut from Permalite roof deck.

Permalite lightweight aggregate concrete gives you all the insulation you'll ever need on a flat roof deck. Just pour it on. And while you're pouring, give yourself a bonus with a **slope to drain.**

Form saddles, cants and crickets too. No problem. Easily placed; strong; fast drying. What could be smoother. **One** application with **one** material poured in place gives you a clean, permanent, insulated deck with "K" factors from 0.51 to 0.77—with positive drain in a pitch as low as ⅛″ to 12″.

Cost? **Less** than other monolithic decks of equal insulating value. Ask your local Permalite man, or write for more information.

Permalite®

World's Largest Selling Perlite Aggregate



BULLETIN G3-65
Permalite concrete, plaster and masonry fill.

Building Prods. Div., GREFCO, Inc. 630 Shatto Place
Los Angeles, Calif. 90005, sub. General Refractories Co.

For more data, circle 149 on inquiry card

LENNOX

DMS

keeps comfort in step with changing interior spaces



Movable wall courtesy of E. F. Hauserman Company

Movable walls have been dividing and expanding interior space for some time. But because heating and air conditioning systems were "locked" to the floor, it has been hard for comfort to follow.

Now the Lennox *Direct Multizone System* provides the final step in space flexibility. Its fiberglass ducts plug or unplug anywhere into the ceiling. Moving around, as the walls move, to maintain the proper thermal environment in each new area. As a result, today's lecture hall becomes tomorrow's "complete" 1st grade classroom. A change typical of many modern buildings—industrial plants, office buildings, clinics, stores—wherever space cannot afford to be static.

Lennox DMS unit is a sleek, 42" low, rooftop system that heats, cools and ventilates at the same time. Thus it can cool a crowded, sun-washed, window-walled room while it heats a room looking north.

It can, in fact, deliver 12 different temperatures of air to 12 different rooms, at the same instant. And at any temperature under 57°, the DMS brings in outdoor air to provide "free" cooling.

Each unit delivers up to 22 tons cooling and 500,000 Btuh heating.

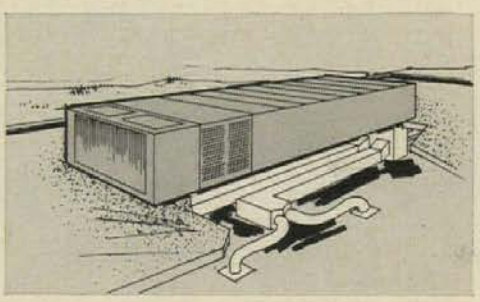


Because the Lennox DMS is a complete, factory-assembled package, including all components, wiring and controls, we offer total, single-source accountability for its performance.

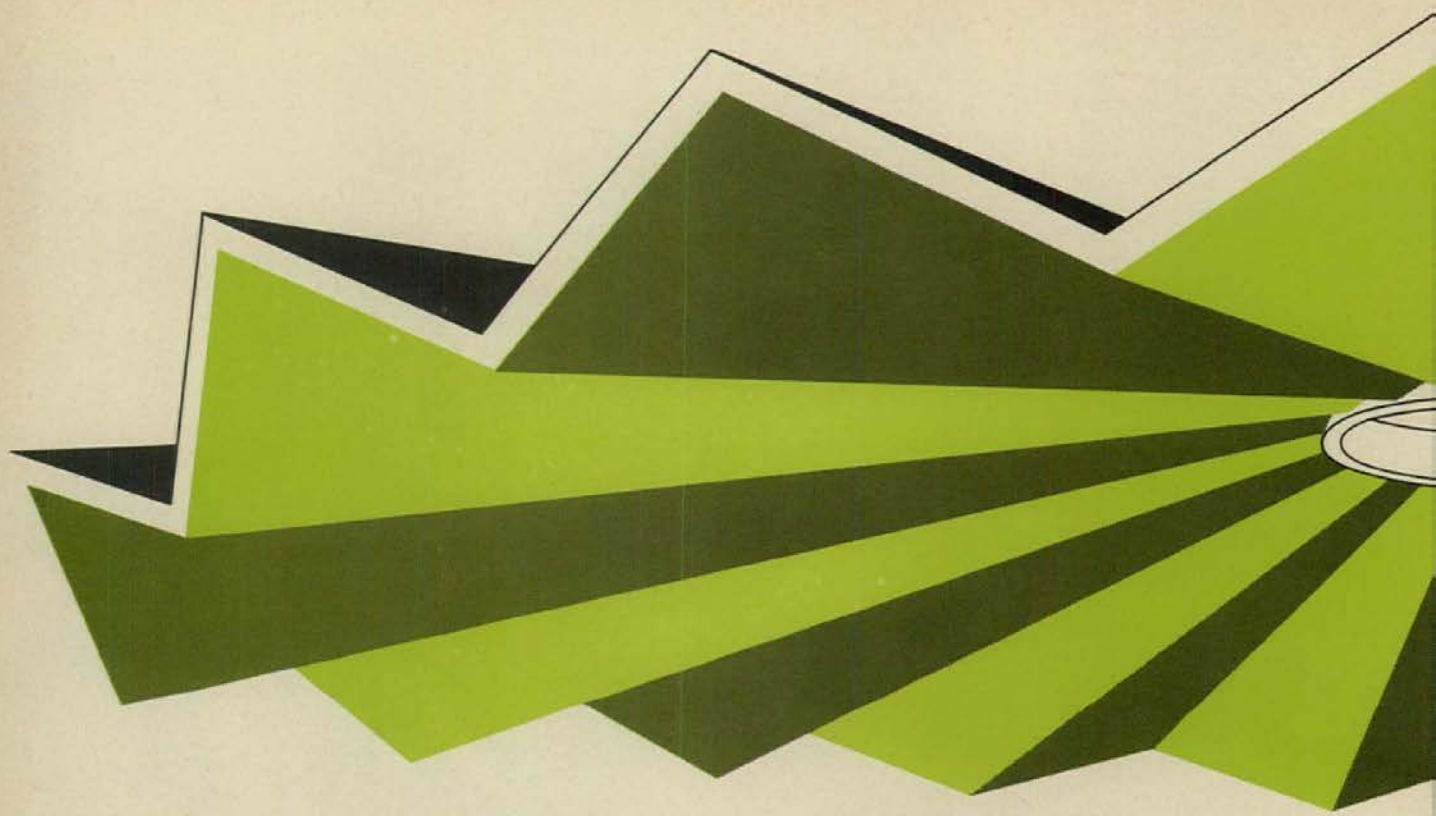
For information write: Lennox Industrles Inc., 681 S. 12th Avenue, Marshalltown, Iowa.

LENNOX

AIR CONDITIONING • HEATING



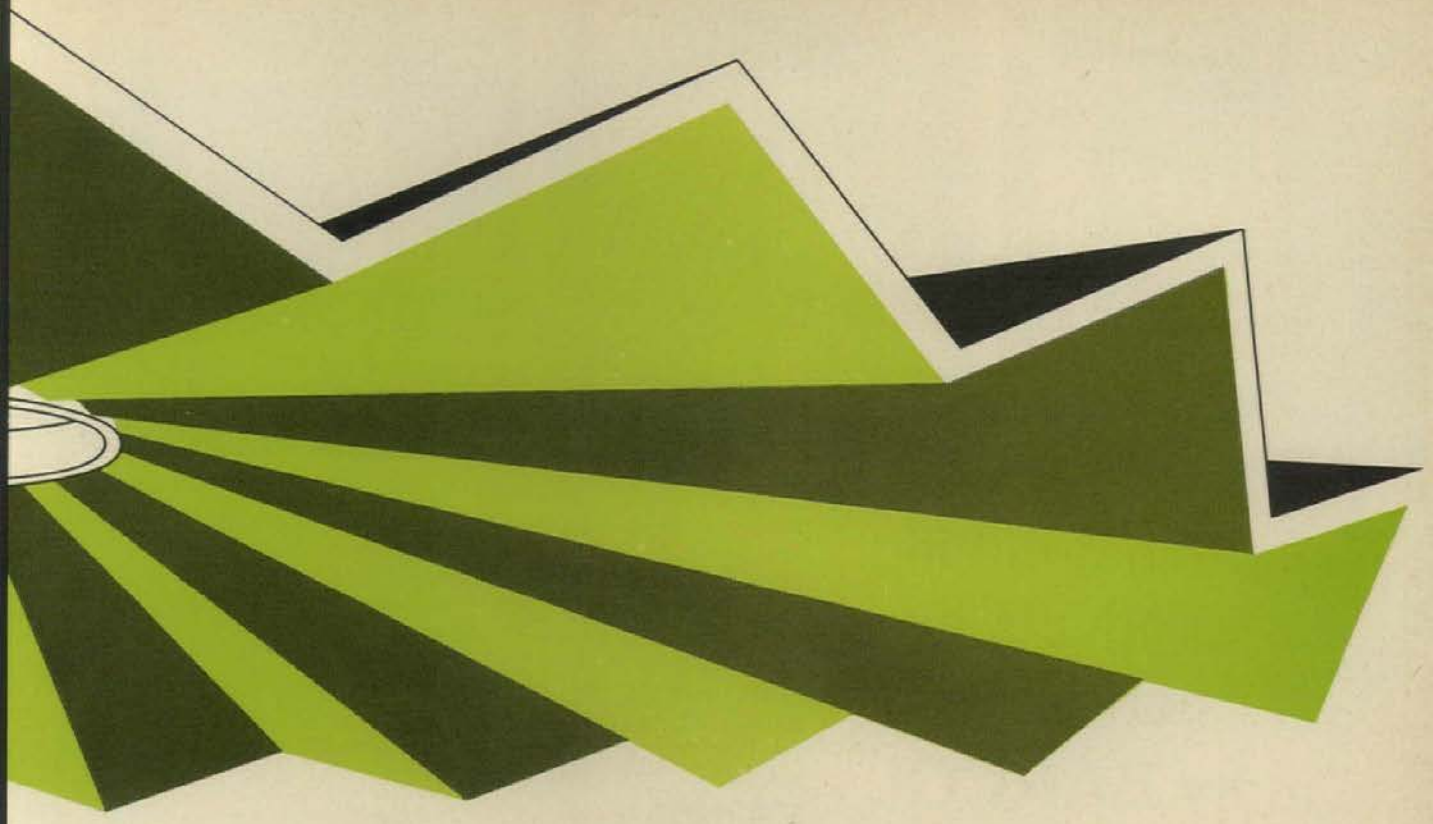
For more data, circle 150 on inquiry card



the most exciting ideas take shape in plywood



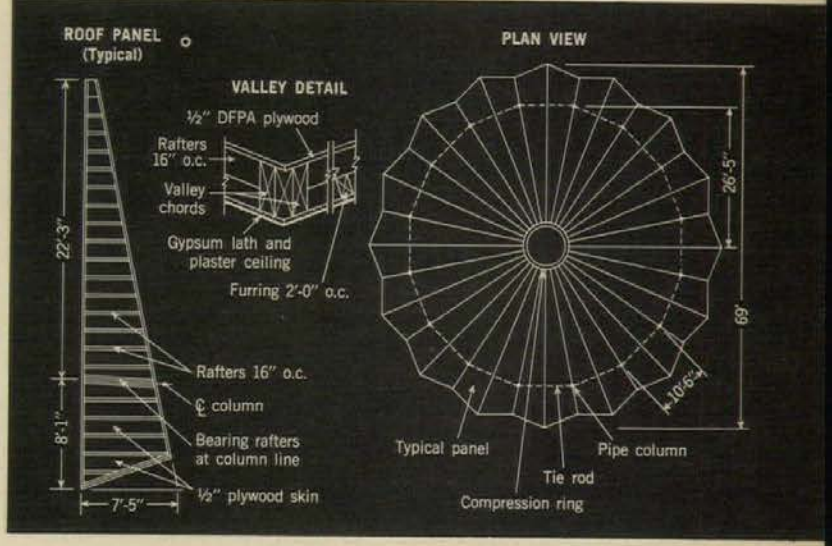


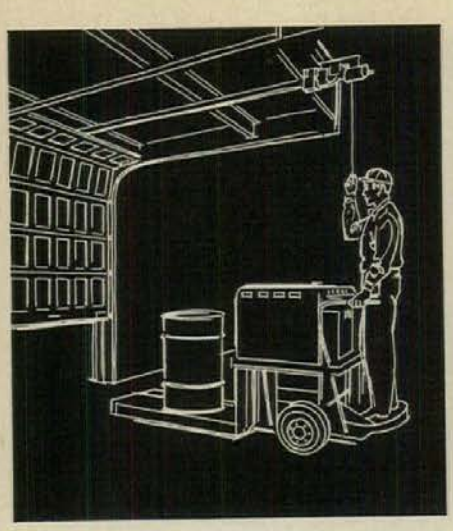


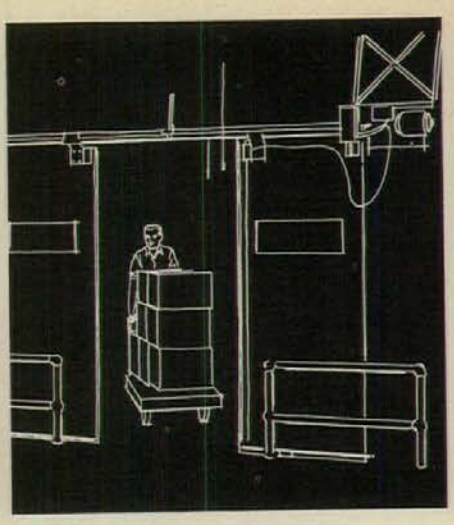
Whirlpool Employees Credit Union Building, St. Joseph, Mich./Edward R. Duffield, Architect/Holland Construction Co., Contractor/Plywood Components Corp., Fabricator

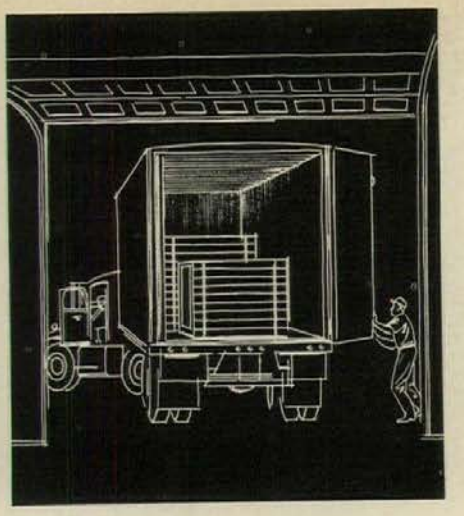
The jaunty cap on this glass-walled office building is a plywood radial folded plate. Its use here proves the versatility of the design idea, more often seen in the august context of churches and public buildings. This plywood roof cost less than any alternative and went up faster. Besides saving money, radial folded plates give large clear-span interiors because no center supports are needed. For more about this and other time-saving, high-strength plywood building systems, send for the new, free booklet "Plywood Construction Systems." We're at Tacoma, Wash. 98401 (USA only).

AMERICAN PLYWOOD ASSOCIATION

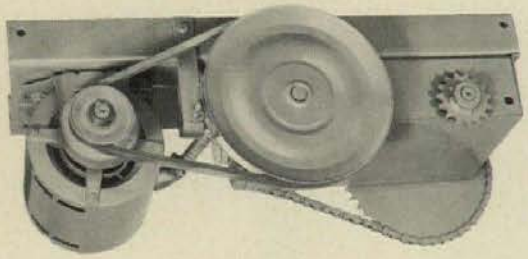


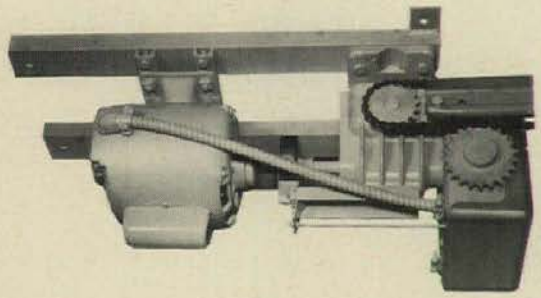


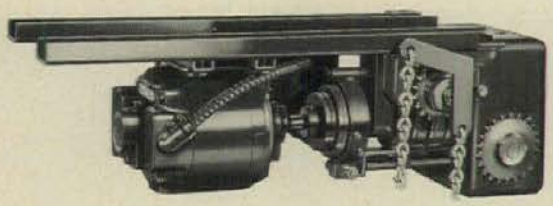




New... cost-cutting products and performance by BARCOL







Automatic door operation substantially reduces building overhead and operating costs. Specifically, the loss of temperature-controlled air . . . inefficient materials handling . . . expensive "walking labor" to open and close doors . . . unnecessary door replacement from accidental damage . . . employee injury . . . all constitute profit-robbing costs that can be be fully *controlled*.

Barcol offers the flexibility needed to reduce these unnecessary costs . . . for all jobs. Three big, power-packed operators meet every requirement for door opening frequency, door size, weight and safety . . . for *all* budgets.

MODEL XL . . . Overhead Type Doors—operating up to 200 cycles per day—and up to 196 square feet in area.

Centrifugal clutch, solenoid-actuated brake and permanently adjusted limit relay are *standard* and *exclusive* with Barcol . . . are designed, engineered and tested to assure long-lasting, dependable operation.

Unique chain-sprocket and belt-drive provide smooth, quiet operation. 110V, 1/3 h.p. motor and overload protector are standard. Drawbar release is for manual operation.

MODEL LR . . . Overhead-Type or Sliding Doors—operating up to 200 cycles per day—and weighing up to 800 lbs—and up to 240 square feet in area.

Engineered for heavier duty, higher frequency door operation. High quality components are designed for longer lasting, trouble-free performance and operating efficiency. Features precision-machined speed reducer, centrifugal clutch, automatic brake, instantly reversing 1/3 h.p. motor (110, 220, 440V), thermal overload protector and disconnect switches as standard. Drawbar release for manual operation. (Clutch release optional).

MODEL MR . . . Overhead-Type, Sliding Doors or Sliding Gates—with unexcelled dependability for high-frequency usage—maximum performance, long life at low cost—greater flexibility in applications and operation.

This heavy duty operator is soundly engineered and designed to withstand rugged high performance on virtually all new and existing doors. Heavy duty speed reducer, centrifugal clutch, clutch release, automatic dual-brake band assembly, reversing relays, thermal overload and disconnect switches, 1/4, 1/3 and 1/2 h.p. motors (110, 220, 440V) are standard. All switch controls also furnished.

WRITE FOR CATALOG D-13015. ALSO SEE SWEET'S.

BARBER COLMAN

BARCOL

BARCOL OVERDOOR COMPANY

Sheffield, Illinois • Subsidiary Barber-Colman Company

For more data, circle 151 on inquiry card



THE MAN from BARCOL

will help you cut owner operating costs

The Man from Barcol is a specialist in protecting and building reputations—yours, the owners and his! This calls for personal qualifications, experience, desire to serve. You'll find your Barcol dealer prepared to:

1. Assist you in analyzing and identifying specific door requirements . . . in order to anticipate and prevent unnecessary door operation problems.
2. Support you with documented proof of product performance that meets or exceeds job requirements.
3. Provide consistently reliable door equipment that's *right for the job* . . . at the least possible initial cost, to achieve maximum owner savings!

The Man from Barcol can demonstrate actually the superior Barcol features and owner benefits that result in faster material handling . . . more accurate temperature control . . . less downtime . . . with more reliable long-term door performance. *Call him today—he's listed in the Yellow Pages. Or, write direct.*

BARBER COLMAN

BARCOL

For more data, circle 151 on inquiry card



Strong vertical emphasis expressed in office building

The 23-story, $14.6-million headquarters building for the American Dental Association in Chicago has strongly expressed (though non-load bearing) columns of concrete with quartz aggregate facing. The recently completed building provides 296,000 square feet of office space, 18,000 square feet of laboratories, a 225-seat restaurant, and a 425-seat auditorium. The building was designed by Graham, Anderson, Probst & White, Inc., and general contractor was the Turner Construction Company.



Community health center has 265-bed "day hospital"

The $12-million, 12-story Community Health Center which will be built at the Brookdale Hospital Center in Brooklyn, New York will contain 265 beds for daytime use, allowing a greater number of people to be treated on a revolving basis while living at home than would be possible with a conventional facility. Architect-engineers are Katz, Waisman, Weber, Strauss; Joseph Blumenkrantz, Frederick Bernhard, consultants.



O'Hare International Airport — Chicago
Architect: C. F. Murphy Associates-Chicago. Terrazzo Contractors: Roman & Co. and John Caretti Co. Jointly-Chicago



Brandeis Department Store — Omaha
Architect: Leo A. Daly-Omaha. Terrazzo Contractors: Demarco Brothers Co. and Universal Terrazzo & Tile Co. Jointly-Omaha.



Forsyth County Hospital — Winston Salem
Architects: Lashmit, Brown & Pollock-Winston-Salem. Terrazzo Contractor: Carolina Marble & Tile Co.-Winston-Salem.

IN CHICAGO...
O'Hare Airport

IN OMAHA...
a department store

IN WINSTON-SALEM...
a county hospital

All use miles and miles of Terrazzo Floors

MARBLE CHIPS FOR LIFETIME BEAUTY BY

Marble Products Company

67 Peachtree Park Drive
Atlanta, Georgia 30309
Phone 404/355-0200

For more data, circle 152 on inquiry card



Suppose you run a 2700-bed hospital:

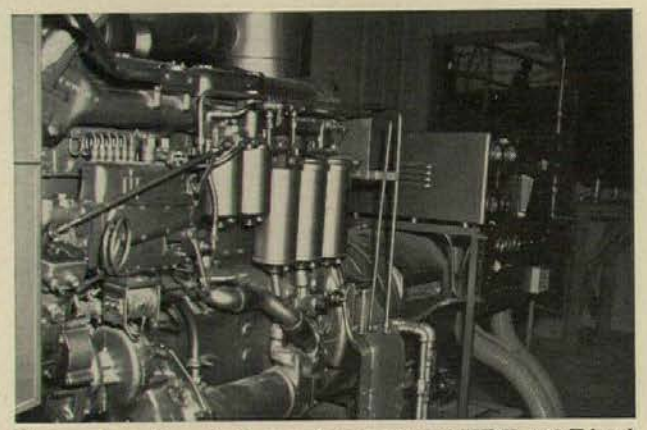
What do you do when the lights go out?

When the big November blackout turned the power off at Kings County Hospital Center, Brooklyn, International® engines went on. Six of them. Driving 150 and 75 kw generators to supply key areas of seven buildings—including corridors, blood bank, operating rooms, food storage and X-ray centers.

The engines ran continuously—just as they were supposed to—until power was restored eight hours later.

Kings County prepared for an emergency before it hit. And they're not through with their power modernization program. By May they'll have nine International engines on standby duty.

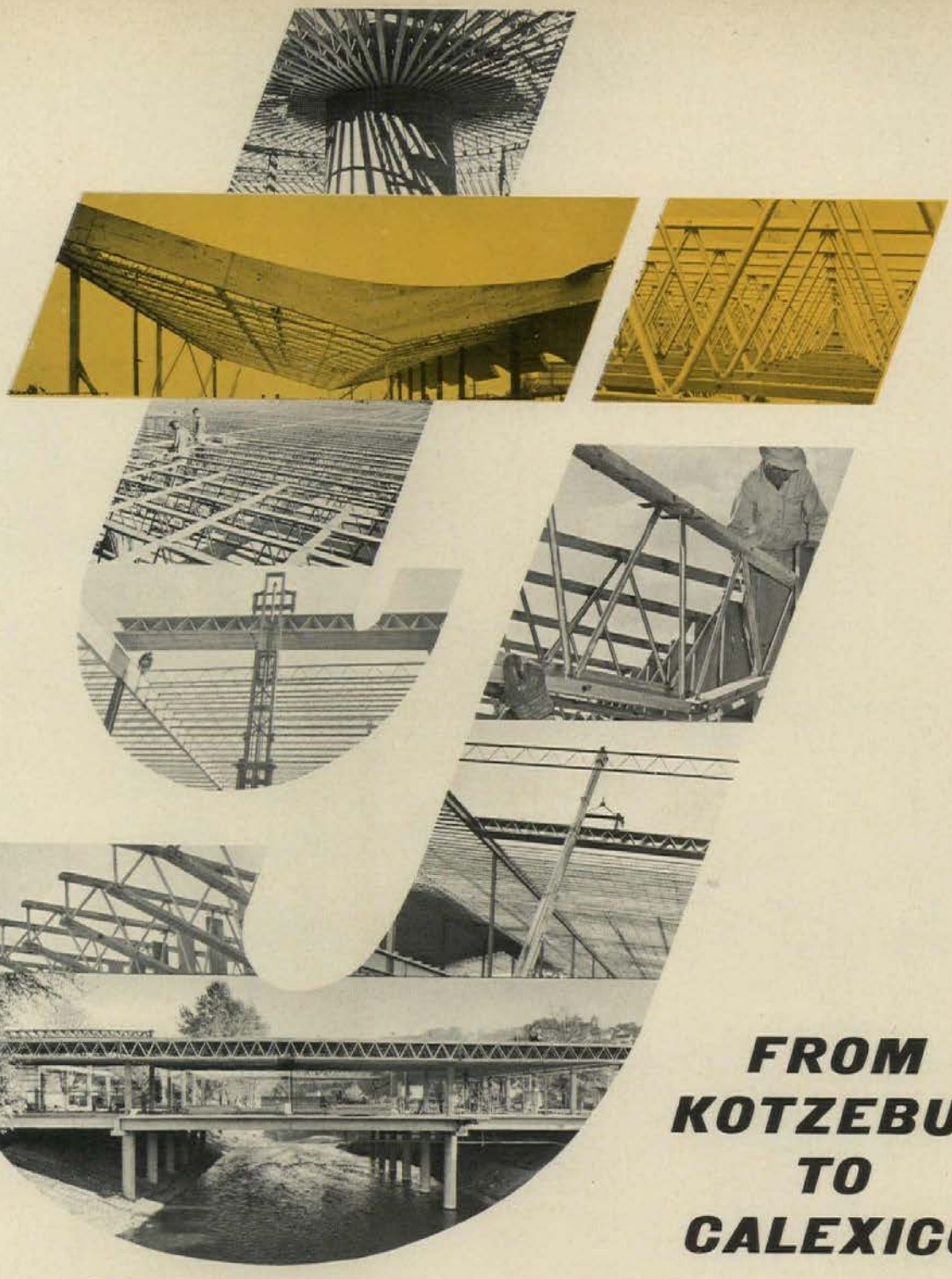
How about your emergency power—is it as good as it should be? Get the facts on International engines. They start fast and easy. Run when the chips are down. Write Engine Information, International Harvester Company, Melrose Park, Illinois 60160.



Power when there isn't any: International UDT-429 Diesel drives a 75 kw generator. 150 kw generators are driven by International UDT-817 engines.

INTERNATIONAL ENGINES

For more data, circle 153 on inquiry card



FROM KOTZEBUE TO CALEXICO

Trus Joist spans the continent. Fitting analogy, too, because TJ is in the span business with both roof and floor systems.

Architects across the country are finding new design freedom with this wood and steel joist. It provides spans up to 100 feet and can be custom fabricated in almost any profile.

Economy is practically Trus Joist's middle name. Light weight (most sizes can be erected by two carpenters) means savings on footings, foundations and bearing walls. Nailable chords allow for direct application of low-cost roofing, ceiling and flooring materials. Other inherent advantages include minimum deflection, open webs for duct work, three week delivery and many more.

Check Sweet's (2b-Tr) or write for our design manual. There's no charge. And feel free to hop up to our newest Eskimo school in Kotzebue, Alaska, (just north of the Arctic circle) or down to our latest warehouse in Calexico, (on the Mexican border). We have distributors in most major cities and factories in California, Arizona, Idaho. Oregon, Iowa and W. Canada.

trus Joist

Route 1, Hiway 20, Boise, Idaho

For more data, circle 154 on inquiry card



Wide open for trouble but not for long.

The 6-inch-wide glass-fiber-reinforced tape stops trouble before it starts. Doesn't give trouble a chance to start because it eliminates the most trouble-prone part of roofing: the joints. Owens-Corning Taped Joint Roofing System actually "welds" the Fiberglas* insulation boards into a single unit. They act as an expansion joint to absorb normal deck movement.

This unitized construction (with large 4′ by 4′ boards that cut down even the number of taped joints) permits Fiberglas insulation to act as a slippage plane between the deck and the built-up roof.

Now buckling, ridging, and wrinkling are minimized. Asphalt absorption eliminated.

Now you have roofing that lasts longer. With



nsulation that keeps its efficiency. Adds
p to greater economy.
Want to know more about the trouble-stopping
'iberglas Taped Joint Roofing System?
Vrite: Owens-Corning Fiberglas Corporation,
ndustrial & Commercial Division,
17 Fifth Avenue, New York,
Iew York 10022.

OWENS-CORNING
FIBERGLAS

*T-M (REG. U.S. PAT. OFF.) O-C.F. CORP.

Dividend Engineering—to stretch your building dollar while improving building performance.

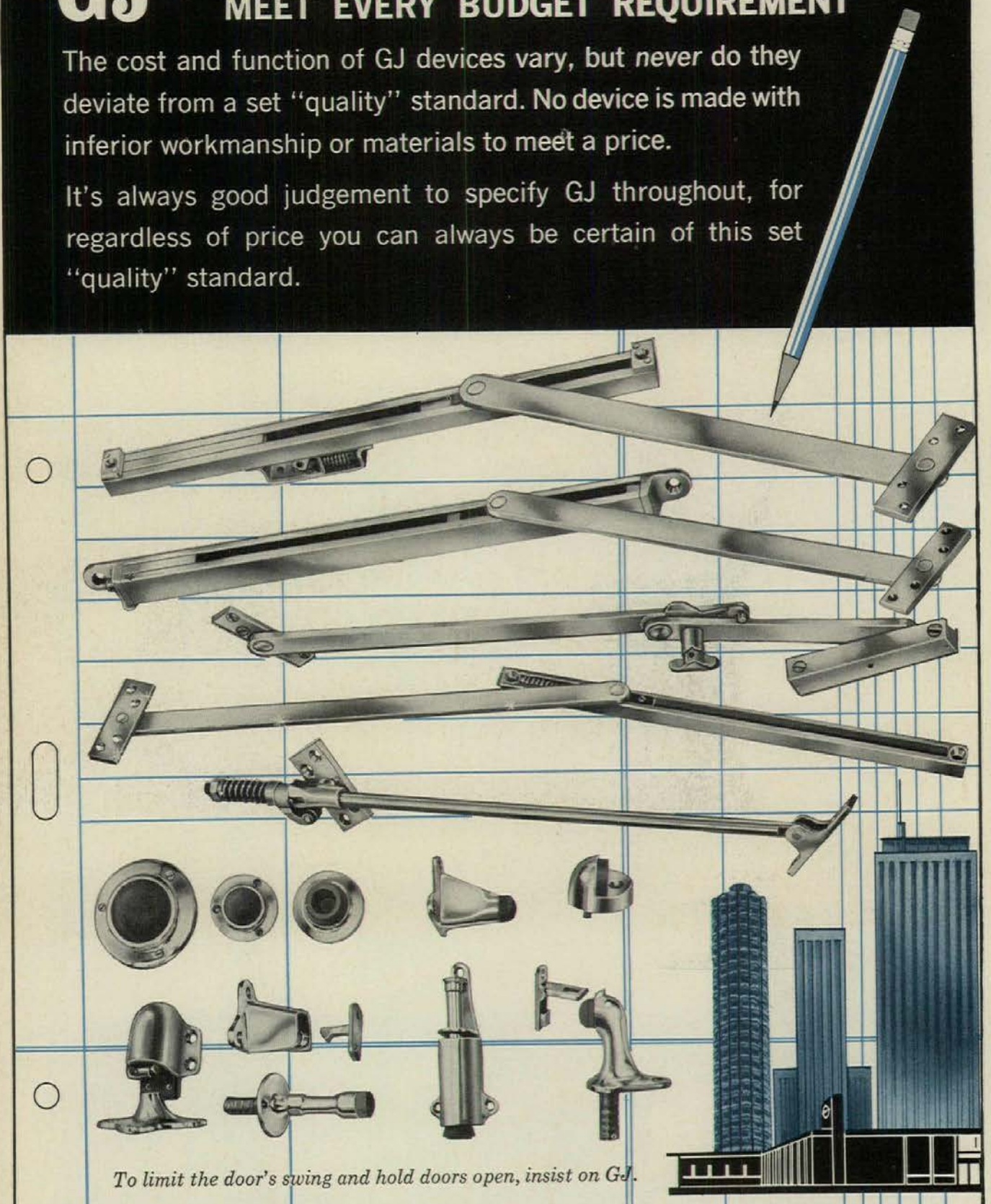
USE DE

For more data, circle 155 on inquiry card

GJ's VARIETY OF DOOR CONTROL DEVICES MEET EVERY BUDGET REQUIREMENT

The cost and function of GJ devices vary, but *never* do they deviate from a set "quality" standard. No device is made with inferior workmanship or materials to meet a price.

It's always good judgement to specify GJ throughout, for regardless of price you can always be certain of this set "quality" standard.



To limit the door's swing and hold doors open, insist on GJ.

GLYNN-JOHNSON CORPORATION / 4422 North Ravenswood / Chicago, Illinois 60640

For more data, circle 156 on inquiry card

For more data, circle 157 on inquiry card



It's no trick to get a built-in range, a built-in oven, a built-in dishwasher. But only Mosaic Tile can get you built-in color compatibility.

We're just built that way.

Every Mosaic tile color is created to harmonize with every other Mosaic tile color. And with any accessories or materials that happen to come along.

Well, see for yourself. Notice in the picture how the Satin-Glaze 1201 Light Green wall tile and the Bluegrass Green Quarry floor tile are perfect running mates for the crisp grain of the oak cabinets.

Then there's our countertop of Evertex 6360 White tile. It not only gets along beautifully with that high-flying Camelot oven hood, but with flame and food acids as well.

It just goes to show: with Mosaic Tile, anything goes.

For prices, samples, colors and availability of our new Byzantile II, get in touch with any Mosaic Tile Representative, Service Center or Tile Contractor. Check the Yellow Pages under "Tile Contractors-Ceramic". Or, send us your inquiries directly. Write to: The Mosaic Tile Company, 55 Public Square, Cleveland, Ohio 44113.

MOSAIC®

"Mosaic" is the trademark of The Mosaic Tile Company.



A light that cleans itself. New G-E Quartzline® Lamp... burns brighter, cleaner, longer

Seven years ago General Electric introduced the iodine-quartz lamp. A light source that uses iodine to stay cleaner and brighter longer. Now there are more than 60 types available for a growing variety of uses. The compact one you see here gives the light of six 100-watt household incandescents, yet will fit into your vest pocket. Find out how G-E Quartzline lamps can work for your business. See your G-E Large Lamp Agent or write: General Electric Co., Large Lamp Dept., C-600, Nela Park, Cleveland, Ohio 44112.

GENERAL ELECTRIC







THE BEST THINGS IN LIGHT ARE G.E.

For more data, circle 158 on inquiry card

For more data, circle 159 on inquiry card



What do fancy cars and space ships have in common with Simmons new line of dormitory furniture?

Bill Schmidt.

He's one of the country's top designers. A lot of automotive manufacturers and space engineers look to Bill when they need top-drawer designs.

It makes sense. He's proven his mettle on more than one test track, sweated out his share of countdowns.

When Simmons wanted a new furniture design—one that really had functional as well as esthetic benefits—they went to Bill Schmidt, too. He had some revolutionary ideas and helped turn them into practical furniture for you.

Simmons new line combines a unique modular concept with styles suitable for any interior design.

Don't buy another stick of dormitory furniture until you see Simmons new PACE line. There's a surprise for you in the drawer!

SIMMONS

CONTRACT DIVISION • MERCHANDISE MART • CHICAGO, ILL. 60654

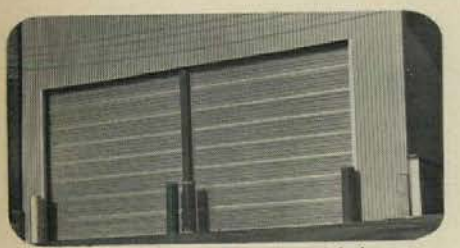
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For more data, circle 161 on inquiry card

COMPLETE LINE, A
OMPLETE DOOR SERVICE
ROM ONE DEPENDABLE SOURCE...

specify

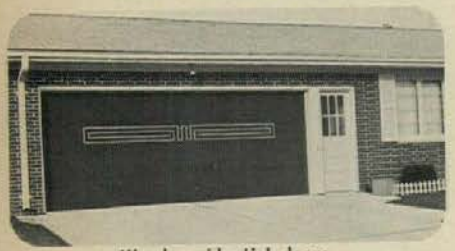
WAGNER
GARAGE DOORS



Fiberglass aluminum commercial doors



Wood commercial doors



Wood residential doors



Fiberglass aluminum residential doors

Here's today's finest line of Fiberglass aluminum, Wood and Steel Doors for residential and commercial applications. Available in a full range of types, styles, designs and sizes —including sectional and one-piece overhead models. Electric operators with push-button or radio control. WRITE FOR NEW BULLETIN AR-66CC.

WAGNER
MANUFACTURING COMPANY
Cedar Falls, Iowa 50613



Wide World Photos

Construction begins on Kennedy Memorial Grave

The first granite slabs, the two biggest weighing 22,000 pounds each, were lowered into place at Arlington National Cemetery on April 11, marking the start of construction of John Carl Warnecke's design for the John F. Kennedy Memorial Grave (January 1965, pages 12 and 13). Construction, except for landscaping, is expected to be completed by late August or early September.

CHANGING YOUR ADDRESS?

If you're moving, please let us know five weeks before changing your address. Use form below for new address and attach present mailing label in space provided

ATTACH
PRESENT MAILING LABEL
HERE

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CONTACT THESE REGIONAL DISTRIBUTORS FOR MORE INFORMATION AND YOUR LOCAL SOURCE OF SUPPLY

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3680 Airpark Street, Memphis

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THE EMERSON CO., 2202 Polk Street
P. O. Box 2114, Houston

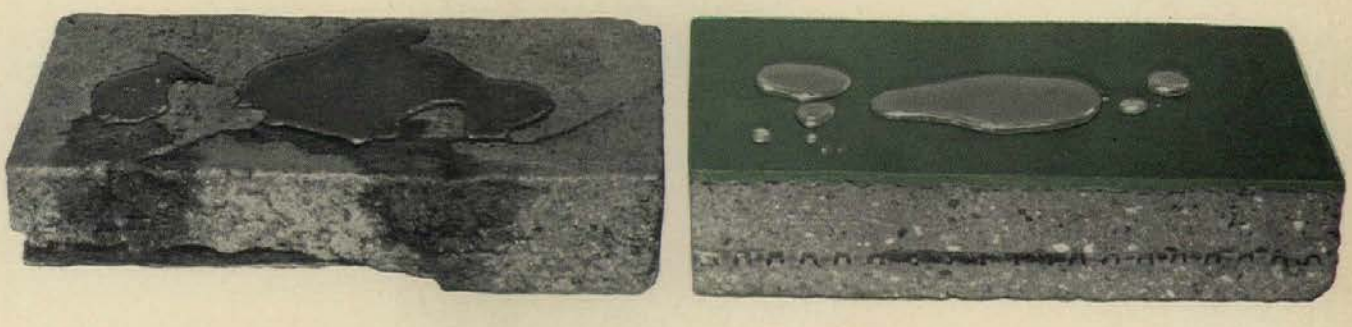
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E. 41 Gray Avenue, Spokane 99202

WISCONSIN
WISCONSIN S & S SALES
404 North Second, Milwaukee

GENERAL ELECTRIC

For more data, circle 162 on inquiry card

Concrete disintegrates...



...G-E Silicone Traffic Topping doesn't!

Let it snow and rain.
Let it freeze and thaw.

General Electric's new silicone rubber Traffic Topping protects walkways, ramps, parking areas, porches, swimming pools, balconies and other traffic areas against moisture damage.

Once on, Traffic Topping stops costly maintenance. It won't let water in, yet "breathes" to let any moisture out. Because the base material is silicone rubber, the most durable, weatherproof elastomer known (the same as Silicone Construction Sealant), Traffic Topping stays flexible and moisture proof.

Traffic Topping won't crack, it's not brittle, and it forms a tough bond to concrete, wood, steel and other floorings. It's remarkably skidproof and is not damaged by salt. Grease and oil are easy to remove. It never needs painting.

To date, no other outdoor coating has been able to stand up to weather and wear for very long. Traffic Topping will. For many years. On patios, steps, garages, runways, for instance. Anywhere there's water and traffic. For complete specifications, test results, application data, color selection and local distribution, please write Section BG6201, Silicone Products Dept., General Electric Co., Waterford, N.Y. 12188.



Quick, easy application. Just prime the surface, add catalyst to Traffic Topping, mix and trowel on. No expensive equipment needed. Only one coat is usually required, so application costs are low.



Permanent flexibility. Traffic Topping is resilient . . . expands and contracts without cracking even at temperatures as high as 300°F, as low as —65°F.



Safe, anti-skid surfaces. Even when wet, Traffic Topping provides superior traction. Excellent wear and abrasion resistance make it ideal for heavy traffic areas.

GENERAL ELECTRIC

For more data, circle 163 on inquiry card

MEET MR. ZIP

OOPS!...HE WAS THERE A MOMENT AGO

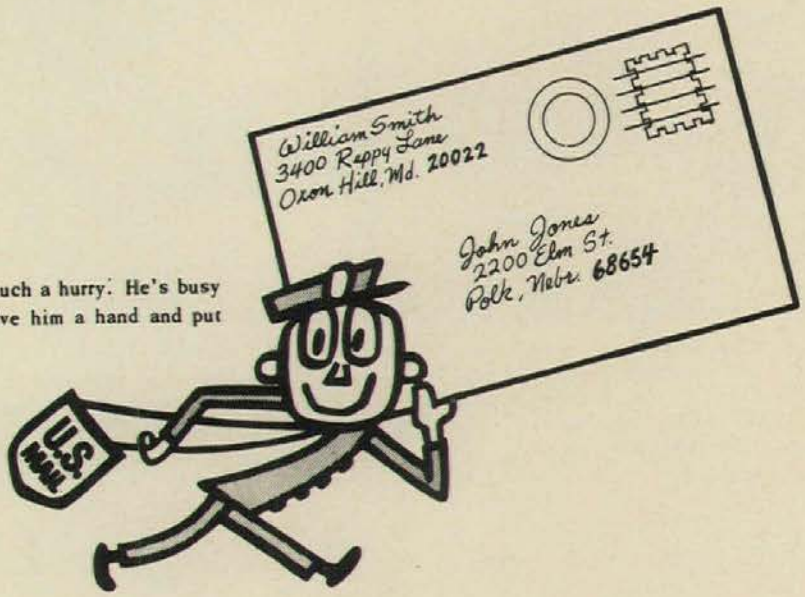
SPEEDY LITTLE FELLOW, ISN'T HE?

Here's how he works. There are 34,000 post offices in the United States. No one could be expected to know the exact location of every one. So, mail often must be sorted several times . . . first by section of the country, then by state, then by different areas of the state, then by city, etc.

However, an address with ZIP Code immediately tells the mail clerk which major post office (or sectional-center) is closest to the final destination. This can eliminate several time-consuming and expensive sortings.

With fewer sortings, mail moves faster and more efficiently . . . and at less cost too. Cost and efficiency are important because the U.S. is in the midst of a mail explosion. Seventy-two billion pieces of mail will be delivered this year.

That's why Mr. ZIP is in such a hurry. He's busy saving time and money. Give him a hand and put ZIP into your mail.





6607

New Textured Wormy Chestnut Marlite



Textured Wormy Chestnut Marlite adds a beautiful new dimension to walls in any room anywhere!

Touch it. You can feel the texture. Wash it. You can't harm its beauty.

It's the newest and most exciting paneling you can specify for your building and remodeling projects. Marlite Wormy Chestnut reproduces the beautiful texture of natural Wormy Chestnut, with the Marlite soil-proof finish that stays like new for years. You can actually see and feel the texture in this unique wood-grained surface. And when you specify Marlite Wormy Chestnut you create more beautiful interiors, more satisfied clients. Get complete information from your building materials dealer, Sweet's File, or Marlite Division of Masonite Corporation, Dept. 605, Dover, Ohio.

Marlite®
plastic-finished paneling

ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

MARLITE BRANCH OFFICES AND WAREHOUSES: 1721 Marietta Blvd., N.W., Atlanta, Georgia 30318 • 57 Smith Place, Cambridge, Mass. 02138 • 4545 James Place, Melrose Park (Chicago), Illinois 60160 • 1199 Great Southwest Parkway, Grand Prairie (Dallas), Texas 75050 • 777-139th Ave., San Leandro, Cal. 94578 • 1622 Phoebe St., LaMirada (Los Angeles), Cal. 90638 • 39 Windsor Ave., Mineola, L.I. (New York) 11501 • 2440 Sixth Ave. So., Seattle, Wash. 98134

For more data, circle 165 on inquiry card

NEW!

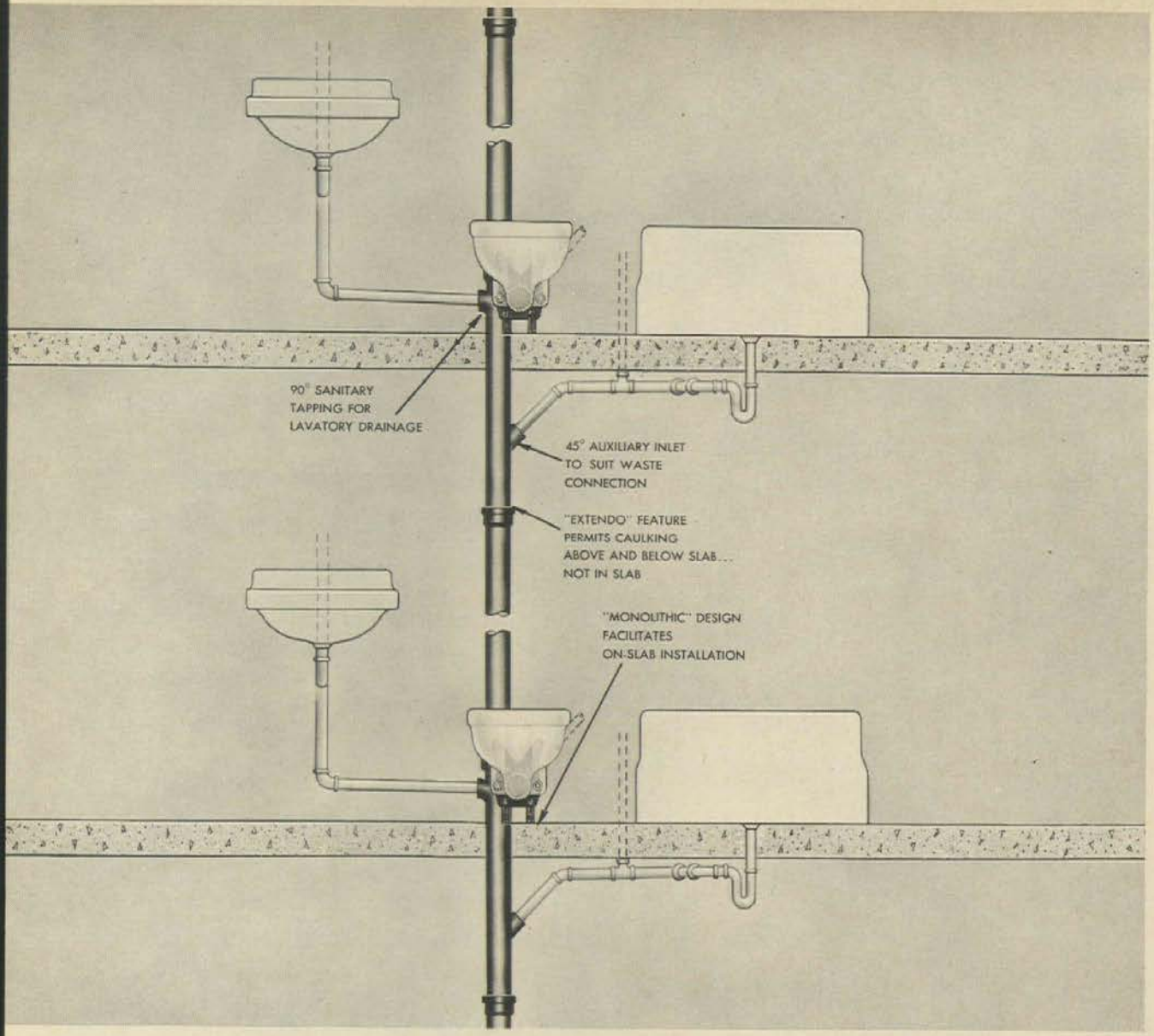
ZURN

"EXTENDO" SYSTEM®...



2 MORE FEE

©1966 ZURN INDUSTRIES, INC.
PAT'S. & PAT'S. PEND. REG. T. M.



. BUT A LOT LESS LEGWORK!

Sure this new "Zurn System" for supporting off-the-floor water closets saves time, effort, and materials. Its EXTENDO feature enables installers to make stack hub connections using modular lengths of soil piping without resorting to costly cutting, fitting, and making extra joints in multi-story restroom installations.

But that's only part of the story! Only from Zurn can you get a fixture supporting medium that incorporates all these advanced features: "Monolithic" design for modern slab construction . . . 45° auxiliary inlet on spigot end in one of four locations around stack to suit waste connection . . . 90° *sanitary* auxiliary tapping above slab for lavatory waste connection . . . common vents in all back-to-back designs . . . blow-out and siphon-jet, hub and spigot, solder or threaded connections.

Come to think of it, we save you a lot of guesswork, too.

TO: **ZURN INDUSTRIES, INC.**
Hydromechanics Div.
Erie, Pa. U.S.A. 16512

☐ Please forward additional information regarding the new Zurn "Extendo" System

Name_____
Title_____
Type of Business_____
Address_____
City_____ State_____ Zip_____

ZURN

A Step Ahead of Tomorrow

ZURN INDUSTRIES, INC.
HYDROMECHANICS DIV. • ERIE, PA., U.S.A.

For more data, circle 166 on inquiry card

Only FLOATING FLOORS systems have 100% free underfloor access



and these 15 other advantages for computer rooms.

1. Greater strength—.080" deflection under 1,000 lb. load.
2. Unique design eliminates stringer interference.
3. Precision-made to .005" tolerance.
4. Self-grounding—no mechanical devices needed.
5. Positive locking pedestal head assures stability.
6. All panels completely interchangeable.
7. Fireproof—all metal.
8. Plastic edge recessed into panel—eliminates overhang.
9. Easy to install.
10. Choice of two panel sizes —18¼" or 24".
11. One-piece tile covering, if desired.
12. 10-year guarantee on availability of replacement parts.
13. Choice of materials—aluminum or steel.
14. Local distribution assures reliable service.
15. Available throughout the world.

Floating Floors, Inc. is part of the world-wide National Lead Company, a leader in metals and metal products for the past 75 years.

We invite you to compare Floating Floors raised flooring with all others. For further information on either Floating Floors aluminum or steel systems, write today for detailed brochure.

FLOATING FLOORS is a trademark of Floating Floors, Inc. for raised flooring systems.

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a helpful portfolio on controlling condensation in built-up roof construction

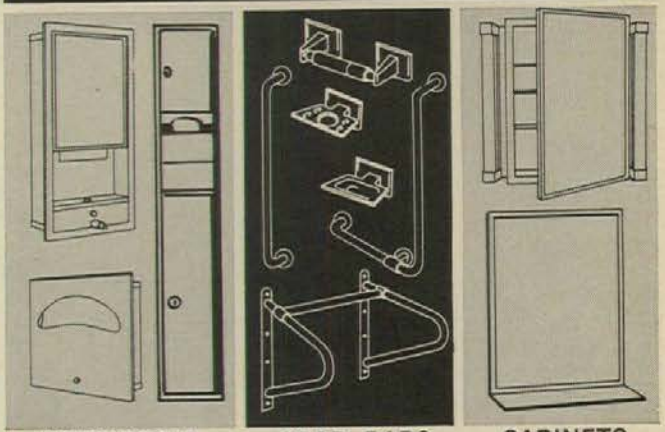
2 ways to help stop failures in built-up roofs

Specify **PyroKure® 600** or **VaporStop 710** as vapor barriers. We've prepared a "Helpful Portfolio" to give you all the facts on the new Sisalkraft principle of water/vapor protection. It's Free. Send for it, today. Contact: Sisalkraft, 73 Starkey Avenue, Attleboro, Mass.

ST REGIS
SISALKRAFT DIVISION

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SPECIFY WITH CONFIDENCE...CHOOSE FROM THE COMPLETE PARKER LINE!



WASHROOM EQUIPMENT | GRAB BARS ACCESSORIES | CABINETS MIRRORS

BY PARKER

The most complete line of quality lavatory and bathroom cabinets, mirrors, accessories and washroom equipment manufactured by a single company! Craftsmanship and functional beauty are built into every product . . . specials are easily obtainable upon request! Write for complete 32 page catalog or technical data sheets to:

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50 HANOVER STREET, MERIDEN, CONN. Dept. "A"

For more data, circle 183 on inquiry card



Look how we expanded the revolution we started in good light and good looks!

Sleek new pole-top-mounts for 2, 3, or 4 *Profile lights*®

Now Profile Light offers you a choice of four pole-top-mounts for even, efficient light. The new options are 2, 3, and 4.

Look them over.

See how you can place light only where you want it. The revolutionary asymmetric reflector of Profile Light makes use of more than 85% of the beam. This means less spill. Less waste. Less glare.

The mounts for Profile Light are cast-aluminum, one-piece, and easy to install on any pole. This means less labor. Fewer poles. Fewer fixtures.

And the sleek designs of the mounts look like the Profile Light itself. Beautiful.

Call your Crouse-Hinds salesman for full information on Profile Light and pole-top-mounts. Or write for Bulletins 2775, 2789. Crouse-Hinds Company, Outdoor Lighting Dept., Syracuse, N. Y. 13201.

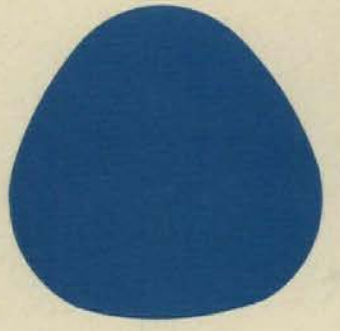


Unique rectangular beam pattern produced by one Profile Light.

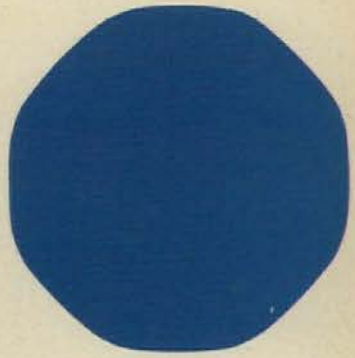


New twin mount produces a giant rectangle.

CROUSE-HINDS



Triangle pattern results from new three-light mount.



Four Profile Lights on pole-top-mount produce an evenly illuminated circle.

For more data, circle 168 on inquiry card

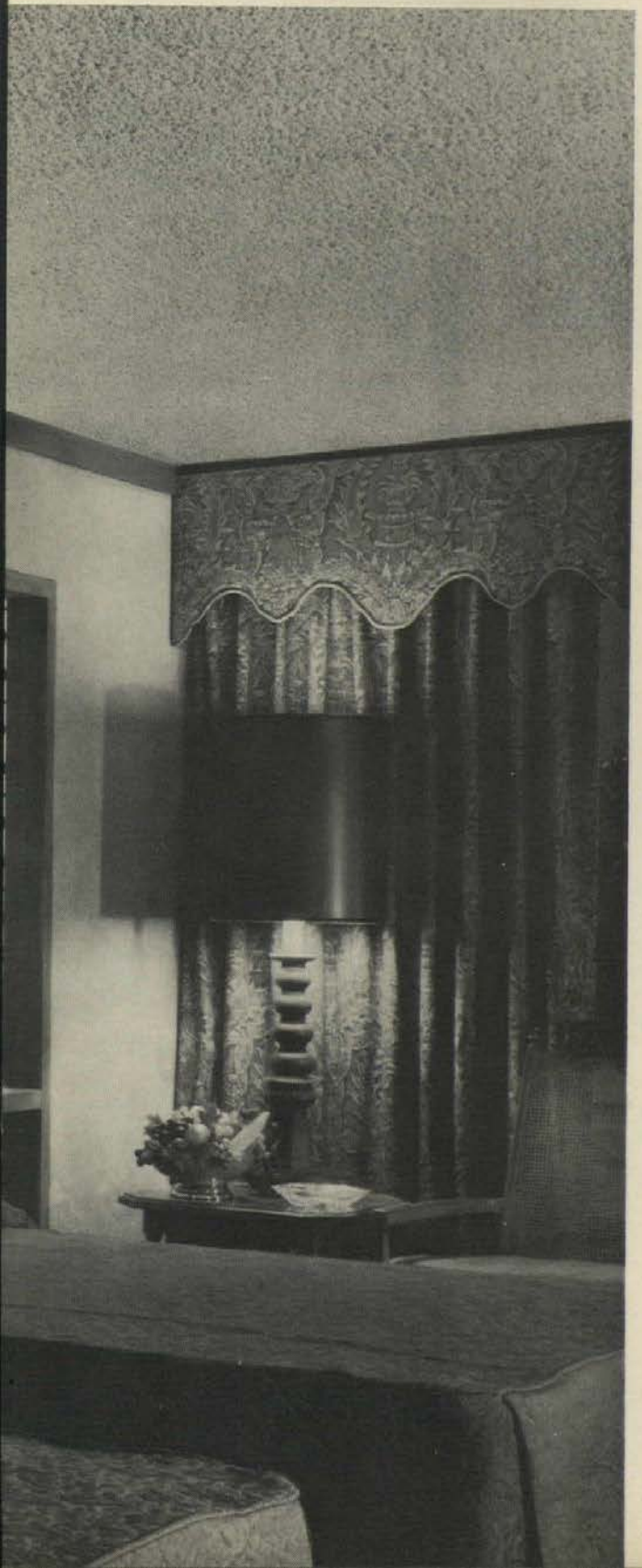
BREAKTHR

BY UNITED



OUGH!

STATES GYPSUM



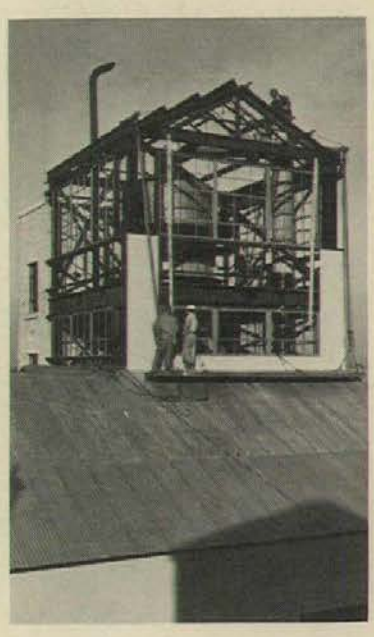
ACOUSTONE Acoustical Tile in new GLACIER pattern presents a deep-fissured surface for ceilings that is unique in its ruggedness, unique in its natural beauty. No problem of monotony in appearance because no two tile textures are exactly alike. No break in the one-surface look because the fissures minimize all joint lines. GLACIER provides a noise reduction coefficient of .80. It is adaptable to all standard installation systems for acoustical ceilings and meets building code requirements as an incombustible product. GLACIER is the latest advance in ACOUSTONE Ceiling Tile...a name that is synonymous with high-quality sound control in construction.

GLACIER ACOUSTONE* Mineral Acoustical Tile...
another breakthrough by

UNITED STATES GYPSUM

For more data, circle 169 on inquiry card

You're looking at a new way to enclose a building



It's a panel of Hetrofoam®-based polyurethane foam between asbestos-cement sheeting, developed by National Gypsum Company.

The new panel weighs only 2.4 pounds per square foot, so it can save dollars in handling, erection, and building design.

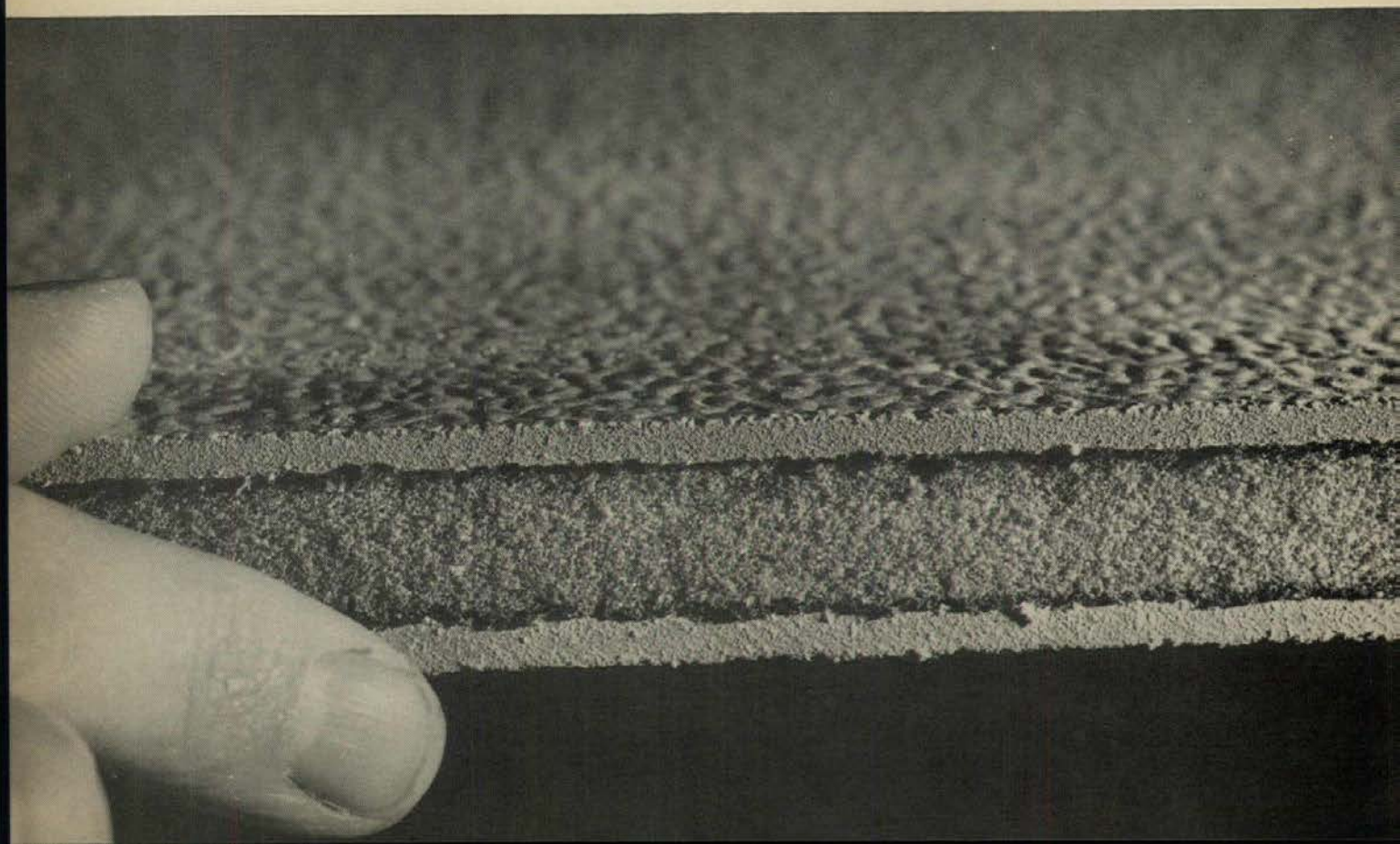
Although it is only 7/8" thick, the Hetrofoam-based core—with a K value of .15—provides excellent insulation. Its essentially closed-cell structure bars moisture. It is rated nonburning by the ASTM 1692-59T test.

For more complete information on all the benefits Hetrofoam provides in architectural and construction applications, please write us. Durez® Plastics Division, Hooker Chemical Corporation, 8006 Walck Rd., North Tonawanda, N. Y. 14302.

HOOKER CHEMICALS® PLASTICS

DUREZ PLASTICS DIVISION

For more data, circle 170 on inquiry card



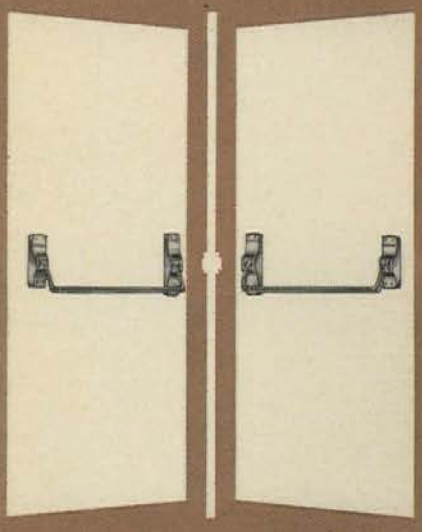
THE ONLY COMPLETE LINE OF FIRE EXIT HARDWARE

Von Duprin offers you the only complete line of Fire Exit Hardware for A, B, C, D and E labeled fire doors. Rim. Mortise Lock. Concealed vertical rod. Surface mounted vertical rod. All providing the Von Duprin high standard of quality and dependability. All listed by Underwriters' Laboratories. For complete details on the only complete line of Fire Exit Hardware, write for catalog bulletin 652.

VON DUPRIN DIVISION • VONNEGUT HARDWARE CO., INC.
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Von Duprin EXCLUSIVE

88-F RIM TYPE FIRE EXIT HARDWARE

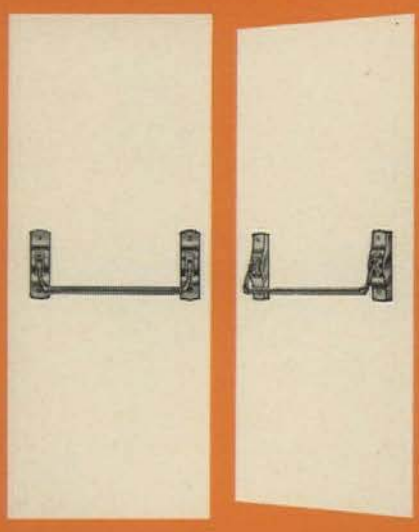


Von Duprin rim devices are listed for A, B, C, D and E labeled doors in single openings up to 3'6" x 7'2" and the 8854 mullion for double door openings up to 7'0" x 7'2".

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FIRE EXIT HARDWARE
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Von Duprin EXCLUSIVE

CONCEALED FIRE EXIT HARDWARE



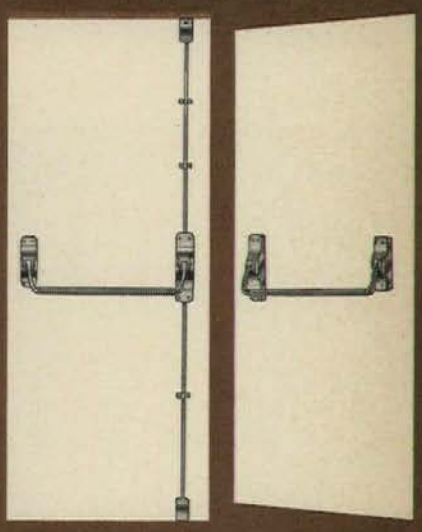
Listed for A, B, C, D and E labeled doors in combination with mortise devices in double door openings up to 7'0" x 7'0". Also for B, C, D and E labeled doors up to 8'0" x 7'0".

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Von Duprin NEW

8817 SURFACE MOUNTED FIRE EXIT HARDWARE

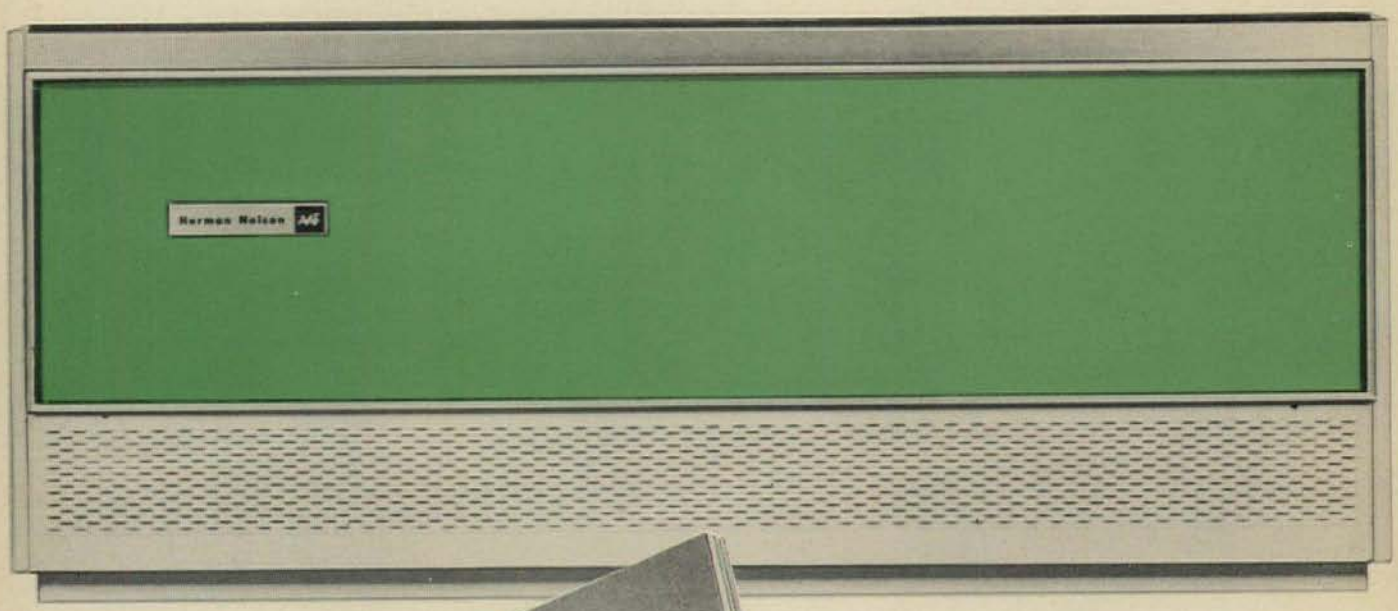


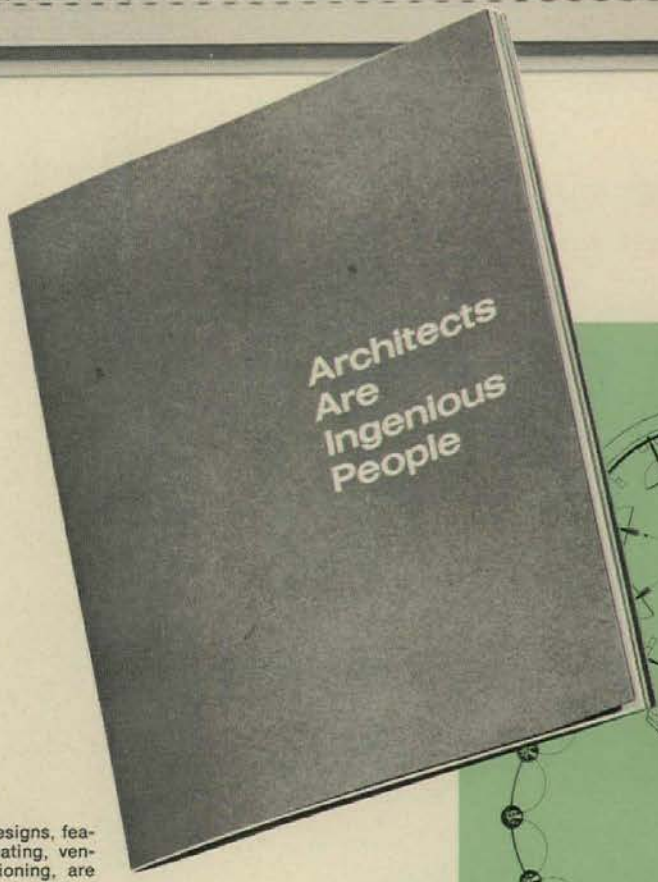
Von Duprin surface mounted vertical rod devices are listed for A, B, C, D and E labeled doors in combination with mortise devices in double door openings up to 7'4" x 7'2".

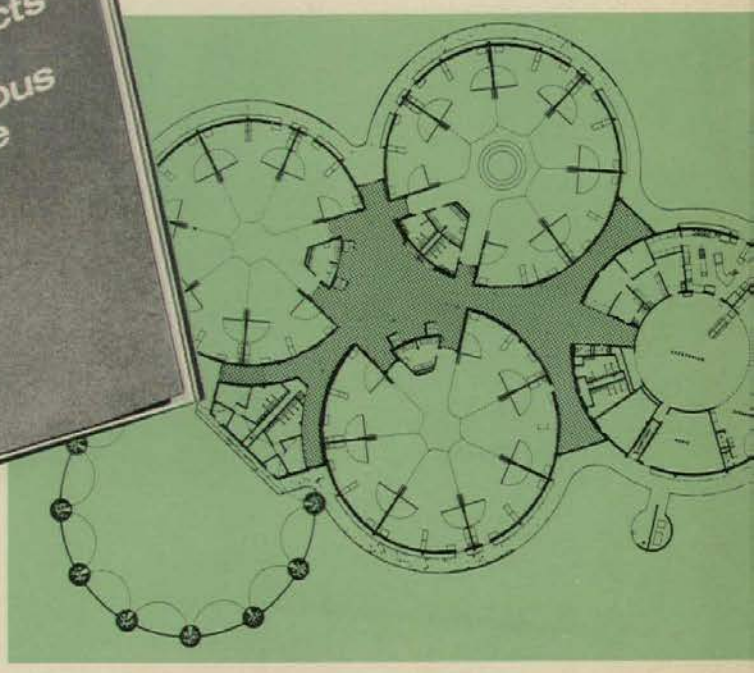
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VON DUPRIN IND'PLS, IND.

AAF/Herman Nelson means...

INGENUITY







30 outstanding school designs, featuring unit-ventilator heating, ventilating, and air conditioning, are described in this new 36-page brochure. Architects may secure copies by writing on letterhead. (Illustrations shown at right taken from brochure.)

unlimited

There's no end to the design possibilities with Herman Nelson unit ventilators for your classroom heating, ventilating, air conditioning.

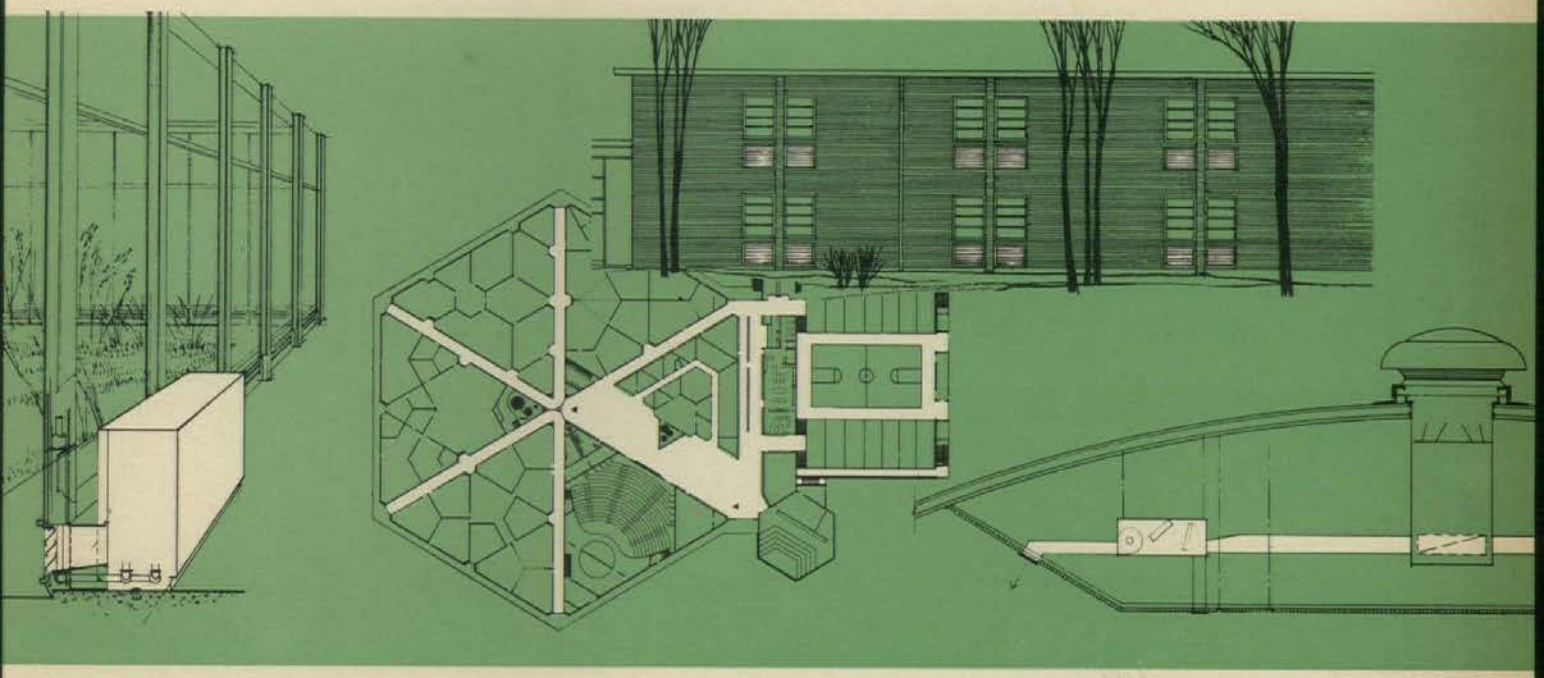
Today, Herman Nelson unit ventilators are delivering fresh clean air in windowless schools, circular schools, cluster schools, flexible schools —in just about every variation of the educational-building theme that's been tried.

And we're going to keep it that way. That's why we want to work with architects who are weighing new ideas. Some of the flexibility we've already built into Herman Nelson unit ventilators includes:

- A wide variety of fresh-air intake arrangements.
- Models for floor, ceiling, wall, concealed, even inverted applications.
- Modern, architecturally-styled units with companion classroom furniture, available in your choice of 4 base colors and six decorator panel colors.
- New fan designs to operate on plenum-ductwork systems of higher static pressures.
- "Now or later" air conditioning units.
- New SC UNIvent unit ventilator featuring self-contained refrigeration. Use in existing schools.

If you've got a new idea you're considering, give us a chance to help it along. Bank it off your Herman Nelson representative, or write: American Air Filter Company, Inc., 215 Central Avenue, Louisville, Kentucky 40208. Available in Canada.

AAF **Herman Nelson**
SCHOOL PRODUCTS DIVISION



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We have a new wrinkle at Reynolds

Reynolds Aluminum CCP—Concealed Clip Panel—hides the joints, covers the fasteners.

Reynolds has a new aluminum siding panel that goes up without a visible joint or fastener showing. It's CCP—Concealed Clip Panel—and the little "wrinkle" is what does the trick. This is a double-channel interlock at the edge that joins the panels together tightly, permanently, and invisibly.

CCP comes in lengths up to 39 ft., so you can usually get the full height you want without visible joints and lap loss. Panels can expand and contract freely, and they can be moved and used again, since they're never pierced by fasteners.

This new siding is available in a handsome stucco-embossed texture in four gauges, in a natural finish and eight baked-on enamel Colorweld® colors.



Get details on Reynolds CCP or on any of the six other siding configurations, or on any of the full line of building products from Sweet's Catalog, Architectural and Industrial File, section 8b/Rey, or write *Reynolds Metals Company, Building Products and Supply Division, P.O. Box AR-66, 325 W. Touhy Ave., Park Ridge, Ill. 60068*

Watch "The Red Skelton Hour," Tuesday, CBS-TV

REYNOLDS
where new ideas take shape in
ALUMINUM

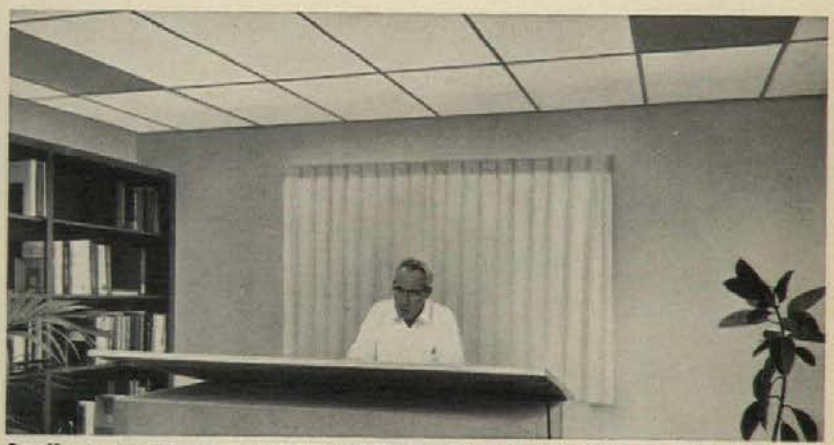
BUILDING PRODUCTS & SUPPLY DIVISION



BRING THE SUN INDOORS WITH 3M BRAND ELECTRIC RADIANT HEATING PANELS



Home. You just can't beat 3M Electric Radiant Heat Panels for bathrooms and kitchens. They warm a room in minutes—no noisy blowers, no pounding pipes. Thin surface mounted panels like these are easily installed on existing ceilings.



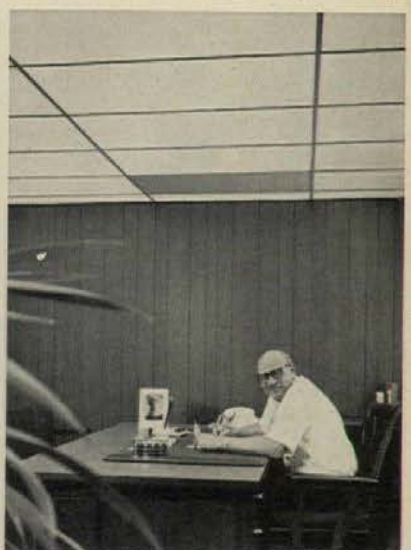
Studio. In this T-bar ceiling, 3M Brand Electric Radiant Heat Ceiling Panels (the opaque ones) blend with the illuminated panels. They provide warmth in soft, gentle rays. No drafts. No noise—not even a whisper. No wasted space. 2′ x 4′ drop-in panels (500 watts).



Reception Room. Like the sun, 3M electric heat radiates from above. Structural and interior design is unhampered by bulky ductwork or unsightly baseboard elements. All 3M Electric Heating Panels are now available through local electrical distributors nationwide. Ask to see them today.



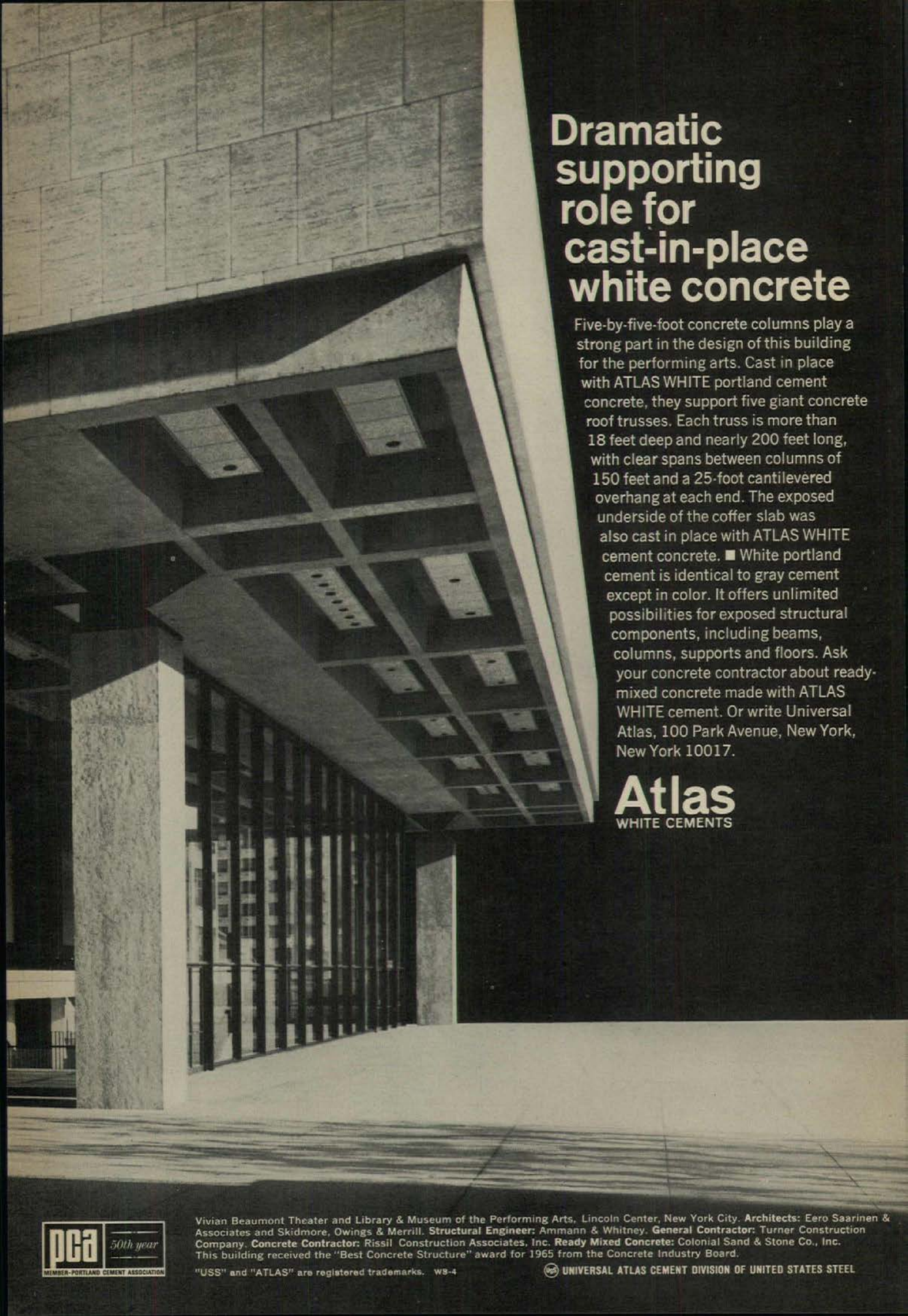
Apartments and Motels. These are the Deluxe Surface Mounted 3M Electric Heat Ceiling Panels (3′ x 4′, 750 watt). Installation is quick and easy. Paint to match any decor. Then forget them—no further service or maintenance required.



Office. 3M Brand Electric Radiant Heat Ceiling Panels warm walls, floors and furniture with heat that's clean and comfortable. And, each room has its own thermostat. For more information see your electrical distributor or write:

Electrical Products Division 3M COMPANY
Building 220-5W, St. Paul, Minnesota 55119
"3M BRAND" IS A REGISTERED TRADEMARK OF THE 3M CO.

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Dramatic supporting role for cast-in-place white concrete

Five-by-five-foot concrete columns play a strong part in the design of this building for the performing arts. Cast in place with ATLAS WHITE portland cement concrete, they support five giant concrete roof trusses. Each truss is more than 18 feet deep and nearly 200 feet long, with clear spans between columns of 150 feet and a 25-foot cantilevered overhang at each end. The exposed underside of the coffer slab was also cast in place with ATLAS WHITE cement concrete. ■ White portland cement is identical to gray cement except in color. It offers unlimited possibilities for exposed structural components, including beams, columns, supports and floors. Ask your concrete contractor about ready-mixed concrete made with ATLAS WHITE cement. Or write Universal Atlas, 100 Park Avenue, New York, New York 10017.

Atlas
WHITE CEMENTS

pca 50th year
MEMBER-PORTLAND CEMENT ASSOCIATION

Vivian Beaumont Theater and Library & Museum of the Performing Arts, Lincoln Center, New York City. **Architects:** Eero Saarinen & Associates and Skidmore, Owings & Merrill. **Structural Engineer:** Ammann & Whitney. **General Contractor:** Turner Construction Company. **Concrete Contractor:** Rissil Construction Associates, Inc. **Ready Mixed Concrete:** Colonial Sand & Stone Co., Inc. This building received the "Best Concrete Structure" award for 1965 from the Concrete Industry Board.

"USS" and "ATLAS" are registered trademarks. W8-4

UNIVERSAL ATLAS CEMENT DIVISION OF UNITED STATES STEEL

"We could sell you an electric plant for 18% less.

But we probably couldn't sell you a second one!"



I'm Bud Onan, president of the Onan Division.

We make electric power plants, engines, generators and controls.

And we could make them for a lot less . . . passing along a price "saving" of 18% across the board. With a 1.5-kw plant, for instance, we could do away with the special alloy valves that contribute to 300% longer valve life.

The crankshaft wouldn't have to be as strong as it is. Bearings could be smaller than we make them. We could knock off $14 by using a second-rate oil pump.

This plant could have paper-thin shielding and a two-bit muffler. We could save the money it takes to test and certify performance before shipment.

But we won't. Because we want that second order, and every one after that. And we want to make sure *you get what you pay for.*

That means building all our products a little better than we have to. It means being conservative when we're rating our product's capability. It means giving you an Onan product that delivers every bit of power our nameplate promises.

It means keeping faith with loyal customers who have made us the world's leading builder of electric power plants.

To us at Onan, it means living, day by day, with the certainty that . . .

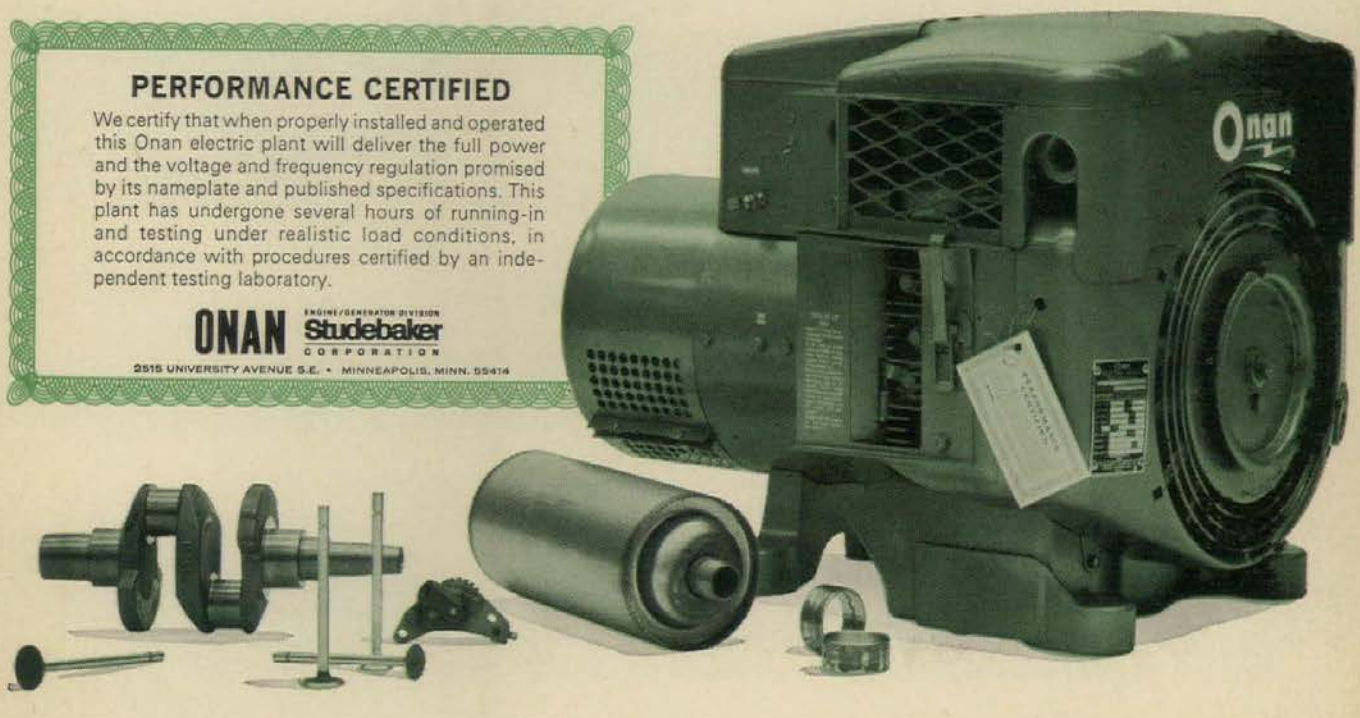
We build our future into every Onan® product.

PERFORMANCE CERTIFIED

We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

ONAN ENGINE/GENERATOR DIVISION Studebaker CORPORATION

2515 UNIVERSITY AVENUE S.E. • MINNEAPOLIS, MINN. 55414



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Howard Johnson restaurant stops the "Sorry, we're out" problem with Tyler glass-door refrigerator.



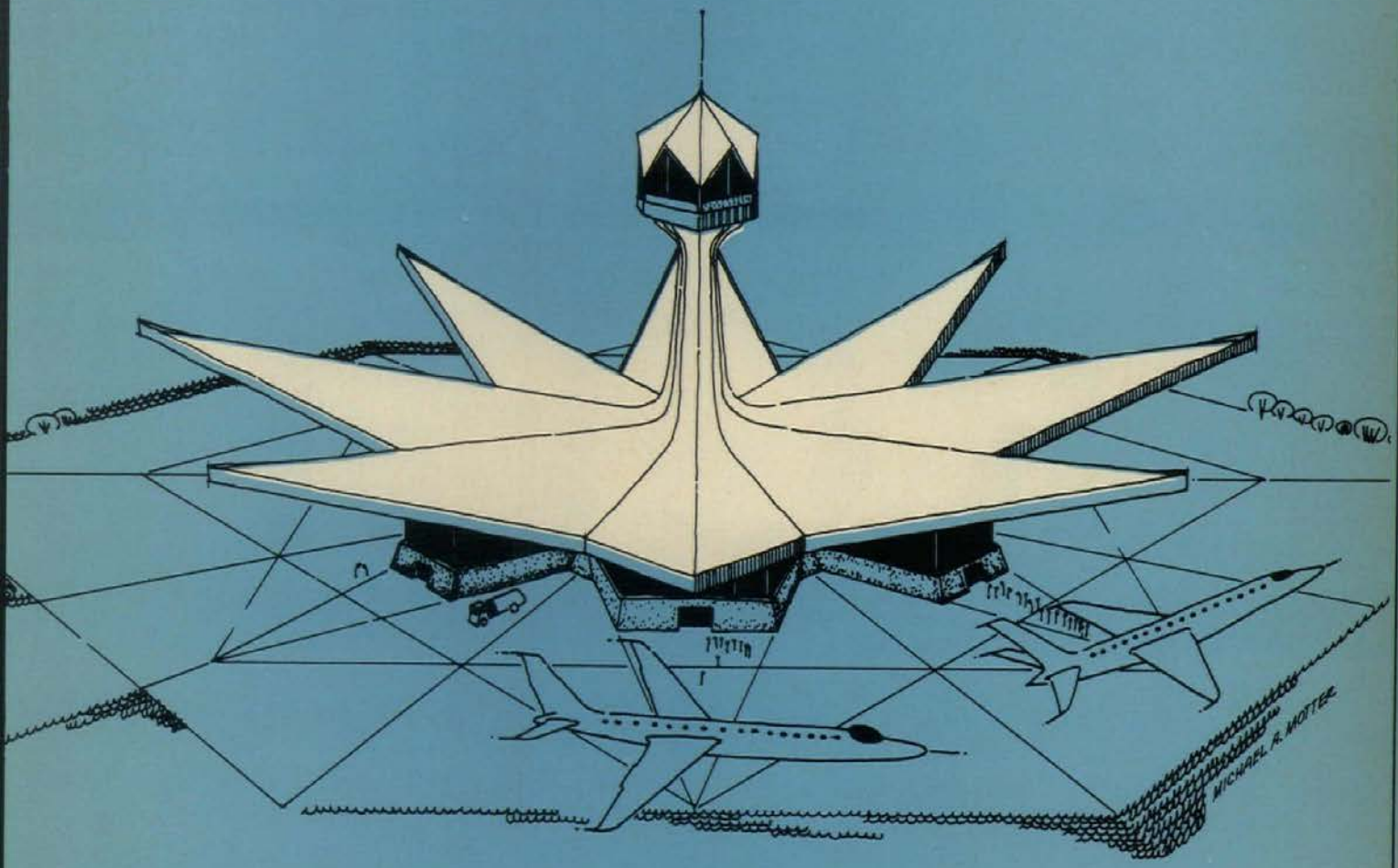
Model AS21EAG. Glass-door reach-in. White exterior. Net capacity 21 cu. ft.

TYLER
REFRIGERATION DIVISION
CLARK EQUIPMENT
CLARK EQUIPMENT COMPANY
NILES, MICHIGAN 49120

Look to Tyler for ideas to help you sell or store more refrigerated foods and beverages. Write us (Dept.1066-7) or call your nearest Tyler food service equipment dealer.

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BFG.
ONE-PLY ROOFING



Let your roof designs fly a little. We'll cover for you.

The far out look is in. Now you can design roofs that look the way you want them to look. Steep pitches, curves, barrel vaults are no longer a problem. B.F.Goodrich has a remarkable new roofing system that works as efficiently on unusual contours as it does on flat roofs. Its name is BFG One-Ply. One-Ply is a laminate of DuPont Hypalon® synthetic rubber backed with neoprene-bound asbestos. It's light, flexible, easily installed, fire resistant, self-flashing. And so watertight, we guarantee it five years against leaks. For technical details. Write B.F.Goodrich Building Products Department RE-18, Akron, Ohio 44318. And then start flying a little.

B.F.Goodrich

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July's Architectural Record will present a subject so importa that...for the first time in its history, the Record will suspe

THE NEW ARCHIT

In the July Architectural Record, the editors will evaluate the great c third of the 20th century-the same challenges and problems that buildi

POPULATION EXPLOSION!

The bulk of the U.S. population growth is in its metropolitan areas. Between 1960 and 1965 — the metropolitan population increased almost twice as fast as the nonmetropolitan population. On the other hand, farm population has continued to drop, decreasing about 21 per cent during the five year period, while the nonfarm population increased 10 per cent, according to the Department of Commerce. The twelve million persons now living on farms represent about six per cent of the total population.

Today . . . 67 per cent of the nation's population is jammed into nine per cent of the land. 130 million people live in 224 U.S. metropolitan communities. By the year 2,000, some 80 per cent of all Americans—more than today's entire population will be city dwellers, according to government figures.

People, Automobiles and Progress

To cope with this population explosion in our cities, President Johnson has warned that in the next 35 years, "we have to build in our cities as much as we have built since the first colonist arrived on these shores." The continuing proliferation of people, automobiles, and new concepts of progress demand it, he said. Our metropolitan centers are expanding at such a rate that we must build the equivalent of one whole new Chicago every year, devouring a million acres of countryside.

Order and Greatness

How promising is that whole new Chicago every year? Is there hope for order and perhaps even greatness? Architects and engineers are the vital key to the biggest building boom in the history of the world.

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ges and crucial problems that face architects and engineers in the last
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The outlook for homebuilding through the Seventies is exceptionally good. The earlier years will provide a gradually rising demand from the current 1.5 million housing units to an annual rate of about 1.8 million by 1970. Then the rate will begin to accelerate more rapidly, reaching about 2.2 million by 1975. The types of housing to be built will change over this period, reflecting the needs of a different population age structure.

Nonresidential Building

The demand for stores, restaurants, and other retail establishments will increase greatly beginning around 1970. Office building will maintain a vigorous upward trend. Industrial building will still have its cyclical expansions and contractions, but the trend will certainly be advancing strongly throughout the years between now and 1980. Growth in expenditures for schools can be expected to rise sharply after 1970.

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ABBREVIATIONS: BTS—Building Types Study; AE—Architectural Engineering; TSS—Time-Saver Standards; BC—Building Components

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