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BUILDING TYPES STUDY: NEW APPROACHES AND STANDARDS FOR URBAN HOUSING

SEMI-ANNUAL INDEX

FULL CONTENTS ON PAGES 4 AND 5

# ARCHITECTURAL RECORD

JUNE 1968

6

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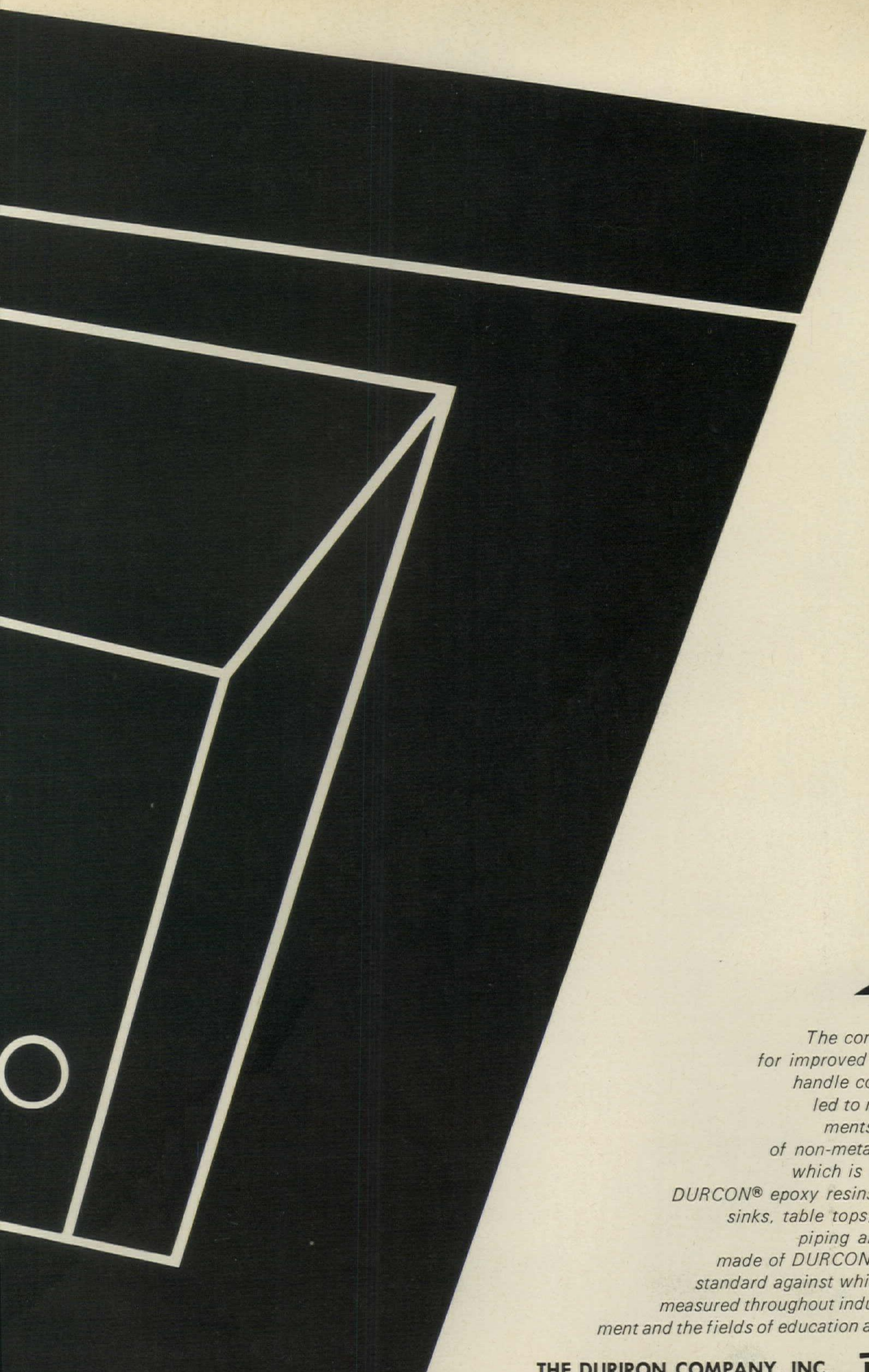


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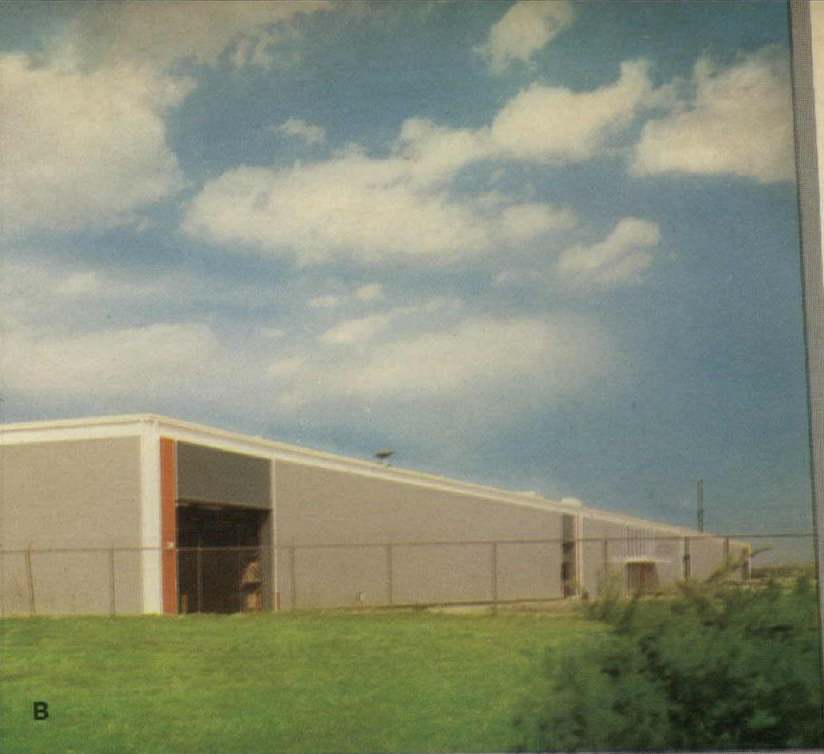
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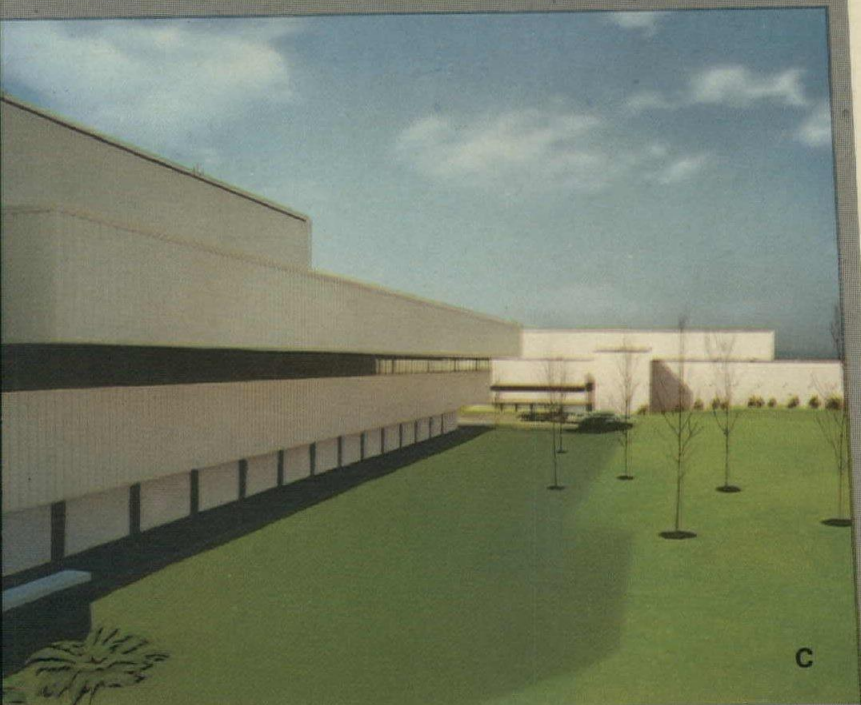
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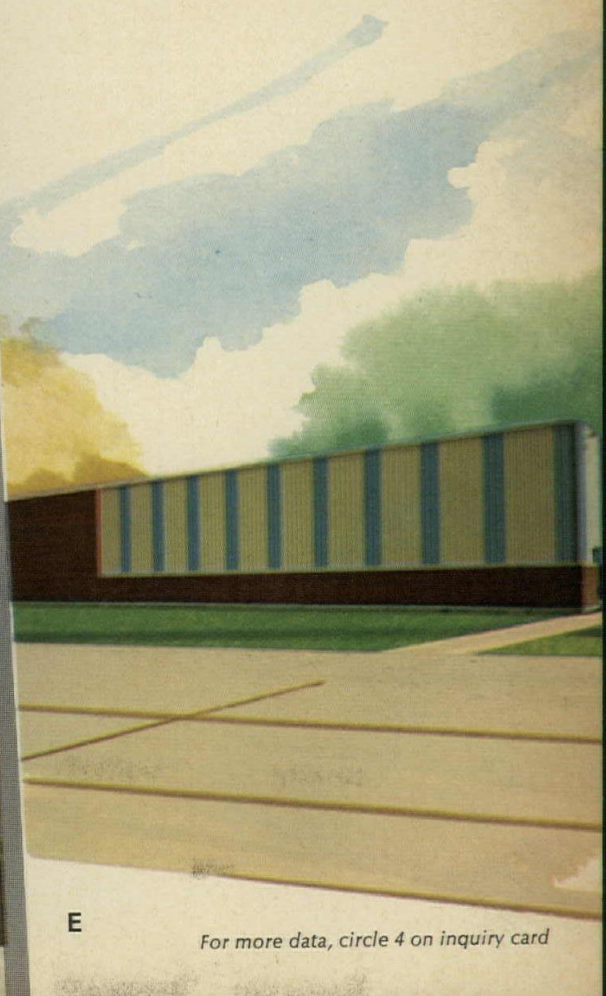
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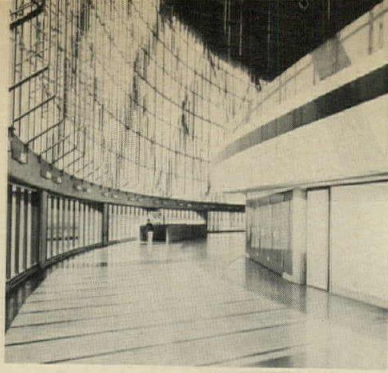
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Cover: Oakland-Alameda County Coliseum  
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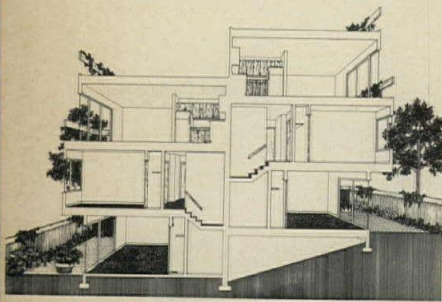
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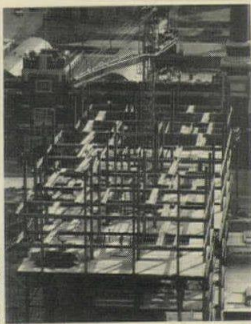


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### BUILDING TYPES STUDY: DESIGN FOR SUCCESSFUL HOTELS

Design and planning principles for effective functioning of hotels will be discussed in next month's study by two architects with long experience in hotel design—urban hotels will be the subject of an article by William Tabler and resort hotels of an article by Alan H. Lapidus of Morris Lapidus and Associates. The examples will cover a wide range of new work.



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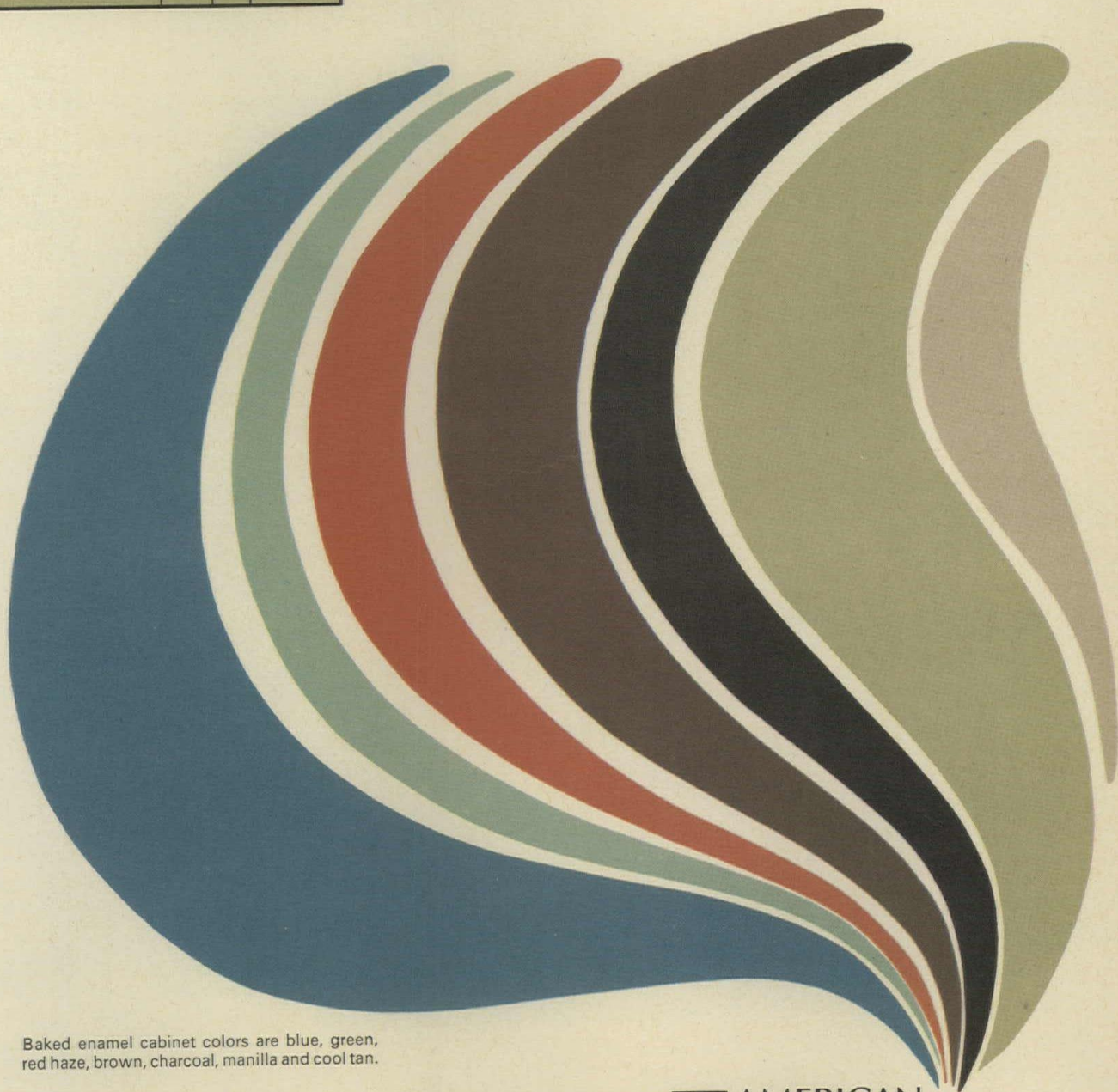
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## Conflict over low-income housing: Where should the architect stand?

On the matter of creating low-income housing that meets the needs of the parties involved, the wishes (or perhaps "demands" is the word) of the community involved, and the professional standards of the architects involved, it seems to me we're a little out of control.

Two years ago, in our 75th Anniversary Issue, we wrote: "Architects and planners engaged in urban renewal projects must spend many hours working with neighborhood organizations which consist mainly of slum dwellers, banded together to protect what they perceive as their interests, and to strive for what they consider to be their rights. . . . The organized poor, when left out of the planning dialogues, raise their new-found voices, and thereby achieve major delays in urban renewal, sometimes halting a project completely."

What has begun to happen since—to add still another dimension to the contradiction and conflict—is disagreement not just among factions within the organized poor, but factions within "the government," and factions within the tax-paying middle-class.

Most city governments—highly responsive, as a matter of political necessity, to the wishes of the slum dweller—have brought neighborhood organizations into the planning process. This system, whatever its benefits (and there are many) delays the process. The delay is compounded by growing struggles for leadership within black communities.

This delay brings frustration on all sides, and in New York has brought the state government in with both feet. James Gaynor of the New York State Division of Housing & Community Renewal argued recently that: "[New York City] leadership has abdicated its responsibility to lead. The concept of planning by those within the neighborhood has been exaggerated to the extent that fundamental responsibilities are ignored. The City has relied upon the neighborhood to determine the type of housing and redevelopment to be effected, and the community, in turn, unable to speak with one voice, has been fractionalized and subjected to its own internal division. The result has been that group opposes group, minority opposes minority, planner opposes consultant, and stalemate opposes progress." Governor Rockefeller's solution: a state Urban Development Corporation with the power to build without the involvement of city processes and over the protests of local community groups.

And while slum-community leaders argue among themselves, and government argues with government, middle-class whites argue with their consciences. A majority have said at the polls that they favor real help for slum dwellers, but plans that affect their own community bring out in many fears of economic loss and in many others expressions of that thin line between unreasonable racial bias and reasonable frustration at

having to pay someone else's rent so that he can become a neighbor.

What position should the architect take amidst this struggle?

For some, the answer is advocacy planning. For others, the answer is to abdicate responsibility by ducking such commissions. For still others, the answer is to take the somewhat arrogant position that "I know what these families should have and don't need to listen to what they think they want."

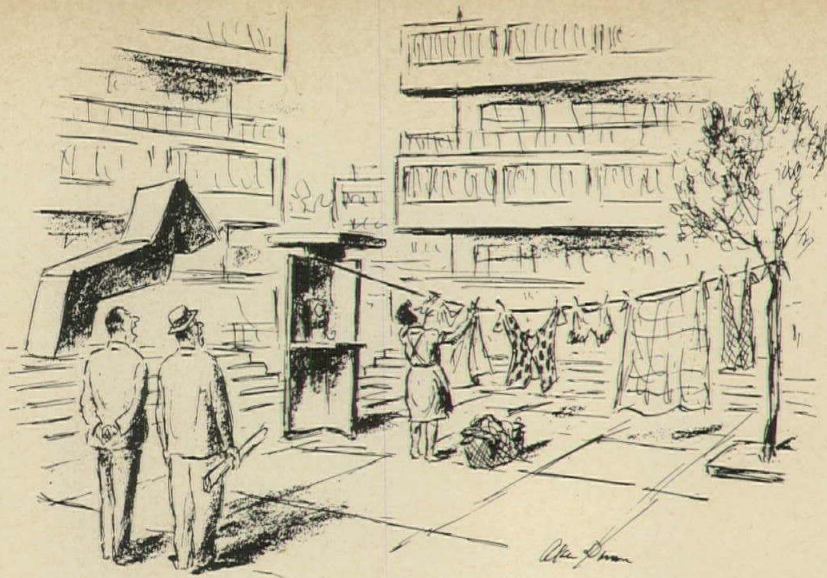
But for most architects, the most sensible position, it seems to me, would be something like this: Some involvement with community groups is needed, if for no other reason, "to keep the community peace." But more importantly: The architect who is going to design within a slum community needs, as with any "client," some understanding of the physical image that the community begins to create as soon as it learns that something is going to be built on its turf.

He also needs to soak up the community wisdom. For example, we've long since learned that the urban poor do not have the same admiration for grass and backyards as the suburban middle-class—and much more sophisticated insights are available to the architect who looks and listens for them.

But the architect must realize that the physical images that the slum dweller projects are based on very limited experience, and must be carefully interpreted. Indeed, in every facet of the design, it is the architect's job to create in a rational and achievable fashion a far better and more imaginative result than the community can express for itself—within the framework and limitations established by the taxpayers and their governments. And that—the architectural job—is a difficult enough challenge.

—Walter F. Wagner, Jr.





"When you come to co-ops  
people have their own ideas  
on how to make use of open spaces"

## A smile, a frown, and an insight

Said architect, planner, and author Albert Mayer (who always says what he has to say with the precisely right word) in a speech to the (New York) Governor's Conference on Aging: "More and more the tendency is gaining ground to pigeon-hole the Aging: whether into low-rental high-rise concentrations for the poor, or gilded-happy or pseudo-happy or vegetable-happy shuffleboard players in Antiques-by-the-Sea in Florida. We need these people, and we can't afford to let them graze, whether wealthily or poorly."

Said James William Gaynor, Commissioner of the New York State Division of Housing and Community Renewal (who always says something that makes me angry—see also overleaf) in a speech in Milwaukee: "... the insistence upon creation of developments which satisfy their [i.e., municipal officials'] esthetic idiosyncracies, and their interference with decisions concerning site layout, design and concept hamper, hamstring and often lead to abortion of the proposed development."

Said A.I.A. President Robert Durham (who, it seems to me, almost always makes very good sense) in a speech to the Gulf States Regional Conference: "It is possible that the great innovators of architecture in our time will not be form-givers at all, but those who invent political and procedural techniques for making effective design possible."

## Works of art vs. the city: is there any debate?

The jury of the 1968 Honor Awards Program this year premiated 20 entries (shown on pages 40-43 of this issue) and

also delivered a report that seems to debate a point I at least thought was well past debate. While noting that "the Jury is permitted to judge only the entries submitted—not all structures completed..." it reported that "the Jury... in their deliberations were overwhelmed by the limits of architectural participation in the environment of the United States.... The environment for most of us is the new urbanism, but this was not reflected in the entries."

The report noted that "most of the projects submitted were isolated 'works of elegant architecture'—as in a showcase, not representative of urban life and its ghetto," and argues that "the profession has too obviously become the visual connection with the affluent sector of our society.... In terms of esthetics, the general level is increasingly egalitarian and still imbued with the tricky and vogueish.... The majority of the Jury... suggests a larger overview than the contented client and the *au courant* esthetic. It suggests that raising the standards and restoring the urban environment, however, modest, must be recognized as worthy architecture. The A.I.A. should encourage in future Honor Award Programs the submission of projects which deal with problems of the inner-city."

Well, sure it should, distinguished jurors. Because if the entries in this distinguished competition were "works of elegant architecture" forming "the visual connection with the affluent sector of our society," that's not what's happening, as I see it, across the country. I'm encouraged to think by what we see to publish (and especially by examples like the low-income housing presented on pages 147-166 of this issue) that the "limits of architectural participation in the environment of the United States" are getting wider and wider all the time.

Is there really any debate about the importance to the profession of the city and its problems?

## "Voila!"

One of the good things that happens to you when you are the editor of the RECORD is that you are invited to join the jury of the Homes for Better Living Competition, which is jointly sponsored by A.I.A., American Home, and House & Home. There were 261 entries in the custom-house section this year and the jury charged by A.I.A. president Bob Durham finally gave three Honor Awards, six Awards of Merit and ten Honorable Mentions—which is a lot of awards to give at such competitions go, and a reflection, I am encouraged to think, of continued (maybe even increasing) interest by architects in residential architecture. We were also pleased that we had published ten of the premiated houses, and several were RECORD HOUSES.

But what I'd really like to report on this page is some of the comments made by the jury and (in their entry folders) by the entrants. They have absolutely no significance, but you might enjoy them.

By the jury:

1. "Can't we give some kind of award for comfortable ugliness?"
2. "This design has unity through money."
3. "The only reason he made it red is that the epoxy salesman said he could get it in any color."

By submitting architects:

4. "A sense of folly was was provoked by the interplay of spaces..."
5. "The client's needs presented a unique problem. The site presented another unique problem. Together they required a distinctive solution—Voila!"

—W.W.





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strength**  
ROOFS

from Keystone

Oakland Coliseum, Oakland, Calif. Architects: Skidmore,  
Owings & Merrill. General Contractors: Guy F. Atkinson.  
Roof Deck Contractor: Anning-Johnson.  
Roof Deck System: Cast in place gypsum reinforced  
with Keydeck Truss-T subpurlins  
and Keydeck mesh reinforcement.



# The Keydeck Truss-T subpurlin,

another form of inner strength



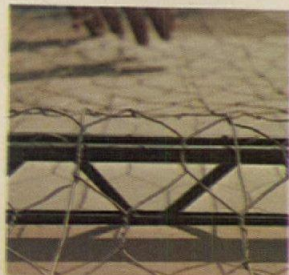
The webs are open.

The cast in place material flows through.

This single design improvement—from solid subpurlin to the open webs of the Keydeck Truss-T—provides a host of advantages.

The subpurlins are lighter. Get better fire ratings. Reduce thermal conductivity. Let you hide electrical conduits in poured slabs over exposed formboards. Provide composite resistance to shear, uplift, cracking and deflection because of complete embedment.

We added an extra improvement, too; widened the base to prevent formboard drop-outs. These advantages are not theoretical. They have been proved in over 30 tests conducted by C. S. Barnes & Associates, Consulting Engineers, and in hundreds of buildings. For complete information, call your Keystone representative or write us.



Keydeck mesh reinforcement is the other component of the Keystone roof deck reinforcement system. It has proved to be a superior reinforcement under stress, maintaining the integrity of decks subjected to hurricanes, tornadoes and earthquakes.





rom Keystone

**inner  
strength**  
ROOFS • WALLS • FLOORS

from **Keystone** Steel & Wire Company  
Peoria, Illinois 61607

*For more data, circle 7 on inquiry card*



# Ready to talk Electric Heat? Talk to an Electrical Contractor.

One reason: the qualified electrical contractor has plenty of experience with electrical heating systems. But that's only part of the story. Electric heat is an electric function and should be the responsibility of an electrical contractor. He's the one man who can furnish, install, connect and inspect electric heating equipment—and see the job all the way through

from plans to permit to operating guarantee. So talk to a qualified electrical contractor. Then put the heating specs into the electrical section of your building plan. That way your electric heating system will be furnished and installed by the man able to take single responsibility for the single best heating system.

## Your Qualified Electrical Contractor

NECA—National Electrical Contractors Association, 1730 Rhode Island Ave., N.W., Washington, D.C. 20036







## The Corporate Carpet

Specify carpet of HERCULON\* olefin fiber wherever business is conducted. HERCULON is tough. Aggressive. Competitive. Great for the long-range plan. Dirt, grime and spills stay at near-surface level. Clean-up is quick and easy. This means shorter hours for the maintenance staff. Less capital expense. Invest in the future, wisely. Specify HERCULON. For more information contact Fibers Merchandising, Hercules Incorporated, Wilmington, Delaware 19899. (302) 656-9811.

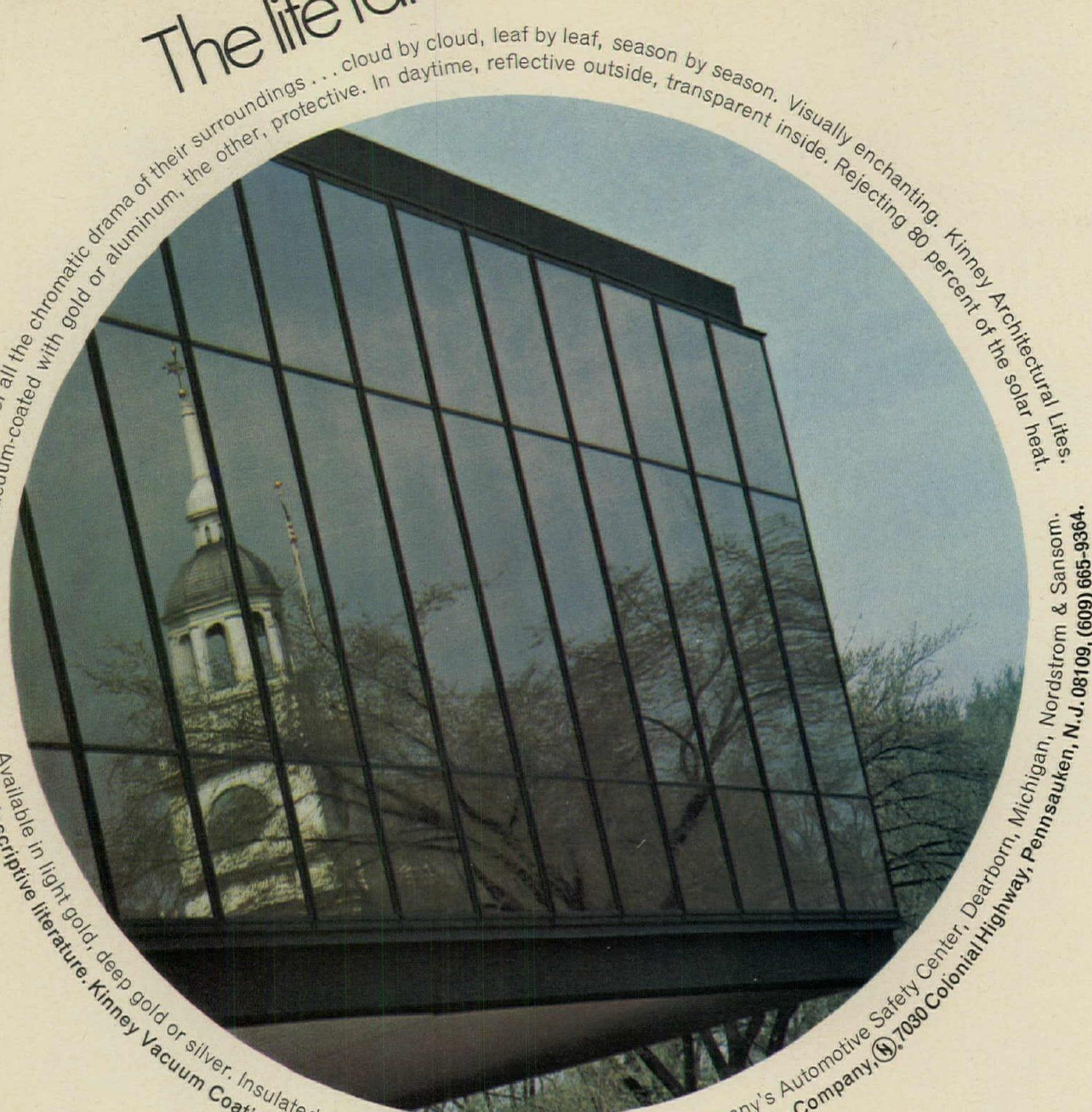
\*Hercules registered trademark

**Since when?  
Since Herculon.<sup>®</sup>**





# The lite fantasia



Conceive of facades which mirror all the chromatic drama of their surroundings . . . cloud by cloud, leaf by leaf, season by season. Visually enchanting. Kinney Architectural Lies. Paired panes, one vacuum-coated with gold or aluminum, the other, protective. In daytime, reflective outside, transparent inside. Rejecting 80 percent of the solar heat.

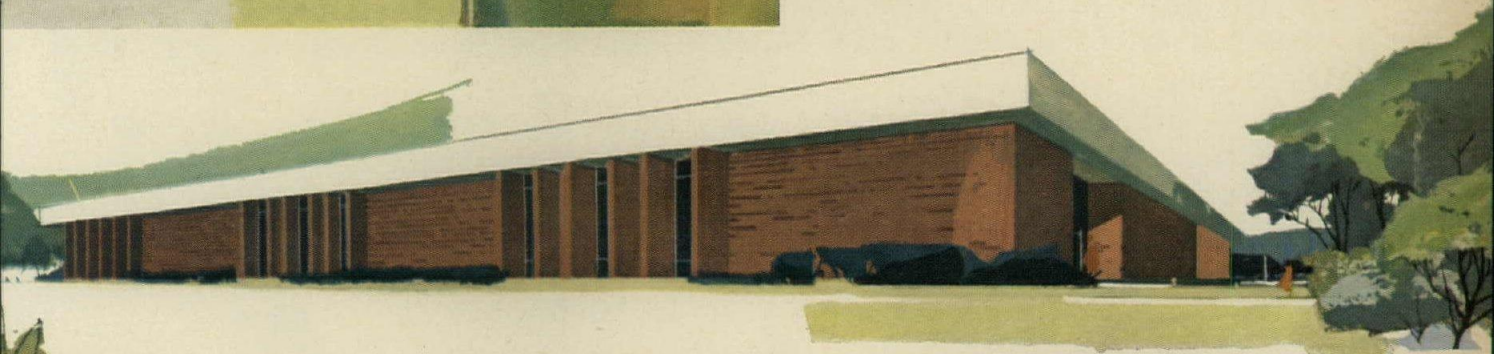
Available in light gold, deep gold or silver. Insulated or laminated safety units. Ford Motor Company's Automotive Safety Center, Dearborn, Michigan, Nordstrom & Sansom. Free descriptive literature. Kinney Vacuum Coating Dept., Kinney Vacuum Division, The New York Air Brake Company, 7080 Colonial Highway, Pennsauken, N.J. 08109, (609) 665-9364.

For more data, circle 9 on inquiry card

◆ For more data, circle 8 on inquiry card



Solving the  
"people problems"  
in all types of  
buildings...



MODULAR CENTRAL SYSTEMS **LENNOX**  
AIR CONDITIONING • HEATING



For more data, circle 10 on inquiry card



# People comfort? Economy? Or Design freedom?

**(Why choose? Lennox flexibility guards all three.)**

When you plan to air condition a building – single-story or multistory – consider all the people problems as well as the building problems . . . and the Lennox solutions.

We create people comfort . . . to match the different problems of different people. In all types of buildings. For all types of people. Doing all manner of things. At the same time. In the same building. Whatever the weather.

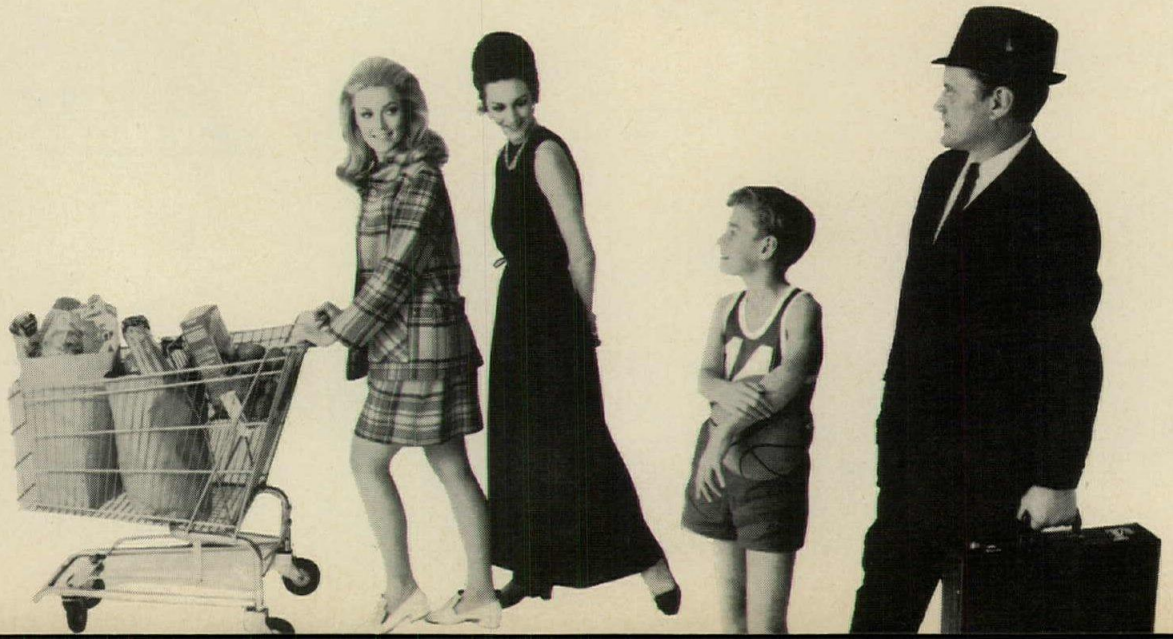
Tough problems? Sure. But Lennox modular central systems can handle them. They have the flexibility, the sophistication of control for an almost infinite variety of “micro-climates” – individual comfort zones.

Whatever the building type, there's a Lennox system—or systems combination—to match its demand for “micro-climates.”

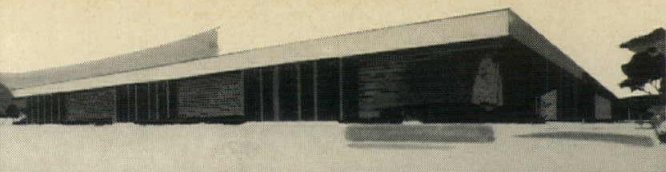
Take the Lennox Direct Multizone System (DMS), for rooftop or multistory installations . . . up to a dozen comfort zones; or DMS with dual ducts and mixing dampers. Or take the single-zone Lennox combination system for gas, oil, or electric heating with electric cooling; or air conditioning with add-on heating; or unitary systems with a wide variety of coil-blower units.

When you plan for people comfort in any building—school, office, apartment, motel, plant, clinic, shopping center, home—plan with the “micro-climate” advantages of Lennox modular central systems.

*For details, see Sweet's—or write Lennox Industries Inc.,  
329 S. 12th Avenue, Marshalltown, Iowa 50158.*

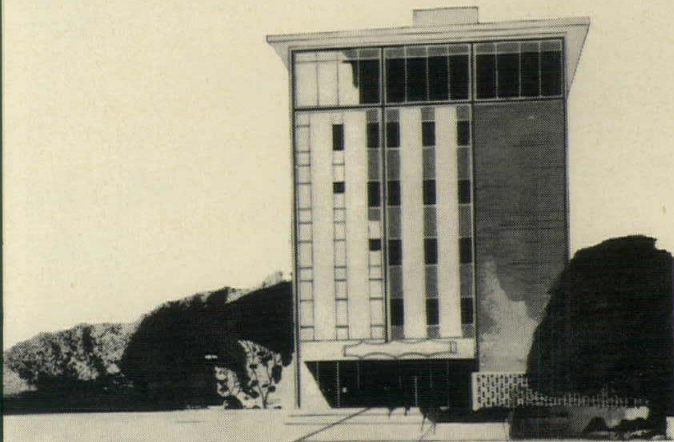
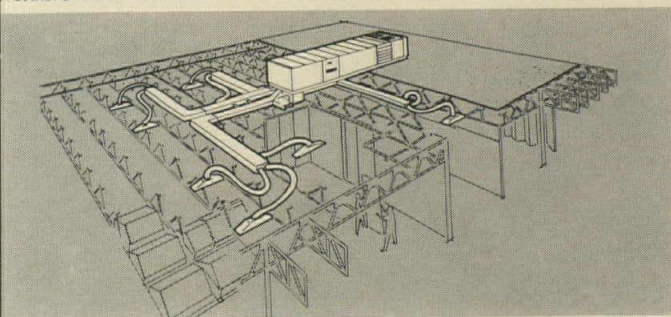






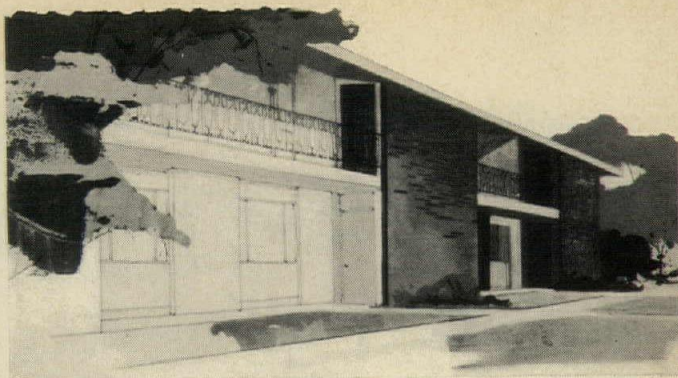
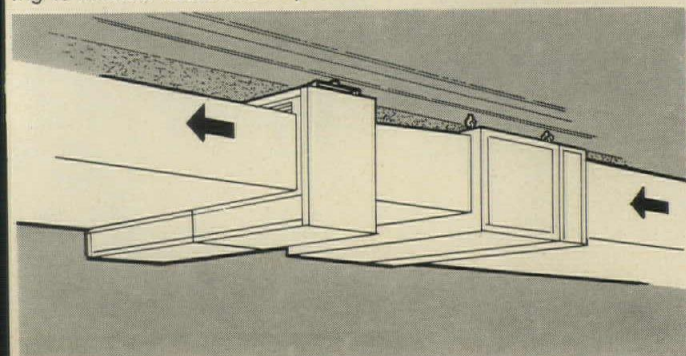
Functional new offices of midwest manufacturer, where four Lennox DMS rooftop units provide the "micro-climates" necessary to meet a variety of individual comfort requirements spread through its 24,000 sq. ft. area. Each DMS combines up to 22 tons of cooling capacity with up to 700,000 Btuh of heating (can be gas, oil, electric or hot water). Each unit can provide comfort in up to 12 of these "micro-climate" areas, and can heat some while cooling others.

*Direct Multizone units on roof serve many comfort zones through flexible duct which can be moved as zones are changed.*



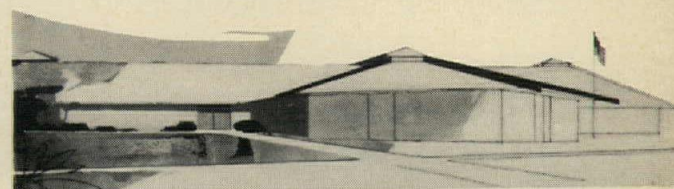
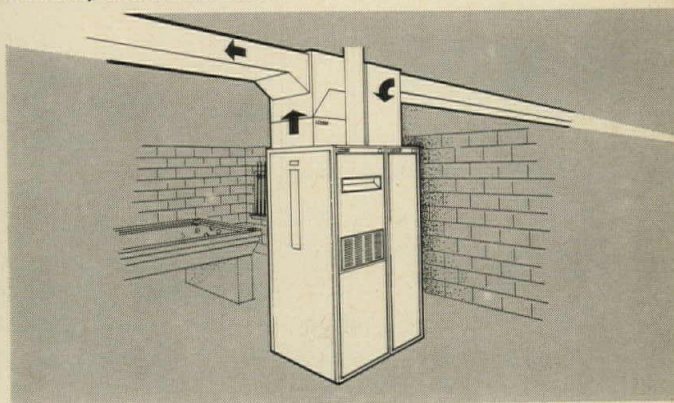
Seven story professional building has shops on lower level, offices on middle floors, restaurant on top. Lennox "micro-climates" meet the varying comfort needs. Thermostatically-controlled dampers select cool or warm air for each comfort zone. An air handler gives constant circulation in each zone. Heating/cooling source is gas duct furnaces coupled with blower-coil-filter units. Air-cooled condensing units are outdoors at grade level. Restaurant is served by two gas heat/electric cooling units on roof. POWER SAVER™ supplies fresh air and cools "free" when outdoor temperature is below 57°F.

*Fan-coil units coupled with duct furnaces supply heating or cooling to first six floors. Rooftop units handle cafe on top floor.*



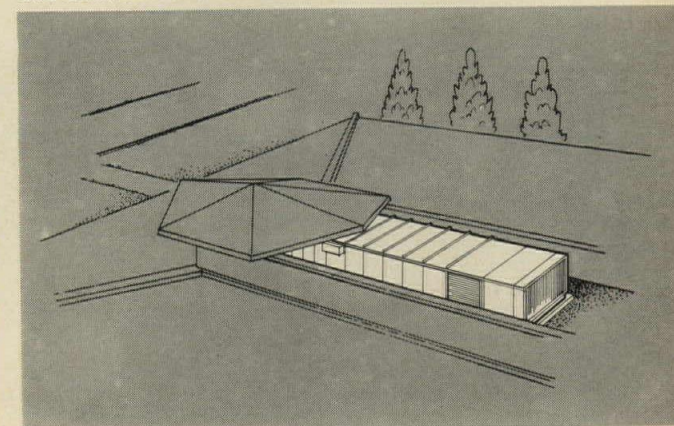
This striking, modern condominium provides individual comfort control for occupants of its apartments with Lennox remote air conditioning systems. Each apartment is cooled and heated by a gas furnace-cooling coil combination located in the basement. Condensing units are concealed on the roof. Cooling capacity for each apartment is 2½ tons; heating is 110,000 Btuh.

*Each apartment has its own heating/cooling system for complete flexibility and tenant control.*



This progressive elementary school utilizes the flexibility afforded by Lennox DMS rooftop units to help promote the advanced concept of team teaching. More than 30 teaching/study areas, offices, and other rooms are heated and ventilated by the four DMS units. Individual thermostatic control in the large class areas permits varying occupancy and activity, while maintaining comfort levels. The DMS units are completely hidden from sight, do not intrude on the school's design esthetics.

*Architecturally-designed enclosure conceals the DMS equipment and contributes to esthetics of the building.*






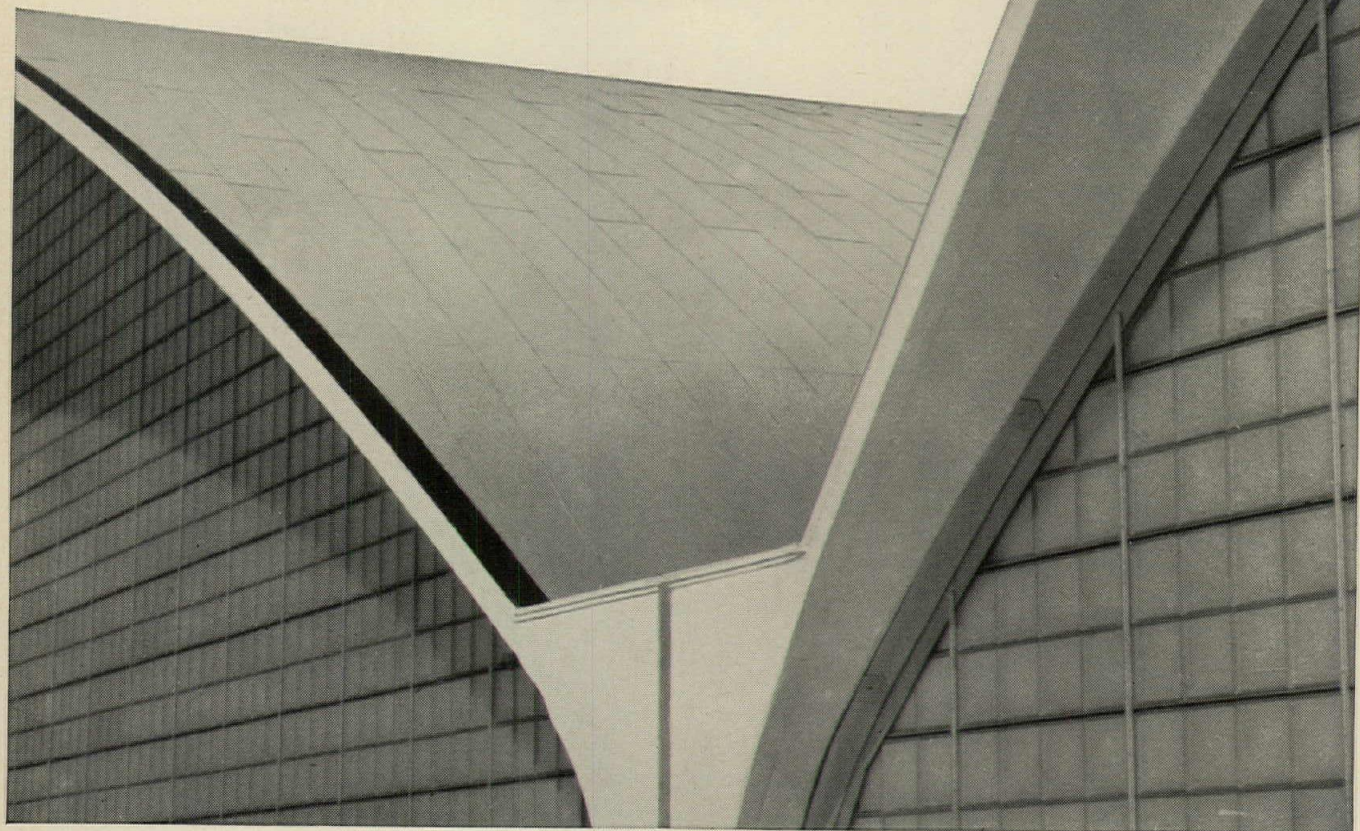
# New or Re-Roofing problem? Look for J-M materials to help you from A to V.

## This roof comes under F.

F is for the Flexstone® mineral surface asbestos cap sheet on the roof. It is only one in the broad line of Johns-Manville Built-Up roofing materials that run from Asbestile® flashings, to Ventsulation® felt (for a roof that "breathes").

In addition to these materials, you'll find the widest range of specifications for smooth, gravel, and mineral surface asbestos roofs. And for added convenience and savings, you can get everything you want from a single source. Everything.

Back at the source, J-M has expert engineering help when and where you need it. Plus the latest data on Built-Up Roofing. Any questions? Just write to the company that offers you more in materials, methods and men-of-experience. Johns-Manville, 22 East 40th Street,  N.Y., N.Y. 10016. **Johns-Manville**



For more data, circle 11 on inquiry card





*The Executive...*

## **THE PERFECT STANDARD STEEL DOOR**

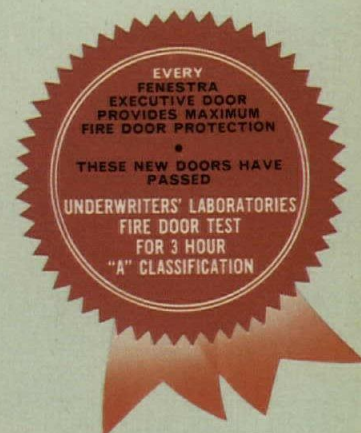
- **SMOOTH – SEAMLESS**
- **3-HOUR FIRE PROTECTION**
- **SOLID, QUIET PERFORMANCE**

ONE precision-made door . . . Fenestra's flush seamless Executive, offers all the advantages you look for in a quality door . . . attractiveness, maximum fire protection, unmatched performance . . . plus the economy and availability advantages of a standard steel door.

There is only *one* Executive Door . . . 3-hour fire protection is built into every door regardless of label requirements. It is the only standard door that offers this *premium* value.

Specify Fenestra steel frames and Executive Doors on your next job. Available with complete door and frame service from your local Fenestra distributor.

Write for new full color brochure . . .  
"The Executive Door."



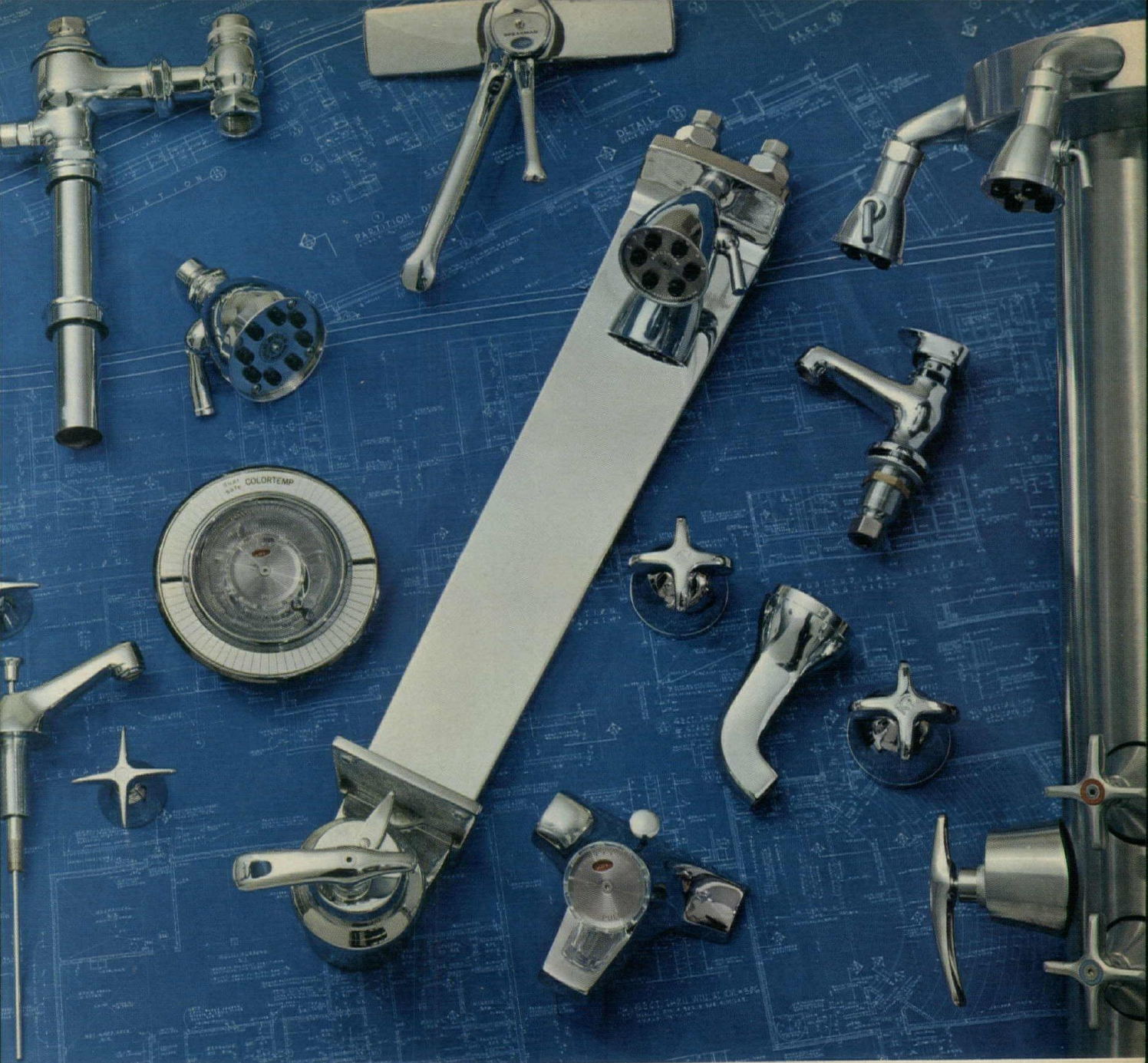
# **FENESTRA**

DIVISION OF THE MARMON GROUP, INC. (MICHIGAN)  
ERIE, PENNSYLVANIA 16505









All the brass on this blueprint is  
value-rated **TOP BRASS** Beautifully by  
**SPEAKMAN**

Specify *value-rated* brass—top brass. Specify Speakman. It costs less really than you think. If you doubt it, get an estimate from us on your next project.

For value, after all, is not just cost, but performance in relation to cost. And dollar for dollar, Speakman brass consistently outperforms other lines of admittedly good brass. This is what we mean by *value-rated*. It's a planned superiority built into every item in Speakman's wide spectrum of home, plant and institutional products.

An excellent *value-rated* example is our new single control COLORTEMP line, for shower, bath, lavatory and kitchen, that uses color for water temperature selection. Unquestioned dependability has caused

COLORTEMP to be the first in acceptance among those who have been cautious in specifying single control valves for their projects.

The achievement comes primarily from Speakman's patented cartridge that provides trouble-free performance far beyond that of ordinary single control valves. Maintenance costs are extremely low. The cartridge houses the *only* working and wearable parts found in COLORTEMP valves. Interchangeable in all models, the cartridge can

be replaced in minutes. Specify top brass—beautifully by SPEAKMAN.  
**SPEAKMAN**<sup>®</sup>  
for the home, the plant  
and the institution



# The weight problem and how to solve it.

The problem: low working concrete in precast floor, roof, lift slabs, bridge decks, beams and piles. Concrete that increases contractors' costs and limits design freedom.

The solution: void the concrete. Void it with SONOVOID®

Fibre Tubes from Sonoco.

SONOVOID tubes are strong enough to meet any job requirement; yet, light enough to handle and install easily.

They're available in a wide variety of sizes, too. And, when necessary, they can be cut or

sawed right on the job.

For more information and a copy of our slab design tables, write Sonoco Products Company, Hartsville, South Carolina. And forget about the weight problem.



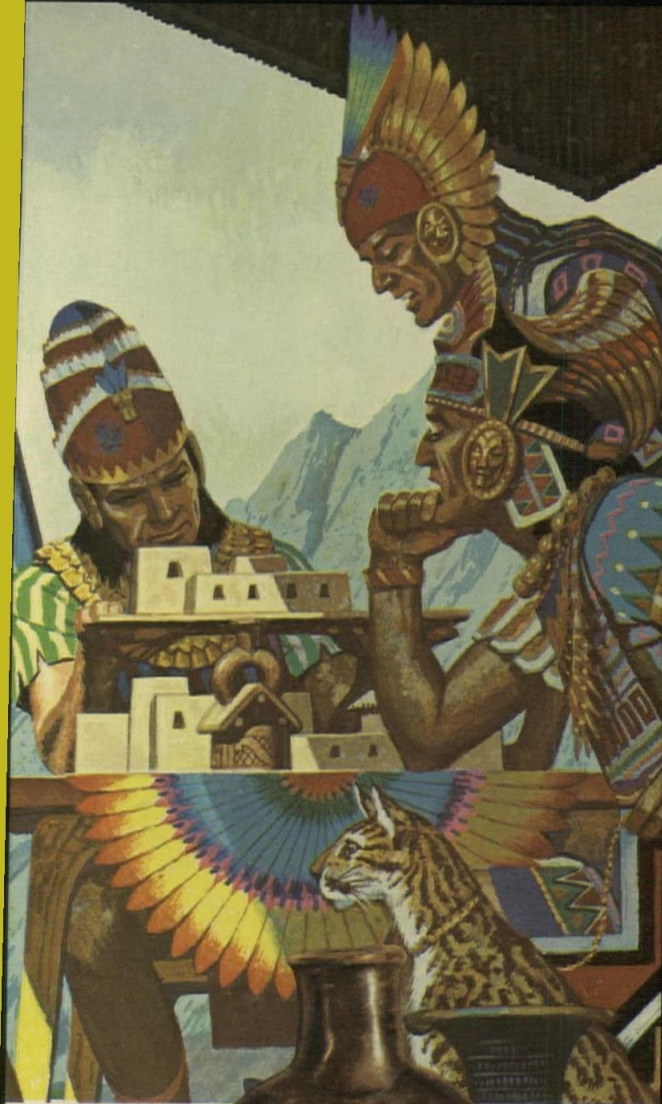
SONOCO

SONOCO PRODUCTS COMPANY, HARTSVILLE, S. C. • Akron, Ind. • Atlanta, Ga. • City of Industry, Calif. • Holyoke, Mass. • Hayward, Calif. • Longview, Texas • Louisiana, Mo. • Lowell, Mass. • Montclair, N. J. • Munroe Falls, Ohio • Mystic, Conn. • Newport, Tenn. • Richmond, Va. • Tacoma, Wash. • MEXICO: Mexico City • Also in Canada

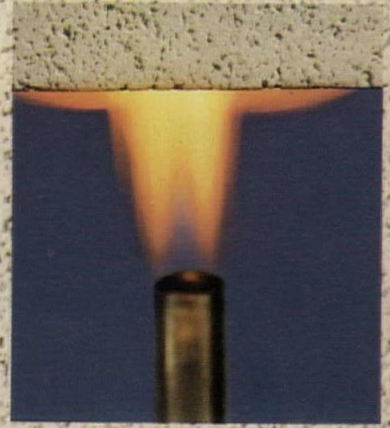
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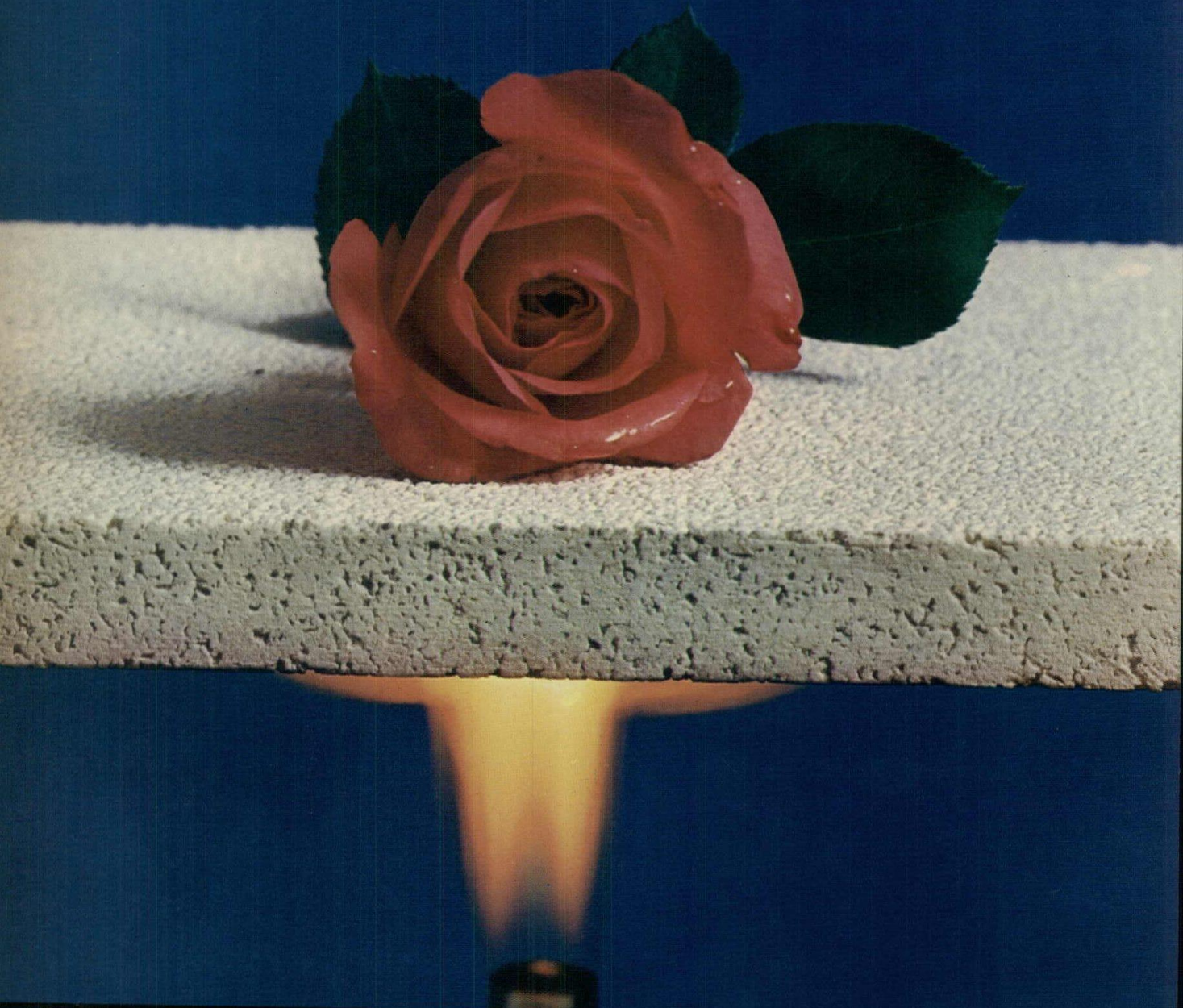
... ancient ceramic  
... is almost 2,800  
... years old. It was an  
... unique even to the  
... architects who  
... cherished it as a  
... sacred relic. It has  
... remained intact through  
... centuries, outlasting  
... buildings of its  
... ... and even the  
... civilization it  
... represents. It is  
... made of fired  
... ceramic clay.



Celotex research  
has forged history's  
most durable material  
into the world's  
most modern  
acoustical ceiling



**CELOTEX GLAZED TOTAL CERAMIC ACOUSTICAL PANELS** are completely incombustible. Remain unharmed even when directly exposed to high-temperature flame. Meet UL requirements for 2-hour time-rated assembly and have 0-0-0 Fire Hazard Classification: Zero Flame Spread; Zero Fuel Contributed; Zero Smoke Developed. Contribute zero BTU during exposure to fire.



# glazed total ceramic

Not merely painted or ceramic-coated mineral fiber, new Celotex Total Ceramic Acoustical Ceiling Panels represent an entirely new technical achievement — a glazed, kiln-fired product that is *all* ceramic, through and through.

The striking appearance of Celotex Ceramic Panels adds permanent distinction to any fine job, whether office, institutional or technical. Incredibly durable, they bring acoustical control even to

swimming pools, clean rooms, saunas and other "impossible" areas.

In addition to high acoustical efficiency (NRC .65) without conventional drilling or fissuring, advantages include complete washability. May be subjected to repeated applications of disinfectant for completely hygienic surfaces.

Glazed Total Ceramic Acoustical Panels by Celotex



...d fabricator developed compo-  
...nts that would fit together on  
...e. Result: one floor of wall system  
...s completed every *three* days.  
...roof that Alcoa has the know-how  
...work with architects and fabrica-  
...s to make aluminum work for  
...em. **(B)** Lake Point Tower is a thing  
...beauty. The aluminum compo-  
...nts feature Alcoa® Duranodic\* 300  
...ish in medium bronze tones. And  
...e rich Duranodic color is an

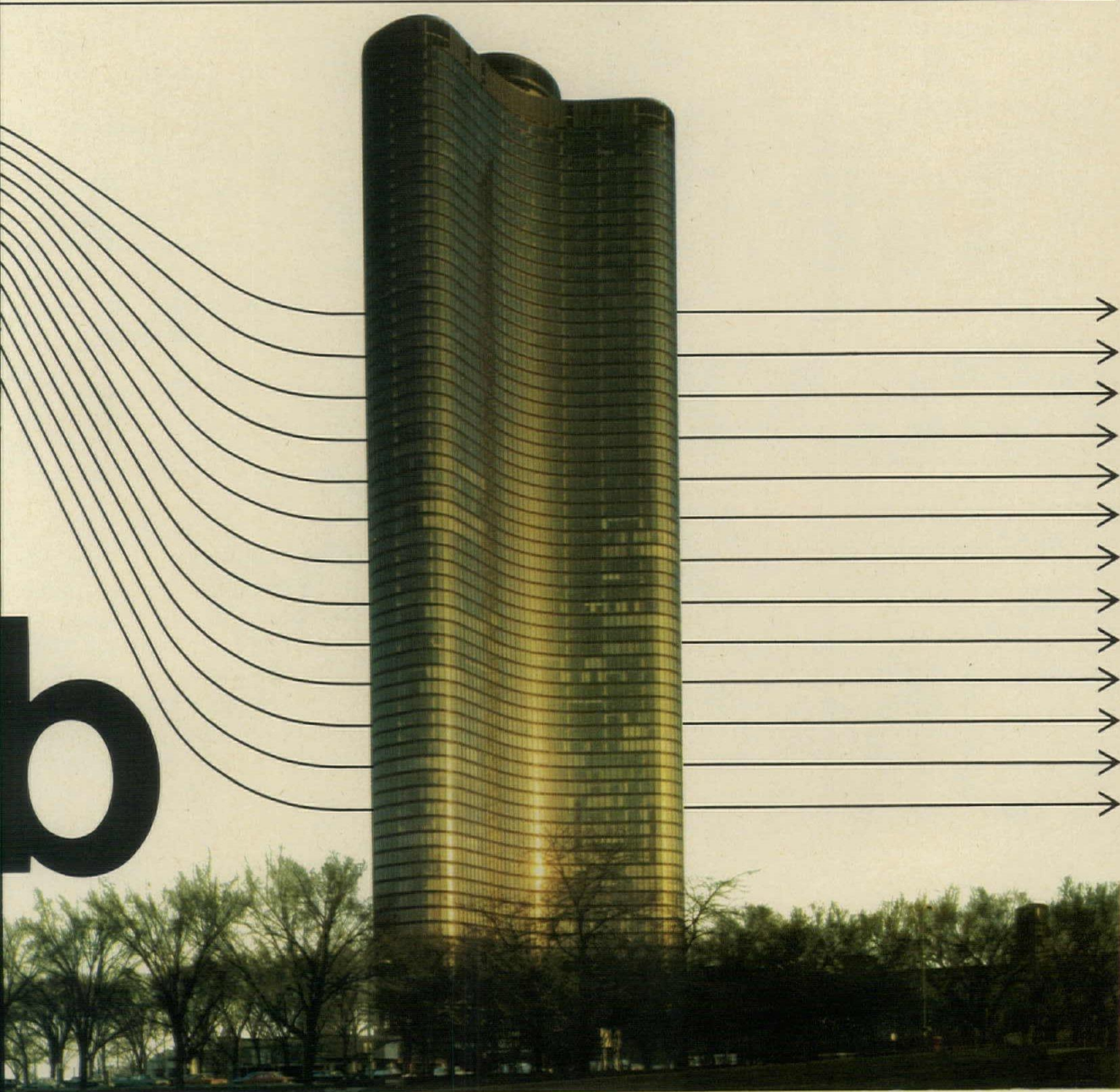
integral part of the metal. This  
means corrosion and abrasion  
resistance is multiplied. Duranodic  
needs less maintenance, yet its  
original color and beauty last and  
last.

Get together with Alcoa early in the  
planning stages. Alcoa has the  
proven capability to work with you  
from concept to conclusion. And,  
as at Lake Point Tower, Alcoa  
stands ready to supply you with a

whole lot more than aluminum. Put  
Alcoa to work for you. Call your  
local Alcoa sales office, and talk to  
Alcoa at the talking tissue stage.

\*Trade Name of Aluminum Company  
of America.

Architect: Schipporeit-Heinrich, Inc.  
Developer: Hartnett-Shaw & Assoc./Fluor  
Properties Inc.  
General Contractor: Crane Construction  
Co., Inc., Aluminum Fabricator: Cupples  
Products Div., H. H. Robertson Co.







Gulf Life Tower, Jacksonville, Fla.  
 Welton Becket, Architect / Kemp, Bunch & Jackson, Associate Architects



## Why were Houghton Elevators with exclusive 1090 Computerized Control installed at the new Gulf Life Tower ?

### To insure the shortest trip time in elevating

The remarkable Houghton 1090 Elevator Control System doesn't "freeze" cars in inflexible zones.

That means cars are free to move precisely in accordance with traffic demands.

For example: Should traffic increase in one section of the building (say between floors 8 and 12) the 1090 System automatically directs the required number of cars to the busy area.

Thus cars don't cruise aimlessly up and down, or park in one section of the building when they are needed elsewhere.

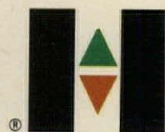
Because the Houghton 1090 System makes possible the most efficient utilization of every car in the system, the time between boarding an elevator and leaving it at the destination floor is always pleasantly short.

People like that. And it's the kind of service they *expect* in prestige buildings.

1090 is a product of Elevonics\* . . . our unique research and development program that looks beyond today to anticipate and satisfy your needs in vertical transportation.

Our 1090 System will keep new buildings new . . . and make old buildings young again. Ask your Houghton representative for complete details. Or write us.

*\*Houghton's advanced program in systems research and engineering with specific emphasis on the creative application of Electronic devices and instrumentation for betterment of systems design and performance. Reg. U. S. Patent Office.*

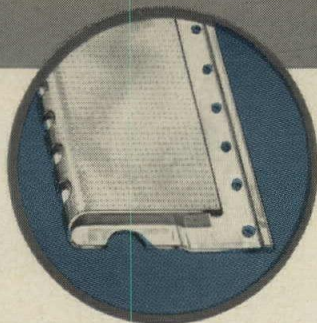


# HAUGHTON ELEVATORS

Houghton Elevator Company / Division of Reliance Electric Company / Toledo, Ohio 43609 / Elevators / Escalators

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## BLUE DIAMOND RESILIENT STRIP LATH & PLASTER SYSTEMS

CEILINGS · PARTITIONS

### WHAT PRICE SILENCE!

BLUE DIAMOND Resilient Strip Lath and Plaster Systems cost but pennies per square yard — a small price to pay to satisfy home buyers and apartment tenants that demand quiet and privacy.

### CEILING...STC 50 ONE HOUR FIRE RATED

Wood Strip Flooring — 25/32"

Felt Building Paper — 15 lb.

Plywood Subfloor — 5/8"

Wood Joists — 2" x 8", 16" o.c.

ATLAS™ Resilient Strip — 16" o.c.

FLINTLATH® Lath — 3/8"

BLUE DIAMOND Hardwall Plaster (sanded) — 1/2"

### PARTITION...STC 45 ONE HOUR FIRE RATED

Wood Studs — 2" x 4", 16" o.c.

ATLAS Resilient Strip — 16" o.c., one side

FLINTLATH Lath — 3/8"

BLUE DIAMOND Hardwall Plaster (sanded) — 1/2"

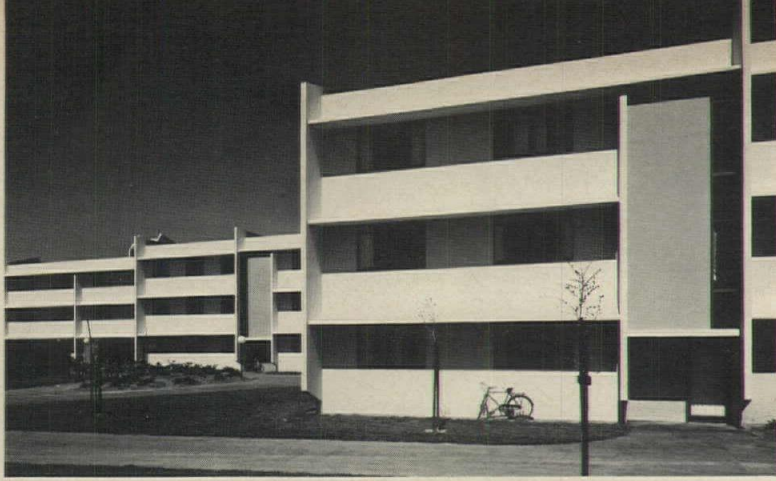


### BLUE DIAMOND GYPSUM DIVISION

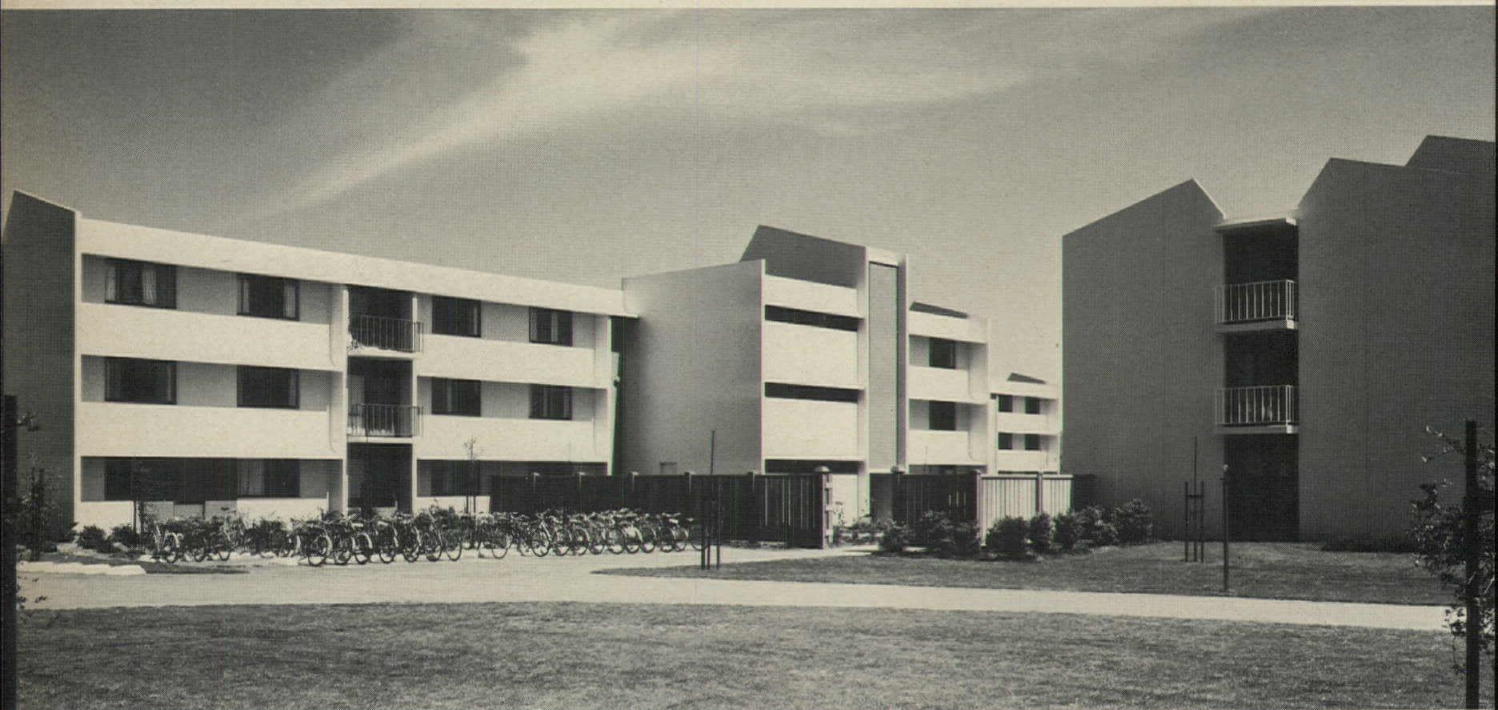
BUILDING PRODUCTS GROUP, THE FLINTKOTE COMPANY  
LOS ANGELES • SALES OFFICES THROUGHOUT THE WEST

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***"Give us dormitory construction comparable in cost to wood frame, but with more\*..."***



**U. C. Residential Halls, Davis Campus, Davis, California**

**Architects:** Gardner A. Dailey and Yuill-Thornton, Warner and Levikow, San Francisco

**Structural Engineer:** T. Y. Lin, Kulka, Yang and Associates, San Francisco

**General Contractor:** F. P. Lathrop Construction Company, Berkeley

When planners at the University of California campus at Davis, California, sought residential hall construction \* "more permanent, soundproof and with less maintenance than wood frame"—yet comparable in cost—their architects specified Basalt plantcast structural components for all walls, floors and roofs. The beauty and structural integrity of the result is evident in the twelve three-story residence halls, encompassing 150,000 square feet of floor space and constructed of Basalt precast concrete load-bearing walls, flat floor and roof slabs. Too, it shows up in the two-story precast concrete community building, providing 34,000 square feet of floor area. Here single tees instead of flat floor and roof slabs were employed. Costs were kept down by the use of mass-produced plantcast components, trucked to the job site for erection. Furthermore, the floor plans could be reversed, flipped and staggered in such a way as to create a continuous illusion of individuality.

Consult with a Basalt engineer today; write or call BASALT ROCK COMPANY, INC., Concrete Products Division, Napa, California 94558. Telephone 707/226-7411.



*"Basalite"—trade name of Proven Quality*

Marketed only in Northern and Central California



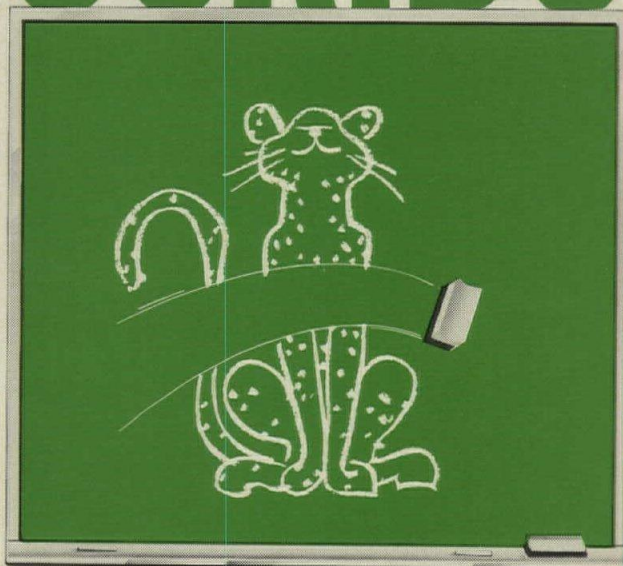


Is this  
any way to treat  
your children's  
playground?

Litter doesn't throw  
itself away; litter  
doesn't just happen.  
People cause it—and  
only people can prevent  
it. "People" means you.  
**Keep America Beautiful.**



# SCRIBO CHALKBOARDS



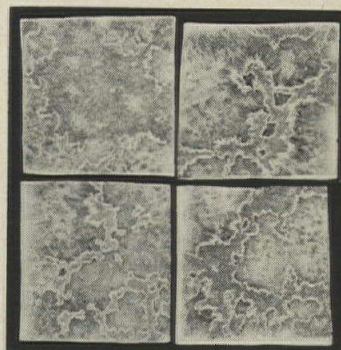
**EASY ON - EASY OFF.** Scribo Chalkboards have a baked alkyd amine enamel surface for clear writing, ghost-free erasing and damp cloth cleaning. Your choice of three types — ¼" Hardboard — ½" Particleboard — 24 ga. Steel — in five standard colors. Write for samples and specifications.

**Bestile MANUFACTURING COMPANY**  
P.O. BOX 71, ONTARIO, CALIFORNIA 91764

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A LATCO EXCLUSIVE

*shades  
of  
old Venice*



## VENEZICO®

VENETIAN-CUT MOSAIC TILE

Lavish shades, subtly depicting the glory of Renaissance Venice, have inspired Latco's "Venezico" collection.

Vitreous, hand-crafted tiles in 20 decorator colors, including gold, silver and brass.

Designed for interior and exterior application, it weathers all seasons and time itself!

Mesh mounted on 12" x 12" sheets with complete trimmers, for easy installation at low cost. For further information, write to:

**LATCO®**  
PRODUCTS

3371 GLENDALE BOULEVARD ■ LOS ANGELES, CALIF. 90039  
TELEPHONE: (213) 664-1171

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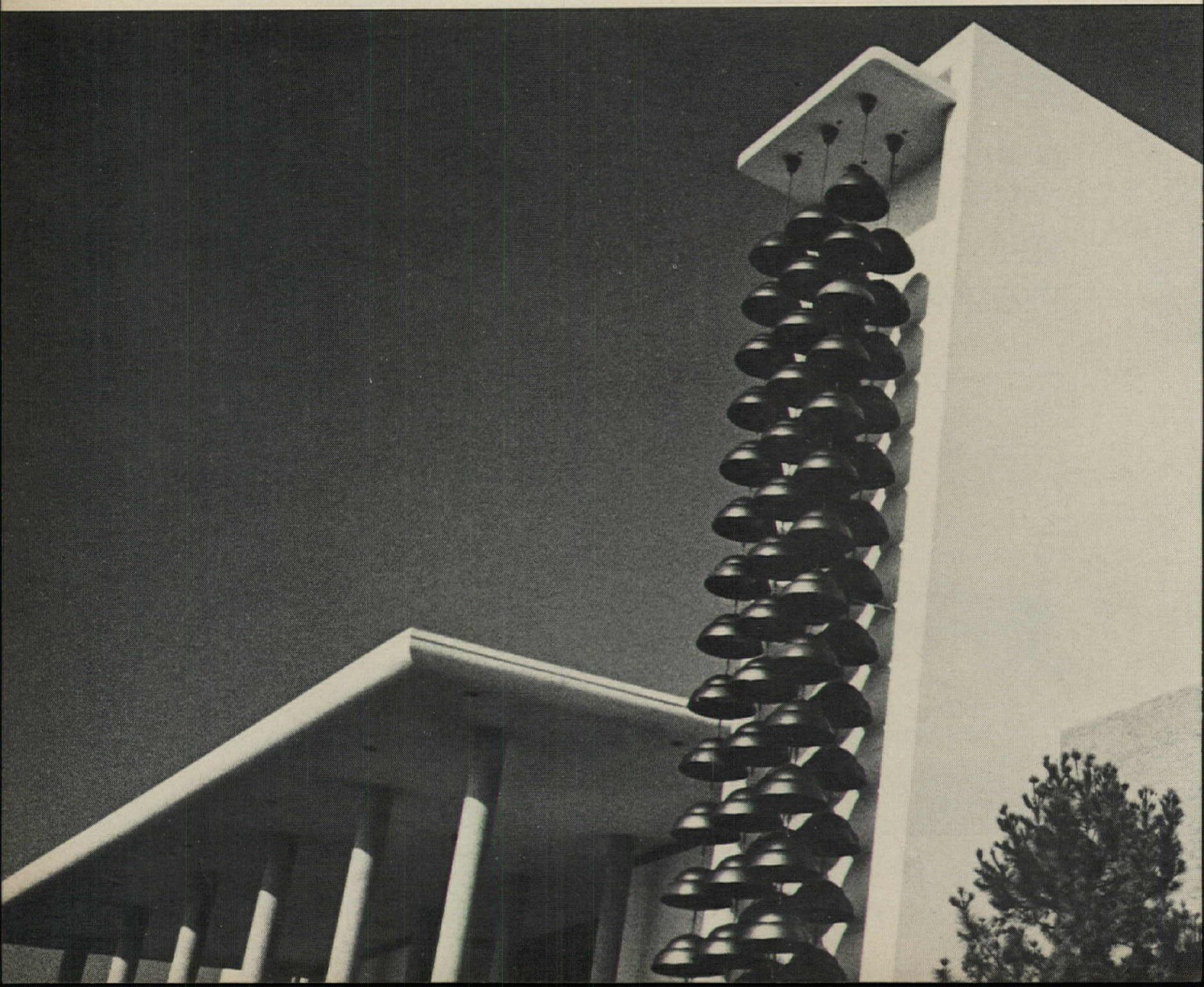
# Another big one goes all-electric.

The advantages of the all-electric concept for commercial buildings

are demonstrated once again. This time, in Robinson's beautiful retail

facilities in Newport Beach. This store is one more important addition to the long list of all-electric buildings owned and operated by major corporations.

Electric space conditioning systems can save builders 30% to 50% in first cost installation. In most cases, expensive stacks, flues and vents are





minated, often saving the equivalent in space of whole floors. There's more freedom of design in all-electric buildings. Less room is required for the main space-conditioning plant. The result is a low first cost, low maintenance building with very competitive per square foot operating costs. Add up all the advantages and sav-

ings. The all-electric building invariably has the lowest total annual cost.

The planning and architecture of Robinson's, Newport Beach, was by William L. Pereira & Associates. Robinson's, Newport Beach, now goes into Edison Company files as one of the hundreds of case histories of all-electric buildings in Central

and Southern California.

The Southern California Edison Marketing Engineering Department will be glad to show you how to apply the all-electric building concept to your project for remarkable savings. Write: Marketing Engineering Department, Post Office Box 62, Terminal Annex, Los Angeles, California 90051.

**SCE**

*Southern California Edison*

# Robinson's, Newport Beach.





# Don't you read before you buy ?



FURNITURE BY PEERLESS STEEL EQUIPMENT CO.

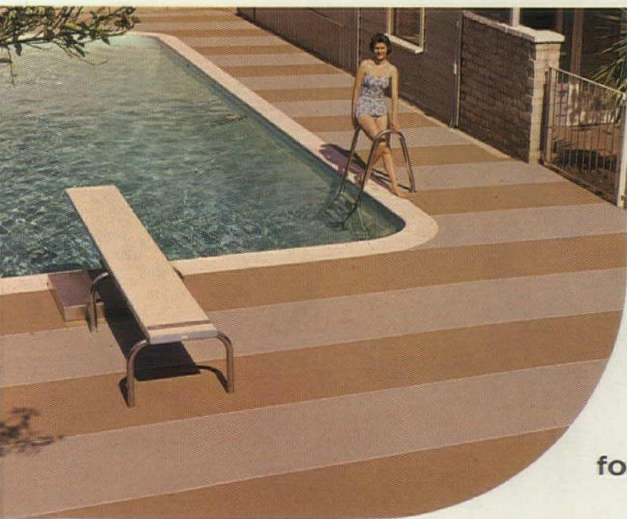
Businessmen do.  
Because when they buy, they put more than their money on the line.  
They put their reputations; perhaps their jobs. So they want the facts.  
The full facts. In print. And they want to refer to the facts. Pass them along  
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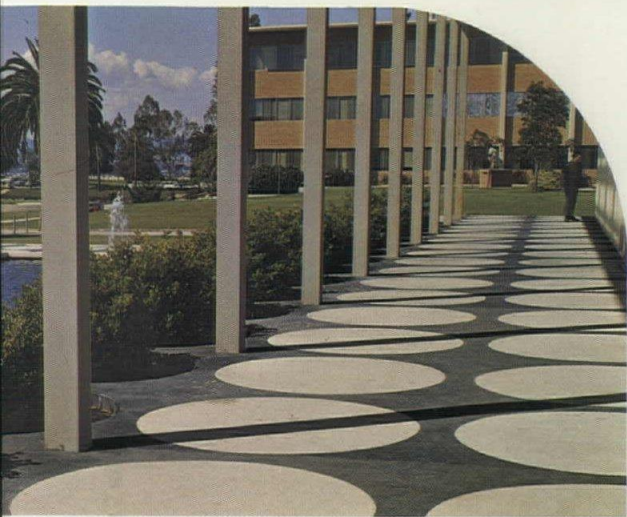
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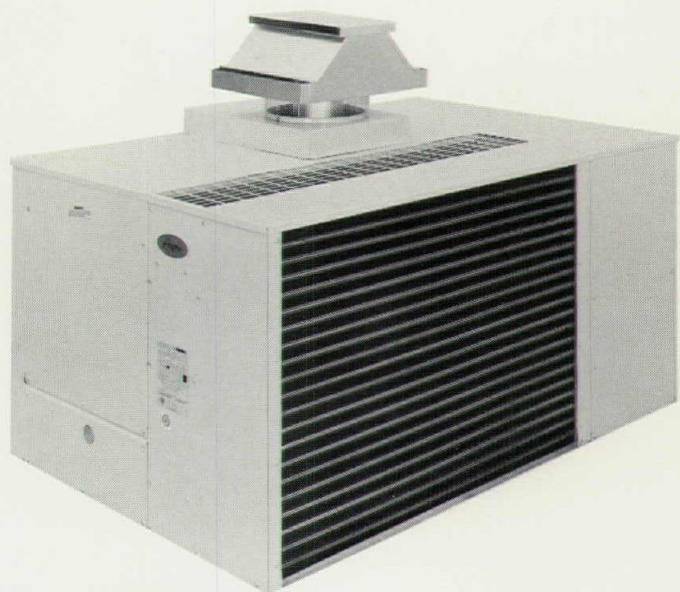
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Residence, Palos Verdes Peninsula, California • Architect: Carrington H. Lewis, A.I.A.

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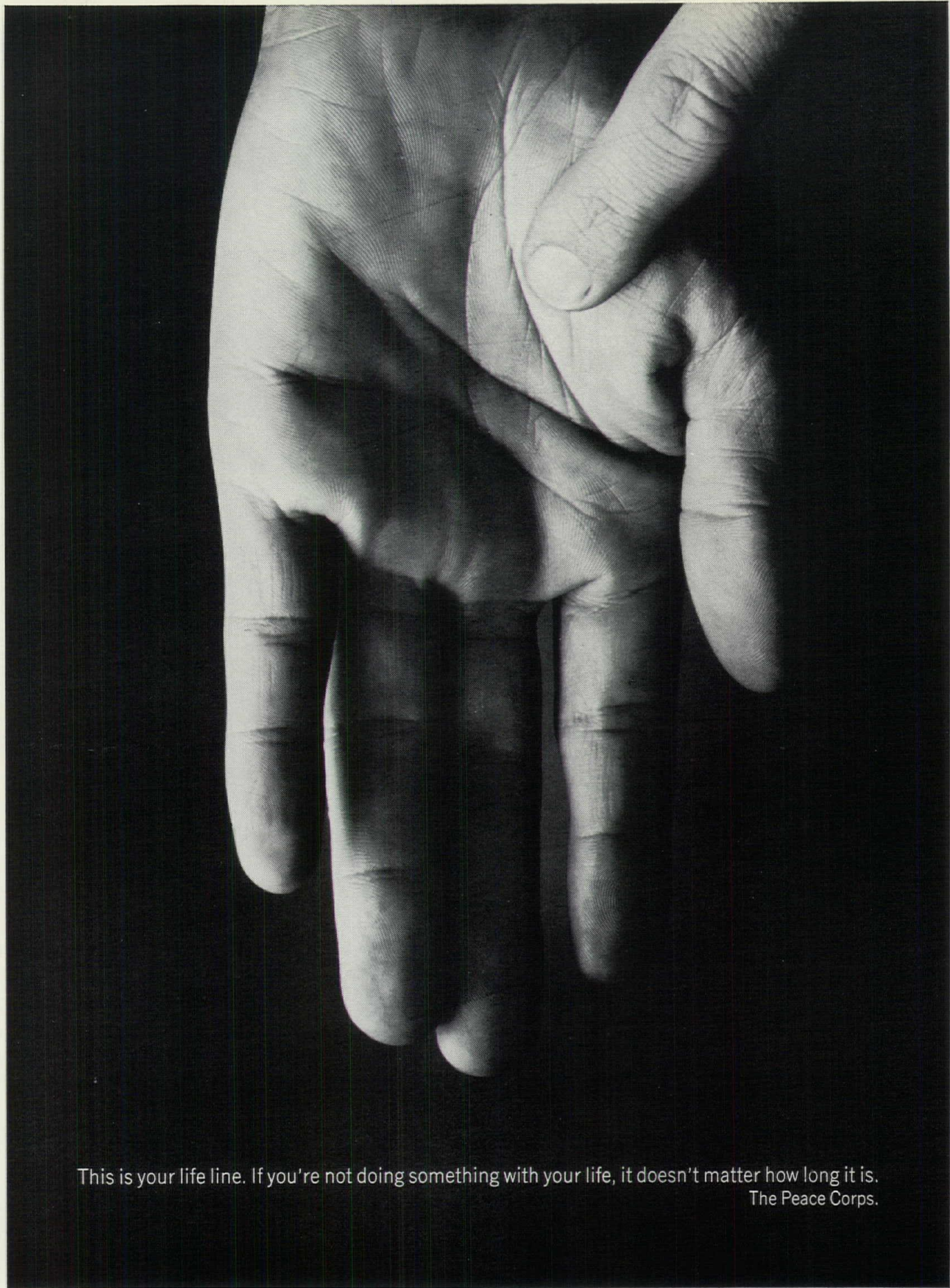
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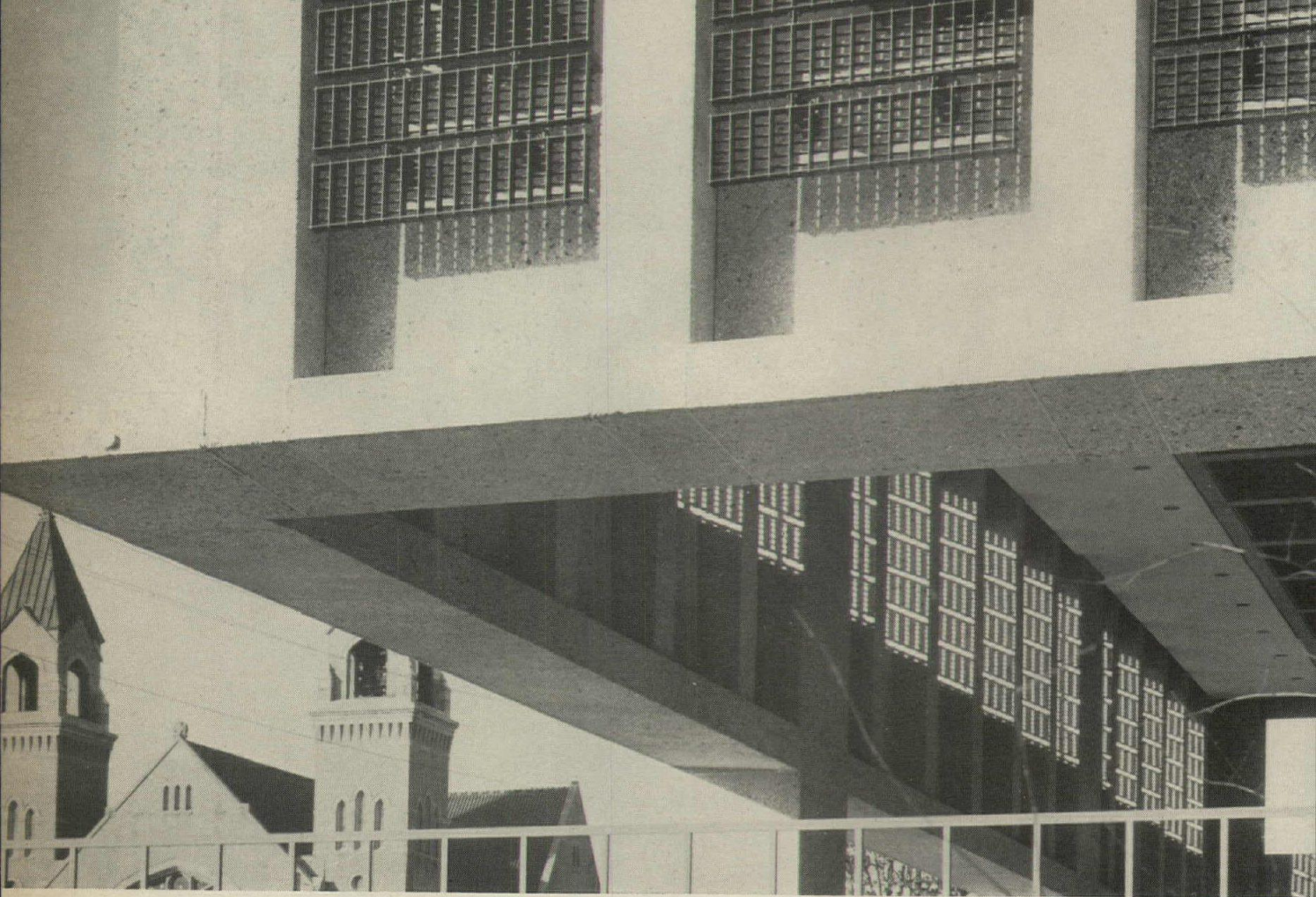
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## **BORDEN DECOR PANEL: Custom Design Screening**

The North Carolina Mutual Life Insurance Co. building in Durham, North Carolina, is shown here. Designed by Welton Becket, F.A.I.A., Architect, of New York City, this multi-story structure utilizes custom designed screening of Borden Decor Panel in rich Kalcolor Bronze finish. Created to complement and enhance the character of the building, the Decor Panel screens were custom designed and specified, individually fabricated, and tailored for special erection methods—all within a fixed budget. The savings effected by Borden's fabrication

and erection techniques made it possible for the architect to use the handsome bronze finish as well—still within the initial budget.

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## A.I.A. elects 76 Fellows; names slide show contest winners

Seventy-six members of the American Institute of Architects have been elected to the College of Fellows. Formal investiture will take place on June 24 at the A.I.A.'s annual convention in Portland, Oregon. Also announced by the Institute were three winners in its first annual nationwide chapter slide show competition, the winners to be shown at the convention.

The winning slide shows were chosen from 25 chapter entries. Participants were required to interpret concerns and activities of architects in American cities. The three winning submissions were: "California—Three Images"; "Whither Tacoma"; and Houston's "Billboards, Limited!". Serving on the jury were architects Millard E. Gooch, chairman, Woodland Hills, California, Harold T. Spitznagel, Sioux Falls, South Dakota, and Kenneth W. Brooks, Spokane, Washington.

The 76 new Fellows will bring the total membership of the College of Fellows to 817. Among the new Fellows is Elisabeth Kendall Thompson, a senior editor of ARCHITECTURAL RECORD, elected in the categories of "Literature" and "Service to Profession." The new Fellows were selected by a jury comprised of the following Fellows of the Institute: Joseph D. Murphy, chairman, St. Louis; Daniel Schwartzman, New York City; William Stephen Allen, Jr., San Francisco; Reginald H. Roberts, San Antonio; William J. Bachman, Hammond, Indiana; Clinton Gamble, Fort Lauderdale, Florida; and Paul Hunter, attending alternate.

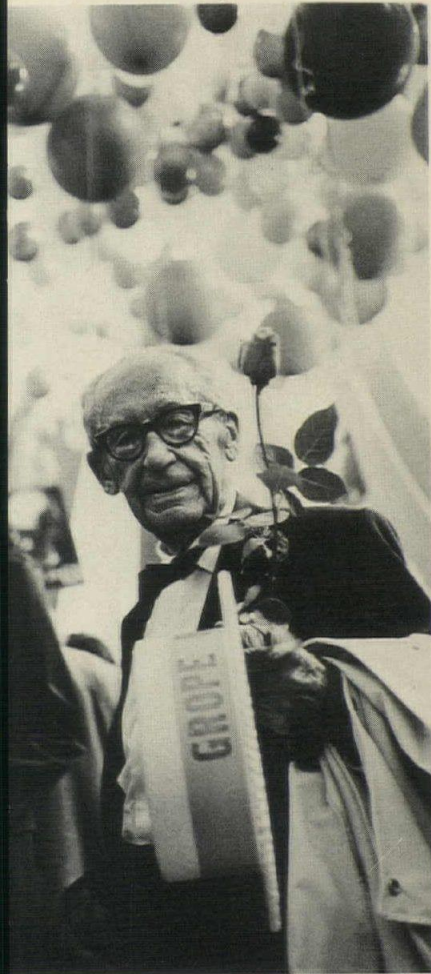
The complete list of new Fellows with their categories of election, follows:

Joseph Henry Abel, Washington, D.C., science of construction; Richard W. Ayers, Baltimore, design; David C. Baer, Houston, service to profession; Howard Barnstone, Houston, design, literature, education; Max Barth, Washington, D.C., science of construction; Carl Ellsworth Bentz, Columbus, Ohio, public service; Noland Blass, Jr., Little Rock, Arkansas, public service; Wilfred E. Blessing, San Jose, California, public service; Joseph Blumenkranz, New York City, education; William E. Blurock, Corona Del Mar, California, design, science of construction; Daniel Boone, Abilene, Texas, service to profession; Daniel Brenner, Chicago, design; Charles W. Brubaker, Chicago, design; Orin M. Bullock, Jr., Baltimore, literature; Walker O. Cain, New York City, design; William Corlett, San Francisco, service to profession; Richard L. Dorman, Beverly Hills, California, design; Daniel L. Dworsky, Los Angeles, design; S. Scott Ferebee, Jr., Charlotte,

North Carolina, service to profession; Henry Chandlee Forman, Easton, Maryland, literature; Louis Edwin Fry, Washington, D.C., education; Harmon H. Goldstone, New York City, public service; and Aaron G. Green, San Francisco, design.

Also: Earle Grady Hamilton, Dallas, design, service to profession; Robert Edward Hansen, Fort Lauderdale, Florida, public service; John C. Haro, Detroit, design; Harold D. Hauf, Los Angeles, education; John Norbert Highland, Jr., Buffalo, New York, service to profession; David Hull Horn, Fresno, California, service to profession; Victor Hornbein, Denver, public service; Gilbert Robinson Horton, Jamestown, North Dakota, service to profession, public service; Leonard L. Hunter, Washington, D.C., public service; Huson Jackson, Cambridge, Massachusetts, education; R. Graham Jackson, Houston, service to profession; Francis Haynes Jencks, Baltimore, public service; Marvin R. A. Johnson, Raleigh, North Carolina, public service; S. Kenneth Johnson, Los Angeles, science of construction; Richard Arthur Kimball, Salisbury, Connecticut, education; Charles Edwin Lamb, Baltimore, design; Ellamae Ellis League (Mrs.), Macon, Georgia, service to profession; Cyril Whitefield Lemmon, Honolulu, public service; Elmer A. Lundberg, Jr., Pittsburgh, science of construction; Charles H. MacMahon, Jr., Bloomfield Hills, Michigan, service to profession, public service; T. Norman Mansell, Wynnewood, Pennsylvania, service to profession; Carl L. Matson, Los Angeles, design; and Gerald M. McCue, Los Angeles, design, education.

Also: Paul D. McCurry, Chicago, public service; Walter McQuade, New York City, literature; Milton Milstein, Buffalo, New York, public service; John Moore Morse, Seattle, service to profession, public service; William C. Muchow, Denver, design; Donald E. Neptune, Pasadena, California, service to profession; Enslie Orsen Oglesby, Jr., Dallas, design; Walter F. Petty, Columbia, South Carolina, service to profession, historic preservation; John C. Portman, Jr., Atlanta, design; George W. Qualls, Philadelphia, design, education; Matthew L. Rockwell, Chicago, public service urban design; R. Gommel Roessner, Austin, Texas, design; Richard Roth, Sr., New York City, science of construction; Ivan H. Smith, Jacksonville, Florida, service to profession; Merritt H. Starkweather, Tucson, Arizona, public service; Claude Stoller, San Francisco, design, education; J. Robert F. Swanson, Bloomfield Hills, Michigan, service to profession, public service; Clinton Ternstrom, Los Angeles, service to profession, Elisabeth K. Thompson (Mrs.), San Francisco, literature, service to profession; David F. M. Todd, New York City, service to profession; Jack D. Train, Chicago, service to profession; Joseph Tuchman, Akron, Ohio, service to profession; James Grote VanDerpool, New York City, education; Harold E. Wagoner, Philadelphia, service to profession; David A. Wallace, Philadelphia, urban design; Elliot L. Whitaker, Columbus, Ohio, education; E. Davis Wilcox, Tyler, Texas, service to profession; William D. Wilson, New York City, service to profession; John L. Wright, Seattle, service to profession, public service; and Raymond S. Ziegler, Los Angeles, service to profession.



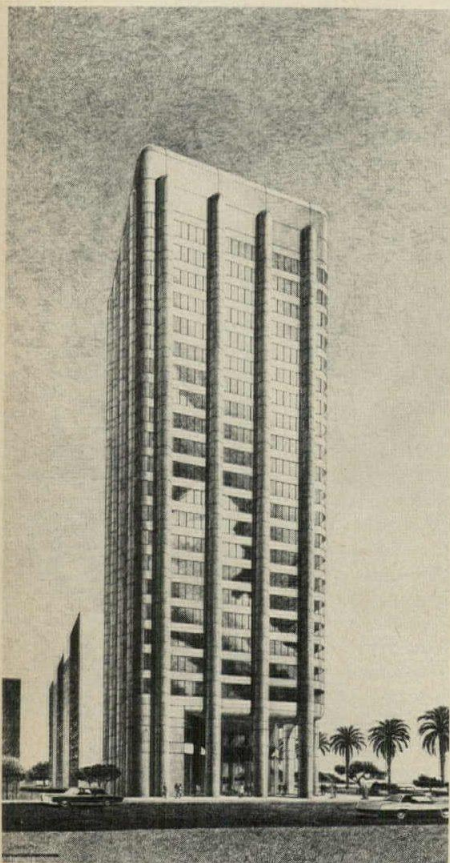
Steven A. Hansen

## Note Grope '68!

Politics were not as usual at Harvard's Graduate School of Design one day last month when the GSD, the Carpenter Art Center and The Architects Collaborative proclaimed Walter Gropius as their candidate for President on the straight Bauhaus ticket, at a party in Robinson Hall in honor of his 85th birthday. Banners, buttons, balloons and straw hats urged everyone to "Hope with Grope" and find "Total scope with Grope." It was an old-fashioned party—no psychedelic films and no "rock." Over 300 guests drank champagne, ate strawberries and listened to a short-haired band playing Chicago and New Orleans jazz.

Grope told his admiring, not to say loving, audience that one must always progress to the future and thereby live longer—"through endurance you may become somebody. . . . I am pleased to see so many young people. I was happy at Harvard."  
—M. F. S.





**The General Telephone Building**, Santa Monica, California, at left, designed by architects and engineers Daniel, Mann, Johnson & Mendenhall—Cesar Pelli, director of design—is a 21-story, square-plan tower providing column-free office space. The structure stands outside the walls and is composed of large hollow columns freestanding and cylindrical at the base, engaged and half-round above and ending in a bullnose detail. The wall is stretched as a skin, curved around the corners, over the parapet and under the soffit at the lobby. The columns and spandrels are smooth-finished, densified precast concrete with thin mullions clad in concrete gray PVC.

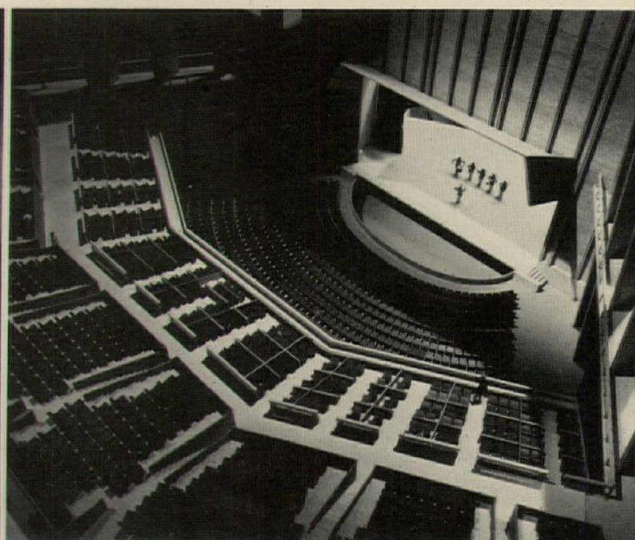


**The 32-story World Trade Center** in Baltimore's Inner Harbor Redevelopment Area will be a pentagonal office tower supported by five massive piers with 65-foot clear spans on each side. The poured-in-place reinforced concrete tower uses the pentagon shape for two reasons: to serve as a beacon for the area; and to allow two sides to rise from the harbor surface. The \$15-million tower will have a total area of 467,440 square feet. Architects are I. M. Pei & Partners (Henry N. Cobb, partner in charge, Pershing Wong, project architect) in association with Fisher, Nes, Cambell & Partners (H. Parker Matthai, partner in charge).

© Louis Checkman photos



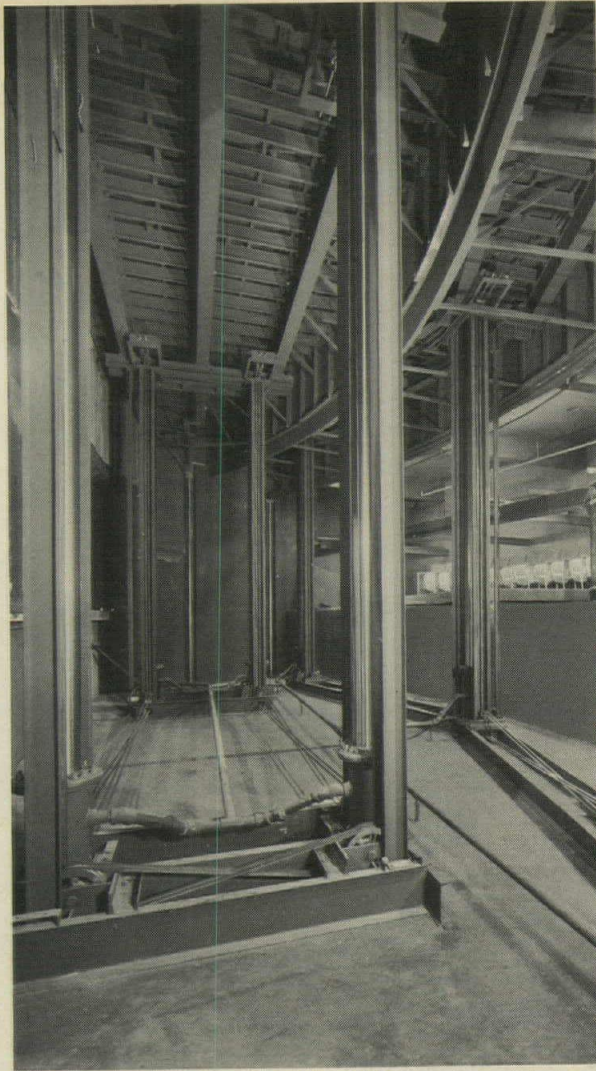
**The Filene Center**, Wolf Trap Farm Park for the Performing Arts, which will be built for the National Park Service in Vienna, Virginia, will seat 3,500 in the auditorium with 4,000 more people to be accommodated on an exterior grassy slope having unobstructed views of the stage. Two large ramps will give access



to the balcony. The stage house is 60- by 100- by 100-foot high with large hangar doors opening out to rehearsal platforms at the rear, sheltered by suspended roofs. Under the stagehouse and rehearsal platforms will be flexible dressing and work areas. The shape of the auditorium roof and walls were acoustically

determined. The roof structure is a system of laminated king-post and queen-post trusses with an infilling of laminated wood bents and wood planking. The acoustical side panels are placed to allow views between them of the meadow and woods beyond. Architects are Macfadyen and Knowles.





Below-stage view shows part of the lifting equipment designed and built by Dover for the Jesse H. Jones Hall for the Performing Arts, Houston, Texas.

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# A.I.A. CITES 20 BUILDINGS IN ANNUAL HONOR AWARDS PROGRAM

Twenty honor awards, for projects shown here and on the following pages, will be presented at the Portland-Honolulu convention of the American Institute of Architects in the A.I.A.'s 20th annual Honor Awards program. The awards will be presented to their architects at a special luncheon in Portland on June 24.

The winners were selected from among 377 submissions by a jury comprised of: Max O. Urbahn, New York City, chairman; Joseph Amisano, Atlanta; Sigmund F. Blum, Detroit; John M. Morse, Seattle; Walter A. Netsch, Chicago; and James Hunter, Boulder, Colorado, advisor. For a discussion of part of the jury's report, see page 10.



Gil Amiaga

"It is to the credit of the New York City citizen that he has preserved this interesting Victorian Gothic landmark in Greenwich Village. The architect is to be commended for his sensitivity in preserving the architecture and converting this landmark to a utilitarian structure for today."

JEFFERSON MARKET BRANCH LIBRARY, New York City. Architect: *Giorgio Cavaglieri, F.A.I.A.*; structural engineer: *A. D. Ateshoglou*; mechanical engineer: *Dr. Nicola Ginzburg*; electrical engineer: *Pavane & Zuckerman*; general contractor: *NAB Construction Company*; owner: *New York City Public Library*.

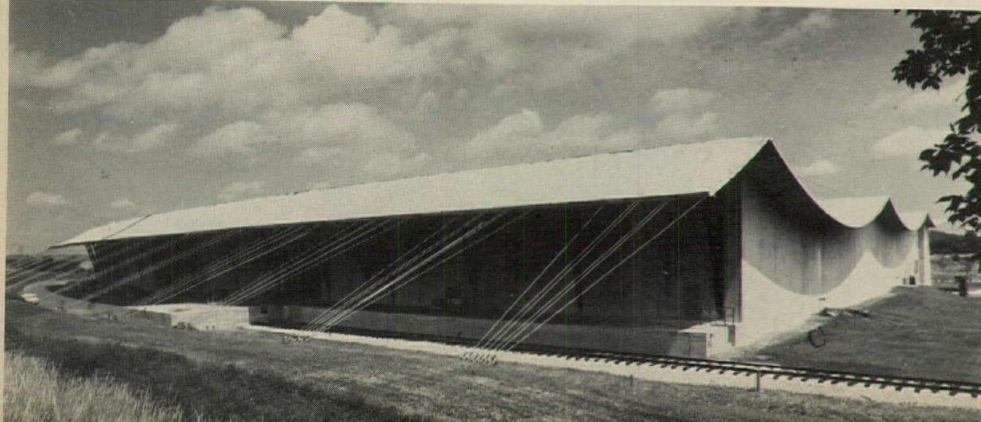


Max Gruzen

"A very straightforward and economical solution . . . yet the architect has been able to get out of it a pleasing form composition. . . . A direct programmatic solution in linear form articulating uses relating the recurrent shed roof as a primary design esthetic to concrete block and precast units."

SUBURBAN Y.M. & Y.W.H.A., West Orange, New Jersey. Architect: *Gruzen & Partners (formerly Kelly & Gruzen)*, *Abraham Geller, consulting architect*; structural engineer: *William Atlas*; mechanical & electrical engineer: *Paolo Squassi Engineers*; landscape architect: *M. Paul Friedberg & Associates*; general contractor: *Strauss Construction Company*.

Ezra Stoller Associates, Inc.



Morley Baer



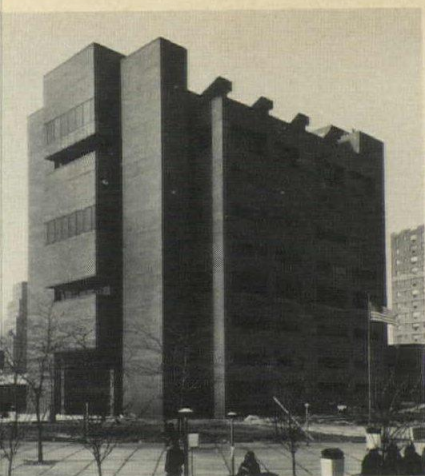
"Highly stylish but practical solution to swimming and tennis building. Beautifully sited, recognizing the surroundings and with the interior swings. Excellent use of graphic High camp."

SEA RANCH SWIM & TENNIS CLUB, The Sea Ranch, California. Architect: *MLTW/Mood Turnbull*; structural engineers: *Davis & Mooreau and Gilbert, Forsberg, Diekmann Schmidt*; electrical engineer: *Yanow & Bauer*; landscape architect: *Lawrence Halprin & Associates*; graphic designer: *Barbara Stauffacher*; general contractor: *Matthew Sylvester*; owner: *Oceanic Properties, Inc.*

"This building makes work a daily event for the people who utilize it. . . . The selection of the structural system is all part of the event. People feel they are coming, not to a house of work, but to an important building. The architects and engineers have demonstrated that they were willing to pursue other than the traditional architectural and economic norm for a warehouse project—it has appropriate scale and flexibility."

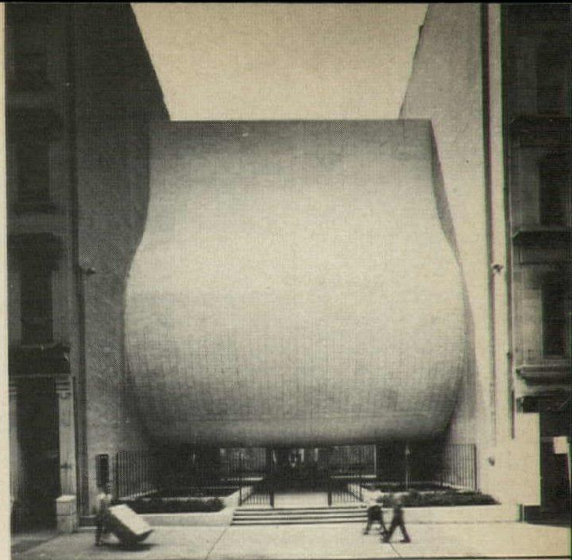
JOHN DEERE COMPANY WAREHOUSE, Pikesville, Maryland. Architect: *Rogers, Taliaferro, Kostritsky, Lamb, S. Thomas Wheatley*; project manager, *James R. Grieves*, project architect; structural engineer: *Severud, Peterson, Fisher, Sturm, Conlin, Bandel*; mechanical & electrical engineer: *Cosentini Associates*; landscape architect: *Knecht & Human*; general contractor: *Consolidated Engineering Company*.





"Very ingenious solution to a restricted urban site. Celebrates the street and the party wall. Flamboyant use of traditional religious element. Pleasant area because of the use of space and form. This religious structure has a glass wall which is unusual and inviting."

**CIVIC CENTER SYNAGOGUE**, New York City. Architect: *William N. Breger, A.I.A.*; structural engineer: *Paul Cugliotta*; mechanical & electrical engineer: *Batlan & Oxman*; landscape architect: *M. Paul Friedberg & Associates*; lighting: *John Maguire*; general contractor: *Sherry Construction Corporation*.



Robert Galbraith

A solution which shows the great adaptability of the old loft building and the economic logic of reusing them in another form. The new esthetic and old esthetic make a good contrast in what we think is important today. The architects are to be commended for their ingenious solution to a difficult remodeling alteration project."

**HUMANITIES-SOCIAL SCIENCE CENTER**, Long Island University, Brooklyn, New York. Architect: *Davis, Brody & Associates, Horowitz and Chun Architects*; structural engineer: *Wiesenfeld & Leon*; mechanical & electrical engineer: *Wald & Zigas*; landscape architect: *Victor Villemain*; lighting: *David Mintz*, general contractor: *Lasker-Goldman*.

"The success of this low-budgeted building is that the overall forms are very clearly expressed. The stadium envelope, with the simplest materials, makes this a very honest building. It's a straightforward solution done with skill, using standard materials. It doesn't follow the normal esthetic formula."

**WASHINGTON & LEE HIGH SCHOOL GYMNASIUM**, Montross, Virginia. Architect: *Stevenson Flemer, Eason Cross, Harry Adreon, Associated Architects*; structural engineer: *Milton A. Gurewitz Associates*; mechanical & electrical engineer: *Kluckhuhn & McDavid Co.*; general contractor: *L. C. Mitchell*; owner: *Westmoreland County School Board*.



J. Alexander

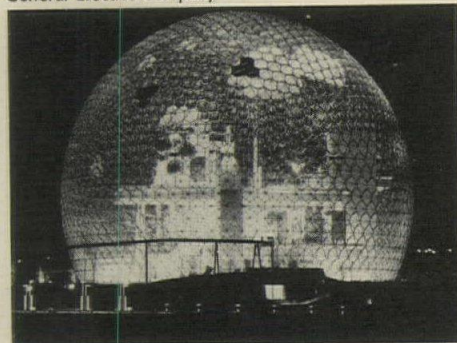
Orley Baer



Research is respected here. It has been emphasized. The attention to both structural and mechanical systems produced a building that tells everyone who sees it some of the things that society is doing. . . . Forceful, but a direct application of the technology of research to the architectural form. In the refinery location its vigorous expression probably is appropriate or could be appropriate."

**RESEARCH LABORATORY D**, Richmond, California. Architect: *Gerald M. McCue & Associates, Inc., McCue Boone Tomsick Architects*; structural engineer: *John A. Blume & Associates*; mechanical engineer: *Sanford Fox & Associates*; electrical engineer: *Beamer-Wilkinson & Associates*; landscape architect: *Sasaki, Walker Associates, Inc.*; general contractor: *Barrett Construction Company*; owner: *Chevron Research Company*.

General Electric Company



"This is an exciting, handsome space structure. . . . Invites the people in to go through an exciting experience. . . . Solved very admirably a problem of exhibit and translucent space. . . . We like the profile form on the horizon for both day and night. . . . Meld between transportation elements and the use of great diagonals through the building, escalators become an architectural form."

**UNITED STATES PAVILION-EXPO 67**, Montreal. Architect: *R. Buckminster Fuller/Fuller and Sadao, Inc./Geometrics Inc.*; structural engineer: *Simpson, Gumpertz and Heger, Inc.*; mechanical & electrical engineer: *Paul Londe and Associates*; landscape architect: *Carol R. Johnson*; interior platforms and exhibits: *Cambridge Seven Associates, Inc.*; general contractor: *George A. Fuller Company*; owner: *United States Information Agency*.

Joshua Freiwald



"Very ingenious thought on trying to solve a problem of a temporary structure for migrant workers that is to last only a couple of years. Employs materials which architects in this country really haven't discovered—plastic. A very pleasant treatment. Very direct, good example of introducing strength into the material by the way it is formed. Leads in a possible direction for our future need of inexpensive housing. Great economy of means. Art which destroys itself is just as valid as something permanent."

**MIGRANT MASTER PLAN, INDIO CAMP**, Indio, California. Architect: *Hirshen/Van der Ryn, Sanford Hirshen, partner in charge, staff—Colin Wright, T. Reynolds Williams, Ronald Gammill, John Trumbo*; structural engineer: *Davis & Morreau*; mechanical & electrical engineer: *Yanow and Bauer*; general contractor: *Elliot Construction*; owner: *State of California, Office of Economic Opportunity, in cooperation with OEO in Washington*.





William Maris

"This house has beautiful spacial qualities. It is a 1968 up-dating of the esthetics of the 30's with very sophisticated shapes and handsome spaces. The house uses flatness and sharpness and contrasting form with assurance. Good example of the affluent society of our suburbia."

ROGER STRAUS RESIDENCE, Purchase, New York. Architect, landscape architect, structural & electrical engineer: *Gwathmey & Henderson Architects*; mechanical engineer: *George Langer*; general contractor: *Barbagallo-Caramagna & La Vito*.

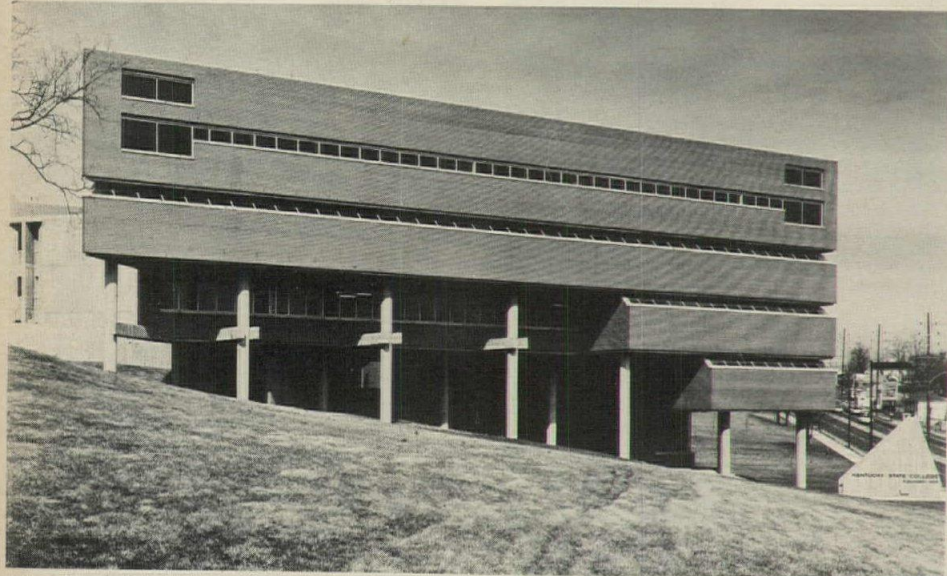


Ezra Stoller Associates, Inc.

"A very simple, straightforward structural statement. The buildings step up the contour and are excellently related to a rolling terrain. Very good example of establishing esthetic values which succeed in making a continuous structure out of separate objects. It uses the harsh whiteness in geometric form rather than selecting a traditional house form on a traditional colonial campus. Highly stylized, playful use of decor, pleasant."

DORMITORIES AND FRATERNITY, Colby College, Waterville, Maine. Architect: *Benjamin Thompson & Associates, Inc.*, *Joseph Maybank*, associate in charge, *Henry S. Reeder, Jr.*, project architect; structural engineer: *Le Messurier Associates*; mechanical & electrical engineer: *Shooshanian Engineering Inc.*; acoustical engineer: *Bolt, Beranek and Newman*; landscape architect: *Carol R. Johnson*; specifications: *Mario Pfaff*; general contractor: *Stewart and Williams Construction Company*.

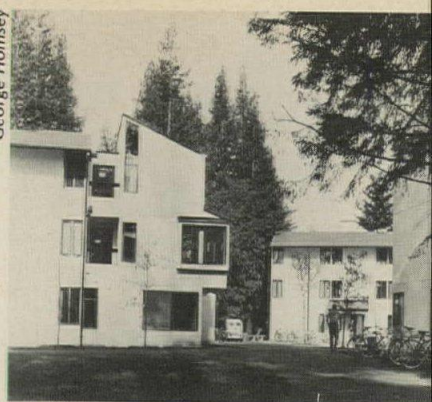
Tony Leonard



"Good, tough building in a traditionally sweet environment. Almost a non-building in which the circulation and movement is most important. Use of primary geometric forms for internal and external recognition. Something for the students to respond to. The architects met the difficult circulation problem . . . with clarity and directness."

CLASSROOM BUILDING, Kentucky State College, Frankfort. Architect: *The office of Oberwarth Associates*, *K. Norman Berry*, Architect/*James E. Burris*, Architect; *Milton Thompson*; structural engineer: *White, Walker and McReynolds*; mechanical & electrical engineer: *E. R. Ronald and Associates*; general contractor: *Vest and Bartell*.

George Homsey



"A very cheerful, lively, residential college playful forms set with variety in a handsome grove of trees. The white walls provide beautiful background for the foliage and shadows. The major interior assembly spaces are enlarged and dramatized by the steep sloping shed roofs. . . . Very successful use of color achieved by using red roofs against the green country-side. It luxuriates in recognizing student individuality."

ADLAI E. STEVENSON COLLEGE, University of California, Santa Cruz. Architect: *Joseph Esherick and Associates*; structural engineer: *Rutherford & Chekene*; mechanical & electrical engineer: *G. L. Gendler and Associates*; landscape architect: *Lawrence Halprin & Associates*; general contractor: *Williams and Burrows, Inc.*

Louis Reens



"Good example of contemporary Cape Cod. The exterior form is designed around the well articulated interior spaces of this house. Very appropriate use of materials for its seaside location. Intriguing interlocking of cubic forms. . . . This is a modest, contemporary house using traditional materials. It contrasts favorably in its simplicity with other highly stylized affluent houses."

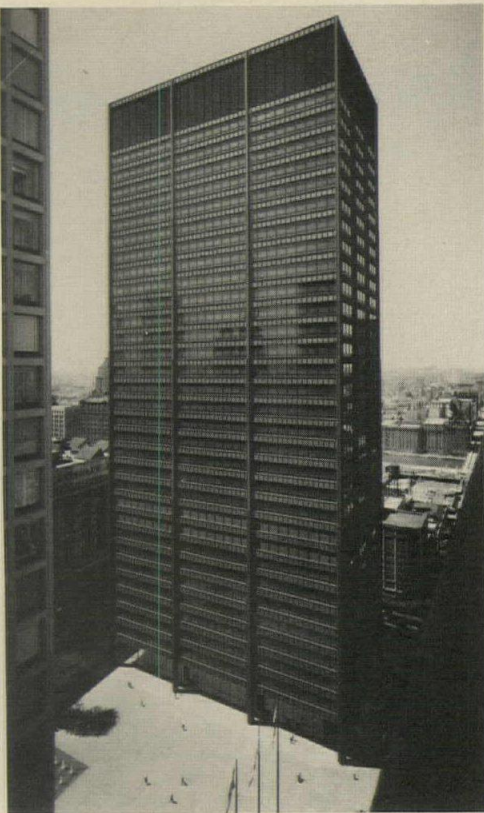
HALE MATTHEWS HOUSE, East Hampton, New York. Architect: *Alfred De Vido, A.I.A.*; general contractor: *Paul Bianco*.



... is a very elegant job. It is beautifully proportioned and has a plaza. It is well located and the space is formed with a purity and simplicity. The strong use of material is very well handled. The clarity of the whole project is excellent. . . ."

CHICAGO CIVIC CENTER, Chicago. Architect, landscape architect, structural, mechanical, & electrical engineer: *Chicago Civic Center Architects—C. F. Murphy Associates, supervising architects, Skidmore, Owings & Merrill, associate architects, Loeb, Schlossman, Bennett & Dart, associate architects;* general contractor: *Gust K. Newberg Construction Company;* owner: *Public Building Commission of Chicago.*

Hedrich-Blessing



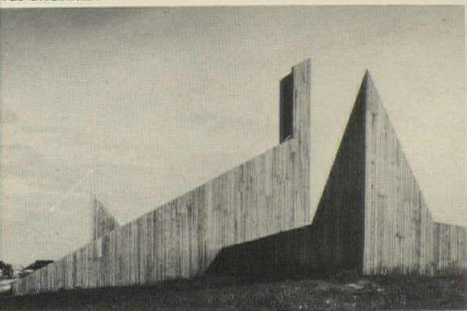
Jack Crider



"Here the usual industrial substation has made a conscientious effort to be organized and frankly admit to what it is. The insulators, transformers, and switches are clearly expressed. We like the introduction of landscaping and playground areas which relate to the neighborhood. . . ."

EAST PINE RECEIVING SUBSTATION, Seattle. Architect: *Fred Bassetti & Company/Architects;* structural engineer: *Richard F. Janke;* mechanical engineer: *Stanley G. Webster;* electrical engineer: *Beverly A. Travis & Associates;* landscape architect: *Richard Haag Associates;* general contractor: *Robert E. Bayley Construction, Inc.;* owner: *Seattle City Light.*

Arthus Schulman



"This house of worship dramatically rises out of the prairie of the Midwest. Its bold, primary wood forms enclose a highly stylized sanctuary. The symbolic use of the triangular forms results in developing interesting spaces, with room for expansion."

COVENANT UNITED PRESBYTERIAN CHURCH, Danville, Illinois. Architect and landscape architect: *Architects Crites and McConnell;* general contractor: *Ore W. Vacketta Construction Company.*

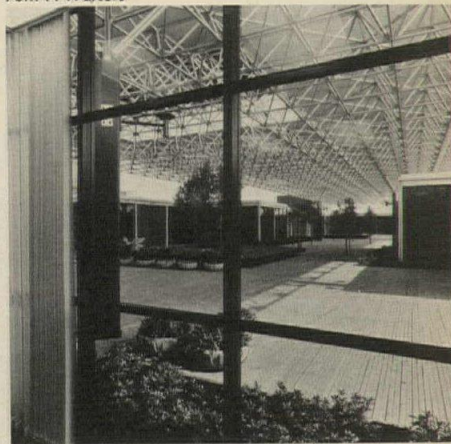
Roger Sturtevant



"This building uniquely expresses the working content of the building which is research. It is an enormously flexible building which suggests that this is not a one-shot plan. . . . Thoroughly systematic, elegant analysis of a medical laboratory problem. Has exuberance and human quality even though it is very technically oriented. Elegant optimization of systematic design and geometric form."

HEALTH SCIENCES INSTRUCTION AND RESEARCH BUILDING, San Francisco Medical Center, University of California. Architect and structural engineer: *Reid, Rockwell, Banwell & Tarics;* mechanical & electrical engineer: *DeLeuw, Cather & Company;* general contractor: *Dinwiddie Construction Company.*

Tom F. Walters




"A marvelous solution to an interim industrial facility in which the space frame canopy permits the juxtaposition of office and laboratory facilities in a pleasing form. The whole approach is pleasing, inviting, simple and direct. Good use of pre-packaged mechanical systems. Shows elegant refinement of a mobile shelter in combination with the engineering refinement of a space frame. Socially responsible in its multiple openness and detailed with absolute consistency."


SYNTEX INTERIM FACILITIES, Stanford Industrial Park, Palo Alto, California. Architect: *Mackinlay/Winnacker, A.I.A. & Associates,* Herbert D. Hughes, project associate; structural engineer: *Pregnoff & Matheu;* mechanical engineer: *William M. Brobeck & Associates;* electrical engineer: *Beamer/Wilkinson & Associates;* landscape architect: *Sasaki, Walker Associates, Inc.;* general contractor and owner: *Syntex Laboratories, Inc.*




# SHHH


**“Where plumbing noise is a factor,  No-Hub® joints give us a quieter sanitary system.”**


MR. BART SPANO, P.E.  
Polysonics Acoustical Engineers, Washington, D.C.

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Remember, sanitary systems of  No-Hub® echo quality . . . and nothing more.

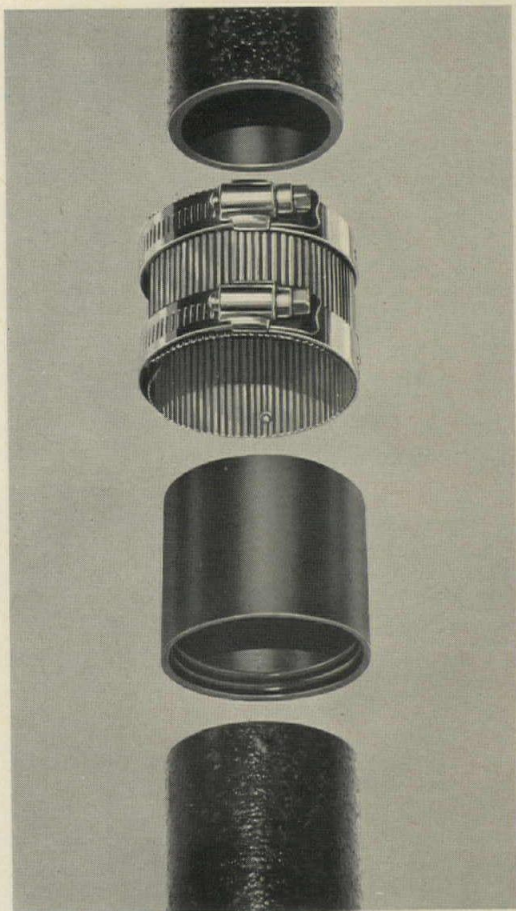
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# QUIET



## The silencer that seals cast iron soil pipe is made of Du Pont Neoprene

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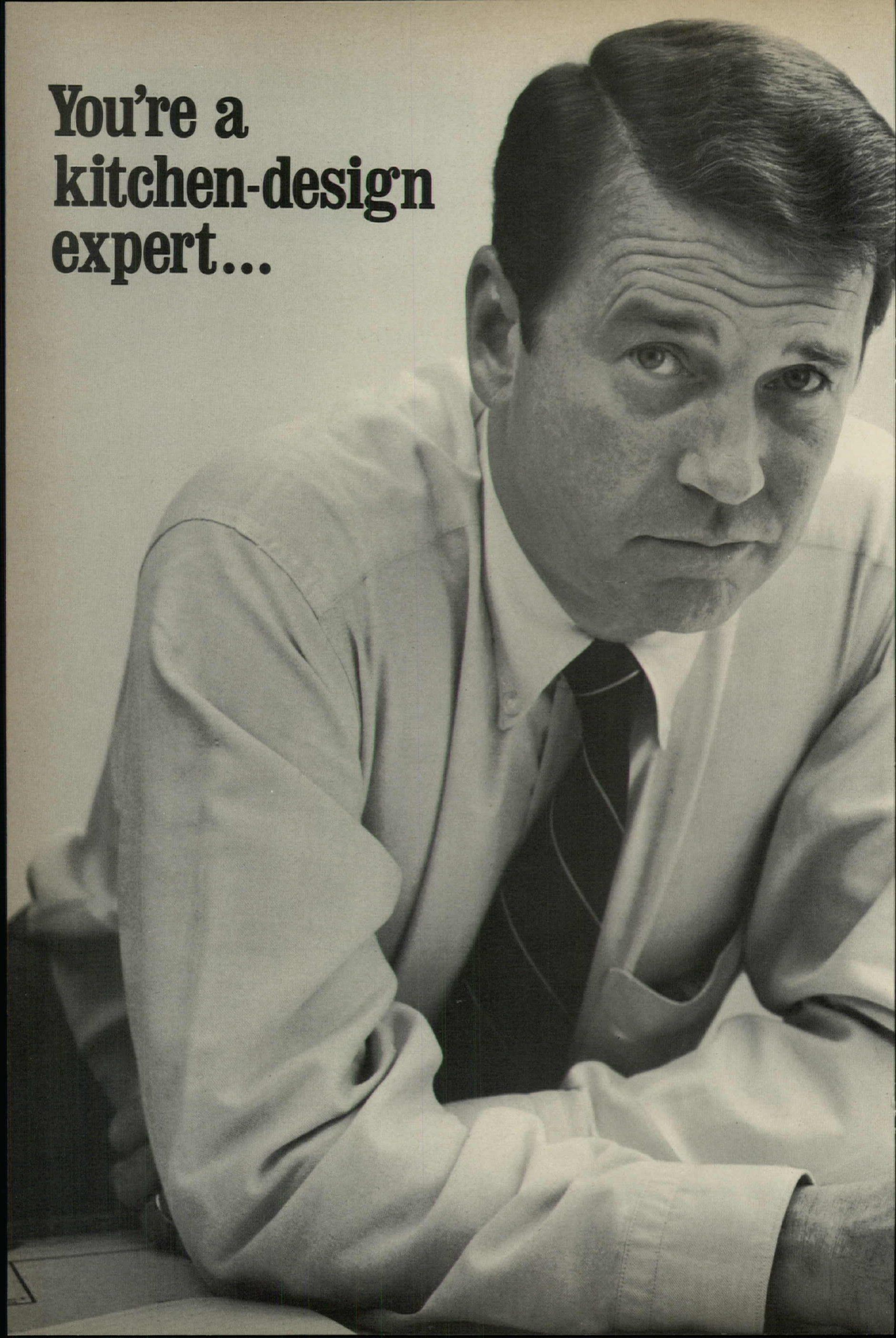
For more information on the use of Neoprene in cast iron soil pipe systems, write Du Pont Company, Room 6258A, Wilmington, Del. 19898.

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**NEOPRENE**

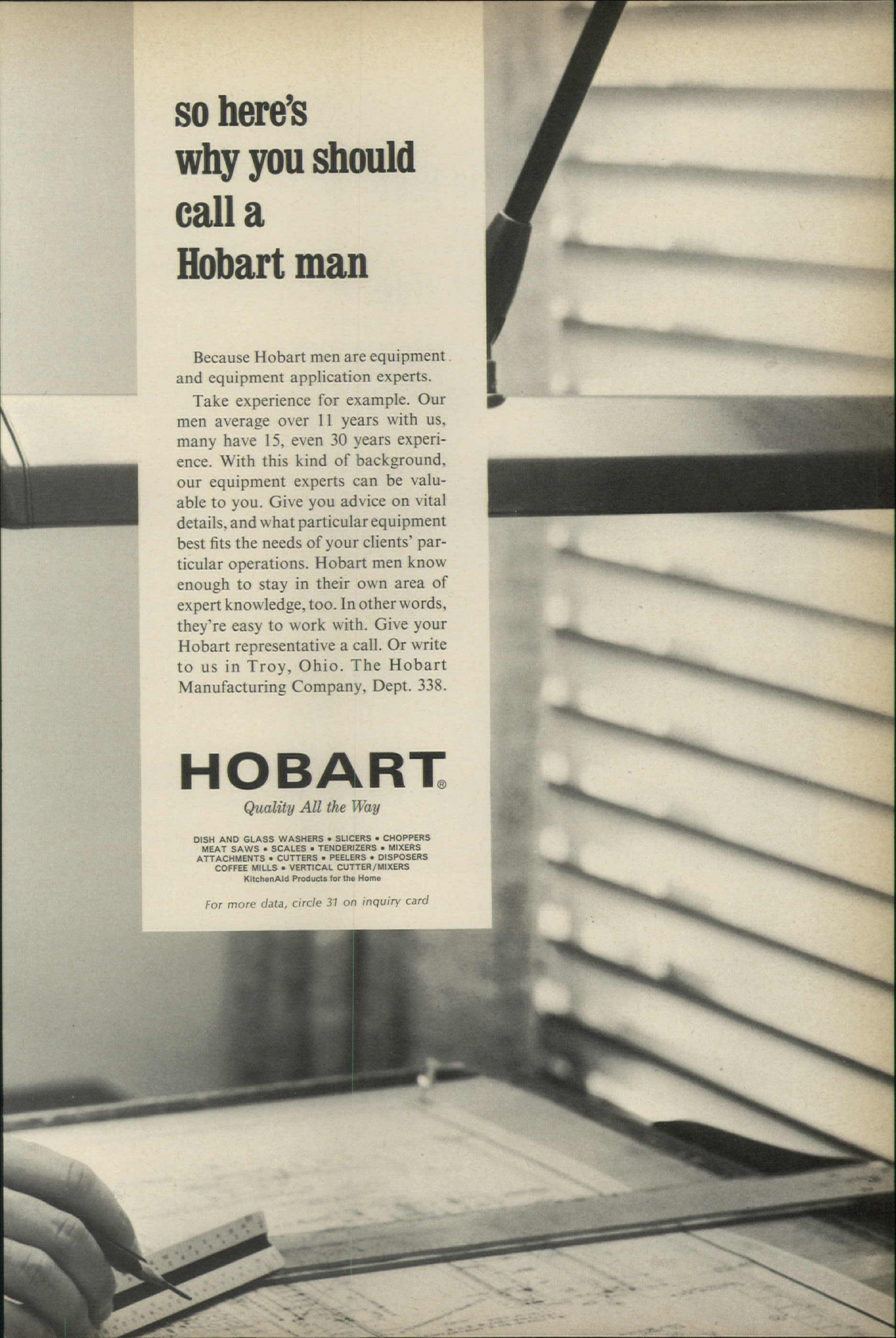
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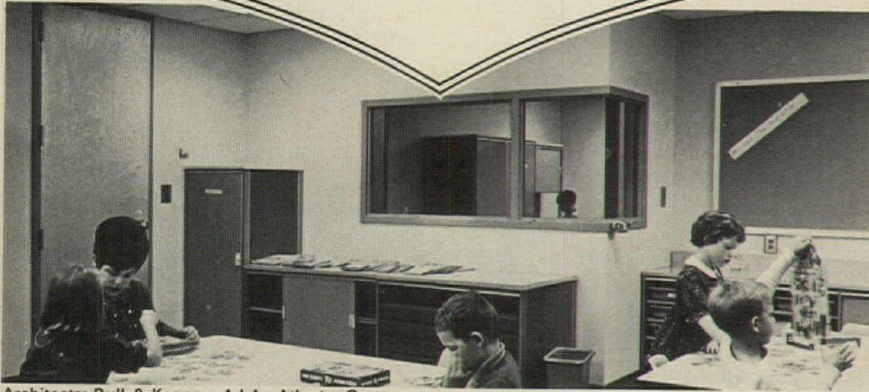
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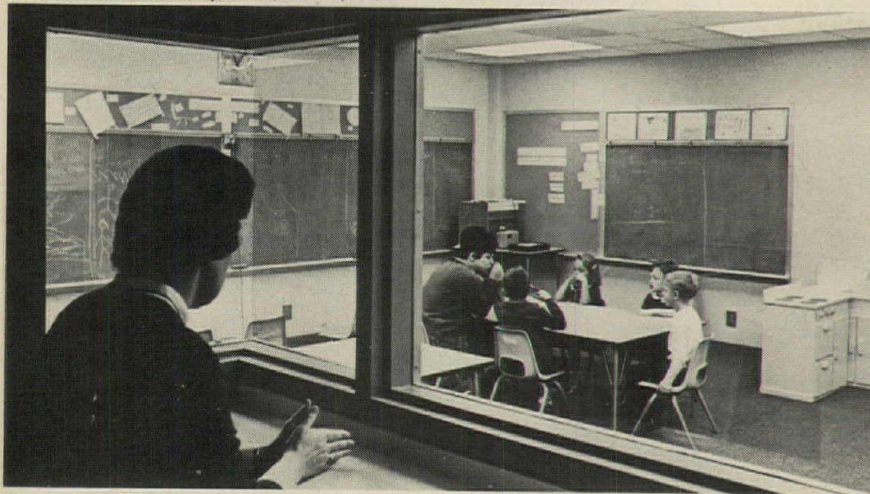
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If you think  
this mirror is just  
a mirror, look at it  
from the other side.



Architects: Bull & Kenney, A.I.A., Atlanta, Ga.

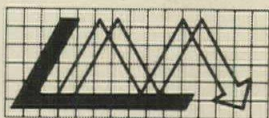


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### The module-space-race

I have read the careful letter by ASP (April, page 48). May I draw some fundamental industrial considerations before your readers feel seduced into the module-space-race:

1. Industrialization is best defined "a productive method based on mechanized and organized processes of repetitive character" (source: Ciribini). We note that: (a) It concerns *how* tasks are performed, not what is made, although the two are obviously related. (b) It involves mechanization and organization—within a competitive context, these must be justified by corresponding savings in direct labor—where mechanization and organization occur without significant repetition. (c) The necessary precondition is that there should be repetition of the processes. Without this repetition it is neither possible nor worthwhile to set up the new technologies.

2. Industrialization is a question of degree. Already there is no building which owes nothing to industrial processes (the brick, the milled stud, the nail, glass—the list would be long) but equally there is no building which owes nothing to manual processes (even the mobile home). The challenge is to increase the use of industrialization.

3. Traditional building is organized in a way that is strictly compatible with its technology. Buildings are commissioned one-off, designed as if uniquely built manually, using basic machine-made ingredients. The architect defines *what* the building is to be like, and the contractor thinks up *how* to build it. This arrangement works as long as the "how" is manual. But introduce industrial methods, and the "how" is no longer so accommodating; the "what" that is designed must take account of the industrial processes.

4. Because of the repetition required for successful industrialization, new programming arrangements (to do away with the one-off, discontinuous traditional procedures) are being devised. This rudely upsets the cozy traditional relationships and new on-going arrangements become necessary.

5. Experience in almost all countries shows that it is quite pointless to propose new technological solutions (superficial or detailed) unless the organizational context is appropriate. There have been few major savings so far in industrialization (and a number of spectacular bankruptcies) it is because people do not realize the importance of industrialization of working within an a

more letters on page

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## *New angle from G.E.*

Semi-recessed fountain or cooler.

Or fountain first and cooler later: refrigeration package is available separately. Choose either 8 or 12 gph cooler model (or the fountain). Logical—and good-looking design from the thoughtful engineers at General Electric.

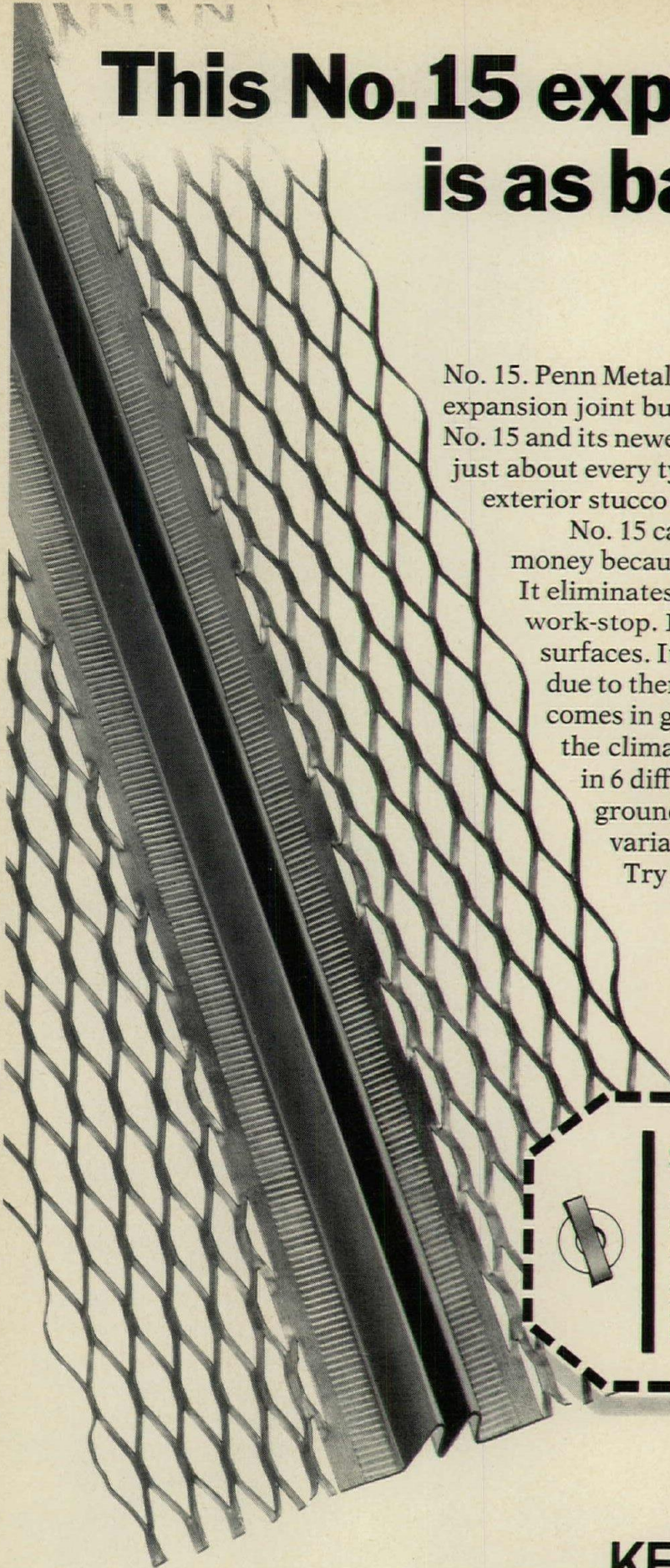
For more information, see the Yellow Pages. Or write: G. E. Co., Dept. 761-37, 14th and Arnold Streets, Chicago Heights, Illinois 60411.

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See Sweet's Catalog for  
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water coolers



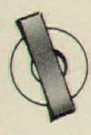
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## Send for free sample.



For all our data sheets on the No. 15 and No. 30 expansion joints, and a free sample of No. 15 for your very own, just write our Bob Battin on your company letterhead. Ask for No. 15. You couldn't ask for anything better.

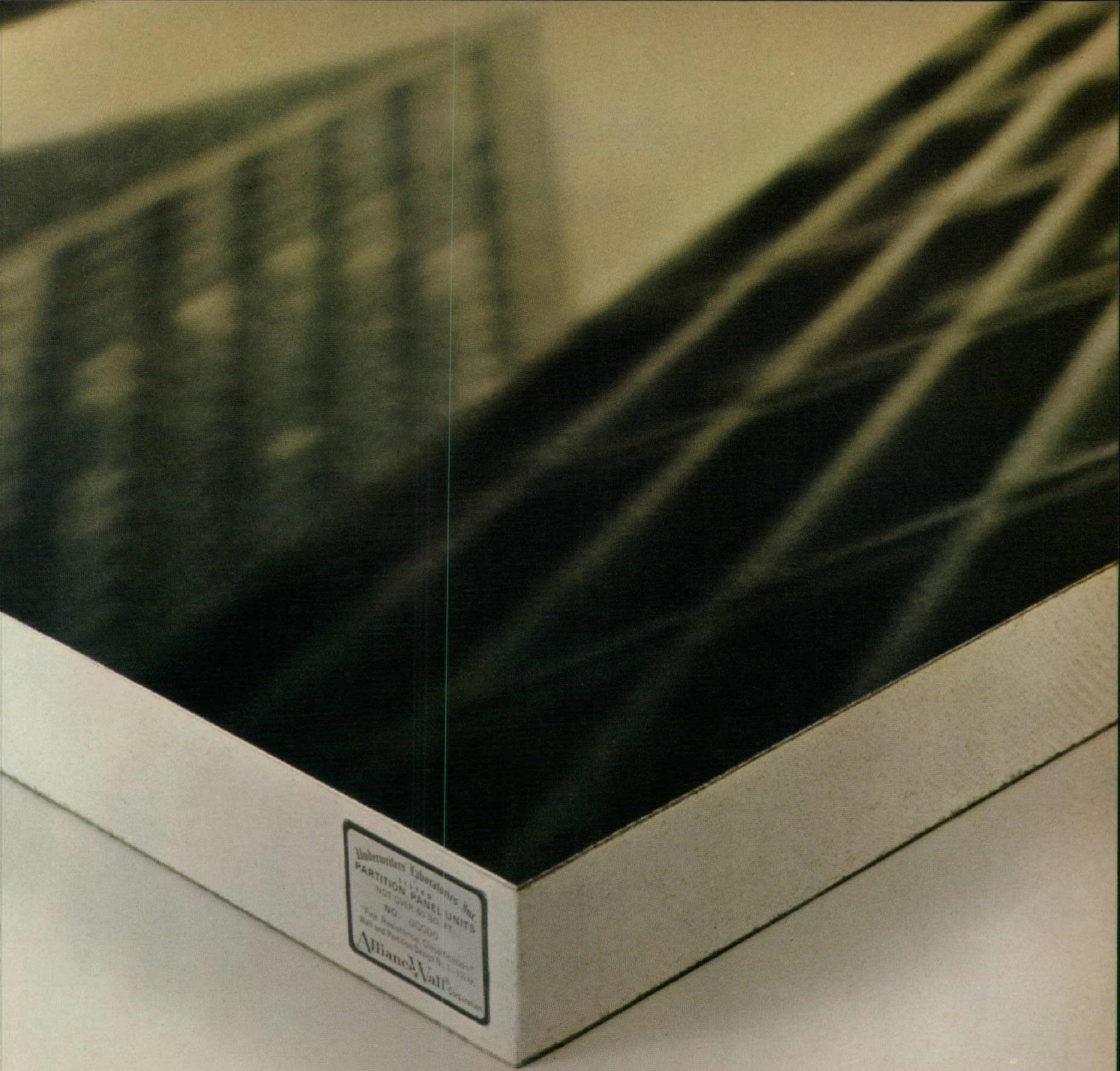
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CORPORATION DIVISION

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They do combine treated wood and a sheath of rigid vinyl to create the most maintenance-free, best insulating windows ever.

Then consider these advantages for you and your client:

**No painting.** Handsome, rigid vinyl won't need it. Yet it takes paint readily. Looks great indefinitely.

**Low maintenance.** They're virtually maintenance-free. Armor-like finish won't pit. Won't corrode. Won't need rubbing down. Won't rust. Resists scratching.

Andersen's unique groove glazing eliminates all face putty problems.

Welded insulating glass means there are no storm windows to wrestle with and two fewer glass surfaces to maintain.

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**High insulating value.** All the insulating superiority of the best quality wood windows!

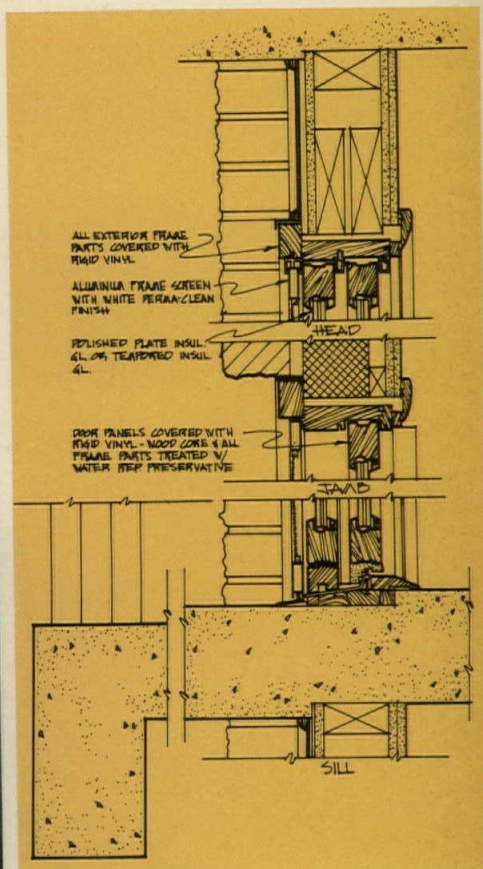
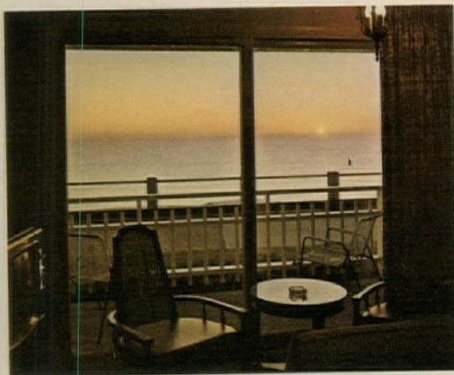
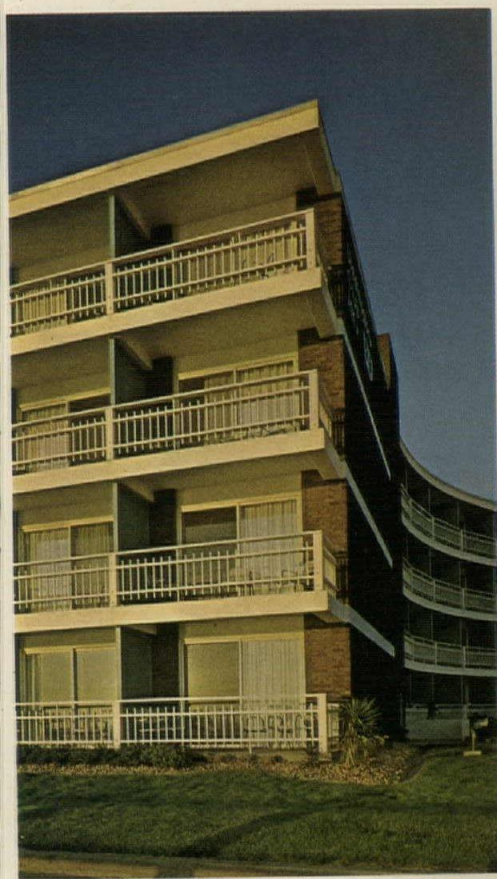
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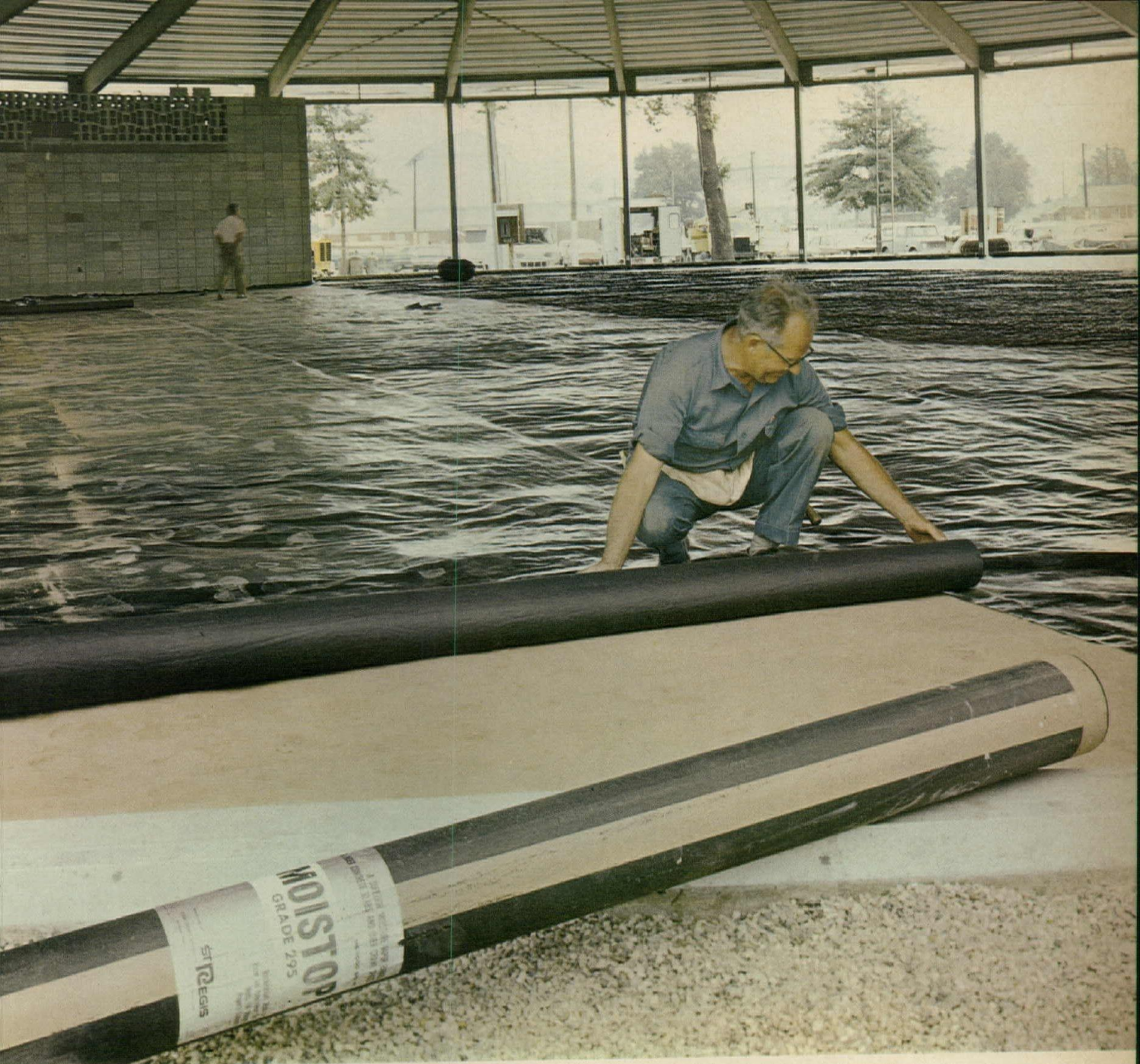
**Where it's crisper by design.**

**LPI** FLUORESCENT  
LIGHTING

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# New, Superstrong Moistop-2 Makes Sure Moisture Migration Never Damages The Floor

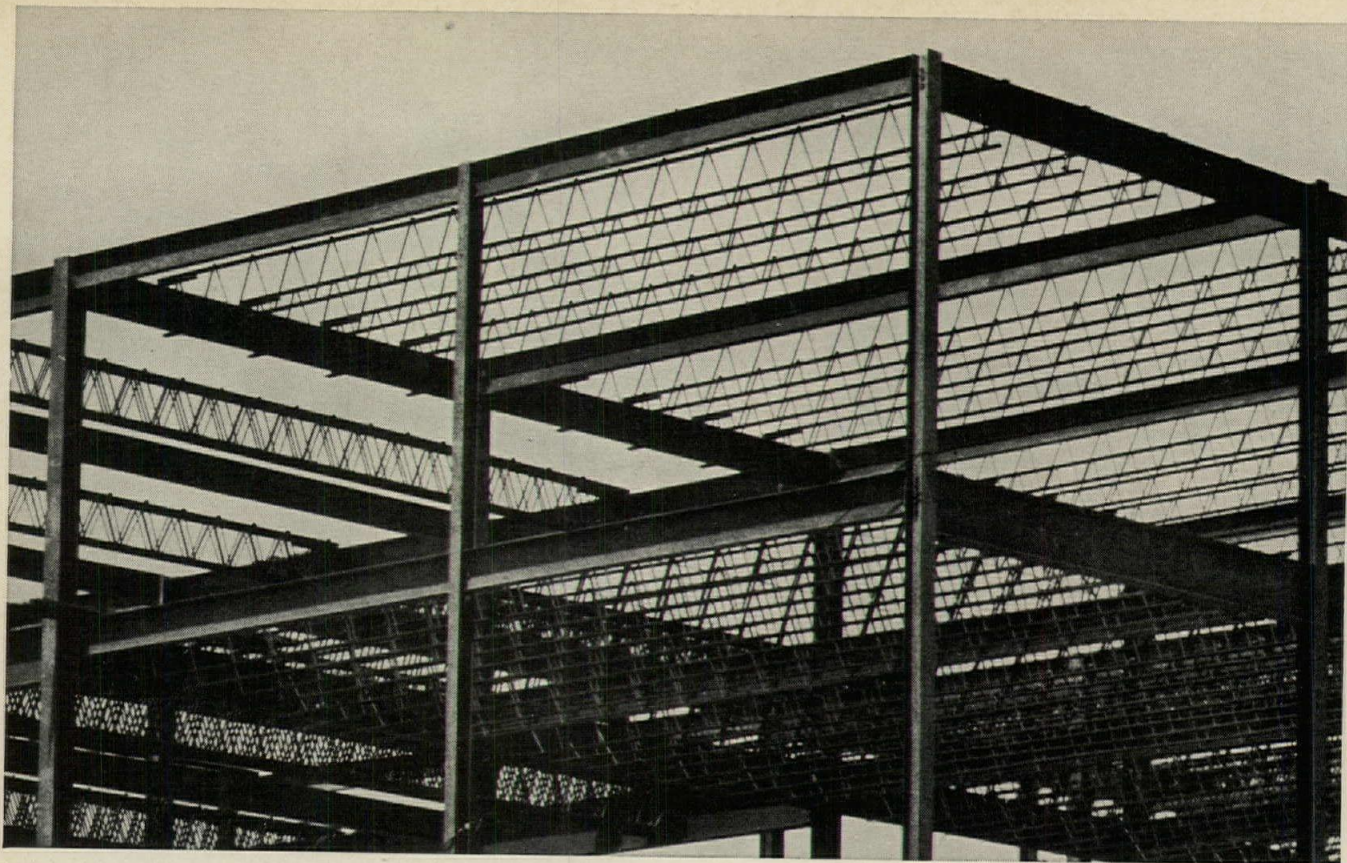
It's what goes **under** the floor that counts! Moisture migration through the slab plays havoc with floors as well as the most beautiful floor covering. Not to mention complaints, call backs and repairs. That's why **before** you start thinking about floor covering, think first about a **tough** enough vapor barrier. Specify and then insist on **Moistop<sup>®</sup>-2**.

**Moistop-2** . . . the 5-ply vapor barrier that keeps out moisture because job-site abuse won't rip and tear it like plastic film. Moistop-2's strength comes from two plies of polyethylene film, plus glass-fiber reinforcement, asphalt and high-strength kraft. It has a permanent MVT rating of 0.10 perms. **Be sure** . . . send for Moistop-2 sample and Specification Guide. Write: Sisalkraft, 73 Starkey Avenue, Attleboro, Massachusetts. In Canada: Domtar Construction Materials Ltd.

**ST REGIS**  
SISALKRAFT DIVISION

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## Another Building Goes Composite with Laclede's Unique C-Joists

Composite construction is showing up in more and more buildings across the country. Here's one of the more recent: Adlai E. Stevenson Hall for Humanities at Illinois State University, Normal.

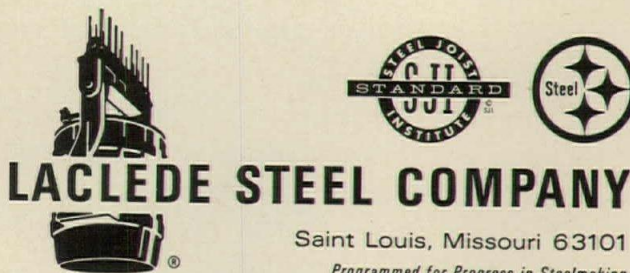
Almost 400 tons of Laclede Composite C-Joists were used in the floor system of this new educational facility, with an additional 52 tons of Laclede standard joists in the roof.

C-Joists offer distinct advantages for composite construction. They eliminate the time and cost of welding on shear connectors. The web panel points project several inches above the top chord, acting as built-in shear connectors. Inverted top chord provides a convenient shelf for fast, one-man placement of prefabricated deck.

Laclede composite and standard joists are available in a wide range of lengths, depths and load bearing capacities. Write for new technical brochure with complete information.



*Adlai E. Stevenson Hall for Humanities  
Architect and Engineer: Middleton & Assoc., Normal, Ill.  
Contractor: J. L. Wroan & Sons, Inc., Normal, Ill.*



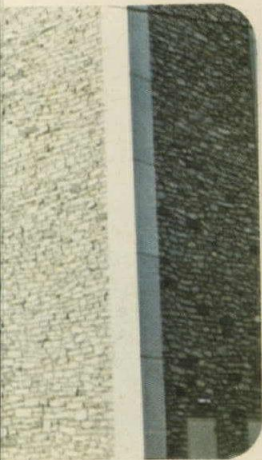
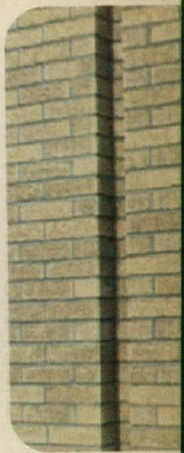
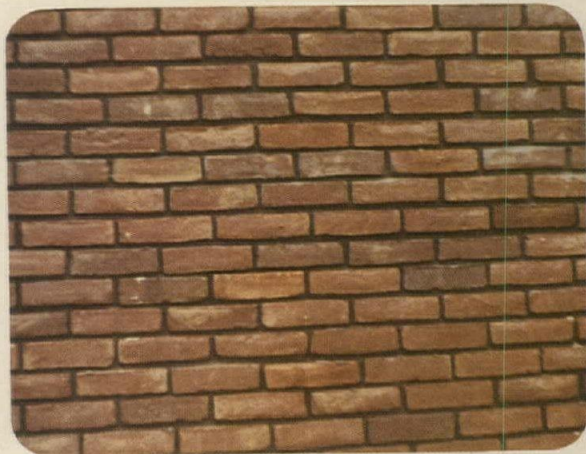
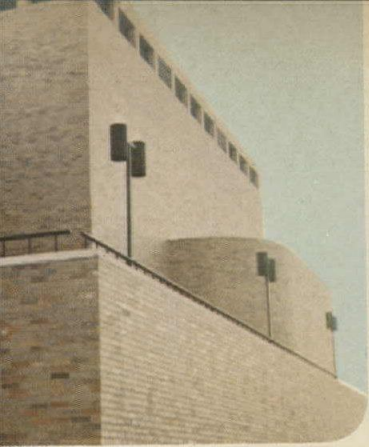
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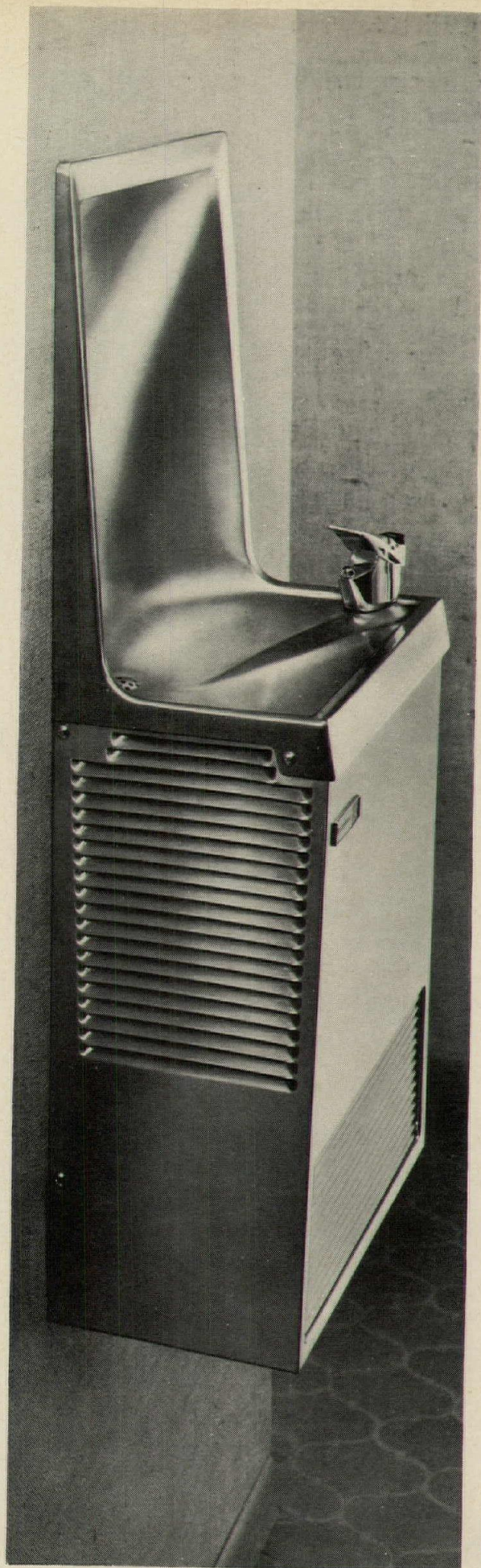
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Projecting only 9½ inches from the wall and tapering down to 8¾ inches, this Westinghouse Semi-recessed Water Cooler has a handsome stainless steel basin with ample headroom. And a tamper-proof push-button bubbler. Comes in three beautiful cabinet finishes: gray-beige enamel, neutral-beige vinyl and stainless steel. Installation's easy and economical because all plumbing enters a sturdy enameled-steel wall box, and is installed before the cooling system is hung into position. The entire unit is backed by a five-year guarantee plan that covers the hermetically sealed cooling system and all functional parts (excluding labor). Specify and install the one that's different from all the others. The slim one. From Westinghouse. For product details see Sweet's Architectural File, or contact our local Manufacturer's Sales Representative.

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**Westinghouse** 

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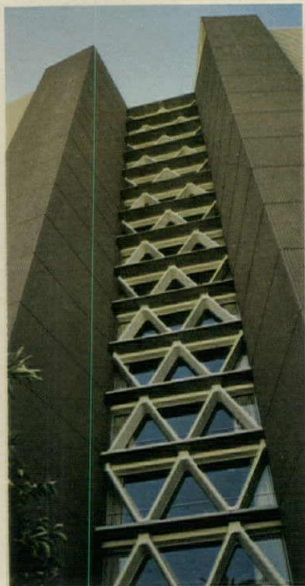
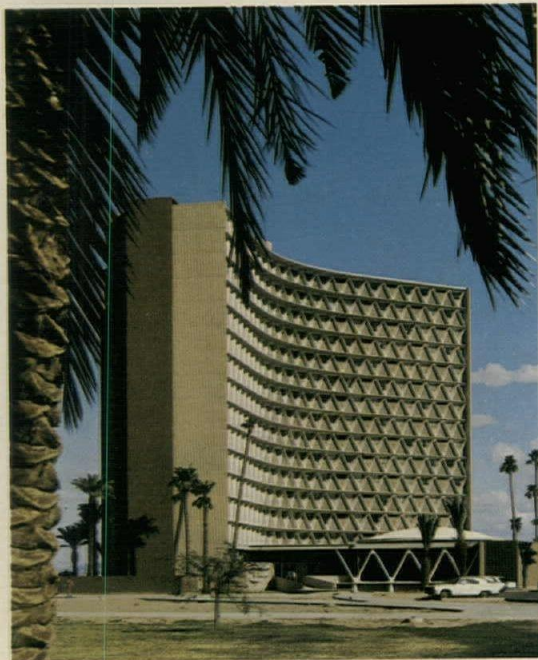
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light,  
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A total of 475 windows like the one shown at left open through the concrete structural skeleton of this distinctive dormitory.

Windows in the front facade are glazed with ASG's twin-ground Gray plate glass to reduce the heat and glare of the late afternoon sun. All other windows are glazed with ASG's clear Starlux® twin-ground plate glass. All windows provide the distortion-free viewing possible only with the finest plate glass.

Starlux and ASG Gray plate glasses are members of the broad family of architectural glasses by American Saint Gobain. For complete information write: Dept. D-6, American Saint Gobain Corporation, P.O. Box 929, Kingsport, Tennessee 37662.

Manzanita Hall  
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Architect: Cartmell and Rossman  
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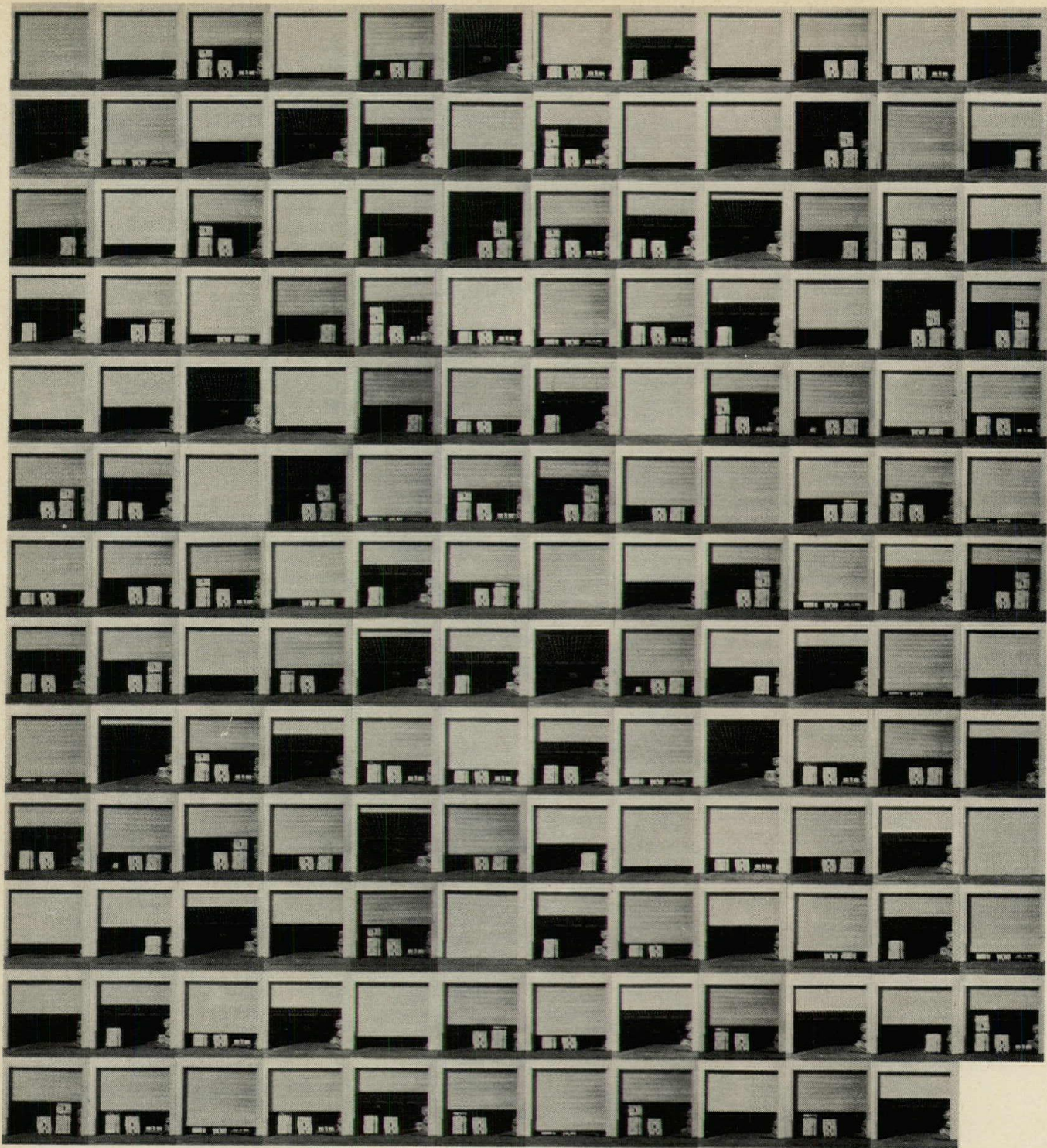


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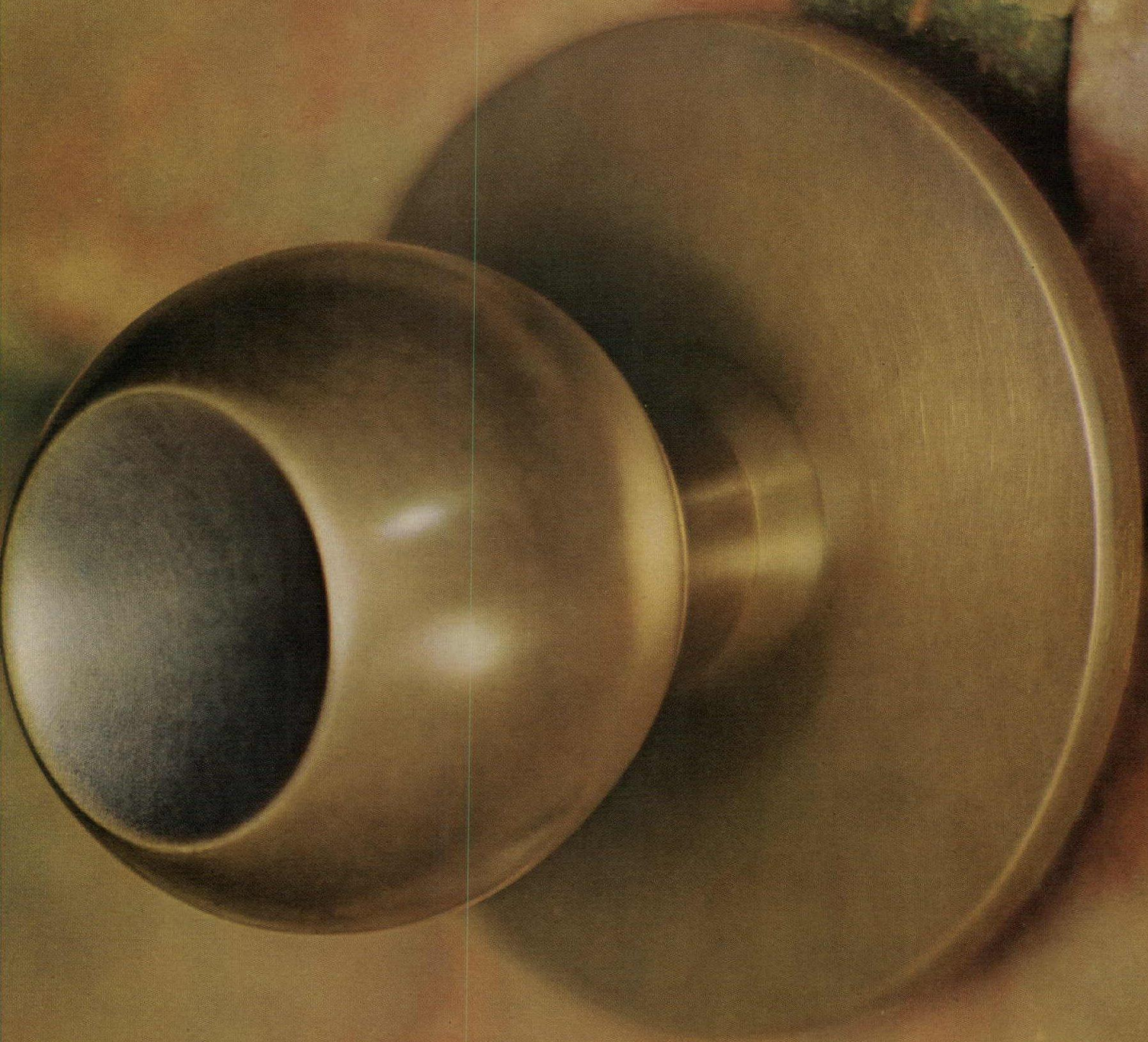
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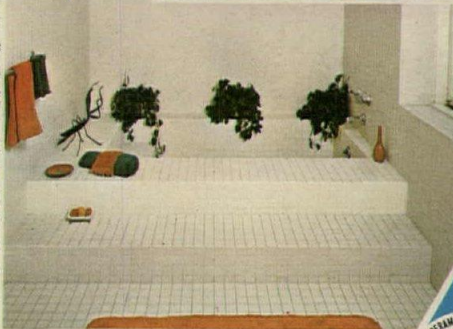
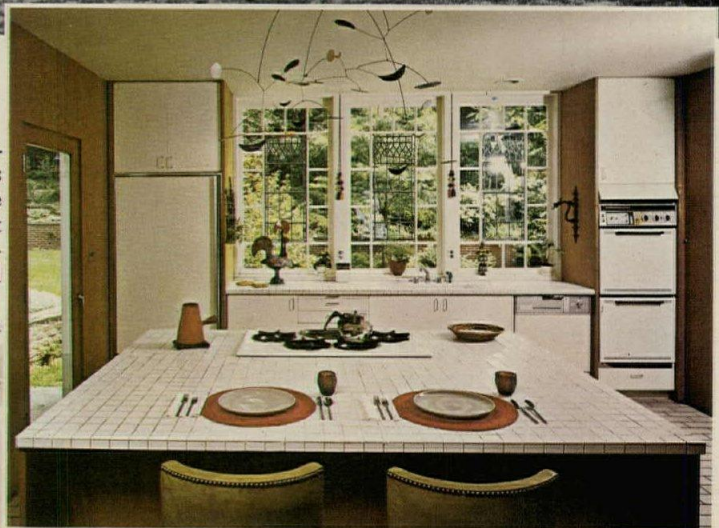


George Nemeny (F.A.I.A.) tore down walls, installed skylights, window walls and white ceramic tile to update this Kings Point, N.Y., house designed by Stanford White at the turn of the century. He flooded the dark interior with light and centered on highlighting a magnificent view of Long Island Sound while retaining the spirit of the Classic Revival original.

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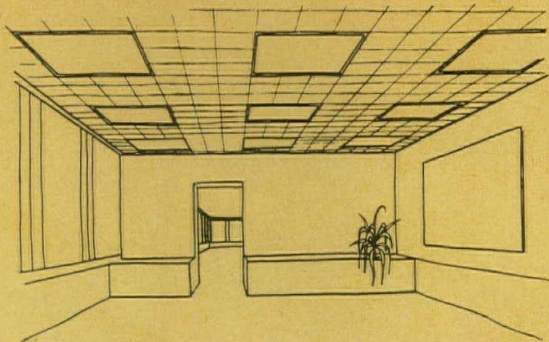
A continuous slot on all four sides, formed by the space between the lens frame and outer frame, performs all three

air-handling functions: supply, return and heat extraction.

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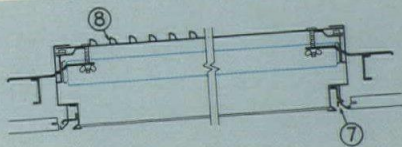
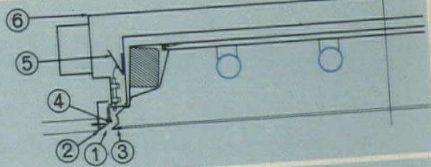
The 3' x 3' Aire-Lume is one of many efforts by Lightolier to better coordinate lighting with architecture.



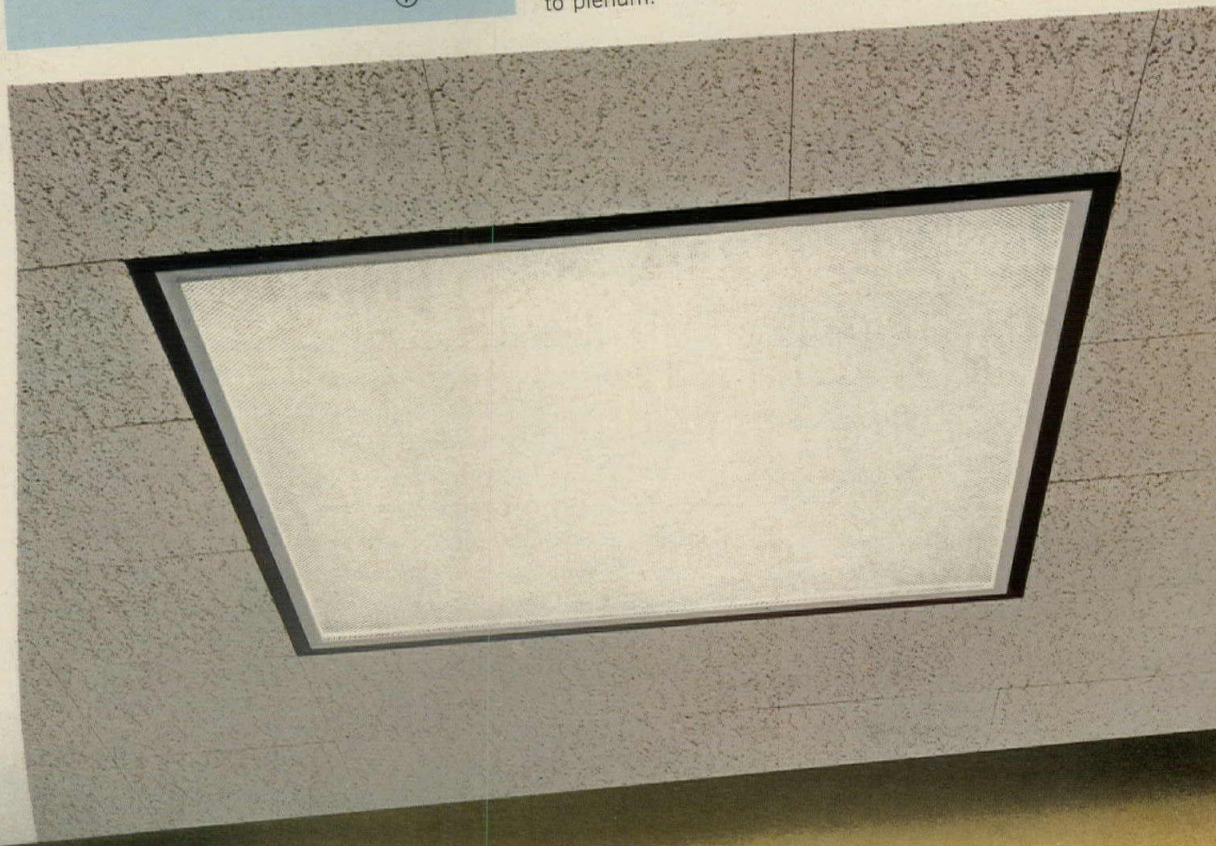
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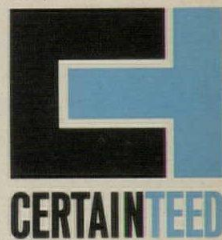
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they are...**

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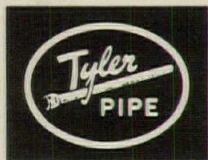
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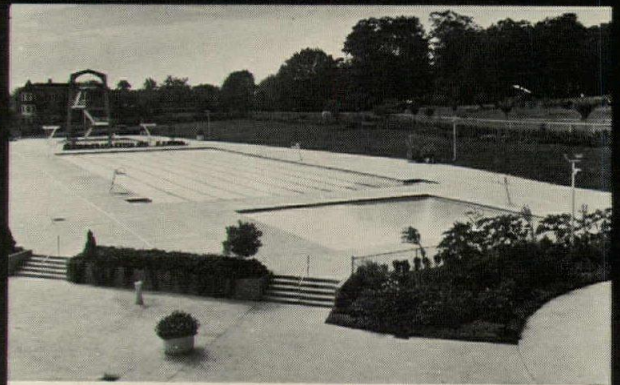


TPI makes Tyler cast iron soil pipe and fittings • Wade plumbing-drainage products  
• Tyler water main fittings and municipal castings

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For a FREE 16 page detailed brochure, performance reports and a list of recent installations, write Paddock of California, Inc., 118 Railroad Avenue Extension, Albany, New York 12205.



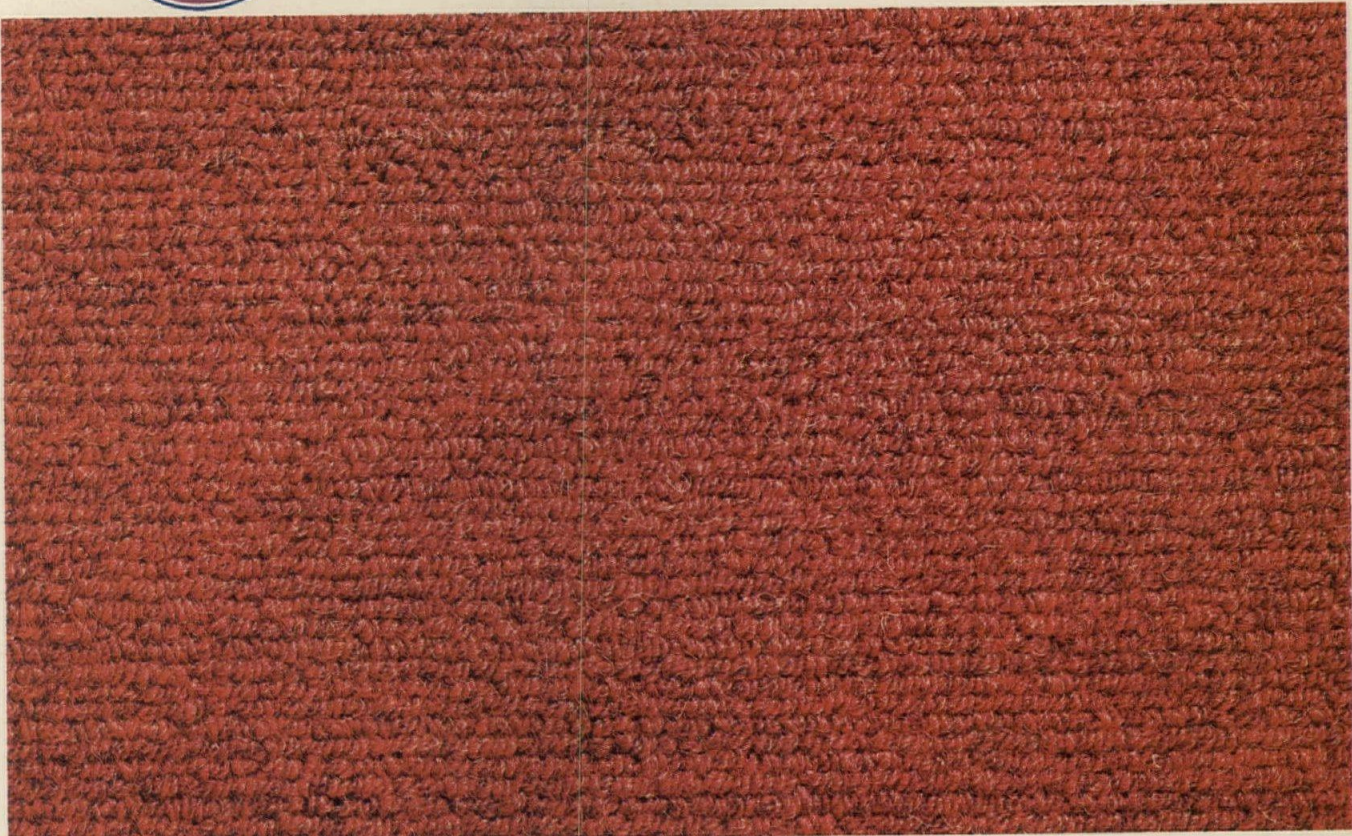
**Paddock**  
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In some traffic-heavy, stain-prone, fade-inducing  
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**SPECIFICATIONS:**

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 dyed Vectra® olefin fiber  
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 Pile Wt.—33 oz. per yd.  
 Pile Ht.— $\frac{1}{8}$ " or .125  
 Stitches per inch—9  
 Tufts per sq. inch—90

Yarn Count—3.00 cc (3 Ply)  
 Primary Backing—  
 100% polypropylene  
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 (all bonded with 26 oz. of latex)

For additional information and samples on Decathlon  
 write to: Wellco Carpet Corporation, Department V,  
 P.O. Box 281, Calhoun, Ga. 30701

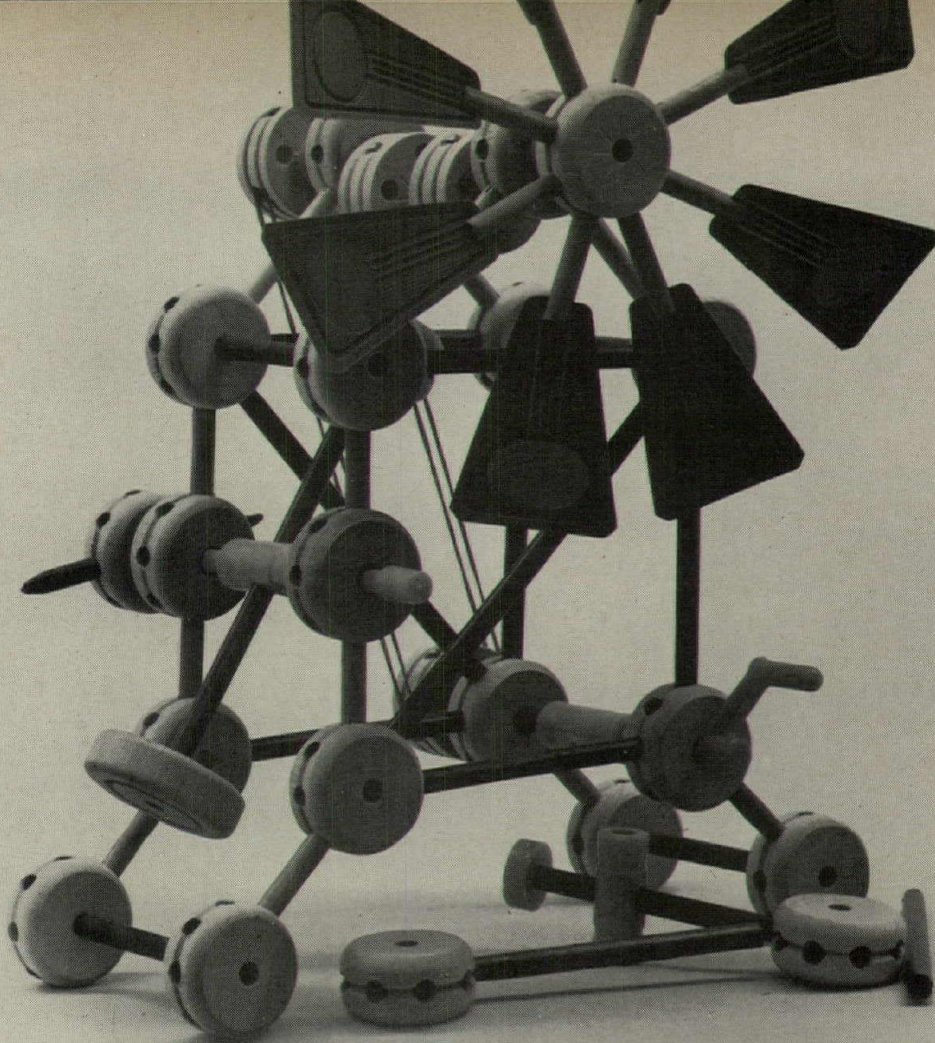
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Vectra® olefin fiber is manufactured by Enjay Fibers and Laminates Company, Odenton, Maryland, a division of Enjay Chemical Company, Odenton: (301) LO 9-9000. New York: 350 Fifth Avenue (212) LO 3-0720. Charlotte: One Charlottetown Center, (704) 333-0761. Enjay makes fiber, not carpet.

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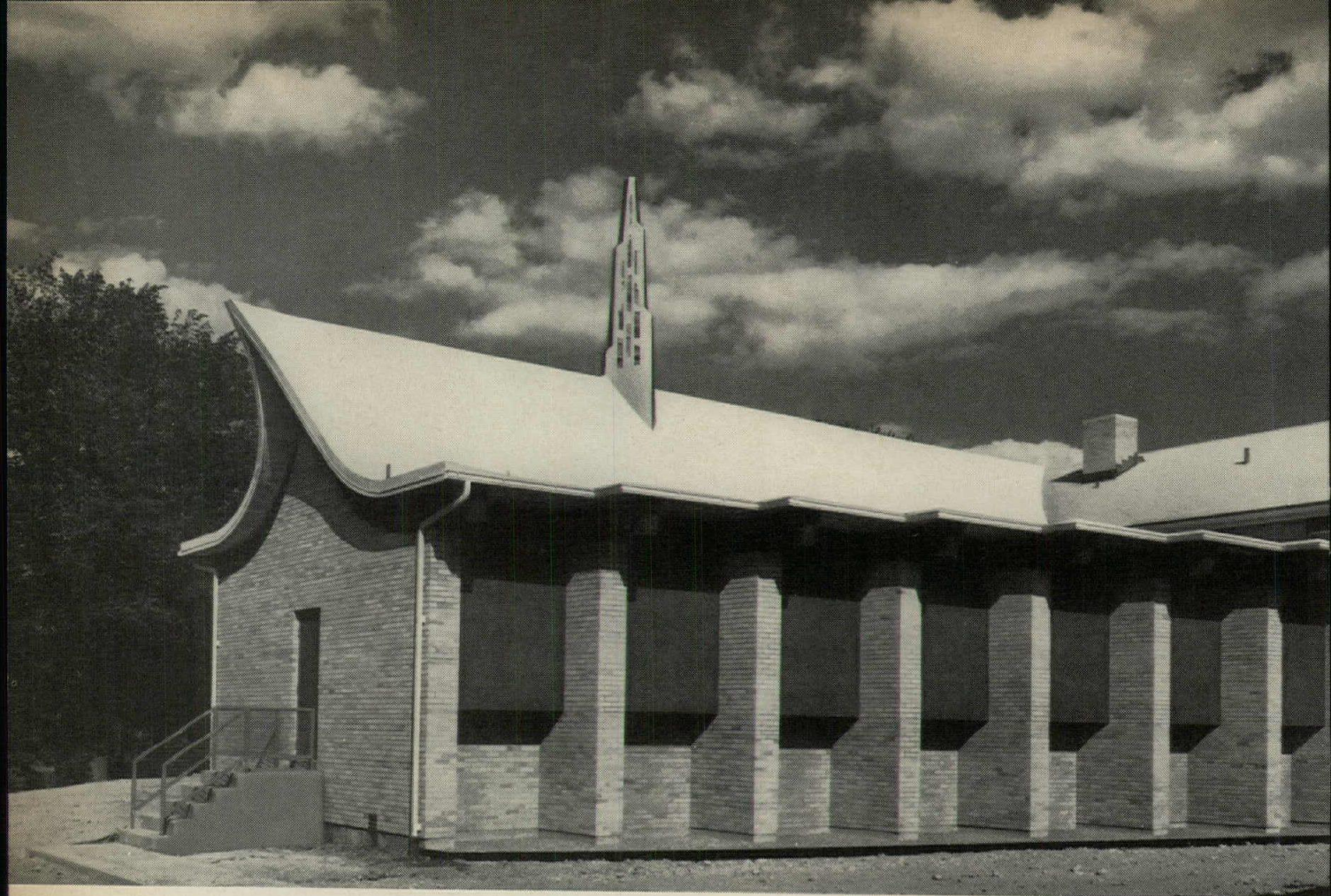
**Quality you take for granted.**

**OASIS® WATER COOLERS • HUMIDIFIERS • DEHUMIDIFIERS**

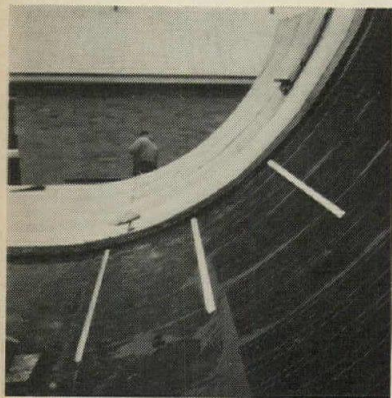
See Sweet's, or write  
Dept. AR-12, 265 North Hamilton Road  
Columbus, Ohio 43213

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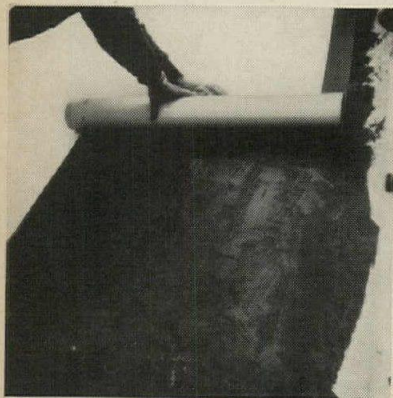
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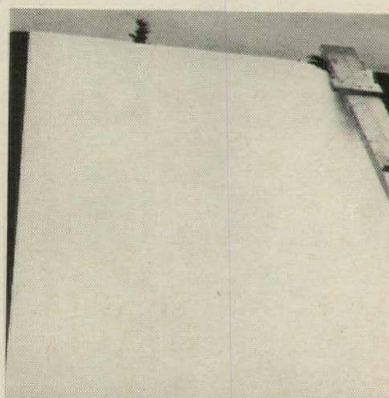
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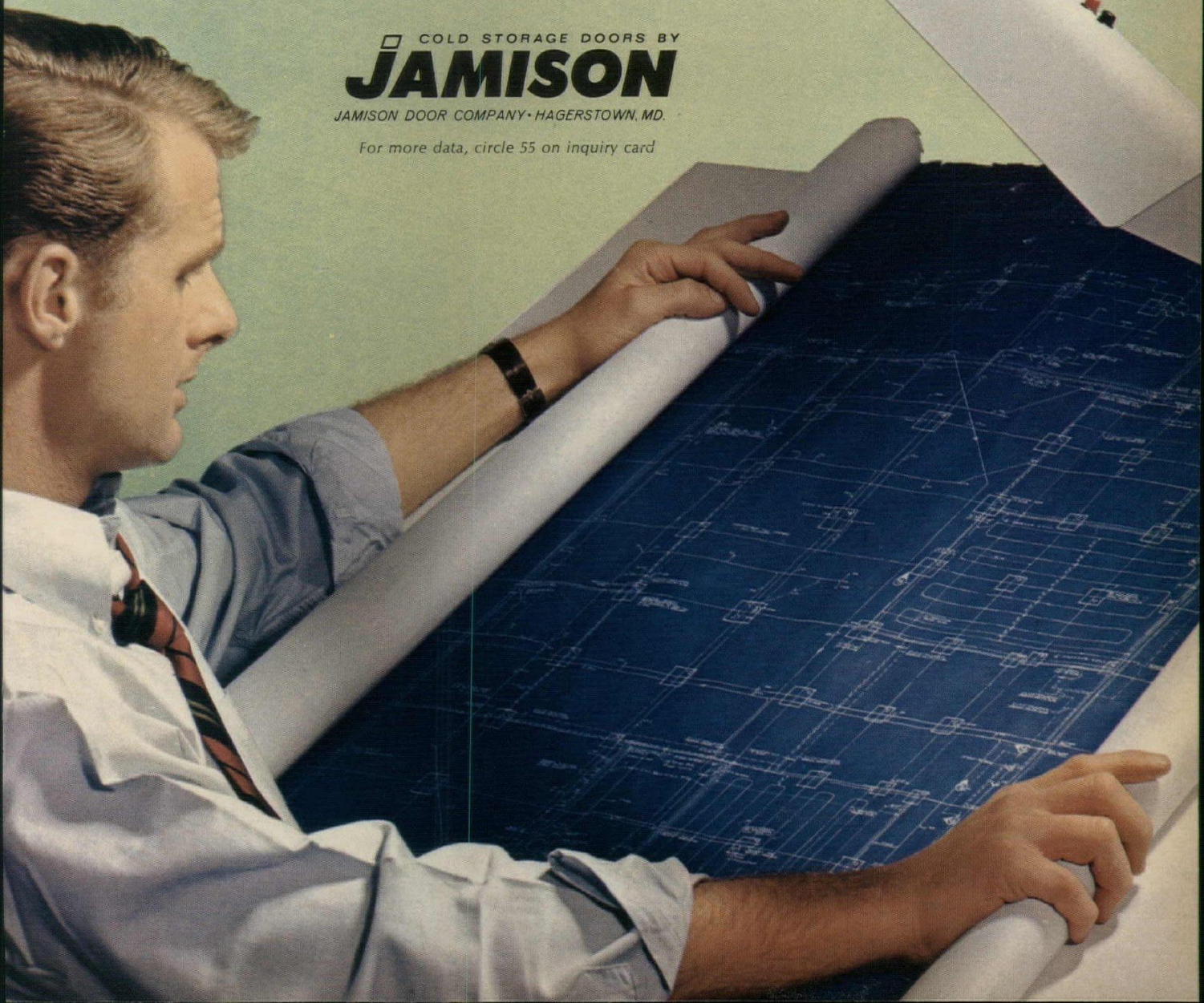
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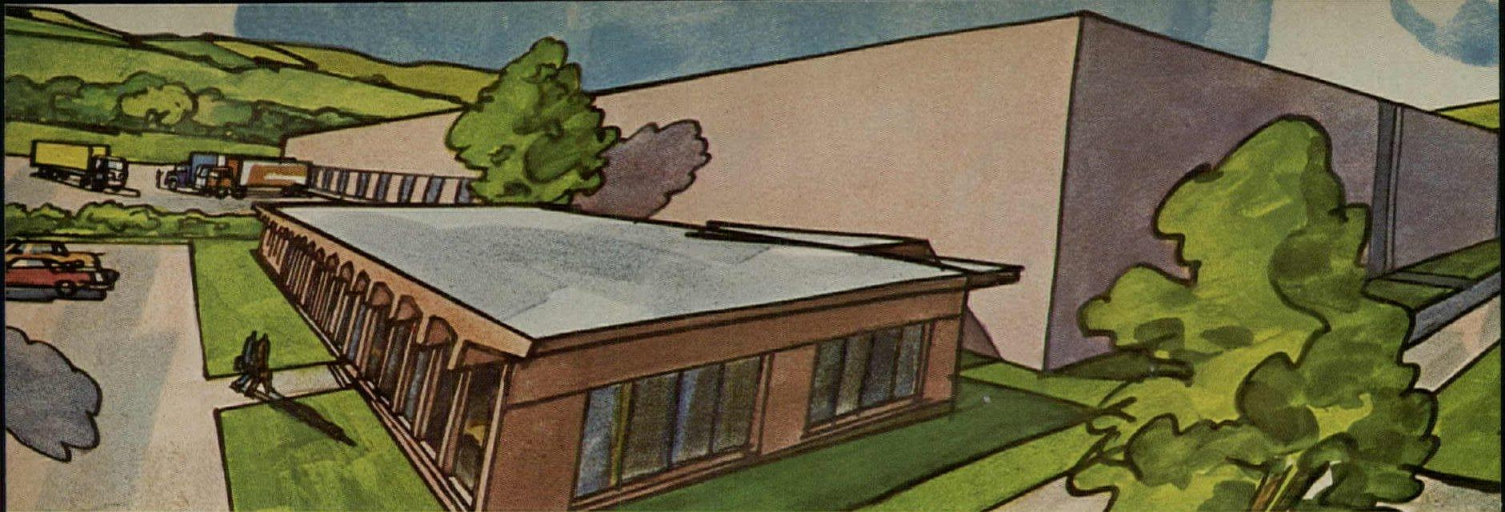
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## Professions search souls as HUD calls for bids

...oes of the still-rumbling confrontation between architectural and engineering professional groups and Federal A/E contracting procedures (which GAO and the agencies still say call for price bids on A/E design contracts) sounded a new note of alarm in April. The Department of Housing and Urban Development announced a basic change in its research and development procedures calling for competitive bidding on proposals prepared by the Department.

A.I.A., C.E.C. and others thereupon took another hard look at what this means to professions—not to question established ethical standards against price bidding for A/E commissions—but to assess the long-range implications of the "R&D" label increasingly applied to government consulting work. Many A/E firms qualify to do the work; but the fee structures for this work and the emergence of other kinds of qualified organizations with different acquisition practices are outside the professional climate in which longstanding statements of ethical standards for design work evolved.

The first of the HUD proposals was to solicit a wide variety of talent in examination of problems attending the "In-City" objective of providing some 6,000,000 low-cost dwelling units in the next decade. A full spectrum of concerned organizations (including architects, engineers, consultants and some manufacturer-developer corporations) was asked to bid on investigating, reporting and describing (but not "designing") modes of exploiting existing opportunities for, and obstacles to, rapid introduction of innovative low-cost housing into specific model cities—about 20 cities per contract in this first-phase inquiry.

Out of 19 responding organizations,

among whom were several architectural firms, HUD chose three to conduct the first phase of the project. They are: Abt Associates, Inc., in joint venture with Daniel, Mann, Johnson and Mendenhall; Building Systems Development, Inc.; and Westinghouse Electric Corp. Each was to submit proposals on about 20 cities by June 15. The three were chosen, according to HUD, to demonstrate effectiveness of three quite different approaches emphasizing 1) programming and design, 2) management and citizen participation, and 3) fabrication techniques, respectively, in order of contractors named.

### Architects and engineers reaffirm ethical stand on bidding

Both A.I.A. and C.E.C. took note of the implications of the bidding procedure in relation to the ethical stands of both societies against competitive bidding on professional design commissions. While A.I.A. had taken no formal action at press-time, it was certain to be a subject for close examination at upcoming meetings. The Consulting Engineers Council, at their New York meeting in May, issued a policy statement derived from discussions of the HUD incident but making no direct reference to the HUD program. The C.E.C. statement said in part: "Consulting Engineers Council/US reaffirms to any possible client be it governmental, civic, industrial, political or private, that any

price competition solicitation of services of any nature to a derivative member-at-large, of Consulting Engineers Council/US or to any of its association members is against the best interests of its clients; and any class of member who responds to such a solicitation is in a position to be deprived of his membership in CEC/US."

Expulsion from C.E.C. for competing on "service of any nature" seems to close the door to the possibility of redefining some classifications of professional work to allow engineers and architects to engage in "research and development" under the somewhat different ethical regulations applying in that field.

### When is R & D a design commission?

For architects, whose opportunities in expanded services are likely to raise many such questions, the ethical posture is not so simply assumed. It is fairly common experience to mention costs of services in many preliminary discussions of work. The nature of these first-phase HUD contracts is such that budgets to finance investigation can conceivably be defined without putting architects in direct competition on price. In any case, some would hold that research and development is not a design service and, therefore, can be performed in a different ethical climate.

### Professional problems increase with the scope of work

Competing on price is one thing. Competing for ideas is another. As one architect observes, architects are increasingly called upon for ideas and proposals preliminary to granting of commissions. The HUD program underscores the scale of work that is rapidly emerging in such pro-

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posals. Professional firms are finding out that the cost of preparing analyses and presentations on speculation at this new scale calls for reassessment of the whole procedure—whether on ethical grounds or any other.

Another aspect of the proliferation of professional problems is the entrance of non-architectural firms into design fields by way of this federal proclivity for

designating many of their current proposals as research and development. Westinghouse, for example, already deeply committed in urban development through various subsidiaries, has set up a new company to carry out all phases of urban renewal projects to provide low income housing. Under the name Urban Systems Development Corporation, the subsidiary will have headquarters in

Washington with objectives to "develop, build and sell low income housing. Federally supported programs and build, rehabilitate, operate or manage urban projects." Another development that seems to indicate one direction Westinghouse's pursuit is their recent commissioning of American Plywood Association Research Laboratories as consultants in the In-City program.

## New commissions show wider scope for architects

The accent appears to be on growth, special services and increased interdisciplinary collaboration among architects across the country in these reports of new projects and management reorganization.

▪ A joint venture group has been commissioned to plan Sao Paulo's growth to the year 2000. Sao Paulo is the largest city in South America (second largest in the hemisphere) with a population of approximately 5.5 million. Principal firms in the joint venture are *Leo A. Daly Company*, planning, architecture, engineering firm; *Asplan*, economic and comprehensive planning consultants; *Montreal*, engineering, transportation and regional development planning firm; and *Wilbur Smith & Associates*, specialists in traffic and transportation. Collaborating firms will include *Hazen & Sawyer*, a firm specializing in water supply and sanitary engineering, and *Real Estate Research Corp.*, specializing in economic studies.

▪ With the first phase of the \$115 million Crown Center Redevelopment undertaking in Kansas City now in schematics, owners Hallmark Cards, Inc. have named the *Concordia Estates Development Company* as project management consultants. The firm will perform construction management services, schedule and supervise construction, and conduct cost control studies. *Edward Larrabee Barnes* is coordinating architect and master planner for the venture, *Marshall & Brown, Inc.* will prepare structural design, work-

ing drawings and specifications; and off-site engineering services will be performed by *Black & Veatch*.

▪ A wide variety of planning disciplines including ecology, marine biology and soils analysis will collaborate to determine the master plan for Evergreen State College, Olympia, Washington. Jointly heading the project study will be Donald H. Grugel for *Quinton Engineers, Ltd.*, and Robert L. Durham for *Durham, Anderson & Freed*.

▪ "To service the specialized interests of its clients," and to provide a "sound basis for continuing expansion," *A. Epstein and Sons, Inc.* has formed four divisions: a food processing and distribution division, a manufacturing and warehousing division, a commercial housing and institutional division, and an office division.

▪ The first nation-wide Space Architecture Committee has been inaugurated by California's East Bay Chapter of the A.I.A. Under the chairmanship of James B. Aitken of *Aitken and Collin, Architects* and director of the Space Architecture Research and Development Institute, the committee will explore design problems the space architect will face such as use of new materials in combatting zero gravity, extremes in temperature, pressure and confinement.

▪ The Post Office Department has retained *Leo A. Daly Company* to prepare plans and specifications for mechanization of a mail handling facility. In the

past, the Department used staff personnel for such work. The project is at New Haven, Conn., where a 320,000 square foot addition is to be built to the New Haven Post Office.

▪ An inter-disciplinary team of architects, engineers, economists and professional experts of allied fields were retained by the Southern California Rapid Transit District to accomplish the study and design work for a rail and bus network. *Kaiser Engineers* of Oakland, and the Los Angeles architectural and engineering firm of *Daniel, Mann Johnson and Mendenhall* associated together as a joint venture to accomplish route selection, station location, and the planning and engineering of the design and functions of the proposed physical facilities, and their cost. *Coverdale & Colpitts* of New York City was retained to formulate traffic and revenue data. *Stone and Young*, municipal financing consultants, San Francisco, viewed the plan for public financing as the first phase of construction. *M. Nishkian & Company*, Long Beach, undertook route planning, and engineering of the Airport-Southwest Corridor project while *Day & Zimmerman, Inc.*, Philadelphia, handled the express study of Airport-Southwest Corridor. *Stanford Research Institute*, Menlo Park, completed an in-depth analysis of the benefit-cost relationship of the project. *Simpson, Curtin*, Philadelphia, systems analysts, investigated modes of transit systems.

## State officials move for national building code

Early last month, a group of state building code officials met at the National Bureau of Standards to work out the idea of a national building code congress to be held sometime in the future.

For years, critics have claimed the many irregularities among building and housing codes have been a chief cause for the lack of an industrialized home-building industry.

Several of the model code-writing groups (such as the Building Conference of America or the Southern Building Code Congress) have tried to work out

differences through various liaison groups, without much success. Many communities insist on changes from the model codes, somewhat nullifying uniformity among the model codes.

Building researchers at the Bureau of Standards feel the NBS-run conference of state weights and measures officials will provide an excellent pattern for convening a similar group of state building code officials.

No one yet has worked out how state officials can validly represent all of the local building code officials since, unlike

weights and measures, administration of building regulations has been largely the province of cities and towns.

But the meeting at NBS accurately reflects the growing concern in Washington about the so-called "code mess." The American Institute of Architects, through its long tradition of fellowship with major building materials manufacturers has quietly been working in the vortex of the fuss but so far has not found an alternative code-writing mechanism that seems to warrant strong or exclusive backing by the professional societies.



CURRENT TRENDS IN CONSTRUCTION

Robert M. Young  
Senior Economist  
McGraw-Hill Information Systems Company

# good year shaping up for industrial building... if ...

The latest McGraw-Hill survey of investment plans indicates that manufacturers anticipate spending a record \$28.5 billion on new facilities and equipment in 1968, a hefty 7 per cent increase over the \$27 billion total. The amount earmarked for new manufacturing plants and warehouses is expected to top the \$5.4-billion mark, 8 per cent above last year and well above the amount spent for such buildings in the early 1960's.

This rather ebullient outlook follows a year in which actual outlays fell some 20 per cent short of plans. It also coincides with a number of economic and political developments that may very well restrict business activity: a tighter money market; higher taxes and lower public spending; the prospects of cutbacks in defense outlays; and a low level of utilization of plant capacity. In view of these factors, many may very well ask if such optimistic plans will be realized.

Looking first at last year's disappointing performance, a number of factors brought about the retrenchment. The severe credit squeeze at the end of 1966 caught many businesses without the cash they needed for day-to-day operations, let alone capital outlays. Add to

this a year of reduced profits brought on by sharply increasing labor and materials cost, and you come up with a major reason for cutbacks in spending: the money simply wasn't there. If this weren't enough to discourage new investment, the temporary suspension of the investment tax credit; a rather lackluster year for consumer spending; reduced outlays for construction; and a leveling off of defense orders reduced much of the incentive to expand production facilities. Poor sales pushed the rate of capacity utilization by manufacturers from 90 per cent in October, 1966 to 81 per cent last September. The desired rate for manufacturing as a whole is 93 per cent.

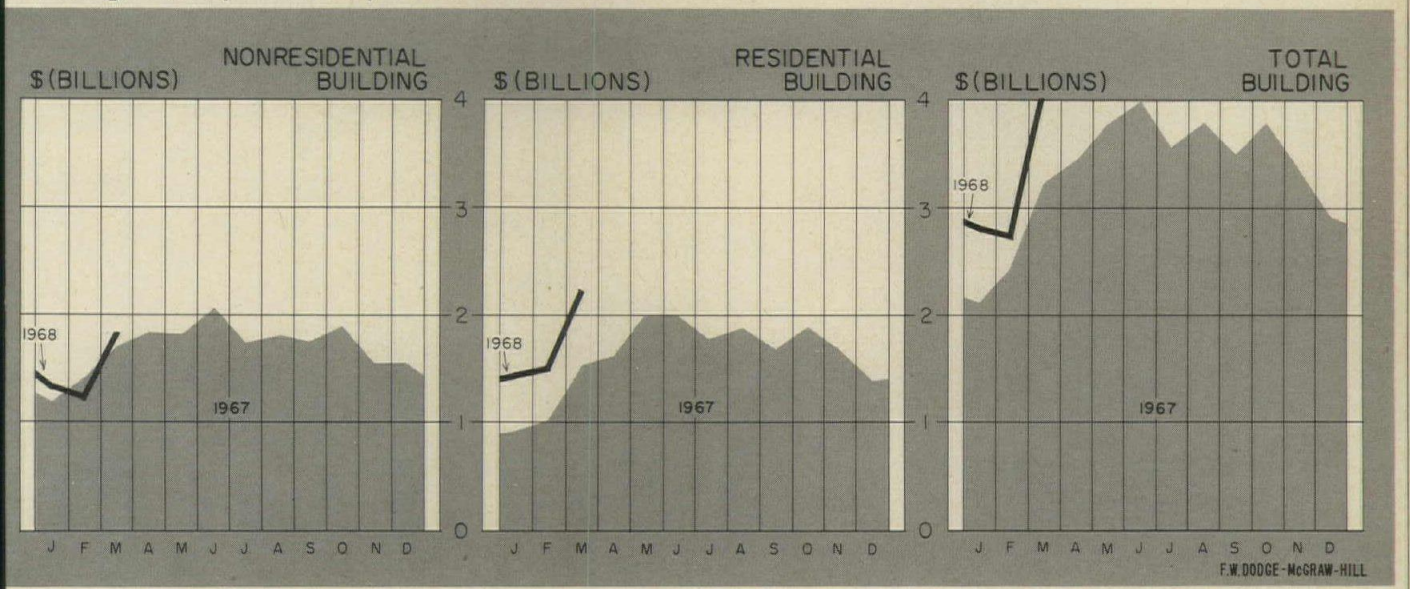
The present situation is somewhat different. True, money is getting tight again. This time, however, businessmen are better prepared. Record borrowing by manufacturing corporations of \$11 billion on the bond market during 1967 has restored much of the liquidity lost in late 1966, and a large slice of this has been set aside for plant and equipment outlays. Prices for many goods appear to be coming more in line with costs, and this is showing up in improved profit margins. The tax hike will take some

of the steam out of rising profits, but it should not seriously affect investment decisions, many of which anticipated higher taxes.

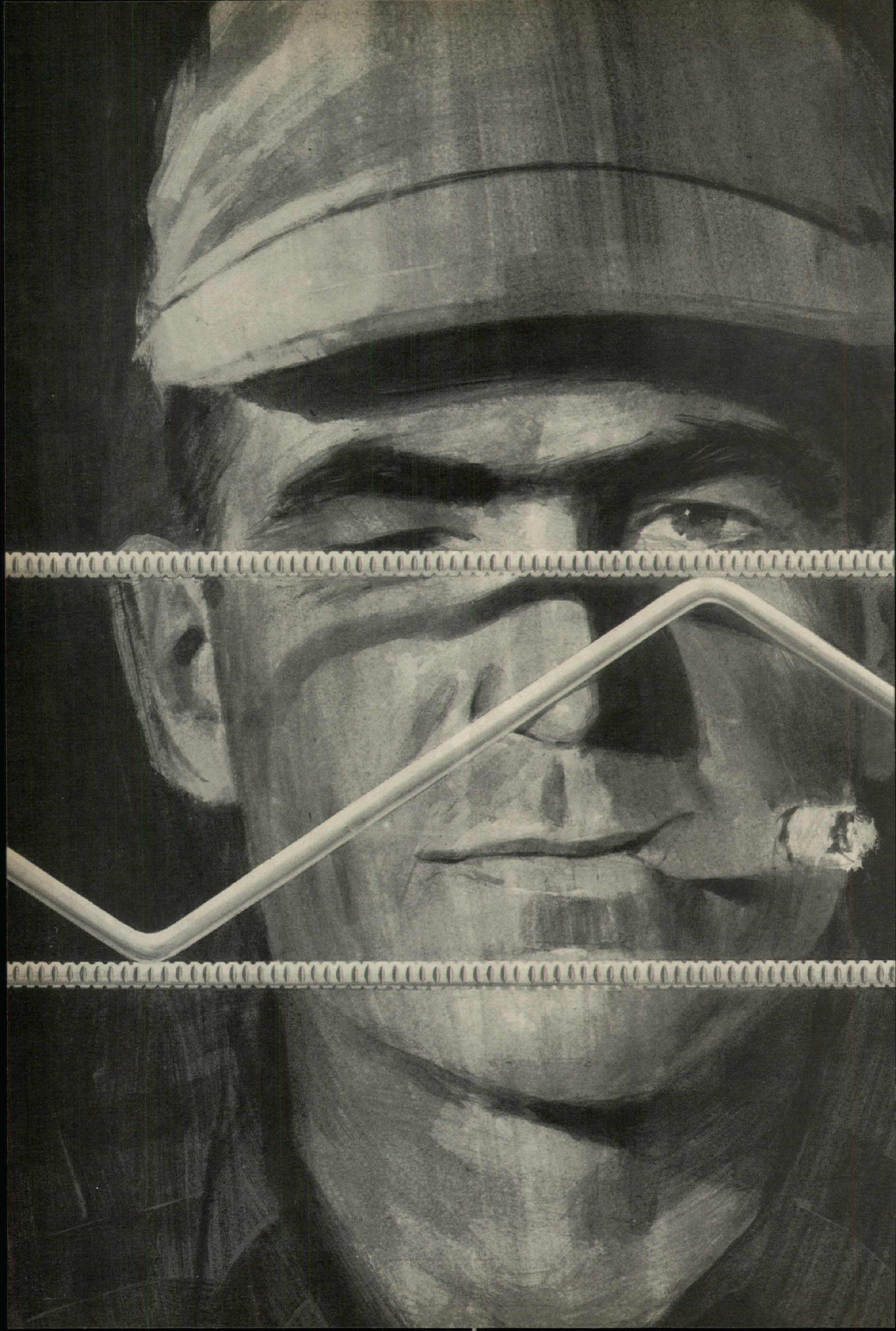
A reversal of consumer attitudes has been reflected in sharply increased spending in the opening months of 1968, although higher taxes will probably temper this before the end of the year. Construction outlays have also surged forward. These new demands are being translated into higher industrial output and greater use of existing capacity.

On balance, despite some clouds on the horizon, the current performance of the economy is strong enough to encourage businessmen to invest in facilities needed for the long run. The prospect of a continued severe shortage of skilled labor means that increasingly more efficient production facilities must come on stream if competitive threats are to be met. Often this takes the form of new machinery. Sooner or later, though, new buildings are required to make the optimum use of this equipment. 1968 appears to be shaping up as a year in which many industries will emphasize the plant, as well as the equipment, side of their planned investment.


## Building activity: monthly contract tabulations









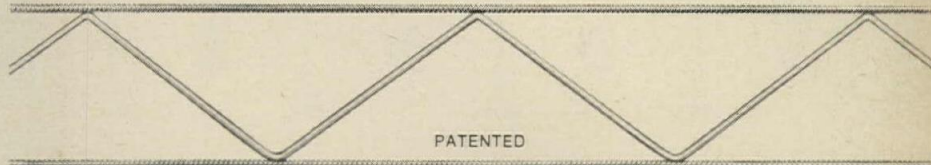


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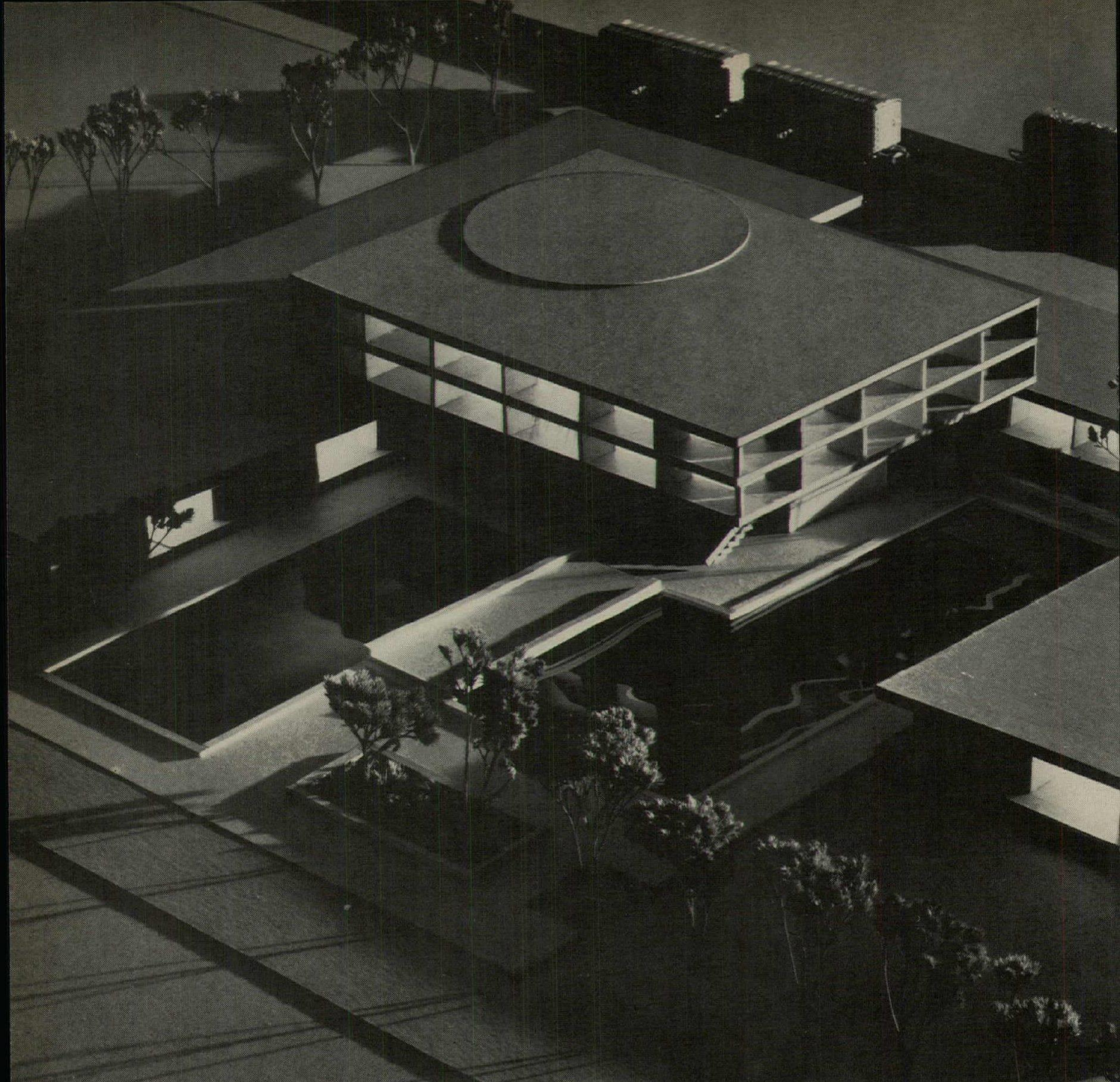
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ENDS AND ANALYSIS

rence C. Jaquith and Bernard Reinbach  
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Performance demand boosts mechanical costs

ongoing process in modern building design is the growing emphasis on mechanical systems. A key impetus to this development is the continuing demand from owners for more refined heating, ventilating, and air-conditioning systems. Problems have been created for design professions by this situation. The architect, as well as the engineer, has had to keep pace with the complex technologies involved. But it is primarily the architect, responsible for over-all projects, who has had to measure cost versus performance within the framework of continual shifts in the allocation of the budget dollar. It is this aspect of the change—rather than the added design complexities of integrated mechanical systems—that has often proved to be the major headache.

The architect has had to deal simultaneously with two elements of change in HVAC costs. First, even if environmental requirements were not increasing, cost escalation would, and does, make on-target estimating of conventional systems a formidable task. But the requirements are changed for many building types, and the higher real costs of more sophisticated systems would account for a larger share of the building dollar even without inflation. Thus, when the client requests the ultimate refinement in multi-zone air conditioning, the cost indicated to him by the architect necessarily reflects both the projected escalation due to inflation and the additional real cost that will be incurred by selecting this more complex system.

Added cost of performance difficult to isolate

When this total cost has been related to the over-all budget for the project, the question of cost versus performance can usually be answered. In order to assess the additional cost of higher performance, the architect often begins by comparing mechanical systems in terms of the percentage of the total budget they consume: e.g. 12 per cent for a conventional system as against 14 per cent for a more sophisticated system. It may occur

to him, however, that this may not represent an accurate measure of added cost relative to higher performance, because he is aware that HVAC costs as a percentage of the total building cost have increased significantly over the years. Examples of this trend for four building types are shown in Table 1.

The architect cannot be sure whether the increase in this percentage, over time, reflects a difference in real costs, a greater rate of escalation in HVAC costs relative to general construction costs, or a bit of both. Therefore, to properly measure this relationship, he must somehow isolate the real cost of increased performance due to increased sophistication. He can then decide whether the added value is worth the added cost.

One way to isolate these elements is to compare the rate of escalation in HVAC costs over time with the increase in general construction costs. If they are approximately the same, then the increase in HVAC costs as a percentage of the total building cost is solely the result of increased demand for more elaborate environmental systems. Hence, a comparison between two alternative systems' costs as a percentage of total building cost would be valid.

Index reveals trends in labor and materials costs

The rate of increase in HVAC costs is shown in Table 2. This has been done in terms of an index over a five-year period. The major system components have been weighted in terms of their percentage re-

lationship to the total system cost. By measuring the weighted change of each element, starting at a common base year (1964), the rate of increase in HVAC costs can be shown. The percentage accounted for by materials represent their delivered cost to the site before fabrication (as in the case of sheet metal) or before installation (as in the case of equipment). "Equipment" includes heating and cooling equipment plus radiation controls. The costs for labor represent costs incurred by the contractor, excluding overtime. Both labor and material costs are averages for major cities.

Equipment costs are stable while labor costs rise

The increase of HVAC costs averages 4.2 per cent per year. Since this compares closely with general building cost increases over the same period, one may reasonably assume that the increase in the share of the building dollar accounted for by HVAC is almost entirely the result of increasing requirements. It is interesting to note that 86 per cent of the cost increase in HVAC over the five-year period is the result of increased labor costs at the site. Since the labor component in HVAC is slightly higher than in

TABLE 1: Average Cost Ranges: HVAC as a % of Total Building Cost

	1948	1958	1968
HOSPITALS	14-18%	16-20%	20-25%
SCHOOLS	5-10	8-12	10-16
HOUSING	2-4	4-6	6-10
OFFICE BLDG.	8-10	8-12	12-14

TABLE 2: HVAC Cost Index (1964-68)

	Steam-Fitters	Sheet-Metal Workers	Asbestos Workers	Equipment	Galvanized sheet	Steel pipe	Insulation	Total System Cost
% of total system cost								
	(28.5)	(17.0)	(12.0)	(29.5)	(8.0)	(4.0)	(1.0)	(100%)
Indexes								
1964	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1965	106.0	106.1	104.1	99.7	103.3	104.5	103.0	103.6
1966	112.5	110.1	112.1	99.8	103.3	110.0	104.6	107.4
1967	120.0	116.6	117.9	100.0	103.3	112.5	107.1	111.5
1968	128.3	125.6	125.7	101.0	105.5	114.0	107.7	116.9



general construction, it may be assumed that the rate of escalation is slightly higher for HVAC. However, this may be somewhat offset by the greater increases in material costs in general construction.

The point remains, however, that although mechanical systems are obviously consuming an increasing share of the budget dollar, this is *not* because the costs for the system components have increased more rapidly than labor and material costs of other systems. It is rather because of the increased demand for more sophisticated HVAC systems.

**Systems should be chosen early in design phase**

The fact that HVAC is costing more, relative to the rest of the building, and thereby consuming a larger portion of his budget has made the architect aware that he must give the choice of this system close consideration at a very early stage of design. He must consider what the client can afford and what the client needs in the way of sophistication.

To answer the question of needs, he and his engineer must consider the effects of a number of factors which determine heating and cooling loads, namely:

- a) type, usage, and hours of occupancy of the building;
- b) orientation of the building;
- c) indoor and outdoor design conditions;
- d) ventilation requirements;
- e) amount and type of artificial lighting and hours of use;
- f) number and type of heat-producing appliances and equipment, and extent of use.

Of these load factors, the use of larger glass areas and higher light intensities have been the most significant influences on the higher costs of HVAC.

Another reason why he should consider the choice of the HVAC system very early is that the new integrated environmental systems do not lend themselves to piecemeal paring after the preliminary design has been established. After working drawings have been started, signifi-

cant reductions in cost cannot be introduced without substantial re-design.

This is because the new, highly refined and complex environmental control systems require extensive integration with the electrical and structural systems. Alterations made in one system may necessitate expensive design changes in other systems.

**Costs for various systems listed by building type**

The variety of system types used in four categories of buildings is illustrated below. The New York City cost range for each type is also shown.

*Apartment buildings:* Most new apartment buildings built with air conditioning usually use either of the two following types of systems:

1) Through-the-wall self-contained units, sometimes with an integral heating coil for winter heating. The popularity of this system is due to its low first cost. Maintenance and operating costs are generally higher than for a central system.

2) Central air-conditioning systems using 3- or 4-pipe fan coil units have given very satisfactory results.

The square foot cost ranges for these systems are as follows:

- through-the-wall, \$1.50-\$2.25
- 3-pipe fan coil, \$4.00-\$5.00
- 4-pipe fan coil, \$4.50-\$4.75

*Hotels & motels:* In these buildings, each guest room must have individual control of temperature, usually by the occupant. The types of systems usually found in new projects and the ranges of unit costs for these are as follows:

- self-contained units, \$325-\$375/unit
- single-duct, reheat, \$625-\$675/unit
- recoil coil, per room, \$725-\$850/unit
- 3-pipe fan coil units, \$4.00-\$4.50/SF
- 4-pipe fan coil units, \$4.50-\$4.75/SF
- 3-pipe induction system, \$6.25-\$7.75/SF
- 4-pipe induction system, \$7.50-\$8.00/SF

The last four types are applicable to hotels only, as a general rule.

*Office Buildings:* The type of occupant in an office building has an important bearing on the type of system most applicable, and will determine the amount of flexibility required. Entrances and lobbies, stores, restaurants, club facilities etc. are generally treated as separate entities with their own systems. Since lighting in an office building produces a substantial part of the cooling load (25 per cent), efforts to withdraw this heat from the source by means of supply or exhaust air or water tubing should be considered.

The usual systems in an office building and the range of square foot costs are as follows:

- dual duct, \$7.50-\$8.00
- 3-pipe fan coil, \$5.50-\$6.25
- 4-pipe fan coil, \$6.00-\$6.85
- 3-pipe induction units, \$6.25-\$7.75
- 4-pipe induction units, \$7.50-\$8.00

*Schools:* The usual systems found in schools and the range of square foot costs for these are as follows:

- perimeter heating plus open-window ventilation, \$2.00-\$2.25
- all-air heating, \$2.50-\$3.25
- perimeter heating with forced-air ventilation, \$3.00-\$3.50
- latter with air conditioning, \$4.00-\$4.50
- unit ventilators, heating only, \$3.25-\$3.50
- unit ventilators with cooling, \$4.25-\$4.50

*Hospitals:* The mechanical systems in hospitals are most complex because of the various kinds of spaces. For this reason it is difficult to offer meaningful cost ranges for the types of systems generally used in hospitals. However, for all systems, the costs usually fall in the range of \$6.50-\$10.00 per square foot.

**Department of Commerce figures show wholesale price trends**

The relative stability of wholesale prices of heating equipment is shown in the following extract of a table from the March issue of *Construction Review*, a monthly report published by the Business and Defense Services Administration of the Department of Commerce:

**TABLE 3:—Indexes of Wholesale Prices of Materials Used in Construction, by Selected Groups and Commodities**  
[1957-59=100, unless otherwise noted]

Period	Selected nonferrous metal products			Plumbing fixtures and brass fittings				Heating equipment			
	Copper water tubing, straight lengths	Building wire, type THW	Non-metallic sheathed cable	Group index	Enameled iron fixtures	Vitreous china fixtures	Brass fittings	Group index	Steam and hot water	Warm air furnaces	Water heaters, domestic
1962 .....	98.6	99.2	90.2	100.1	97.7	91.0	106.9	93.2	102.5	87.8	80.6
1963 .....	101.7	100.4	88.0	100.5	94.2	88.0	111.5	92.9	101.5	86.5	82.8
1964 .....	107.3	107.7	99.6	101.8	94.2	89.5	114.2	92.0	102.8	85.6	79.9
1965 .....	126.2	132.5	121.9	104.7	94.9	93.0	118.7	91.7	102.5	84.6	80.2
1966 .....	160.1	156.6	138.8	108.4	96.1	95.7	129.0	92.5	102.6	85.4	81.9
1967: January .....	161.9	162.5	144.1	110.5	96.6	96.3	133.1	92.6	101.2	86.4	82.8
1968: January .....	179.8	154.4	143.3	110.7	96.8	96.6	133.1	93.1	103.8	87.8	79.7



## INDEXES AND INDICATORS

William H. Edgerton  
 Manager Dodge Building Cost Services  
 McGraw-Hill Information Systems Company

### 1968 BUILDING COST INDEXES

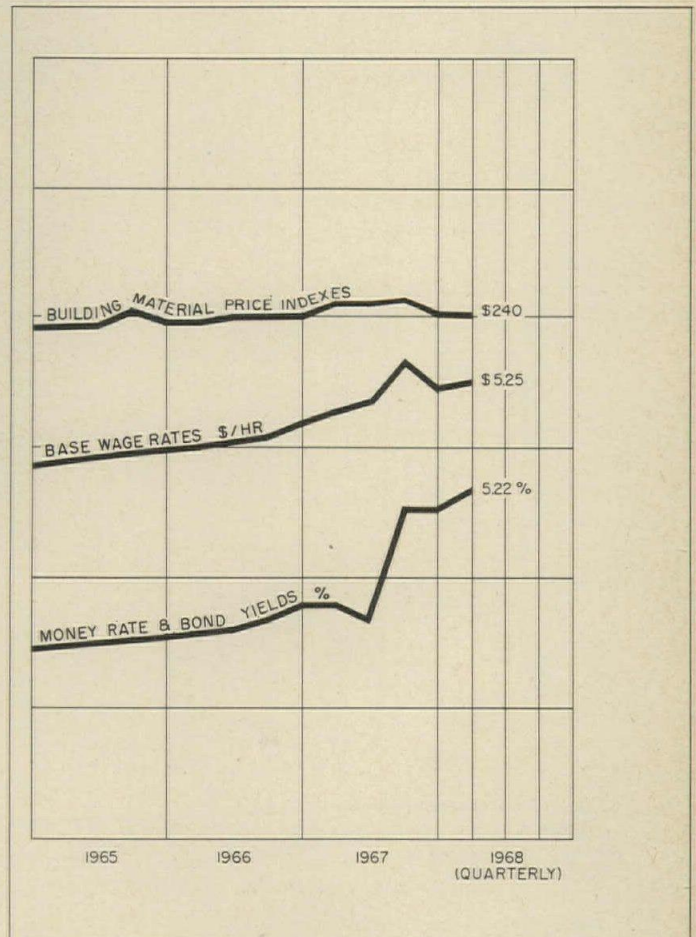
1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index		% change year ago
		residential	non-res. res. & non-res.	
U.S. Average	8.5	288.2	307.0	+3.06
Atlanta	7.2	330.8	350.9	+4.62
Baltimore	7.9	290.6	309.2	+4.33
Birmingham	7.3	263.2	283.0	+1.97
Boston	8.5	258.7	273.8	+2.43
Chicago	8.9	318.4	334.9	+2.80
Cincinnati	8.8	278.7	296.2	+4.58
Cleveland	9.6	303.6	322.7	+5.65
Dallas	7.5	267.0	275.7	+1.79
Denver	8.1	290.9	309.3	+2.48
Detroit	9.2	298.8	313.7	+3.75
Kansas City	8.2	256.9	271.9	+2.52
Los Angeles	8.3	292.4	319.9	+2.76
Miami	8.4	283.6	297.7	+3.48
Minneapolis	8.7	286.3	304.3	+2.73
New Orleans	7.8	259.6	275.1	+3.15
New York	10.0	301.4	324.2	+2.06
Philadelphia	8.5	283.3	297.4	+2.12
Pittsburgh	9.1	270.3	287.3	+4.07
St. Louis	9.1	281.8	298.6	+1.24
San Francisco	8.5	371.7	406.6	+2.24
Seattle	8.4	263.7	294.6	+3.50

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 divided by that of a second (8.0) equals 125%, then costs in the first city are 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.

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.

### ECONOMIC INDICATORS



### QUARTERLY BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

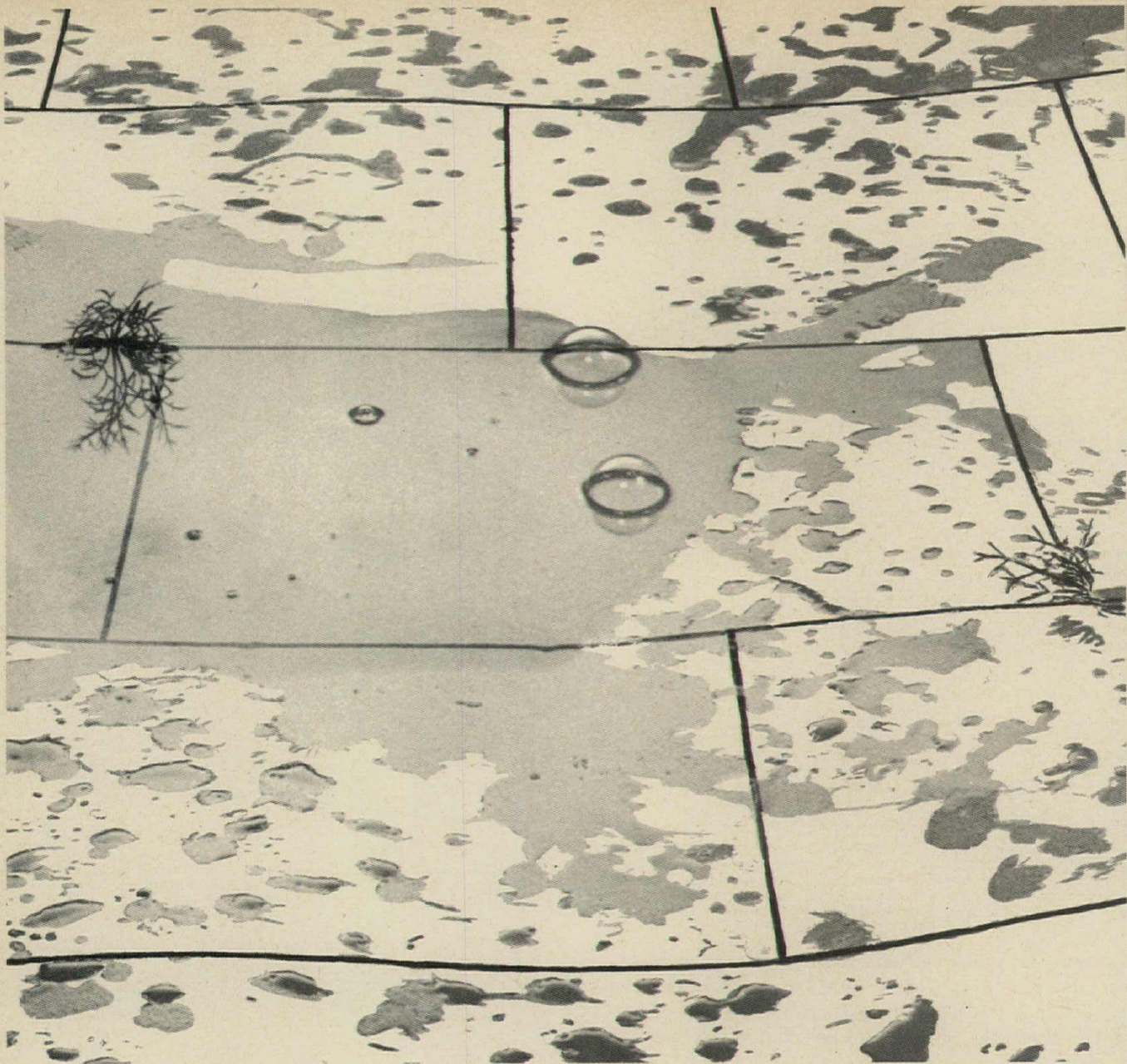
1941 average for each city = 100.00

Metropolitan area	1960	1961	1962	1963	1964	1965	1966	1967 (Quarterly)				1968 (Quarterly)				
								1st	2nd	3rd	4th	1st	2nd	3rd	4th	
U.S. Average	213.5	264.6	266.8	273.4	279.3	284.9	286.6	292.7	293.7	295.5	297.5	301.5	—	—	—	—
Atlanta	223.5	294.7	298.2	305.7	313.7	321.5	329.8	332.4	333.4	334.6	335.7	345.6	—	—	—	—
Baltimore	213.3	269.9	271.8	275.5	280.6	285.7	290.9	290.4	291.5	294.9	295.8	302.9	—	—	—	—
Birmingham	208.1	249.9	250.0	256.3	260.9	265.6	270.7	272.9	274.0	273.8	274.7	278.5	—	—	—	—
Boston	199.0	237.5	239.8	244.1	252.1	257.8	262.0	262.9	263.9	264.8	265.7	269.3	—	—	—	—
Chicago	231.2	289.9	292.0	301.0	306.6	311.7	320.4	320.4	321.3	327.3	328.4	329.4	—	—	—	—
Cincinnati	207.7	257.6	258.8	263.9	269.5	274.0	278.3	278.7	279.6	287.3	288.2	291.4	—	—	—	—
Cleveland	220.7	265.7	268.5	275.8	283.0	292.3	300.7	300.0	301.3	302.6	303.7	316.5	—	—	—	—
Dallas	221.9	244.7	246.9	253.0	256.4	260.8	266.9	267.6	268.5	269.5	270.4	272.3	—	—	—	—
Denver	211.8	270.9	274.9	282.5	287.3	294.0	297.5	297.6	298.5	304.0	305.1	304.9	—	—	—	—
Detroit	197.8	264.7	265.9	272.2	277.7	284.7	296.9	298.0	299.1	300.1	301.2	309.2	—	—	—	—
Kansas City	213.3	237.1	240.1	247.8	250.5	256.4	261.0	260.8	261.9	263.4	264.3	267.5	—	—	—	—
Los Angeles	210.3	274.3	276.3	282.5	288.2	297.1	302.7	303.6	304.7	309.0	310.1	312.0	—	—	—	—
Miami	199.4	259.1	260.3	269.3	274.4	277.5	284.0	283.4	284.2	285.2	286.1	293.1	—	—	—	—
Minneapolis	213.5	267.9	269.0	275.3	282.4	285.0	289.4	292.0	293.1	299.2	300.2	300.0	—	—	—	—
New Orleans	207.1	244.7	245.1	248.3	249.9	256.3	259.8	262.3	263.4	266.7	267.6	270.6	—	—	—	—
New York	207.4	270.8	276.0	282.3	289.4	297.1	304.0	309.4	310.6	312.5	313.6	315.9	—	—	—	—
Philadelphia	228.3	265.4	265.2	271.2	275.2	280.8	286.6	287.1	288.1	292.8	293.7	293.3	—	—	—	—
Pittsburgh	204.0	250.9	251.8	258.2	263.8	267.0	271.7	272.2	273.1	274.1	275.0	283.0	—	—	—	—
St. Louis	213.1	256.9	255.4	263.4	272.1	280.9	288.3	290.3	291.3	292.3	293.2	293.7	—	—	—	—
San Francisco	266.4	337.4	343.3	352.4	365.4	368.6	386.0	388.1	389.2	389.6	390.8	396.4	—	—	—	—
Seattle	191.8	247.0	252.5	260.6	266.6	268.9	275.0	276.5	277.5	282.6	283.5	286.2	—	—	—	—

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 (100.0) divided by the index for a second period (150.0) equals 133%, the costs in

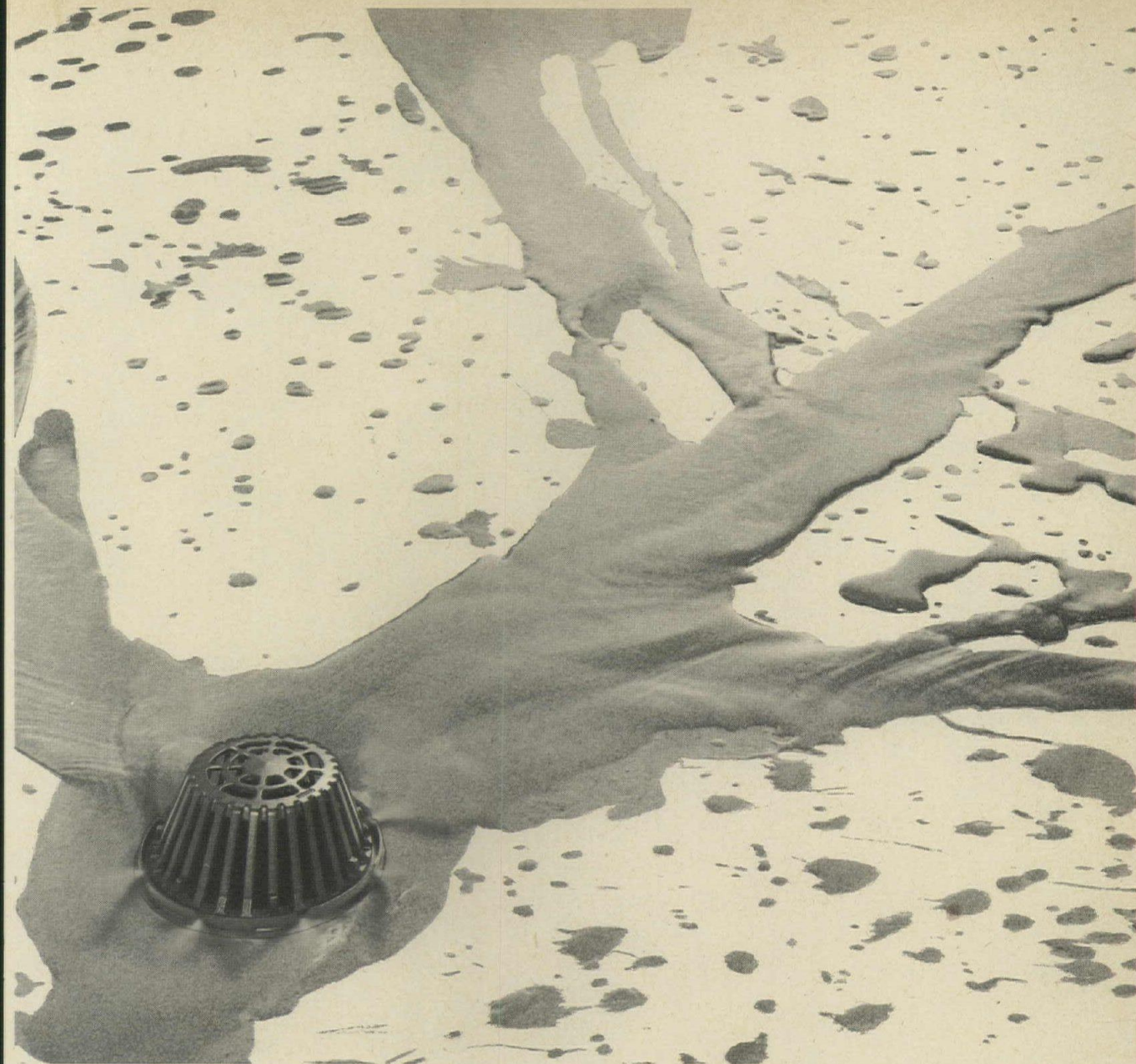
the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 ÷ 200.0 = 75%) or they are 25% lower in the second period.





## **Seamy roof decks have problems**





## that our seamless decks don't

**Zonolite® is the name.** Slopes for drainage are easy and economical to build into our seamless, lightweight insulating concrete systems. They are difficult and costly with seamy systems.

**Our seamless systems require no taping, have no heat leaks, and are permanent. You can't say that about seamy systems.**

The economical insulation range for our seamless systems is from U.24 to U.05. For seamy systems it is from U.39 to U.19.

Our seamless systems also provide potential fire insurance advan-

tages, conform to curvilinear designs, meet the toughest hurricane and load requirements in the country, are certified internationally, and are supplied and installed by approved applicators. Seamy systems don't, can't, won't, aren't and aren't.

Our seamless systems can be applied over galvanized metal, form board, structural or pre-cast concrete.

**Besides which, our seamless systems normally cost less.**

Why don't you mail the coupon to find out more about them?

**GRACE®**

Zonolite Division, W. R. Grace & Co., Dept. AR-06  
Merchandise Mart Plaza, Chicago, Ill. 60654

Gentlemen:  
Please send me your latest Zonolite Roof Deck information describing economical, seamless roof deck systems for all structures.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

For more data, circle 59 on inquiry card





# Things that go bump in the night

Sylvania Lighting Center, Danvers, Massachu





## don't hang around in the light.

You know the feeling. Somebody's following you. Your  
suits get wet. The back of your neck gets cold.  
You're scared.  
You tell yourself it's just your imagination. Monsters don't  
exist. And they haven't since you were five.  
But then lurid newspaper stories flash through your mind.  
Maybe monsters don't exist, but robbers and muggers do.  
And all it takes is one bump.  
If only it weren't so dark.  
Sylvania knows a little light goes a long way. Especially  
when the bumps are in someone's imagination. So we make  
light-lights for grown-ups. Our outdoor lighting fixtures are

the most dependable ones you can buy.

And they can solve just about any lighting problem. We  
have the right fixtures for everything from racetracks to  
church steeples. Or from patios to parking lots. (Take the  
GBB shown above. It illuminates an average of 5 footcandles  
of light over an acre of land. And the ballast and lamp are  
easy to install and maintain.)

So if you agree that there's no point in asking for trou-  
ble, talk to the people at  
Sylvania. It's easier than giv-  
ing your employees karate  
lessons.

OUTDOOR LIGHTING BY  
**SYLVANIA**  
A DIVISION OF  
GENERAL TELEPHONE & ELECTRONICS

For more data, circle 60 on inquiry card



A single climate conditioning system would





# e fine if a building had only a single space.

Most Indians have grown out of tepees. And most schools have grown out of single spaces using single climate conditioning systems. Today's schools have both core and perimeter learning spaces. And if you choose one type of system—unit or central—to handle both types of situations, you're compromising.

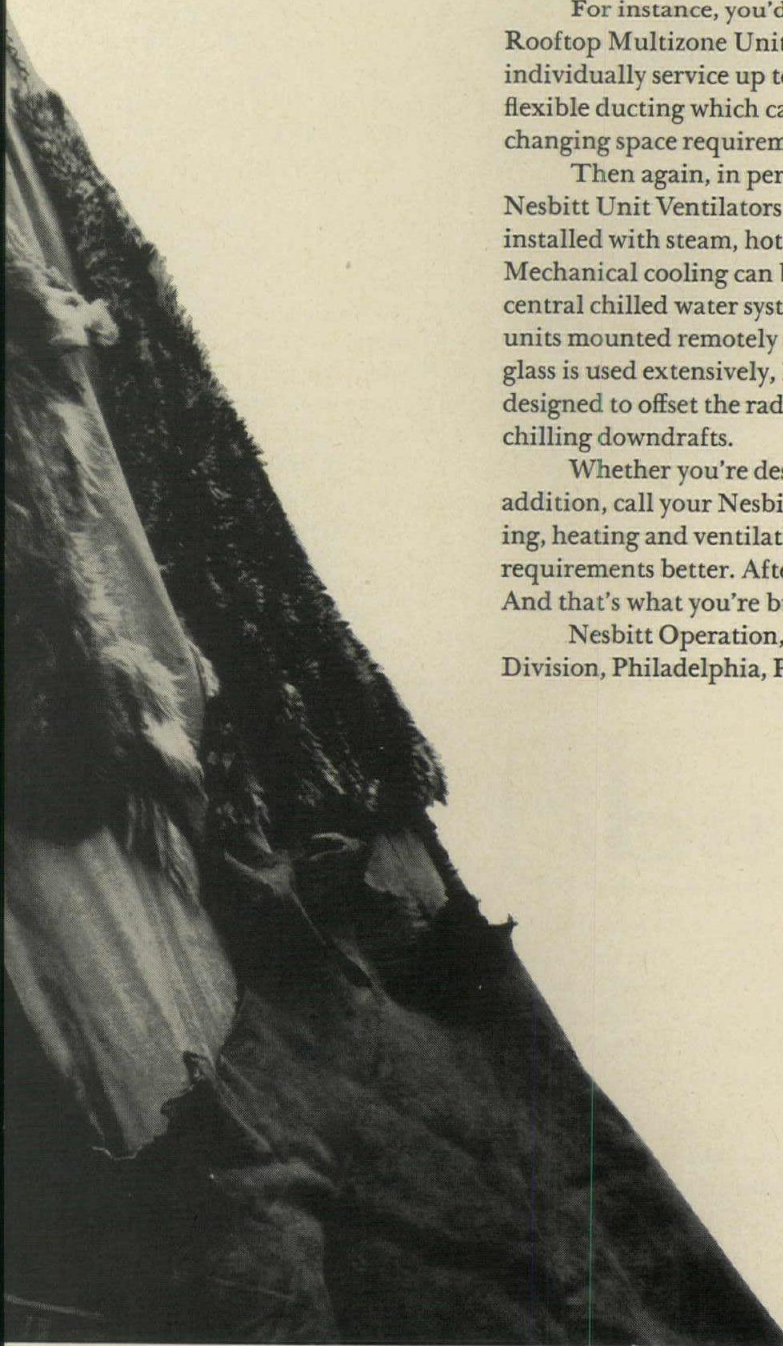
That's why we make the range of equipment we do today. Without compromising anything, you can select the matched equipment that best fits your needs. And you can use the most economical fuel available in your area whatever the equipment.

For instance, you'd probably select our Nesbitt Rooftop Multizone Unit for flexible learning areas. It can individually service up to 12 separate zones through flexible ducting which can later be altered easily to meet changing space requirements.

Then again, in perimeter classrooms, you may find Nesbitt Unit Ventilators most economical. They can be installed with steam, hot water, electric or gas heating. Mechanical cooling can be added now or later using a central chilled water system or individual condensing units mounted remotely or adjacent to the unit. Where glass is used extensively, Nesbitt Wind-o-line Radiation is designed to offset the radiant heat loss and prevent chilling downdrafts.

Whether you're designing a new school or an addition, call your Nesbitt man. He has the air conditioning, heating and ventilating equipment to meet your requirements better. After all, he's a specialist in schools. And that's what you're building, isn't it?

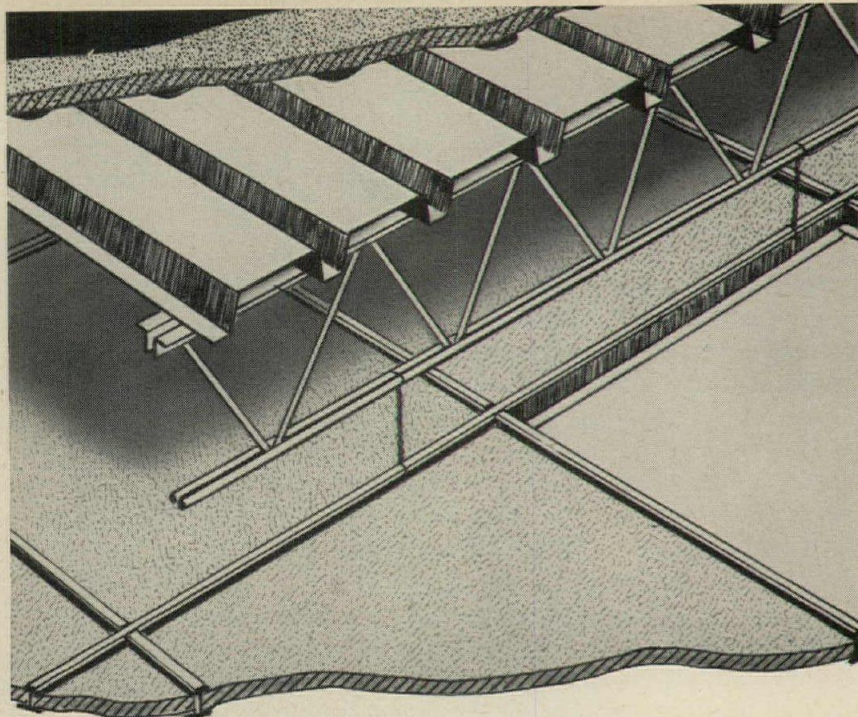
Nesbitt Operation, ITT Environmental Products Division, Philadelphia, Pa. 19136.



**NESBITT** **ITT**

For more data, circle 61 on inquiry card



*continued from page*

## 1 HOUR RATING FOR STEEL ROOF DECK WITH CONVENTIONAL LAY-IN CEILING

A second 1 hr. test gets U. L. approval for roof/ceiling assembly. This time the deck span was increased to 7'-0", the suspended lay-in ceiling panels were conventional acoustical board, and a single layer of 3/4" insulation board was used over the deck.

This combination of lay-in ceiling and deck to span ratio provides an exceptional economical deck assembly. One that is strong and now fire rated.

Fill in coupon below and clip it to your letterhead for detailed information on this new fire rated system.

**STEEL DECK INSTITUTE**



**Airtherm Manufacturing Co. • Armco Steel Corp. • Bowman Building Products Div., Cyclops Corp. • The Ceco Corp. • The Goldsmith Metal Lath Co. • Granco Steel Products Co. • Inland Steel Products Co. • Macomber, Inc. • The R. C. Mahon Company • Plasteel Products Corp. • Republic Steel Corp., Mfg. Div. • Roll Form Products Inc. • H. H. Robertson Co. • Wheeling Corrugating Co.**

*Fill in coupon and clip to your letterhead for your free copy*

**STEEL DECK INSTITUTE** 9836 Roosevelt Rd., Westchester, Ill. 60153

Please send me complete information on new 1 HR. fire test.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

*For more data, circle 62 on inquiry card*

appropriate context. The problem is experts already exist who can solve technological problems, building on their own experiences, but few people are in a position to do anything about the context.

Mobile homes succeed because they stay right outside the building industry context (to our greater shame) bringing them into building on the crest of a wave of technological fashion that they are heading for trouble.

*Colin Davis  
Consultant, Industrialization of Building  
London Visiting Professor  
School of Architecture  
Washington University, St. Louis,*

### Soft doors for psychological rockets

May I express my appreciation for your very factual, non-sensational report of damage to the Embassy Building in Saigon in the March issue. The figures quoted are extremely accurate. However, there is one item of interest which has never been published in connection with the attack on the Embassy.

The Viet Cong who infiltrated the compound attempted to blow the fire doors down with rocket fire. The original design of the building called for doors in heavy cast-bronze, but as an economy measure, less expensive wood doors were substituted. The rockets failed at the doors failed to detonate upon contact because of the softness of wood, but instead pierced the doors and exploded against the marble walls of the inside lobby. Failure of the rockets to detonate at the surface of the doors prevented their being blown off their hinges, and foiled entry to the building by the Viet Cong. Before the Viet Cong could devise other methods of forcing entry through the doors, helicopters which landed on the roof thwarted their attack, and the Viet Cong did not get into the building.

It is rather interesting that a few dollars provided for the sake of economy would prove the effective deterrent to forced entry by the enemy. The real threat to American prestige is not losing the war in Viet Nam but rather losing our economic stability which now supports the rest of the world. Strategic economic measures applied at home possibly could prevent the detonation of psychological rockets and thus avert the threat to our nation. We have the resources of men, money, materials, and technical ability. Why can't we be more judicious in their use and application?

*Adrian Wilson, F.A.S.  
Los Angeles*

*For more data, circle 63 on inquiry card*



It just rolls along trying to make things easier for you. Like maintenance. It's resistant to stains because the fiber won't absorb them. And it cleans easily and economically.

It withstands heavy traffic. Indoors and out. It resists mildew, rot and insects. It's non-allergenic and offers no static problem.

This carpet with a conscience is the brand new Four Seasons® 'Conquest'.

It's made with face of Marvess® olefin CG, a Phillips 66 fiber. A stronger, tougher carpet fiber. General Felt Industries designed this new durable needlepunched carpeting so you can put carpet

where you never dared put it before.

'Conquest' is the thoughtful carpet. It quiets places down, warms them up. Softens them. Makes them colorful and they stay that way because 'Conquest' resists fading. The depth of color is sealed in the fiber. And it's safer too. (Cuts down on slips.)

It also cuts down on clatter. Chatter. The clicking of typewriters. The clacking of footsteps.

It's the thoughtful carpet that lets you hear yourself think.

To put it simply, Four Seasons 'Conquest' won't give you any headaches.

No earaches, either. **MARVESS OLEFIN CG**

A PHILLIPS 66 FIBER



**FOUR SEASONS 'CONQUEST' IS A PRODUCT OF GENERAL FELT INDUSTRIES INC.**

GENERAL FELT PRODUCTS DIV. 2301 SO. PAULINA ST. CHICAGO, ILLINOIS 60608 · CROWN PRODUCTS CORP. DIV. 295 FIFTH AVE., NEW YORK, N.Y. 10016



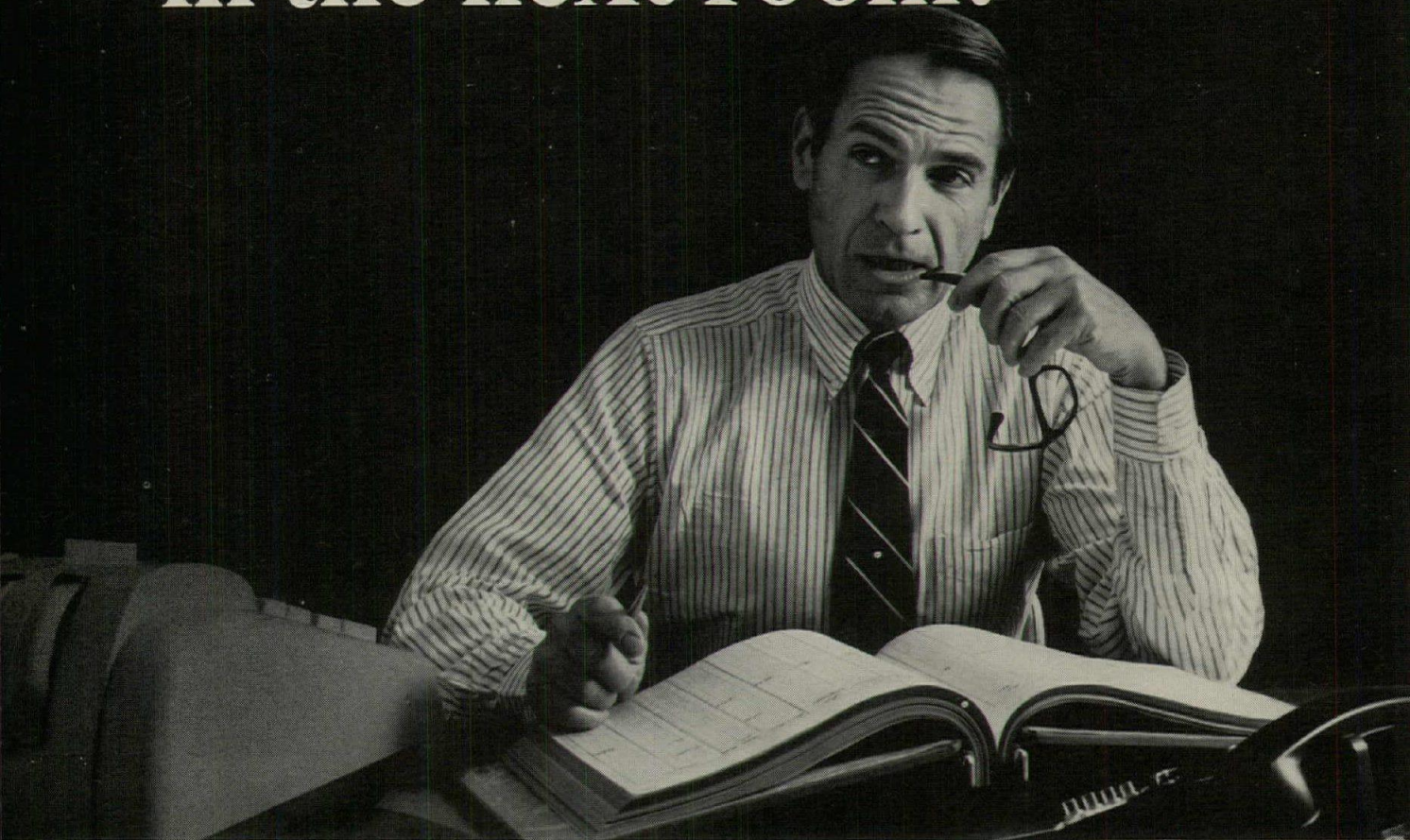
PHILLIPS FIBERS CORPORATION, GREENVILLE, SOUTH CAROLINA, A SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY. MARKETING OFFICES: 1120 AVENUE OF AMERICAS, NEW YORK, N.Y. 10036. PHONE: (212) 697-6050, DANIEL BLDG., GREENVILLE, S. C. 29601. PHONE: (803) 242-5366. PHILLIPS 66 FAMILY OF FIBERS: MARVESS® OLEFIN, QUINTESS™ POLYESTER, PHILLIPS 66™ NYLON.

\*REG. U.S. PHILLIPS PETROLEUM COMPANY

**Four Seasons® 'Conquest'**  
**The carpet with a conscience.**



# \$1183 was spent to soundproof this office and you can hear a cough in the next room!



## They forgot an Acoustilead plenum barrier.

Soundproof wall materials, plus expensive acoustical ceiling tiles, were specified to make this a noise-free office. These materials do the job . . . up to a point. That point is the plenum, the space between a partition top and the floor slab above it.

Sound waves flood over the partition virtually unimpeded if there is no acoustical plenum barrier. Ordinary sound barriers in a plenum are usually so full of leaks around ducts and pipes that noise still passes freely.

**Gain Maximum Noise Reduction at Minimum Cost.** The solution to this annoying problem is Asarco Acoustilead—sheet lead that's only 1/64-inch thick. Drape a curtain of

Acoustilead from the floor slab above to the top of the partition and you stop penetration of all normal noise. There are no sound leaks because Acoustilead fits tightly around ducts and wires. It can be cut with scissors, easily bent by hand, and is installed in less time than other acoustical materials.

Acoustilead is the first material available for sound barriers in normal plenum areas, with an installed cost generally below \$1.00 per square foot.

**Help.** Our brochure on Acoustilead shows why and how to install thin sheet lead. Send for it today. Sound Attenuation Department of Asarco.

Federated Metals Division  
**AMERICAN SMELTING AND REFINING COMPANY**  
120 BROADWAY, NEW YORK, N. Y. 10005



For more data, circle 64 on inquiry card



# Make lighting a design tool with GE SPACE-LITE\* luminaires

The flexibility of today's daring architecture has been captured with the dramatic styling of General Electric SPACE-LITE luminaires. Circles and squares become your tools to make every lighting installation unique.

SPACE-LITE luminaires combine flexible modular mounting arrangements and bold geometric shapes to give you exciting design possibilities. Six decorator colors, a variety of mounting hubs and arms, and today's most efficient light sources are available to further increase application flexibility and efficiency.

High-quality GE features make SPACE-LITE luminaires your best lighting buy. New application flexibility makes them your best design choice.

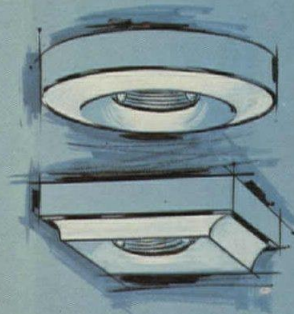
For additional information and a "Build an Installation Designers Kit" see your General Electric Sales Engineer or write to: Section 460-27, General Electric Co., Schenectady, N. Y. 12305.

\*Trademark of General Electric Co.

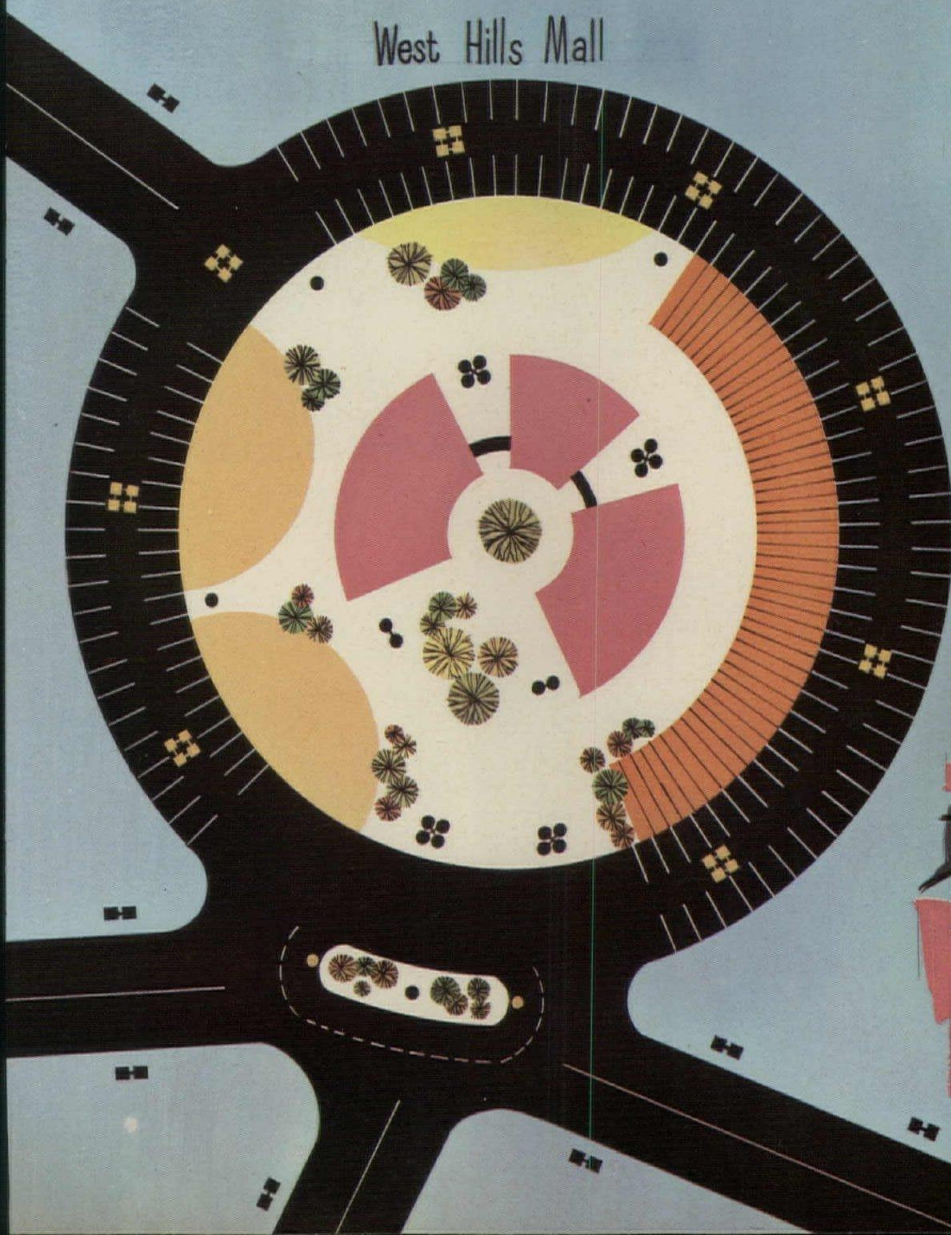
Outdoor Lighting Dept., Hendersonville, N. C.

**GENERAL  ELECTRIC**

*For more data, circle 65 on inquiry card*

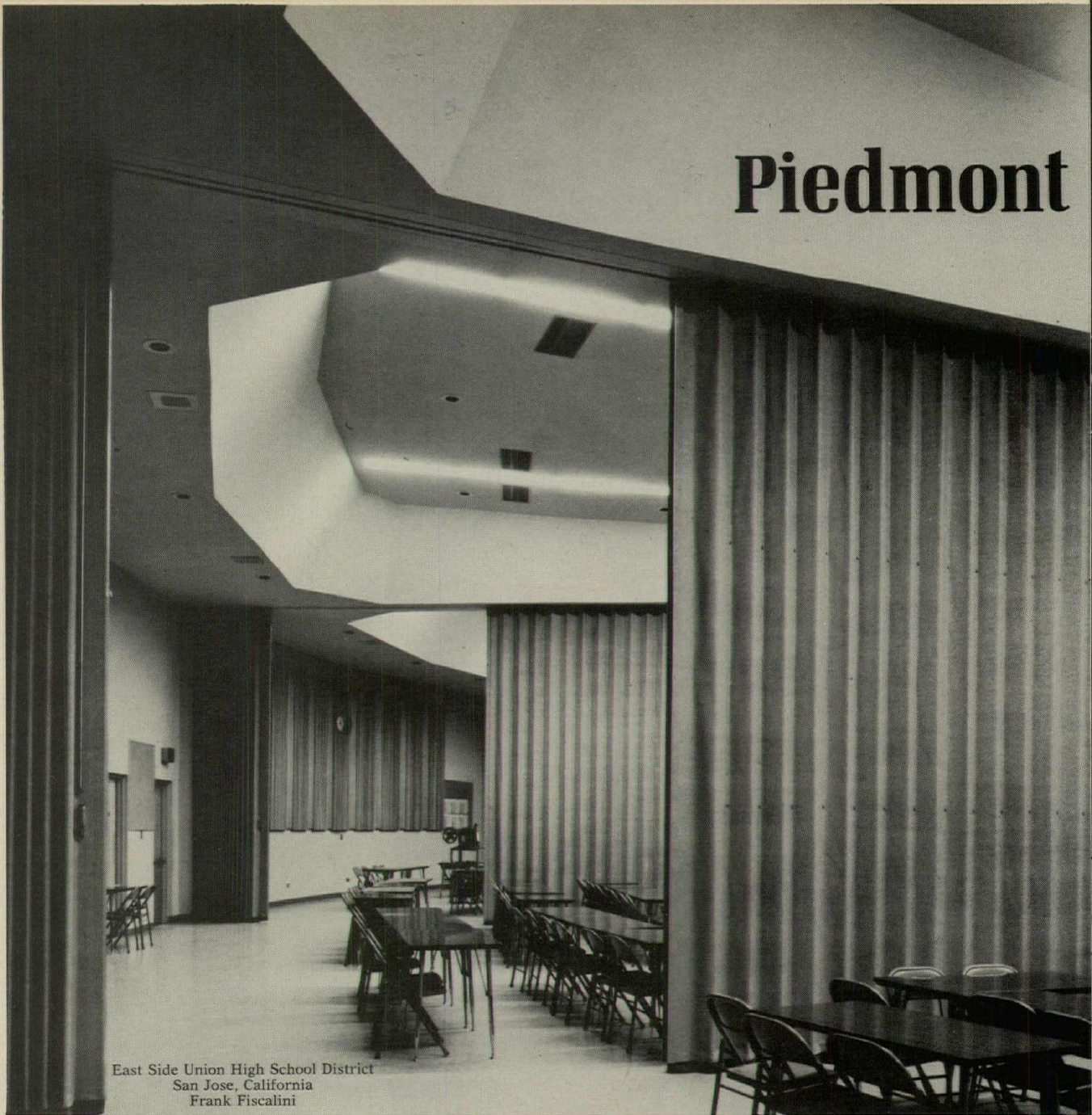


West Hills Mall

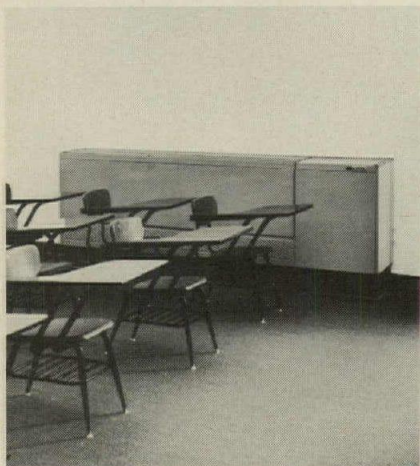




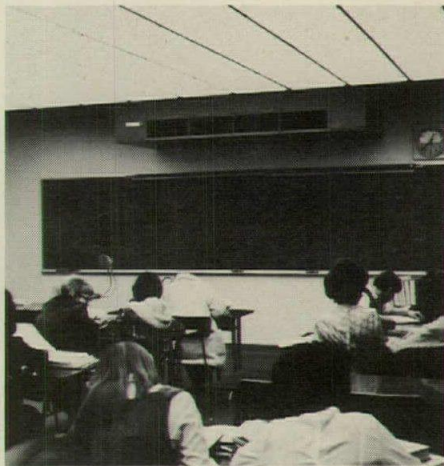
# Piedmont



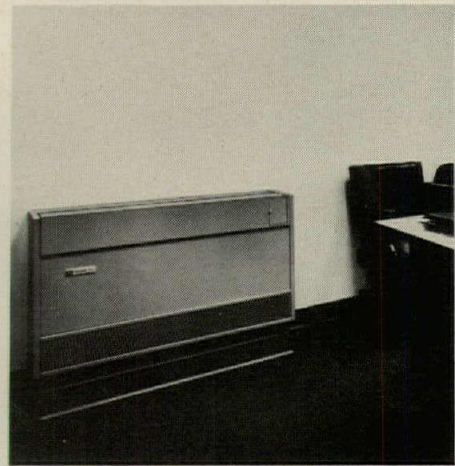
East Side Union High School District  
San Jose, California  
Frank Fiscalini



SC UNivent—classroom unit ventilators featuring self-contained refrigeration—are used in perimeter classrooms to provide ideal year-round thermal conditions on a room-by-room basis.



SG Ceiling unit ventilators, chosen for larger core classrooms, save floor space while they provide the desired thermal atmosphere.



A smartly-styled SC NELSON/aire terminal air conditioner with self-contained refrigeration was selected for smaller areas, such as the school's conference and faculty rooms.



# Hills: a school air system with a split personality points the way to the future.

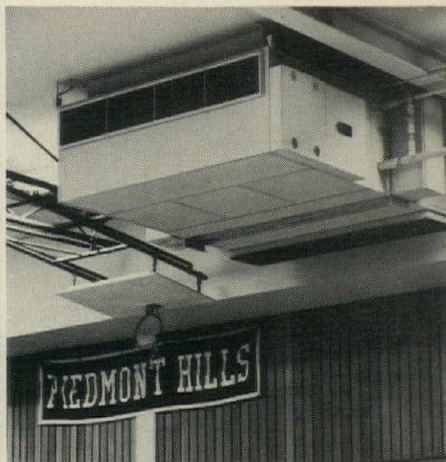
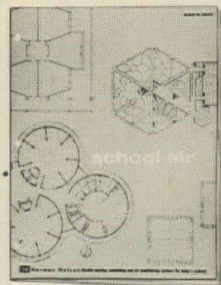
With the exception of the universal need for good classroom ventilation, virtually no two schools' "school air" problems are alike.

Innovative school planners, in the East Side Union High School District at San Jose, California, are finding they can incorporate a *variety* of heating, ventilating and air conditioning equipment and arrive at a school-air system that meets their precise needs. The Piedmont Hills High School is a perfect example of using split systems to cope with the school's exact thermal needs.

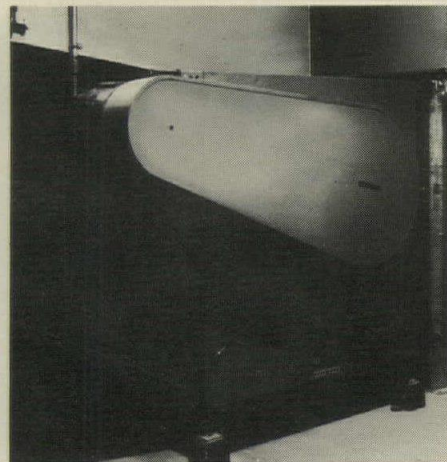
AAF Herman Nelson unit ventilators with self-contained refrigeration are used in exterior classrooms. A central station air handling unit provides thermal control for the school's hexagonal central building that houses the library, flexible team-teaching rooms (large picture upper left), and other multi-purpose rooms. SC NELSON/aire self-contained air conditioners with electric resistance heating were used in selected administrative offices . . . ceiling unit ventilators in core classrooms . . . and an AAF Audivent ultra-quiet unit ventilator in the auditorium.

Result: A well-integrated, balanced atmosphere for teaching and learning. When your school needs thermal "analysis," why not call us? We're specialists who carry a *complete* line of school air equipment. In the meantime, let us send you FREE a copy of our booklet, SCHOOL AIR, which gives you a more detailed idea of how AAF system planning can help you.

**AAF Herman Nelson**  
SCHOOL PRODUCTS DIVISION



A ceiling-mounted specialized unit ventilator, the AAF Audivent, supplies the large volumes of air needed in the school's auditorium.



This central station air handling unit is mounted in the ceiling above the team teaching rooms shown upper left, and provides a central source of heat and cooling through ductwork for the library and other multi-purpose rooms as well.

Please send a copy of "SCHOOL AIR" brochure.

Please have a representative call.

TO: "School Air"  
American Air Filter Co.  
215 Central Ave. • Louisville, Ky. 40208

Name \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

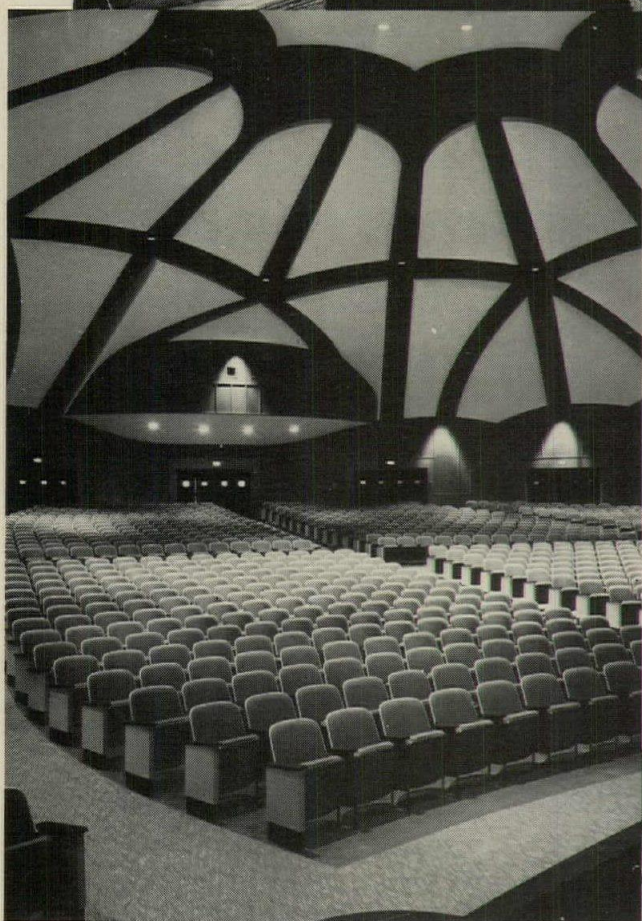
Title \_\_\_\_\_

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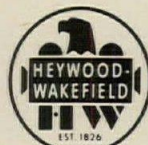


Loretto-Hilton Center for the Performing Arts, Webster College, Missouri



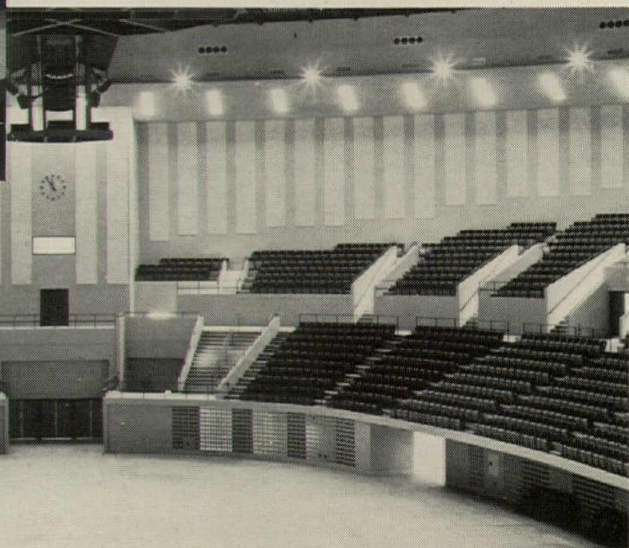
## Heywood-Wakefield seating makes these new auditoriums more than just beautiful.

Heywood-Wakefield seating is engineered to give the kind of deep, luxurious comfort that makes people want to come back. Backs are generously padded. Deep-cushioned seats have 16-coil spring construction. Heywood-Wakefield seating is designed to work hand-in-hand with modern architectural designs, to give you the flexibility of color, fabric and style you want. And it's made to last a long time, with a minimum of maintenance. For more information, see Sweet's Catalog.



Gardner, Mass.

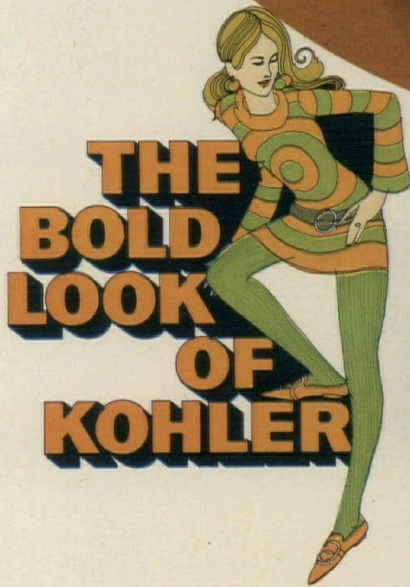
Susquehanna University, Selinsgrove, Pennsylvania



San Antonio Civic Center, San Antonio, Texas

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# THE BOLD LOOK OF KOHLER



The world's most comfortable bathtub. It's Kohler's new Caribbean, with comfort-contoured interior—a full six feet of stretch-out relaxation. New safety: recessed grip rails, Safeguard® bottom. New versatility: "no apron" design with universal pattern (use left or right) permits a full range of installations—sunken tub, recess, corner, free-standing, peninsula. Unlimited choice of exterior treatments: paneling, tile, plastic laminates—even bring the carpeting up the sides. Bold, that's Kohler!

## KOHLER of KOHLER

Kohler Co., Kohler, Wisconsin

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## **There's more to Canadian architecture than meets the eye.**

Canadian manufacturers are providing the architect with contemporary building products that add scope to his imagination and freedom to his expression.

Think what you could create with mass-produced concrete blocks with a sea shell, granite chip or sea sand exterior finish that won't chip or weather away. Or factory-assembled

circular staircases that are delivered ready to install. Or one-piece moulded marble bathroom vanity tops and bowls. See these unique products and many more on display at the Canadian Exhibit, A.I.A. Convention, Portland, Oregon. Then, let your imagination take it from there!

**Department of Trade and Commerce**  
Government of Canada, Ottawa



*For more data, circle 69 on inquiry card*



# Bright idea



## Beautiful way to cut building costs: Bradley Washfountains!

Bradley Washfountains come in a wide variety of attractive colors and compositions. But the real beauty of Washfountains is the money they save. For example, Washfountains serve up to 8 people with one set of plumbing connections, cutting installation costs as much as 80%. They use less space than ordinary fixtures (up to 25% less). They reduce water consumption 45-80%. And they cut maintenance costs, too. Wherever you specify Washfountains—offices, schools, plants, institutions, public and commercial buildings of all types—you secure a handsome saving! See your Bradley representative. And write today for complete information. Bradley Washfountain Co., 9107 Fountain Boulevard, Menomonee Falls, Wisconsin 53051.

# from Bradley!



For more data, circle 70 on inquiry card





## How can Raynor improve the No.1 fiberglass garage door? Make it with Tedlar, guarantee it for 15 years!

Now Raynor has found a way to make the industry's leading fiberglass garage door even better. Raynor took Raylon fiberglass, already rated outstanding in value and durability, made it with du Pont Tedlar\* PVF Film, and guaranteed it for 15 years! Tedlar offers exceptional protection against corrosive acids, alkalies, hot tar, greases, caustics . . . virtually everything that

\*TEDLAR IS A REGISTERED TRADEMARK OF DU PONT.

defaces or erodes other surfaces and finishes. Unequaled in resistance to sunlight, oxygen, and weather. Maintenance? Virtually non-existent. And price? No change. Lightweight, ruggedly built, yet attractive in appearance. Raynor also makes industrial, commercial, and residential doors in wood, steel and aluminum in all price ranges.



**RAYNOR**  
The Brand You Can Depend On

Raynor Manufacturing Co., Dept. H, Dixon, Illinois  
Please send me free literature on Raynor garage doors.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

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# Anchor:® New Dimensions in total protection

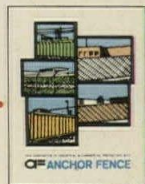


**Anchor Permafused Chain Link.** Forest green vinyl coating fused to steel wire. Exclusive square construction, with no top rail, provides total protection.

If you've been told all chain link fences look alike, look again. Anchor, the best possible protection for industry and commerce for over 75 years, now offers the best possible look in chain link: new Anchor Permafused® . . . with its handsome forest green vinyl coating bonded to tough steel wire. Permafused fabric is impervious to acid and alkali atmospheres. Anchor's rugged, clean-cut framework eliminates all wrap-around bands—and without top rail, there's no place for a potential trespasser to get a convenient hand or foothold for climbing. No doubt about it . . . Anchor's new Permafused is the toughest, best looking, most protective, lowest maintenance chain link on the market. Permafused is only one of the many Anchor products that bring you total protection. Our new booklet tells all; send for it.



**Anchor Privacy** fence attractively protects and conceals. Baked-on colors, such as polar white, dawn blue, terrace green, mocha tan and rich ranch maroon.



ANCHOR FENCE DIVISION  
ANCHOR POST PRODUCTS, Inc.  
BALTIMORE, MARYLAND 21224  
Plants in Baltimore, Houston, Los Angeles;  
48 branch offices.

Anchor Fence, Dept. C-06 6500 Eastern Ave.,  
Baltimore, Maryland 21224  
Please send 1968 "New Dimensions" color booklet.

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Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

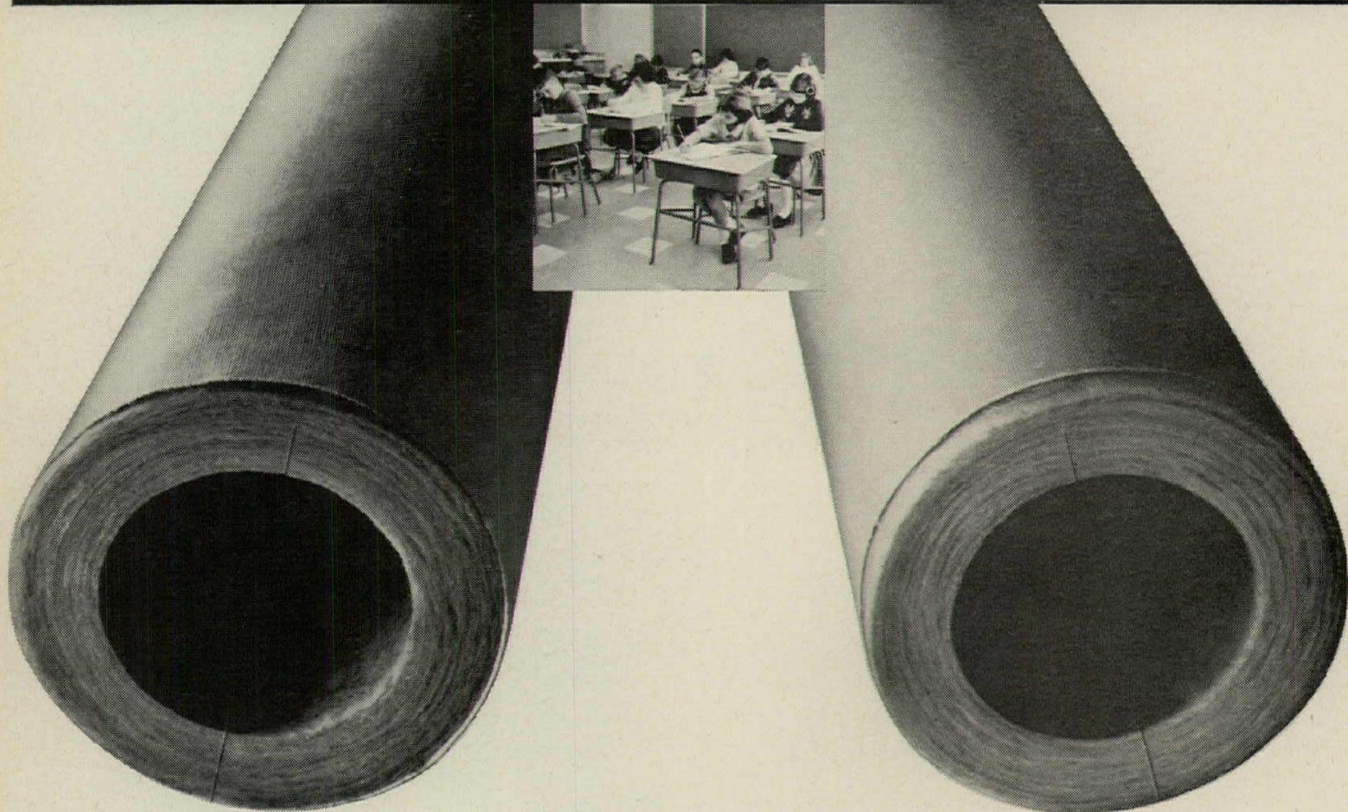
Please check Anchor products which interest you: Chain link, Permafused\_\_\_\_, galvanized steel\_\_\_\_, aluminum\_\_\_\_, All-aluminum Privacy board-on-board\_\_\_\_, All-aluminum Anchor-weave privacy strips\_\_\_\_. Thank you.

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# The difference may be a few lives.

Maybe theirs.



Conventional pipe insulation

New Flame-Safe pipe insulation

Meet new Flame-Safe® fiber glass pipe insulation. On the right.

It's one of the J-M Life Safety\* products. Reduces fire and smoke hazards. And it may save a few lives.

There are four Flame-Safe products. Two for exposed installations, two for concealed. They're the first to meet the same rigid safety standards established for duct insulations—NFPA 90A.

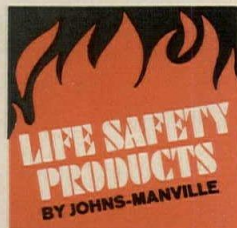
Each has the required 25 Flame Spread and 50 Smoke Developed ratings on the *composite* product (insulation, jacket, and the adhesive that joins them), tested in accordance with ASTM E-84, NFPA 255 and UL 723.

And they offer a lot more than fire- and smoke-safety. Their high thermal performance makes temperatures easy to control, lowering fuel and power costs. They're also easy to install. Lightweight.

Resistant to damage and deterioration. And attractive.

When it comes to installed cost, let your nearby Flame-Safe contractor, distributor or J-M representative show you how all these benefits work for you.

For complete information on J-M Flame-Safe pipe insulations, call or write your nearest Johns-Manville Industrial Insulations sales office. Or write Johns-Manville, Box 14, New York, N.Y. 10016. Cable: JOHNMANVIL.



REDUCE HAZARDS OF  
FIRE & SMOKE

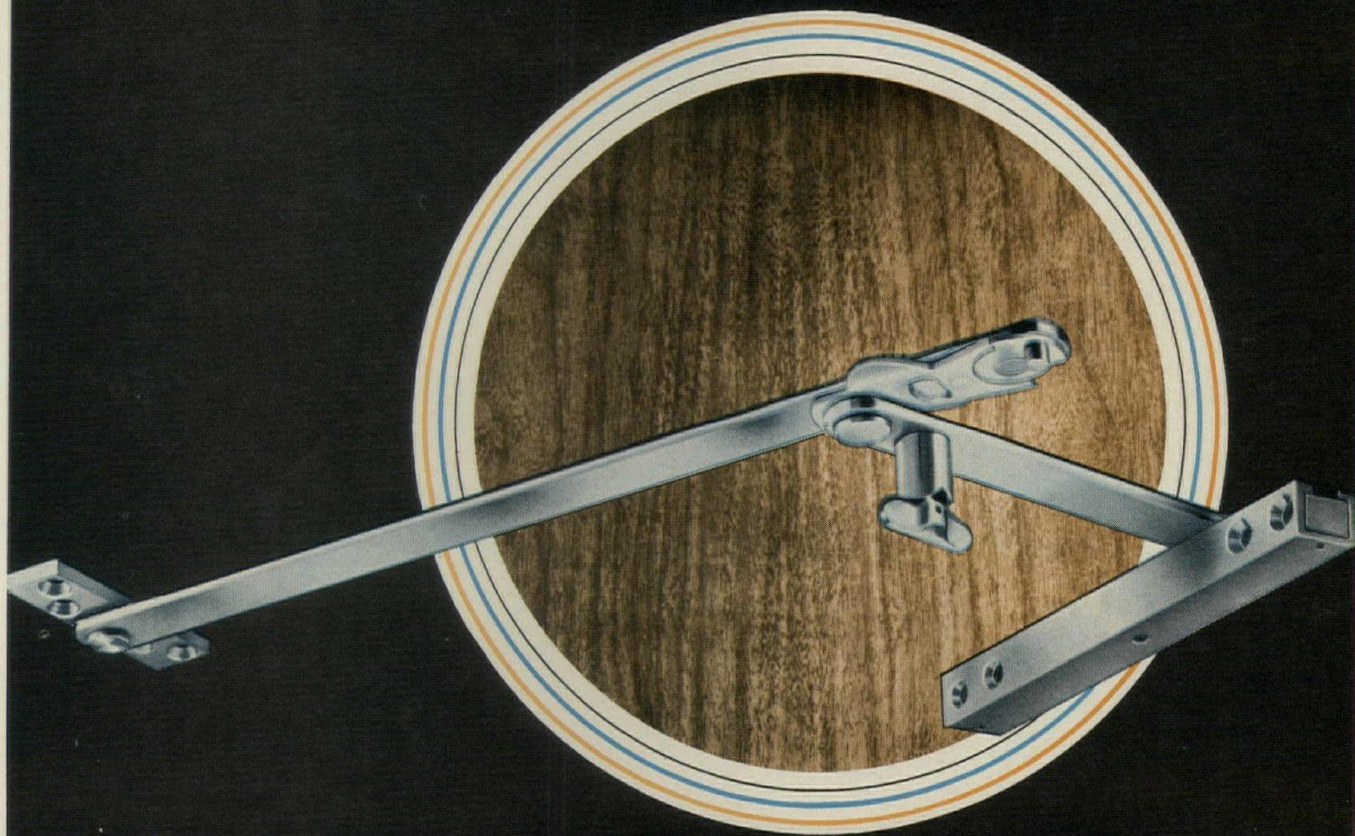
\*A Johns-Manville trademark

## Johns-Manville

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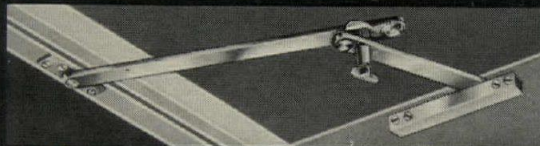
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-  stops the door
-  cushions the stop
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*At United's new training facility in Elk Grove, Illinois*

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Montgomery Elevator service is not listed in the handbook of United Employees benefits. The odds are, no indoctrination lecture will include mention of it. And what's more, 99 out of 100 United people riding in the elevators will probably never even glance at the name plate on the threshold of a Montgomery car. We don't mind. That's why we over-build them the way we do. To serve totally unnoticed. With this installation, Montgomery now serves United people as a silent extra benefit in several of their locations as well as in many major airports in North America.

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*For more data, circle 75 on inquiry card*



The United Air Lines Training Center in Elk Grove, Illinois  
Architect: Skidmore, Owings & Merrill—Chicago. Contractor: Power Construction Company—Oak Park, Illinois



# HOSPITAL. QUIET.

And that's how Anemostat  
air distribution products  
keep this new Dallas hospital—

How do you circulate air  
through a huge hospital  
like this... without a single discomforting draft or dis-  
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At Dallas's new 323-bed Presbyterian Hospital it's done  
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ment. In all, sixteen different types of mixing boxes,  
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## QUIET!

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and silently.

The result is an environment that's restful and serene  
for the patients, pleasant and invigorating for the staff.  
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Products Division, P.O. Box 1083, Scranton, Pa. 18501.



**Anemostat Products Division**  
**Dynamics Corporation of America**

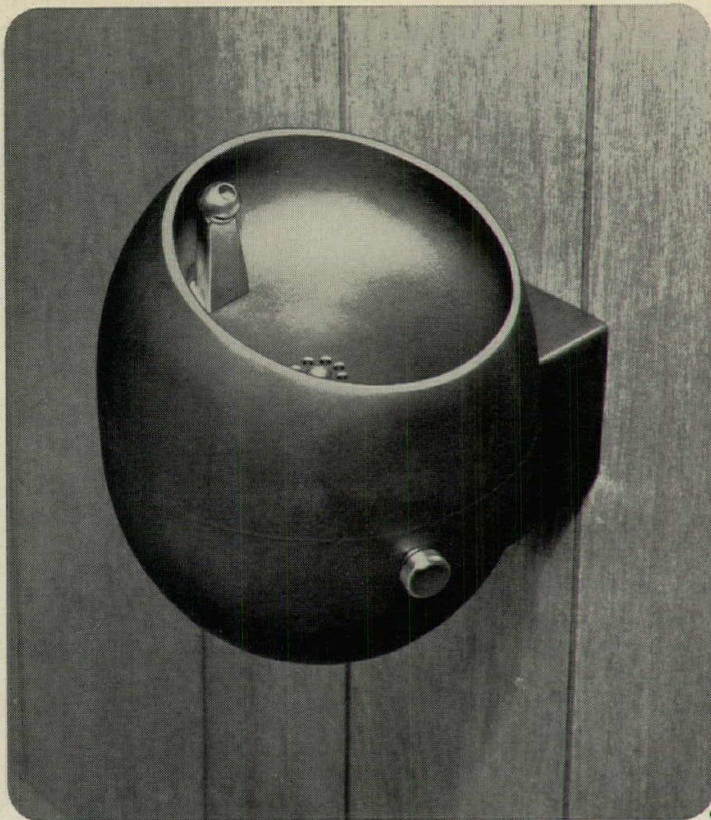
**DCA**

*For more data, circle 76 on inquiry card*

Architect—Roscoe DeWitt, FAIA • Engineer—Leo L. Landauer & Associates • Mechanical Contractor—  
Brown & Olds Plumbing and Heating Corp. • Sheet Metal Contractor—Keetch Metal Works of Dallas



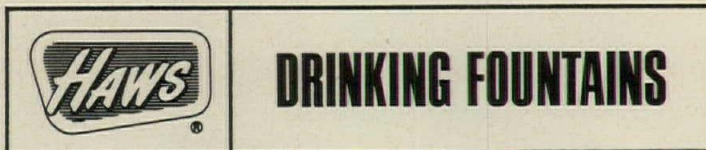




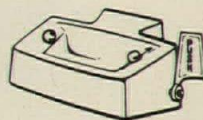
## the quiet show off

Sooner or later, when the big things are decided, you'll come to the time for drinking fountains. The wrong choice can be an eyesore, so don't settle for just anybody's fountain. Haws gives you more new designs and modern materials than all the "other guys" put together. Ask for your free catalog today. **Haws Drinking Faucet Co., 1441 Fourth St., Berkeley, California 94710**

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emergency eye/face-wash  
fountains and drench showers,  
dental fountain/cuspidors  
and lab faucets



For more data, circle 77 on inquiry card

**John W. Alving** and **Kent Johnson** have been named associates of **Fred Bass & Company Architects** of Seattle.

**Wayne A. Brewer** has been named partner of **Skilling, Helle, Christianson, Robertson, Consulting Structural Civil Engineers**. Mr. Brewer continues as Manager of the firm's New York office.

**Robert B. Callan, A.I.A.** has been appointed vice president and director of architecture of **Engineers Inc., Consulting Engineers** of Newark, New Jersey.

**Henry J. Campbell, Jr. and Associates** announce the change of its name to **Campbell and Friedland, Consulting Engineers**. The firm has offices in Greenvale and Brentwood, New York.

Two new partners have been named by **J. Gordon Carr & Associates**, New York architectural firm. They are **Gifford Lips, A.I.A.** and **Edward J. Meade, A.I.A.**

**Reynolds, Smith and Hills**, Florida architects and engineers, has appointed **Donald M. Cheek** as chief of its new Division of Planning.

**Clayton & Westbury, Inc., Architects** have opened their new offices at 1111 Monroe Drive, N.E., Atlanta. **Lester Clayton, A.I.A.**, president, was formerly associated with **Thompson & Hancock**. **Rodney A. Westbury, A.I.A.**, vice president and treasurer, was recently with **Finch, Alexander, Barnes & Rothschild & Paschal**.

**Carroll P. Colvin, A.I.A.**, **W. I. Miller, A.I.A.** and **Kenneth L. Shirey** have formed a new partnership under the name of **Colvin, Miller & Shirey Architects**. The firm's office is at the Hall Building, Little Rock, Arkansas.

A new partnership was recently formed to expand the architectural and engineering services of **Cox-Liske-Associates**. **George Lionakis, Architect** and **Klyne Beaumont**, structural engineer, have joined **Whitson W. Cox** and **J. R. Lisk** in this reorganization. The new firm, known as **Cox-Liske-Lionakis-Beaumont Architects and Engineers**, is located in the Banker's Life Building, 10 Fuller Court, Sacramento, California.

**Keith W. Dawson** is now chief architect at **Brown and Matthews, Inc.** in Union, New Jersey.

The architectural firm of **Kahn and Jacobs** recently appointed **Der Scutt** and **Elijah E. Tompkins** as associates.

**Norbert W. Maurer** is now structural consultant for **Sverdrup & Partners and Associates, Engineers-Architects** in St. Louis.

continued on page





# The number is Corbin 110

Your number for dependability. Strong, functional and stylish. One of many utilitarian door closers from Corbin. It typifies the beauty, quality and dependability built into all Corbin products.

Your Corbin distributor can furnish you with complete data on this design, or write P. & F. Corbin, Division of Emhart Corporation, New Britain, Connecticut 06050. In Canada—Corbin Lock Division, Belleville, Ontario.



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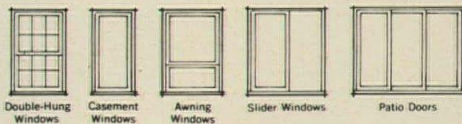
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Neighborhood have WOOD WINDOWS.

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WOOD WINDOWS**



For the ultimate in windows, C200's are double weatherstripped, are available with insulating glass and vinyl glazing — a combination that's leakproof, permanent and maintenance-free.



Double-Hung  
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Casement  
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Awning  
Windows

Slider Windows

Patio Doors

**CARADCO, INC.**  
Dubuque, Iowa

Subsidiary: Caradco Eastern,  
Pemberton, N.J.

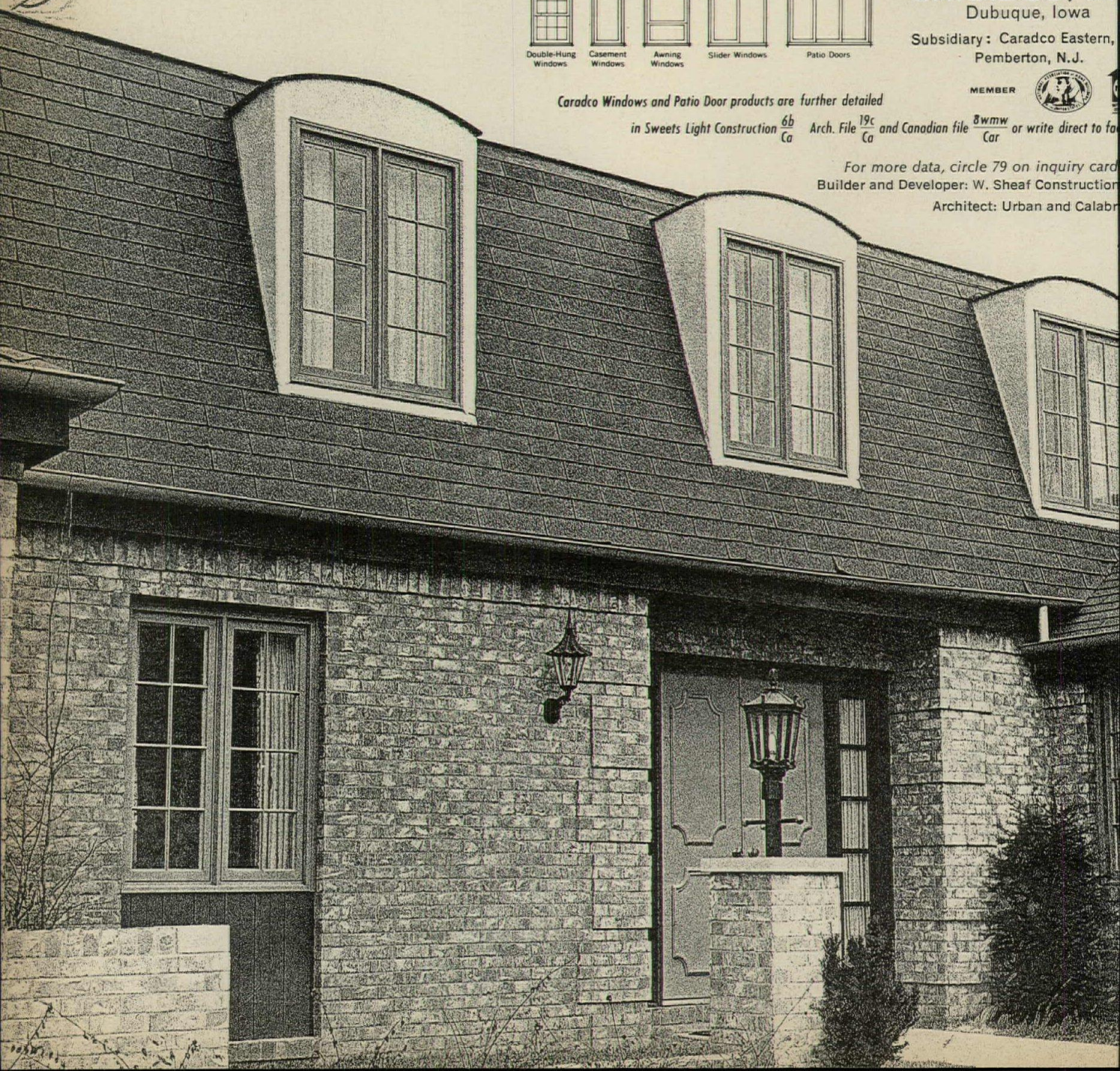
MEMBER



*Caradco Windows and Patio Door products are further detailed*

*in Sweets Light Construction 6b Arch. File 19c and Canadian file 8wmw or write direct to fa*  
*Ca Co Ca Car*

*For more data, circle 79 on inquiry card*  
Builder and Developer: W. Sheaf Construction  
Architect: Urban and Calabro





# 2 versatile exterior coatings from Bostik.



Application: Bostik Textured II on concrete block and poured concrete columns and beams.  
Owner: All-State Insurance Company, Northbrook, Illinois  
Architect: Schmidt, Garden & Erikson, Chicago, Illinois  
Applicator: Bobbe & Co., Inc., Chicago, Illinois

## Bostik Textured II...

is the hard, tough, colorful and weather-resistant exterior texture coating. Available in a wide range of colors. Bridges hairline cracks—"breathes" to avoid spalling. For decorating and protecting in-place and pre-cast concrete, concrete and cinder block, cement asbestos board. Easy to apply right from the can by spray, brush or roller.



Application: Featurestone on cast in-place concrete.

Owner: Chalk House, Washington, D. C.  
Architect: Morris Lapidus Assoc., Miami Beach, Florida  
Applicator: Edward W. Minte Company, Washington, D. C.

## Bostik Featurestone...

gives you the beauty, texture and permanence of natural stone yet you spray it on—fast. For accenting or decorating exterior columns; panels, concrete, pre-cast. An acrylic matrix into which colorful chips of marble, quartz, granite or other stone are embedded. No color fading, seamless, "breathes" to prevent blistering and spalling.

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continued from page 112

**Morgan V. Raines** has joined the firm of **Deigert and Yerkes and Associates** as a partner in its Washington office. The firm has opened a branch office at 5 Swann Street, Biltmore, Asheville, North Carolina.

The firm of **Birge M. Clark, Walter Stromquist and David F. Potter** continues the practice of architecture at its present address, 3200 Hanover Street, Palo Alto, California, under the new name of **Clark, Stromquist and Potter**. **Joseph Ehrlich, Rodney Heft, and Jack Rominger** have

opened offices for the practice of architecture at 2470 El Camino Real, Palo Alto, under the new firm of **Ehrlich, Heft & Rominger**.

**Peter Flack, Consulting Engineers** of Rochester and New York City, has appointed **Joseph L. Petraglia, Jr.** and **Henry DiGregorio** as associate members.

**George, Miles & Buhr, Architects & Engineers** of Salisbury, Maryland, has admitted **John L. Graham III, A.I.A.** as architectural associate.

**Harry Green, R.A.**, has been admitted as a partner in the New York and

Washington, D.C. firm of **Leo Kornbl Associates / Architecture / Planning / Interiors**.

**Abbott Harle, A.I.A.** has been named a vice president of **Victor Gruen Associates**.

**Marvin Hatami, A.I.A.** and **Maxwell L. Saul, A.I.A.**, in association with **Fred H. Tanaka, A.I.P., Planner**, have established offices for the practice of architecture, urban planning and design at 1036 Grant Street, Denver.

**Richard T. Henmi, A.I.A.** has been named a partner in the St. Louis architectural firm of **Schwarz & Van Hoef**.

**Holforty Widrig O'Neill & Associates Inc., Consulting Engineers** of Troy, Michigan, has appointed **Frederick Oleszkowicz, P.E.** and **David Silbert, P.E.** as senior associates of the firm. **Fred L. Lopez, P.E.** has been named an associate.

#### OFFICES OPENED

**William R. Jenkins** has announced the opening of new offices for the practice of architecture and planning at 2737 Buffalo Speedway 212, Houston, 77006.

**Hamilton Frederick** has joined the firm as an associate architect.

**Jones & Mogensen, A.I.A., Architects and Planners**, 101 Park Avenue, New York City, announce opening of a Long Island branch office located at 601 Plandora Road, Manhasset, New York.

**Robert A. Little & Associates** announces the opening of an office for the practice of architecture and urban design at 12025 Shaker Boulevard, Cleveland 44120.

**Charles Luckman Associates**, with corporate headquarters in Los Angeles, has opened a new office in Phoenix.

**Gene D. Smith, A.I.A.**, announces the opening of an office for the practice of architecture and space planning at 12121 Wilshire Boulevard, Los Angeles 90049.

**Sverdrup & Parcel and Associates Inc., Engineers-Architects** based in St. Louis, has opened an office in Nashville at 306 Gay Street.

**McGaughy, Marshall & McMillan Architects, Consulting Engineers and Planners** have opened a Richmond, Virginia office at 303 Ross Building. The firm's home office is in Norfolk, Virginia.

## ON THE CALENDAR

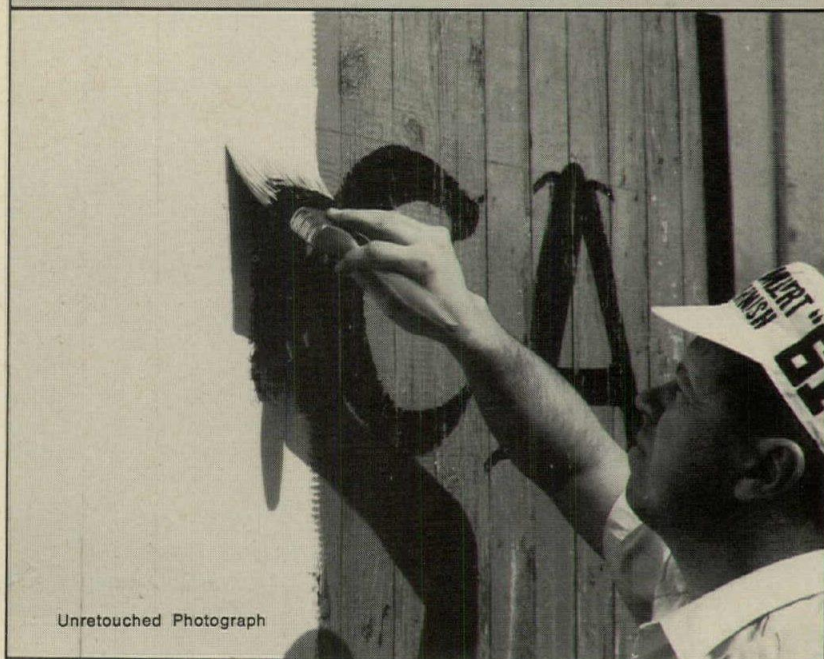
### JULY

3-6 Annual meeting of the National Society of Professional Engineers—Schroeder Hotel, Milwaukee.

## NEW ONE COAT WHITE

Supr 1 Kote  
Superior hiding alkyd  
Brilliant White  
Covers in just one coat  
Even deep colors  
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Unretouched Photograph

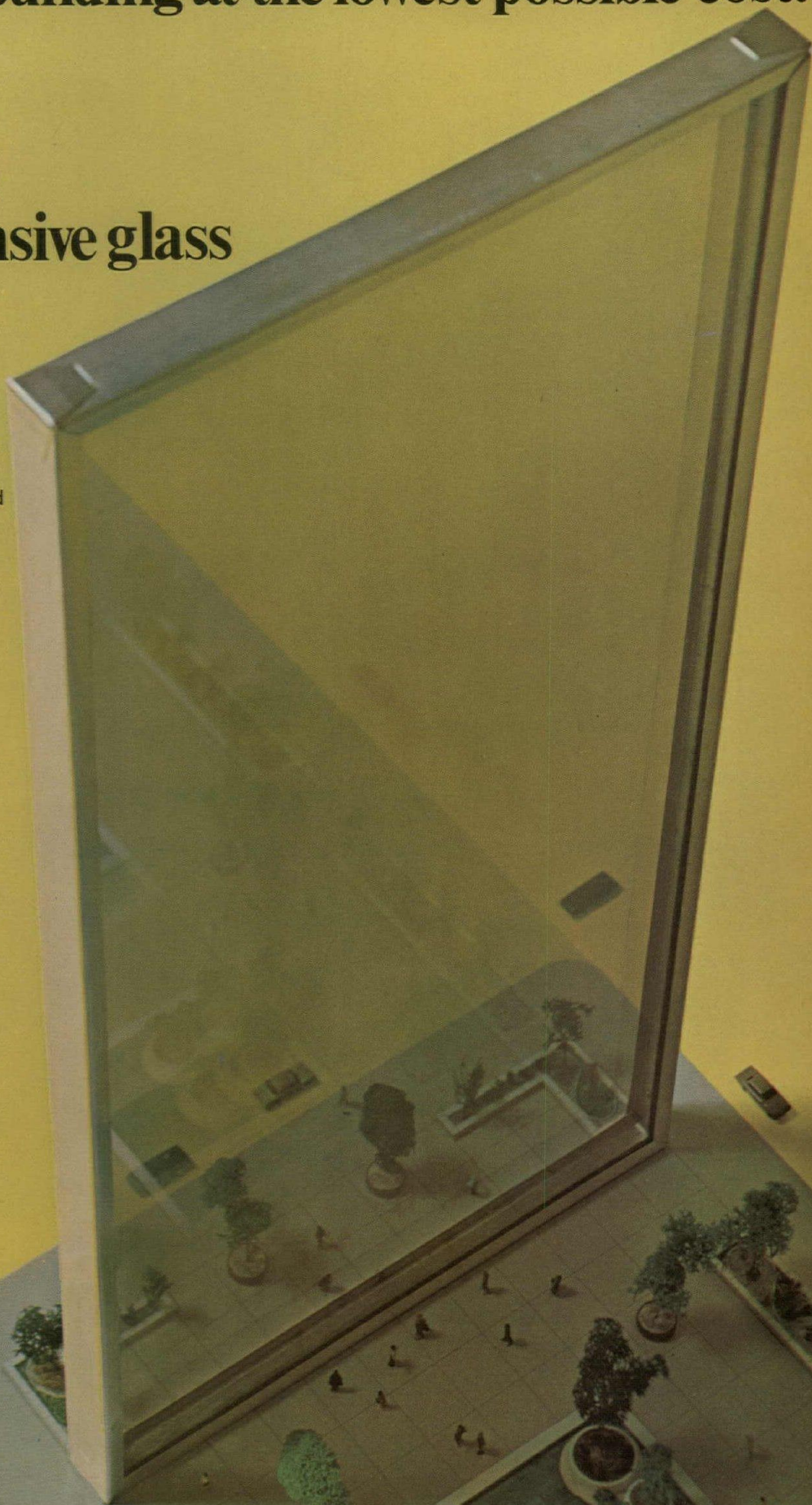
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more than glass.  
It's Thermopane® insulating glass  
with a micro-thin coating of metal on  
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control this coating to control infrared  
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conditioning costs as much as 50%.  
Our most expensive glass could  
turn out to be the most economical  
you can specify and it demonstrates  
an important L-O-F capability: the  
combining of materials in new ways  
to achieve desired characteristics.  
Incidentally, our most expensive  
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# The Growing World of Libbey-Owens-Ford



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And your kind of imagination to utilize them to their optimum potential.

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They have been fully investigated and verified by an extensive program of full scale load deflection tests using both regular and light-weight concrete.

For more information on the new Inland Composite Beam Design Manual write: Inland Steel Products Company, Dept. F, 4033 West Burnham Street, Milwaukee, Wisconsin 53201.

# Composite beam design? Ask Inland.

*Every building  
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you with new  
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Stoller (ESTO) photos

The strikingly handsome new Oakland-Alameda County Coliseum complex is not only all that Skidmore, Owings & Merrill set out to make it—handsome and bold, intimate despite size, pleasant and profitable to use—but in concept and design is a sophisticated and unique structure.

## An elegant sports and recreation center







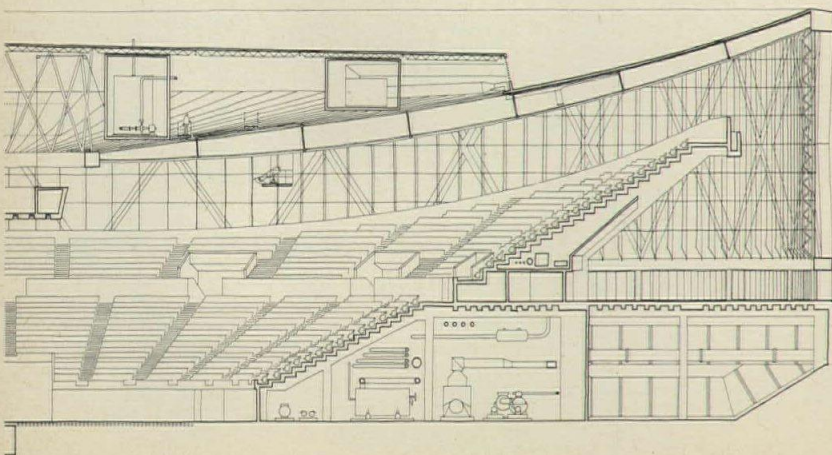
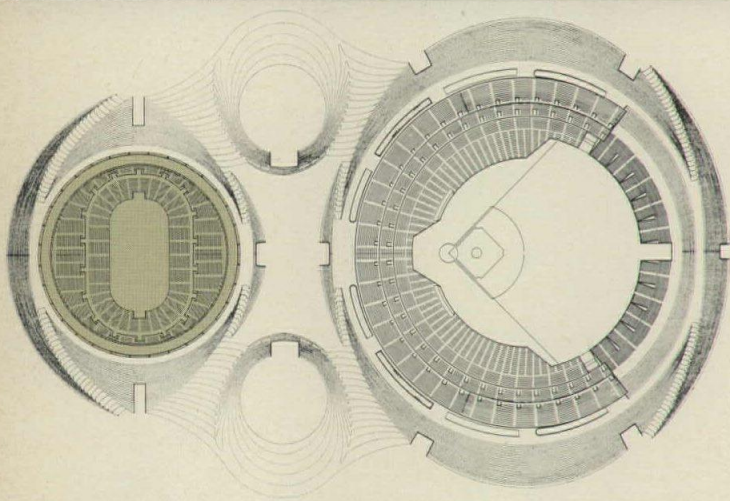
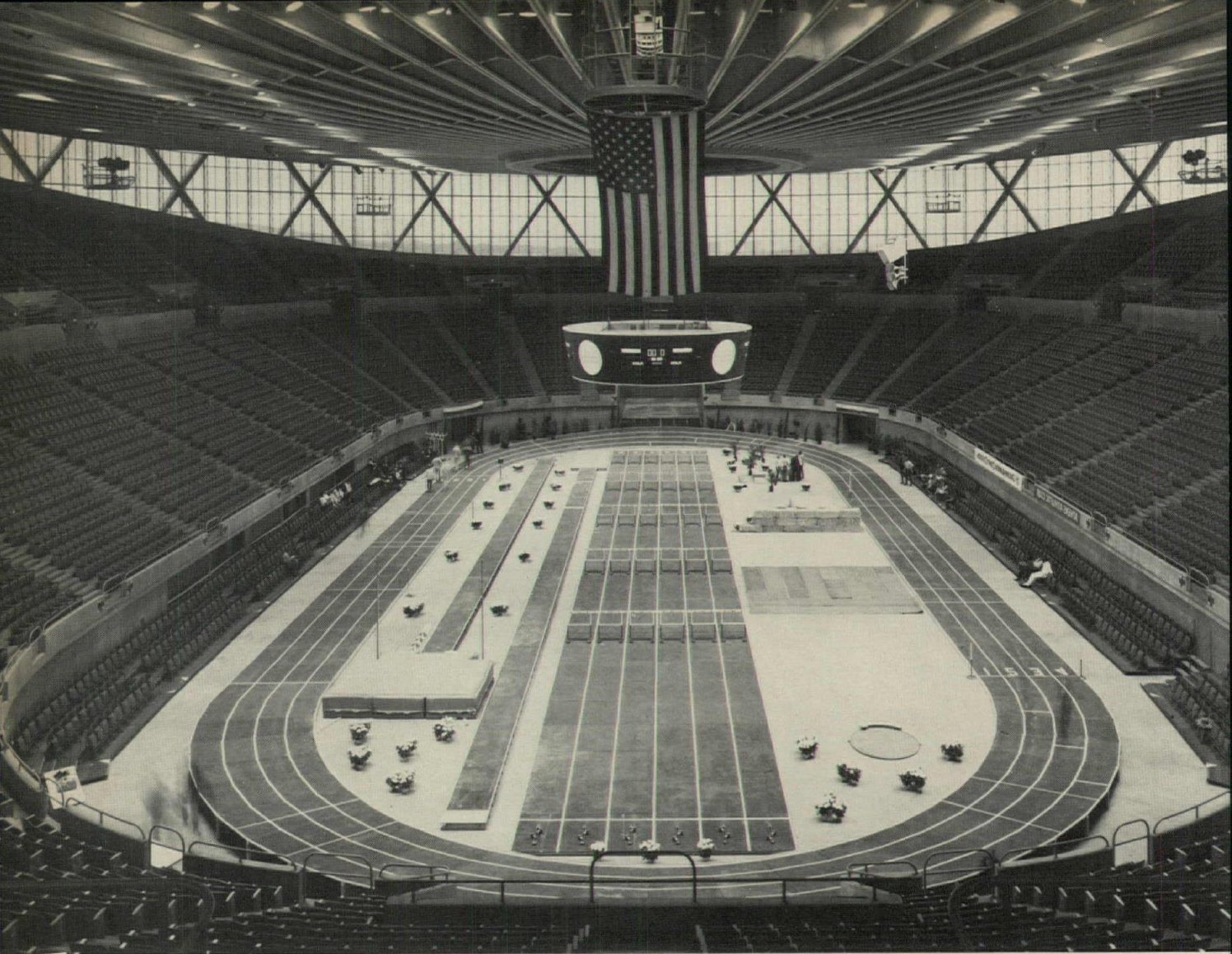
## Arena: Drama and elegance for indoor events

The Coliseum is a multi-use complex of three parts: the enclosed Arena for indoor sports and a variety of entertainment; the outdoor Stadium for baseball, football and soccer; and the Exhibition Hall which connects them and gives the Coliseum its great versatility. Although each has its special attributes and architectural virtues, the Arena dominates the complex and focuses attention on its simple but highly dramatic form—a cylinder with a frame of slender X-columns and topped with a thin band of concrete. This dramatic expression derives directly from the structural conditions: the building has a cable-supported roof—one of the world's largest: its diameter is 420 feet—suspended from the concrete compression ring which rests on the X-columns. Inside the X-frame and independent of it is a curtain wall of gray glass 70 feet high which surrounds and encloses the building. Outside, the web-bar joists, anchored at the bottom, brace the glass wall. This diaphanous closure and the powerful scale of the frame irresistibly attract attention at any time of day, but never more than at night when the transparency reveals the drama and elegance of this brilliant solution.



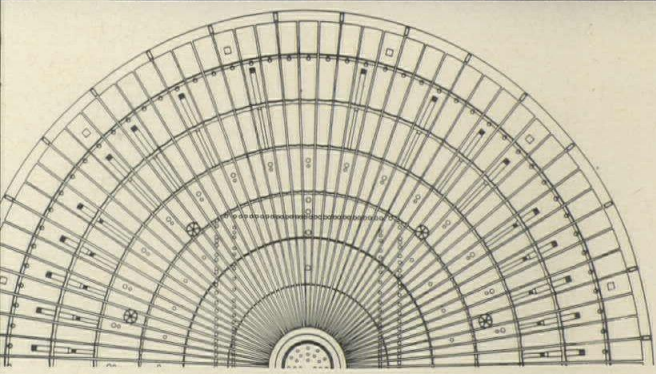
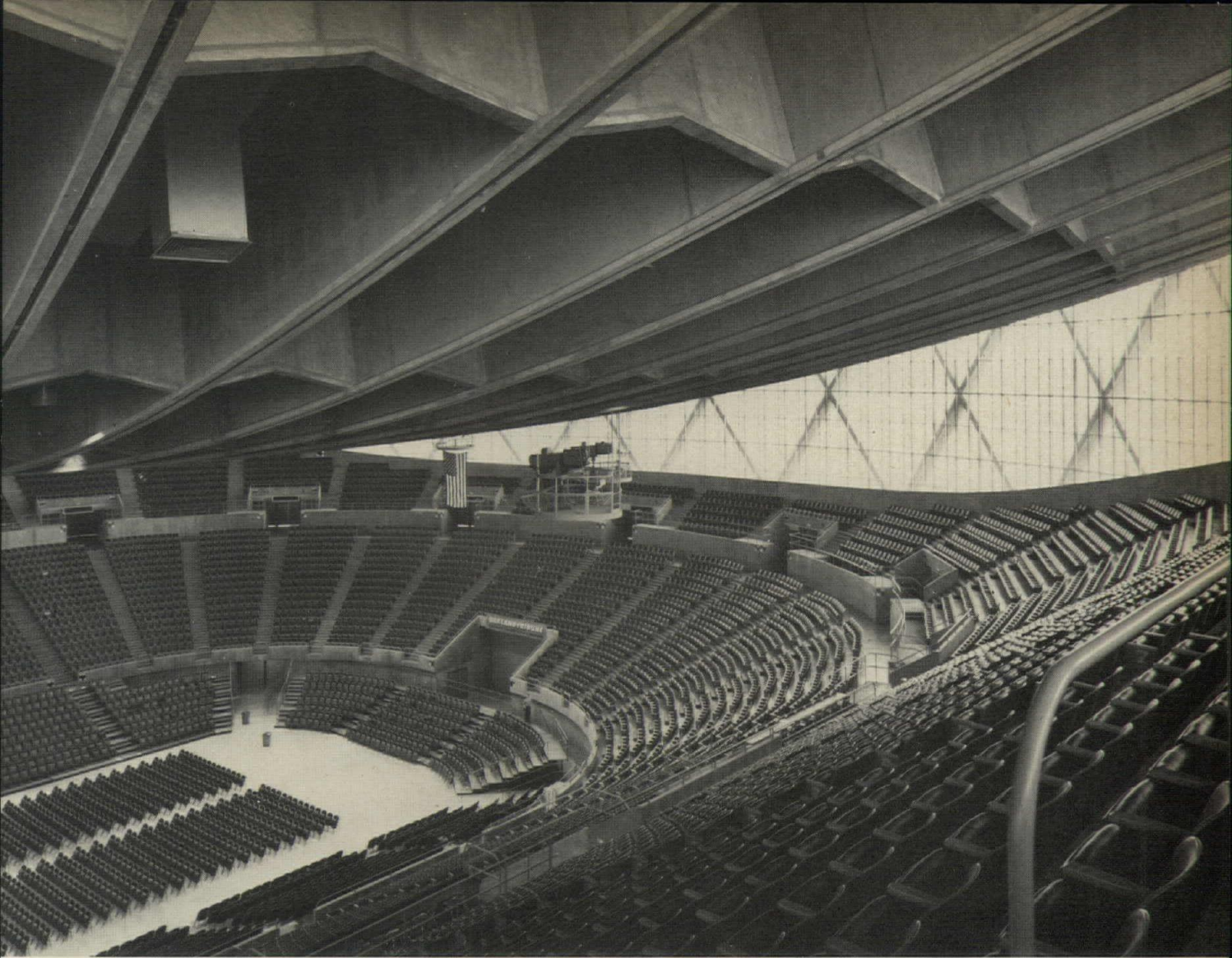




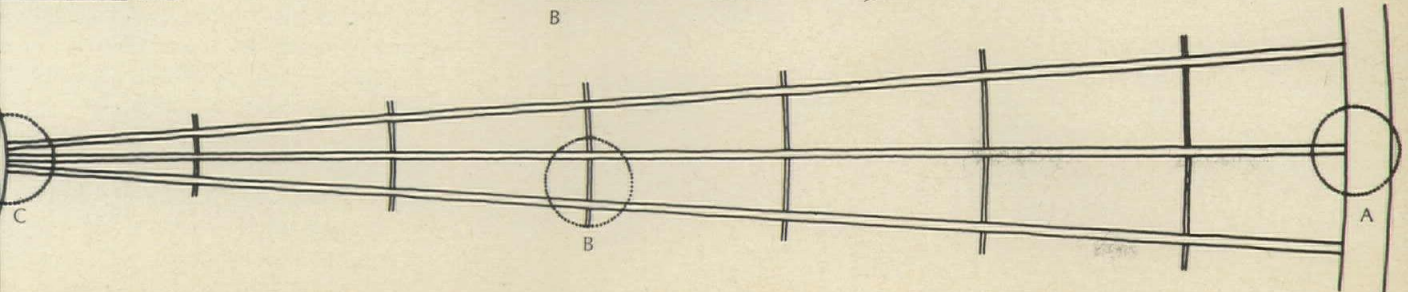
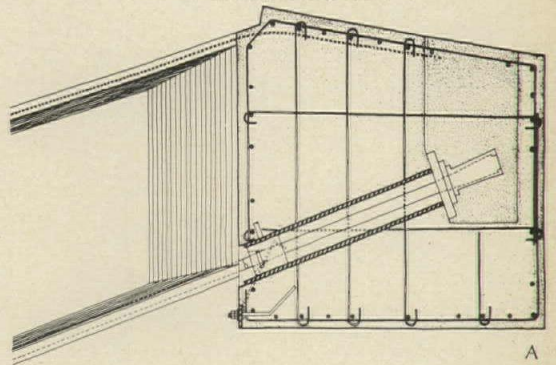
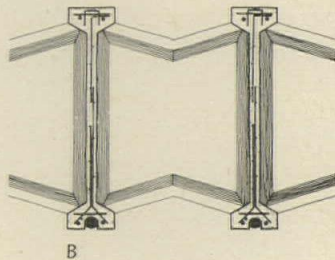
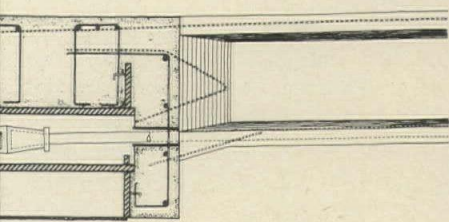


The Arena seats from 11,000 to 15,000, depending on the type of event, in theater-type seats set in precast-concrete bleachers. Ingenious construction methods were devised for the Arena roof. The concrete X-columns, each 57 feet high, were cast in place using prefabricated steel forms. The compression ring, too, was cast in place in seven segments, to exacting tolerances (one-half-inch for the radius and one-fourth-inch for cable anchor points). The 45-foot-diameter steel tension ring at the center was assembled on scaffolding 65 feet above the Arena floor, and diametrically opposite cables, each 186 feet long, were simultaneously attached. The cables take the dead load of the ribs, the 260-foot-diameter penthouse, and the cast-in-place gypsum roof deck. The ribs take the live load. By using a then-new 150-foot mobile tower crane, the radial ribs could be precast in two 93-foot segments (instead of the originally intended seven) and hoisted, two cables, into place. An unusual drainage system collects water (which could not run off due to the inverted roof shape) at the outer wall of the penthouse, feeds it by gravity to pumps in the penthouse, which send it up the roof slope to the drainline at the compression ring. If more than 160,000 gallons collect on the roof, the overflow will be dumped on the Arena floor.

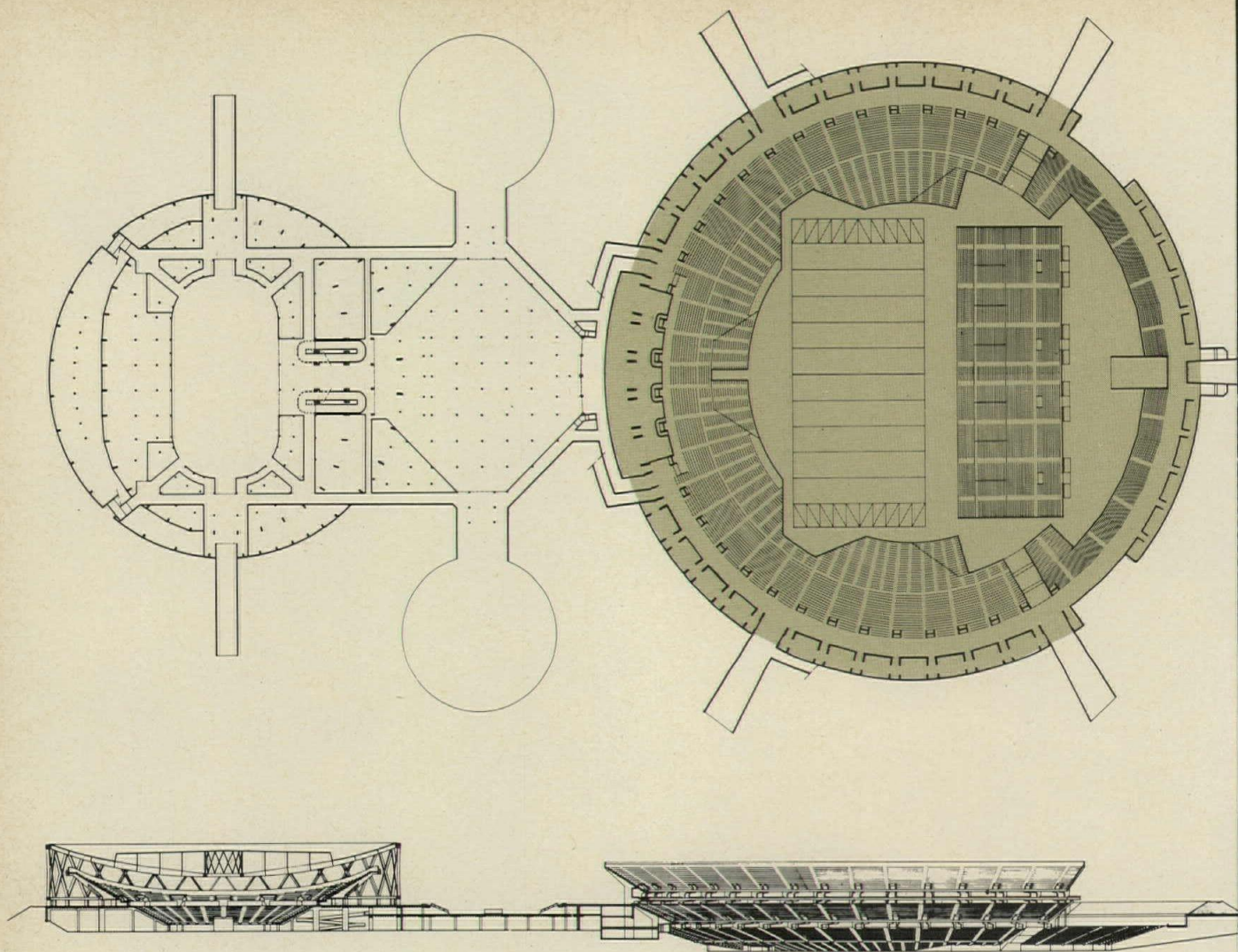




The 96 steel cables that support the roof, the roof structure and the mechanical penthouse above, hang from a 5-foot-deep compression ring (A) resting on the X-columns, and span 186 feet to the steel tension ring (C) at center. Anchored inside pipe sleeves, ends secured by notched anchor plates (A), cables run in continuous slot in bottom flange of concrete I-ribs (B). Diaphragms connect ribs and tie roof structure together.







## Stadium: Versatile, handsome and comfortable

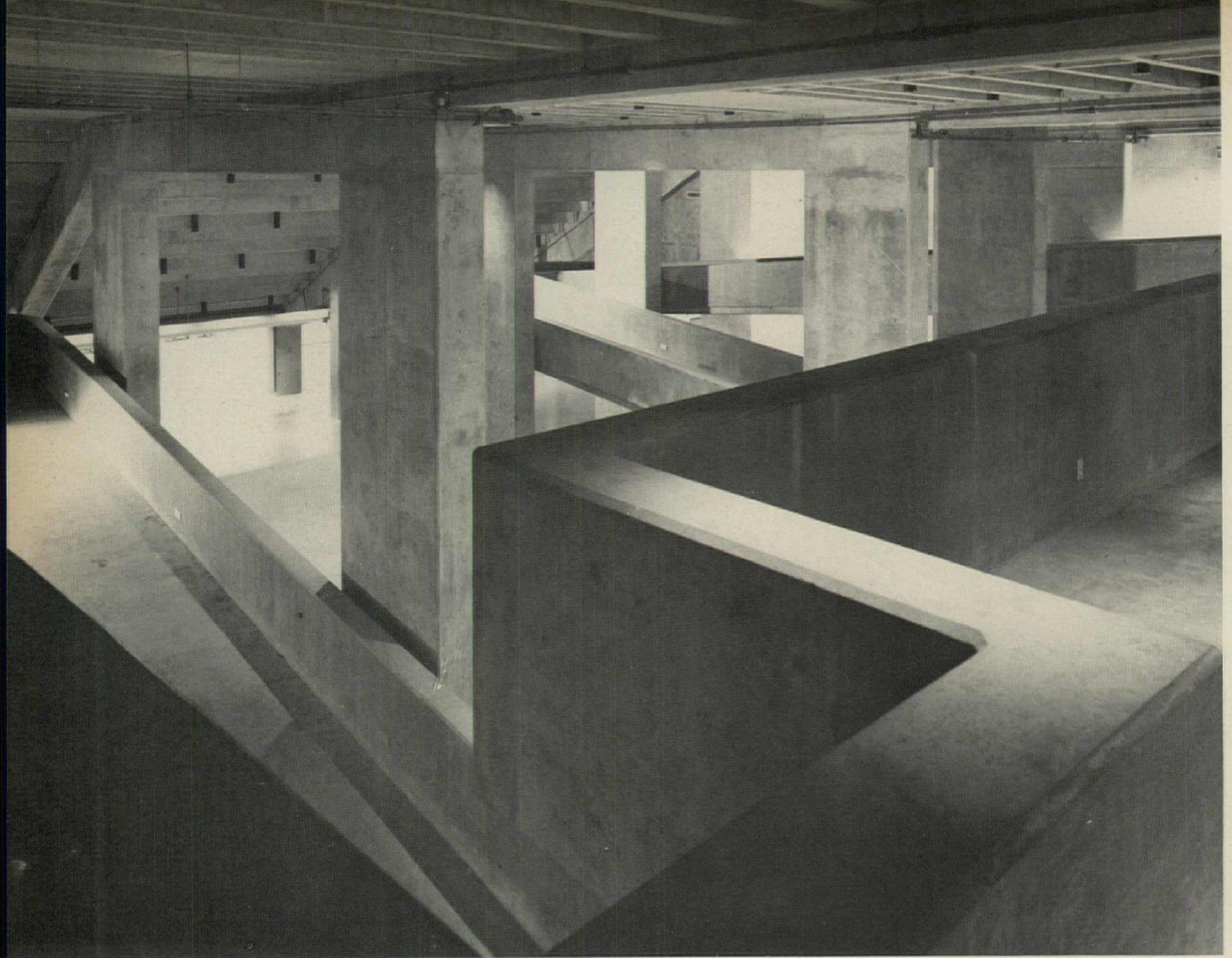
The Stadium, circular like the Arena much larger (outside diameter of feet)—is, for all the conventionality its poured-in-place construction, a remarkable structure. With half its height hidden behind an earth berm, it has none of the awkwardness of most large stadiums. The lower half is depressed 29 feet below the parking level so that the entrance is at midpoint of the seating; no one climbs more than half the stadium height to reach his seat. In addition to this amenity no one is more than a minute's walk from rest rooms and concessions, nor more than 500 feet from his parking space to an entrance. Sightlines are unobstructed; distances from seats to playing field are minimal. The stadium is ingeniously adaptable for either baseball, football or soccer by laying out the football field perpendicular to baseball field and making some of the lower grandstand seating to form bleachers. With this arrangement the center seats become prime sideline seats. The stadium can also be used for outdoor displays in connection with the Exhibit Hall (plan above) and Arena, providing an unusual facility for large conventions and exhibits. The Exhibit Hall roof forms a plaza on the parking level.





There are 50,000 seats for baseball, 53,000 for football, all orienting the spectator to the center of action. All permanent seating, set on precast seat benches, faces the 50-yard line for football, and for baseball, a spot just behind second base. Permanent seats are theater-type, plastic (green, except in boxes, where seats are red) and aluminum. Instead of stairs, ramps are used throughout for greater safety. Originally conceived as a two-tier grandstand with 42,000 seats, its final design provides three tiers which extend around two-thirds of the playing field.





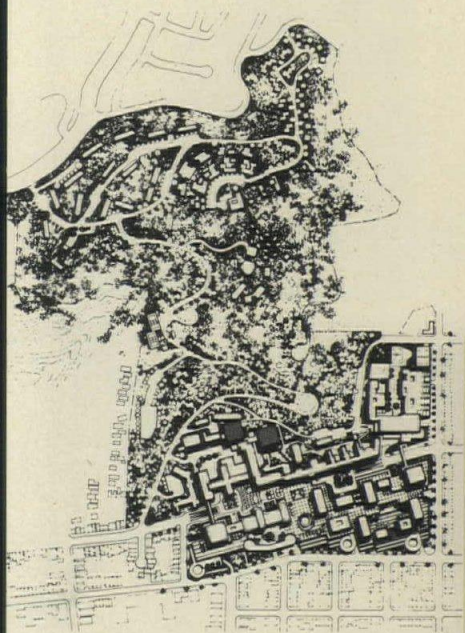
Handsome detailing is evident throughout the \$30-million complex. The strong sculptural quality of the exterior carries through to the interior where the ramp structures create unexpected and unusual spatial effects. One of the aims of the architects was that this complex should not be set in a "sea of asphalt", and consequently there is an extensive but essentially simple landscaping program under-way which relies mainly on ivy, ice plant and eucalyptus trees.

OAKLAND-ALAMEDA COUNTY COLISEUM COMPLEX, Oakland, California. Owner: Oakland-Alameda County Coliseum, Inc. Architects and engineers: *Skidmore, Owings & Merrill*; consulting engineers (arena roof): *Ammann & Whitney*; acoustical engineers: *Bolt Beranek & Newman*; general contractors: *Guy F. Atkinson Company*.

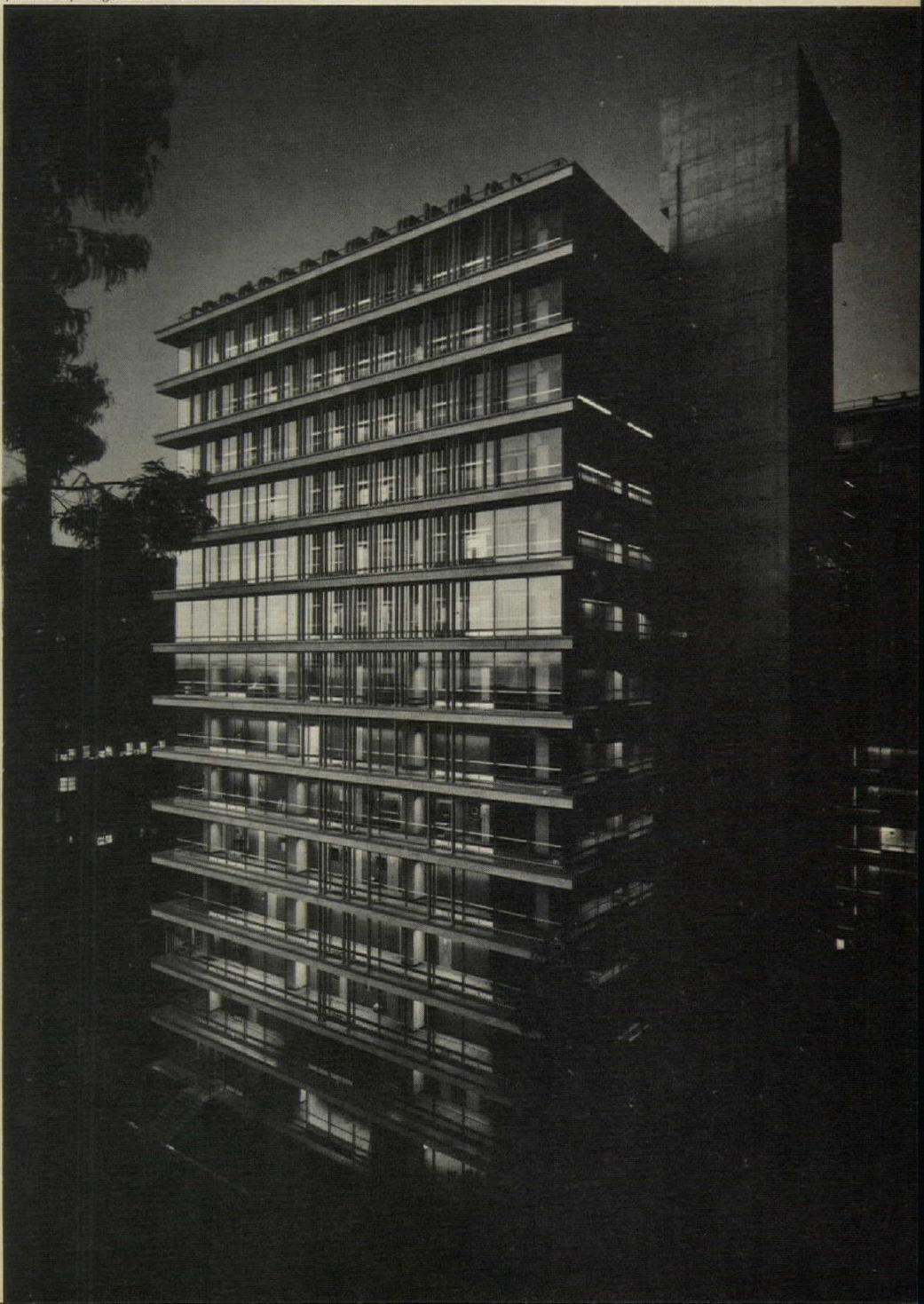


# UNIQUE BUILDING FOR MEDICAL RESEARCH

The complex and changing needs of medical research demand a place that is usable today and adaptable to the unknowns of tomorrow, and the design of a building that will fully satisfy both determined and indeterminable requirements is a challenging project. The Health Sciences Instruction and Research building at the University of California Medical Center in San Francisco is such a building, reflecting these exacting requirements in unique and important ways. In a hierarchy of needs for laboratory buildings, adaptability would surely stand first, yet few laboratory buildings have ever been designed to provide for this inherent characteristic of research—accentuated in medical research because of its multi-disciplinary approach—and at the same time guarantee continuance of the primary architectural concern for any building, a suitable environment for its functions. The HSIR building represents the prodigious achievement of both these objectives. Only because of continuous coordination among architect, structural and mechanical engineer and by their strict adherence to the set objectives for the project was such a result obtained.



photos by Roger Sturtevant





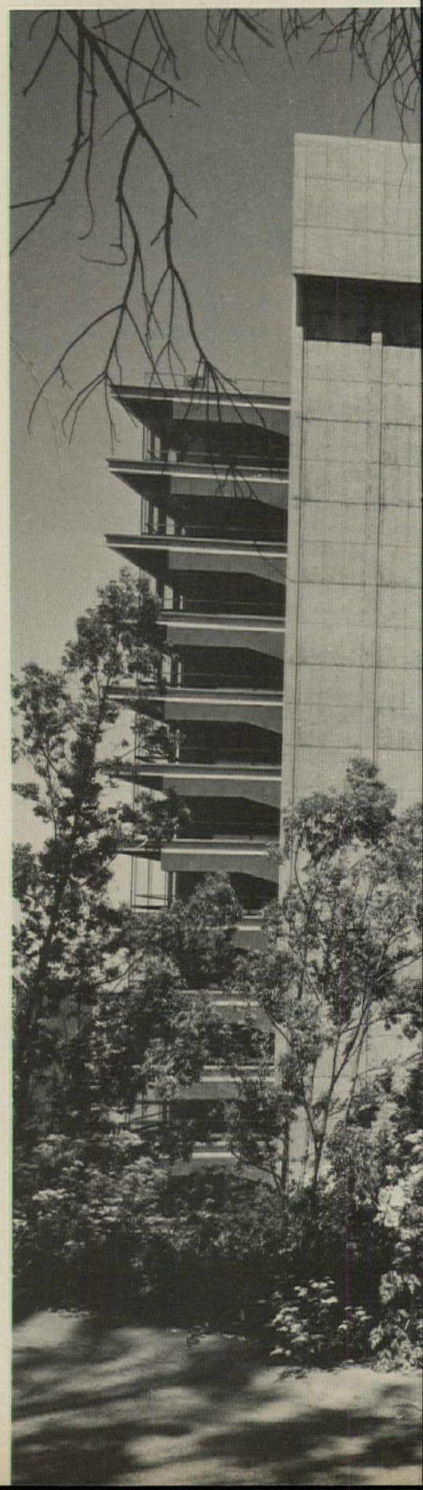
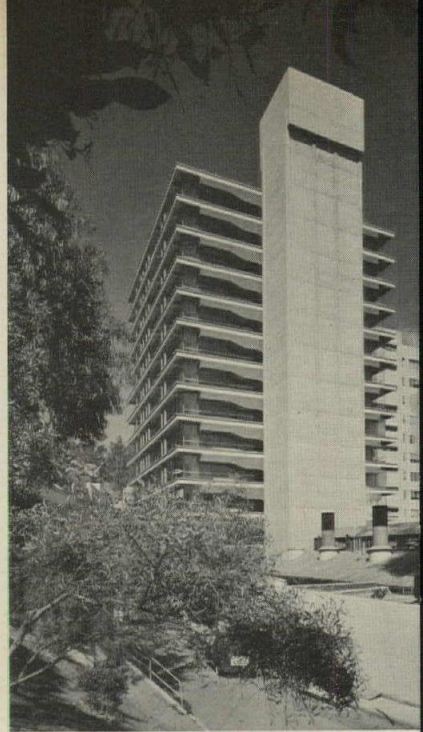
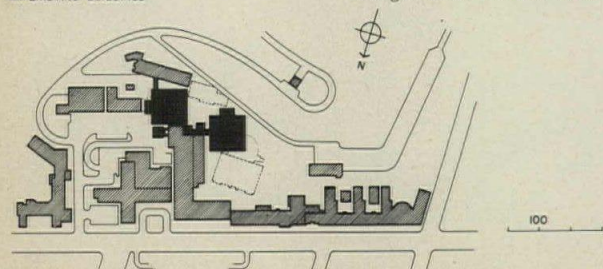
The HSIR building consists of two identical steel-framed 16-story square towers, connected at every floor by a glass-walled bridge, served by separate towers of composite structure for elevators and for ventilating system equipment. The shape derived from the exceedingly tight site conditions, but it proved eminently appropriate for the structural solution: 12 peripheral columns, set 93 feet 4 inches o.c. (a record at that time for multi-story buildings), and a two-way floor grid forming a moment frame resistant to all lateral forces (including seismic, as required in California). Because this solution was unconventional, an alternate design using columns at 30-foot intervals was made and let out to bids simultaneously. A low bid, \$100,000 less for the unconventional scheme, led to its use. The solution provides a column-free laboratory space 90 by 90 feet square, adaptable to almost infinite sizes and shapes of division and subdivision. In a laboratory building, however, additional factors test adaptability: lighting and ventilation especially are crucial to a scientist's environmental comfort. Here the provision of continuous ceiling strips of lighting and ventilation outlets means that every assigned space has its own utility and service lines, and there is complete freedom in setting up new spaces and moving partitions.

An important part of this freedom—and of the architectural expression of the building—are the glass-walled perimeter corridor and the fume hood system. The windowed perimeter corridor provides an insulating envelope of tempered air for the laboratory core, permitting its areas to have single-zone temperature controls and greatly simplifying air distribution and temperature control. The fume hood system is unique. It provides initially for addition of fume hood exhaust ducts (as many as four per mullion are acceptable) without interference to the building's appearance or function. The ducts run up the building exterior to the roof where they join fan and blower units. Any change in number or location lends an unusual vitality to the building facade, making the ducts an essential part of the design. Locating them outside the building saves valuable interior space, does not require fireproofing, makes them easy to inspect, clean, remove and replace. This building has been called a machine and, in a way, so it is. But only because, like a machine, function is its primary requirement. To have found in function well-springs for design—as this building does—is the essence of architecture.

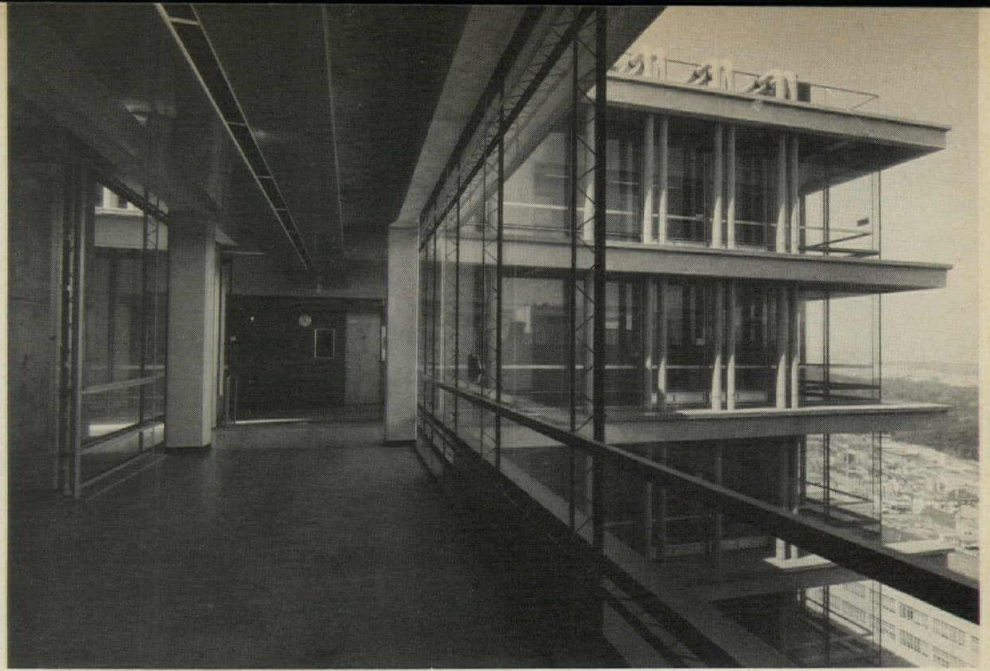
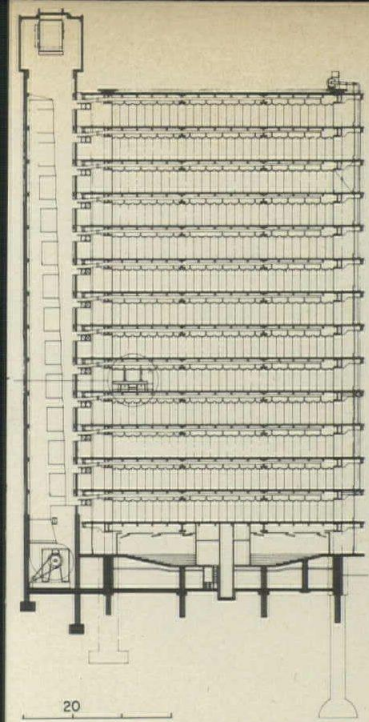
HEALTH SCIENCES INSTRUCTION AND RESEARCH TOWERS UNIT 1, San Francisco, California. Owner: Board of Regents, University of California, San Francisco Medical Center. Architects and engineers: Reid, Rockwell, Banwell & Tarics; mechanical and electrical engineers: DeLeuw, Cather & Company; acoustical consultant: Daniel Fitzroy; Medical Center Campus Architect: Richard B. Grenfell; contractor: Dinwiddie Construction Company.

The HSIR Towers are located on an already crowded and too-small urban campus, further limited by a steep hill just behind their site. An existing building to which the towers had to connect had determined the 8 feet 6 inches floor-to-ceiling height used in the new buildings.

■ HEALTH SCIENCES INSTRUCTION AND RESEARCH UNIT  
 ■ EXISTING BUILDINGS





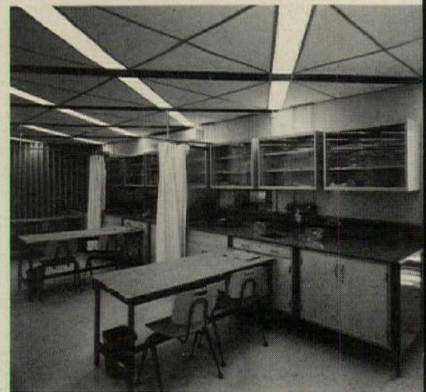
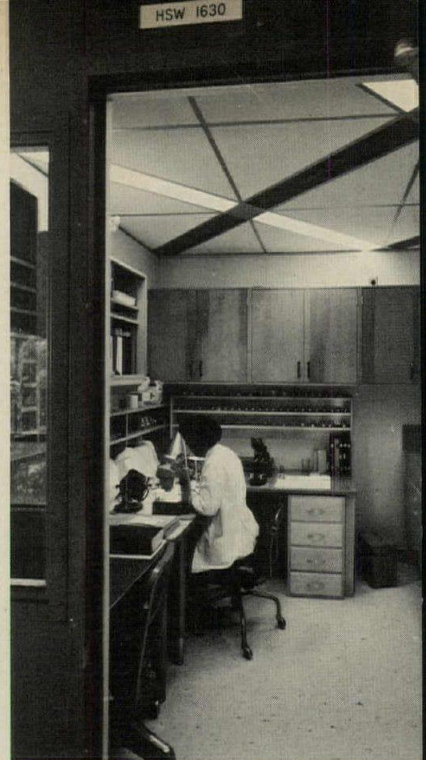
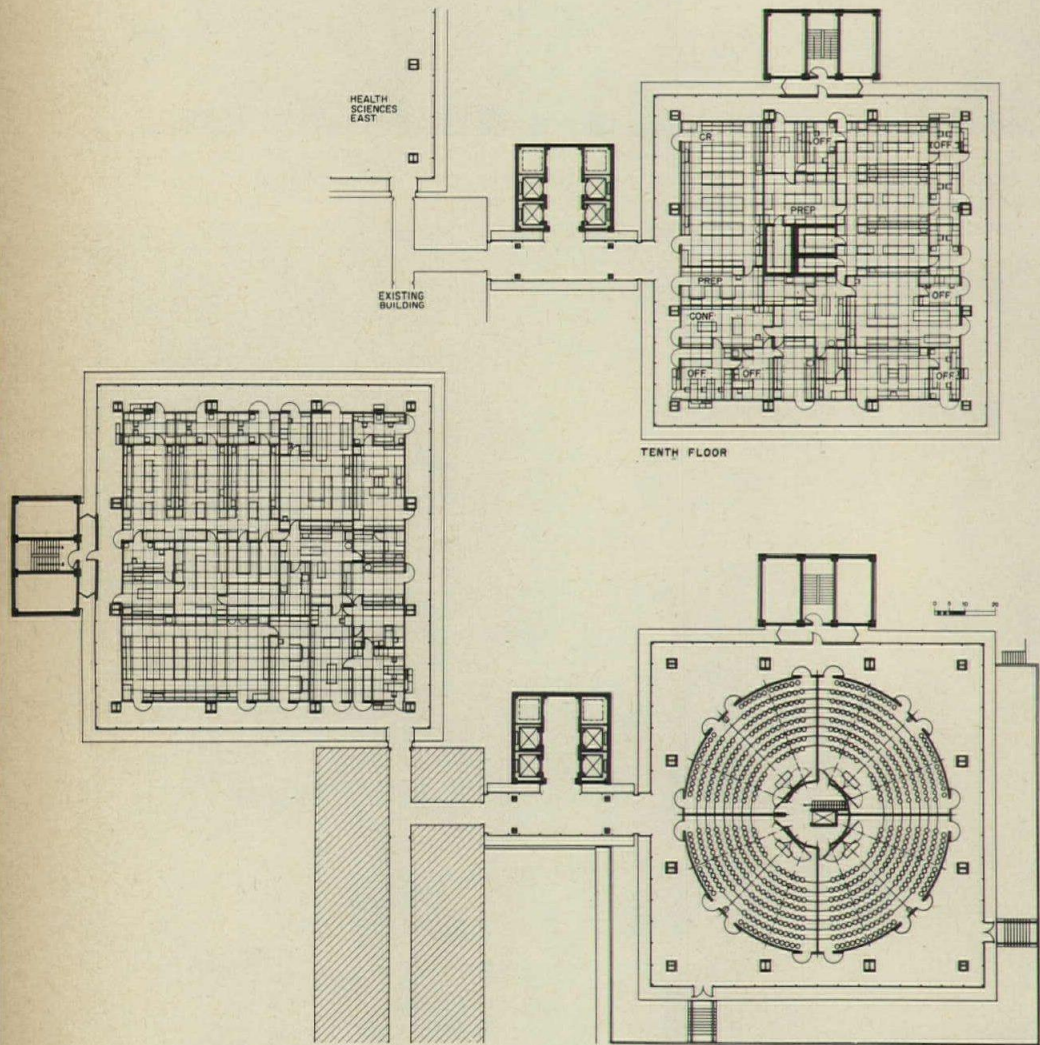


For maximum protection from contaminated air, intake is at ground level, and exhaust is in separate tower, with flexible ducts leading to each floor. Supply and exhaust fans, whose vibration is intolerable to sensitive instruments, are in separate tower, with flexible ducts leading to each floor.



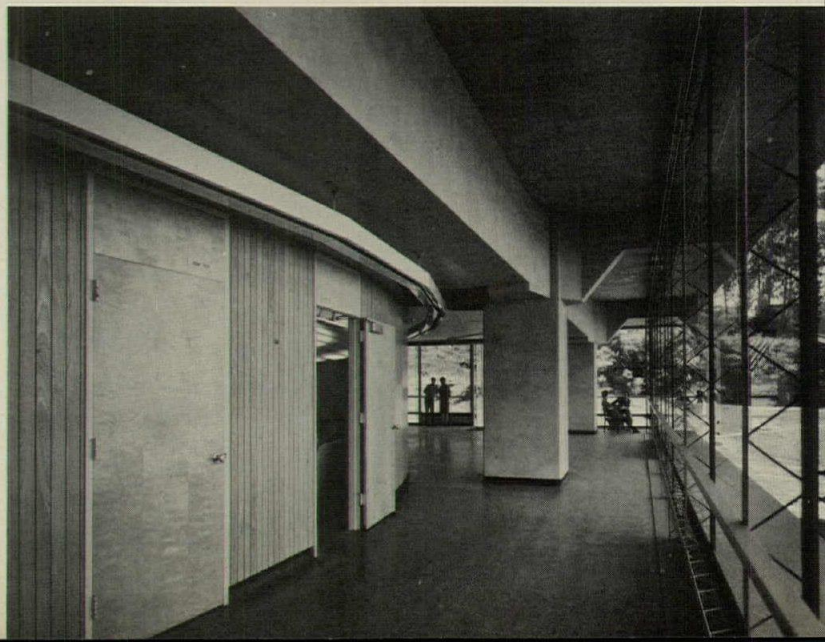


The HSIR building dramatically states its basic concept of windowless laboratories and windowed corridors—a design decision based on research into scientists' preferences. This solution provides the scientists with the wall space, temperature control and even lighting they wanted. But it also provides views from the building over the city by glazing the perimeter corridor floor to ceiling—the outlook is where it can be enjoyed by all, not in the laboratory where work would preclude its being noticed. Cantilevering the corridors beyond the column line frees interior space, shields laboratory areas from sun, and provides access to fume hood ducts. Openings at top exhaust warm air and prevent buildup of differential pressures.

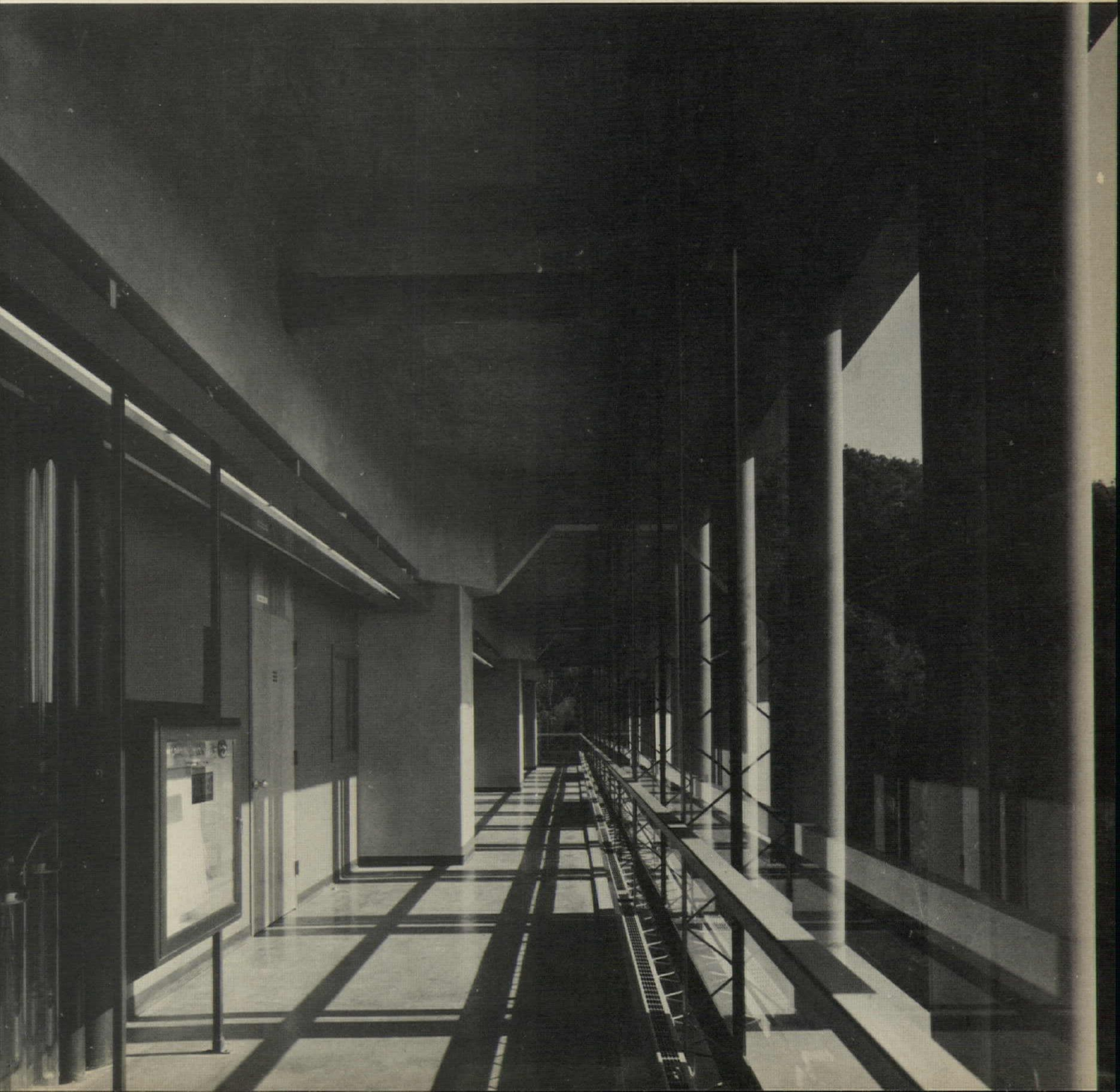
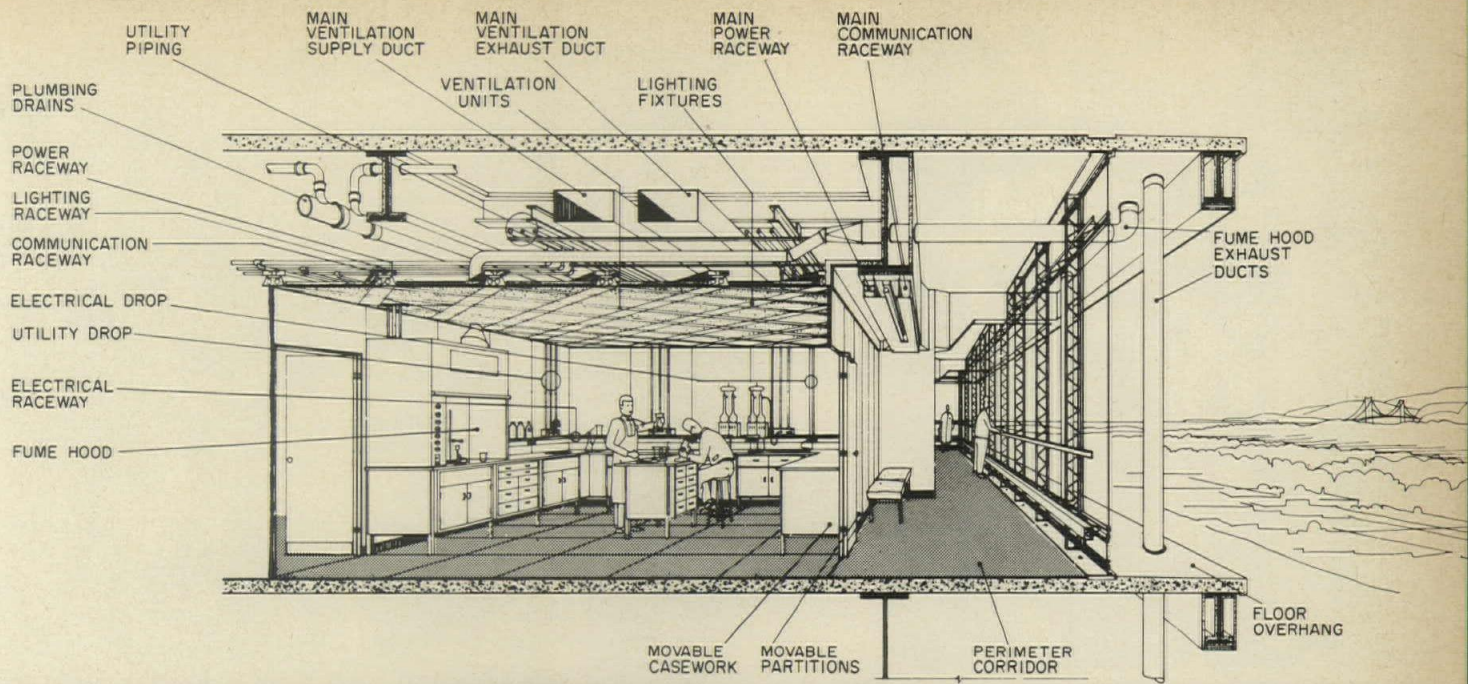


Movable partitions of gypsum board divide space according to need: teaching lab (above) individual research space (top) or for multiple use. Pipes and conduits drop vertically from ceiling to insure future flexibility of use.

The ground floor provides a circular classroom area which is divided into four major lecture and demonstration rooms, each divisible into smaller units. Demonstration area is reached from the lower floor. The broad corridor (right) is enclosed in glass and overlooks what is to be a landscaped court between the two towers. Above are plans for two of the 15 lab floors: because of widely different requirements, space assignment is completely different. No two floors are alike in use.



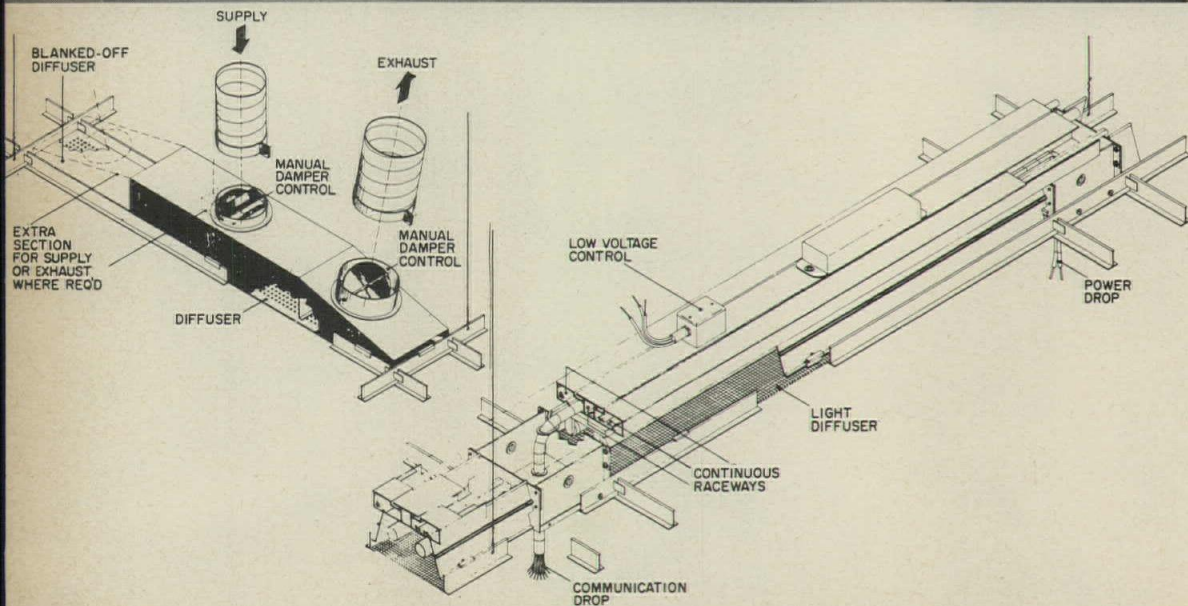




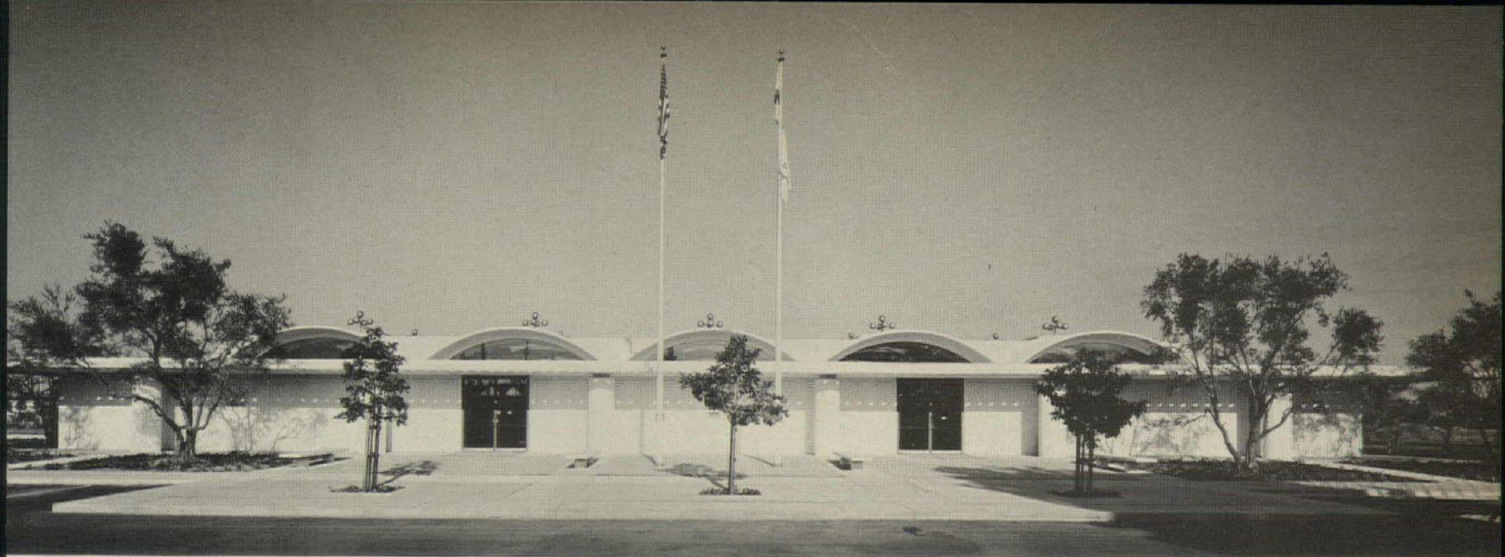




The 40-inch horizontal grid module used permits the greatest variety in room sizes (including a "standard" width of 10 feet for small offices). Fluorescent fixtures are installed in continuous strips in the ceiling, placed on the diagonal of the module. Crossing these strips are strips of ventilation grilles. All utilities are carried in the ceiling and piping from them is run vertically to counters. Partitions can be moved without impairing utilities and service lines, and utility line location does not impede partition changes. Casework was also designed to the 40-inch module, except for counter tops which are longer, but independently supported for storage unit interchange. On the 16th floor (center) corridor space is pre-empted for two large seminar rooms, an exception nevertheless in accord with the concept that outlook (as here, where the view is to the Golden Gate) is important in general areas.





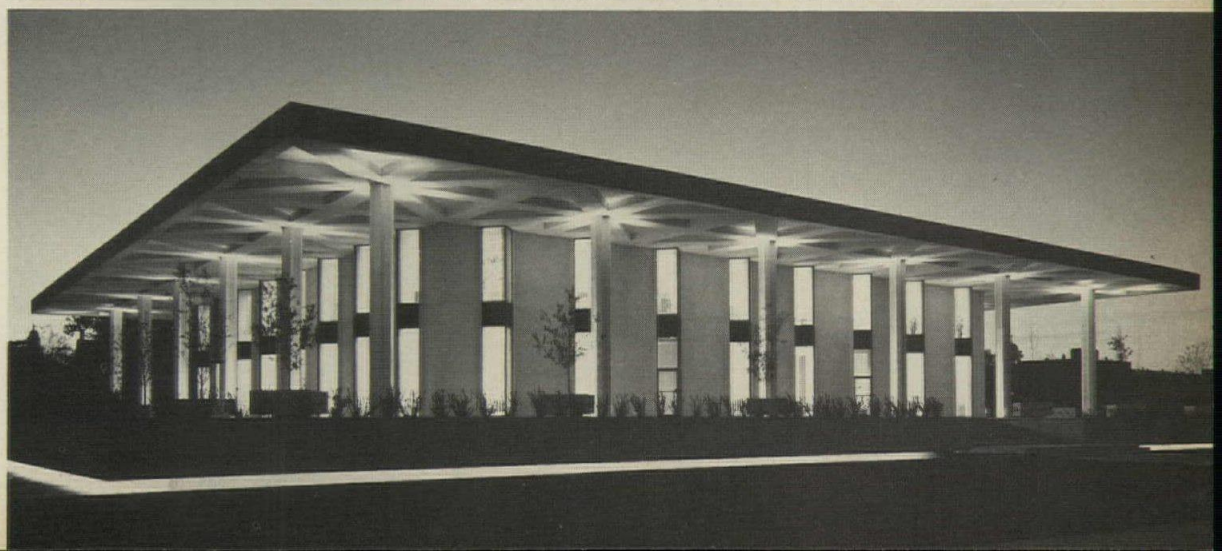


ey Baer

## Three well-detailed small buildings

These three small buildings designed by Edward Durell Stone serve three distinct and different functions—a library, an office building and a city hall. They are all characterized by their adept handling of the clients' needs, their sophisticated site development, and their painstaking detailing which is subdued to create a serene and coherent finished product. The library for Santa Clara, California (above) gives a decorative treatment to the structural ribbed-vault elements which define square bays within an overall square plan. The Levitt & Sons Executive Office Building, Lake Success, New York, (below) utilizes two-story windows with adjustable jalousies on the facade and facing an interior court for privacy and sun control. The Paducah, Kentucky, City Hall (at bottom) is organized around a grand skylighted atrium with an overhanging balcony, providing entrance to all public areas and functions.

© Ezra Stoller (ESTO) photos







## Sculptural vaults for a small library

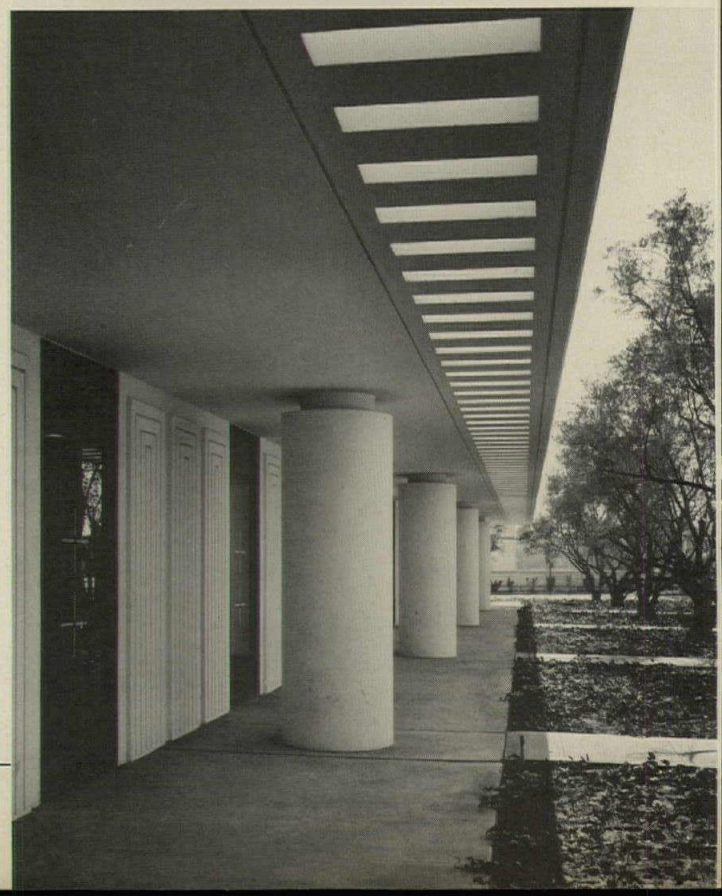
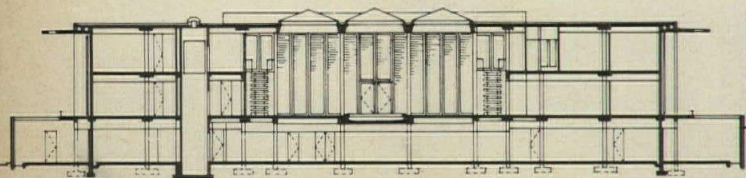
This compact and functional small library gains its distinction from the structural and decorative treatment of dramatic ribbed vaults which define 27-foot-square bays within the overall square plan. The vaults, said to be inspired by the vaulted roof in a local Carmelite Chapel, intersect and rise organically from low, 9-foot-high concrete columns, subdividing spaces within the plan and providing a varying ceiling height from 9 to 14 feet. The warm gold wall-to-wall carpeting serves as a textural foil to the ceiling.

The spatial play of the vaults is further enhanced by the lighting system by day and by night. By day, lighting is achieved by skylights at the top of the vaults, lunettes on the periphery of the vaults and by 11 4-foot-wide, floor-to-ceiling windows. By night, the structure is illuminated by clusters of gold roof ornaments on the exterior which shine down through the skylights and, by concealed fixtures in the top of the columns directed into the vaults, which also provide supplemental light during the day.

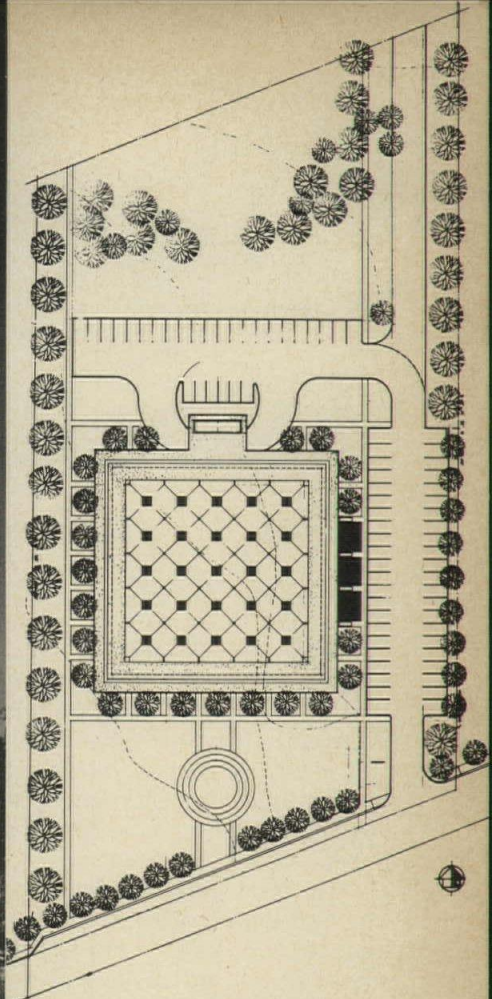
The one-story plus partial basement library has load-bearing patterned walls and the main construction material is poured-in-place concrete. There is a total usable area of 36,000 square feet and a book capacity of 250,000 volumes, half in closed stacks in the basement.

A special feature of the building is a separate and complete children's library, enclosed for maximum sound control. Visual connection is maintained by use of glass partitions, and the section has its own outdoor entrance with a door connecting to the main library. Cost, including furnishings, was \$1,016,752.

SANTA CLARA LIBRARY, Santa Clara, California. Architect: *Edward Durell Stone & Associates*; structural engineer: *Pregnoff and Matheu*; electrical and mechanical engineer: *Alexander Boome*; landscape architect: *Edward Durell Stone, Jr.*; contractor: *J. P. O'Halloran, Inc.*

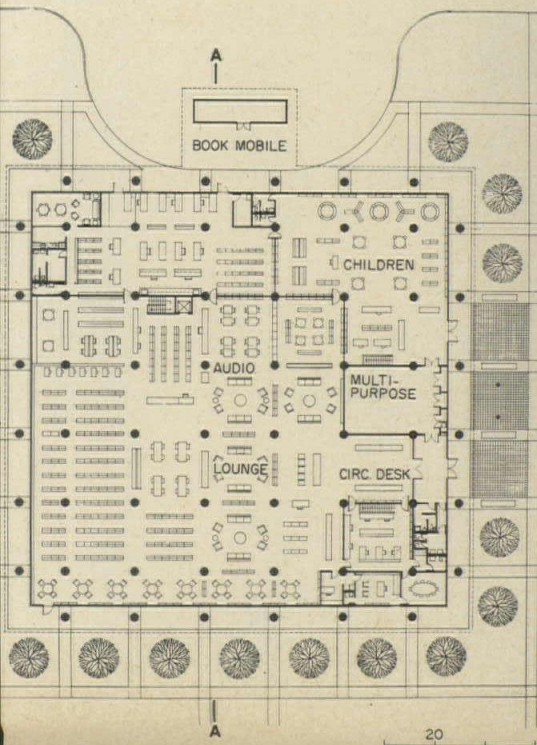




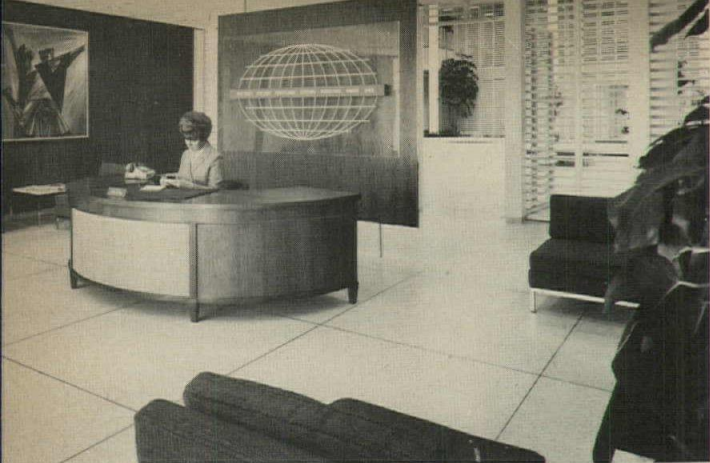


This gleaming white library for a burgeoning California community (the old library was built in 1955 to serve the reading needs of the city for a quarter of a century, and is now kept in operation as a branch library) is set off-center in a parallelogram-shaped landscaped site. One facade facing a street is denoted by a large fountain while the main entrances are defined by twin flag poles. On the interior is a seating capacity of 240, including 75 provided in the multi-purpose room. Reading tables are small and are scattered throughout the library. The library utilizes a new computerized data control system, controlling circulation and freeing the staff of much detail work.

Morley Baer photos







## Office building encloses courtyard

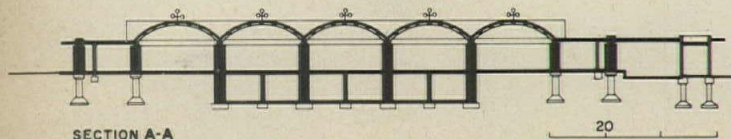
This delicately detailed, two-story plus basement office building for a staff of 200 is organized around a two-story interior courtyard. The impressive courtyard, lighted by nine geodesic skylight domes, contains planting and five octagonal pools with fountains echoed by octagonal floor paving.

The square-plan building rests on a 190-foot-square podium within a 14-acre site, which, with two other projected structures, will occupy less than 15 per cent of the site. The entrance forecourt is dominated by a 54-foot-square reflecting pool with five copper, free-form fountains by Dutch sculptors Gerith and Hans van de Bovenkamp.

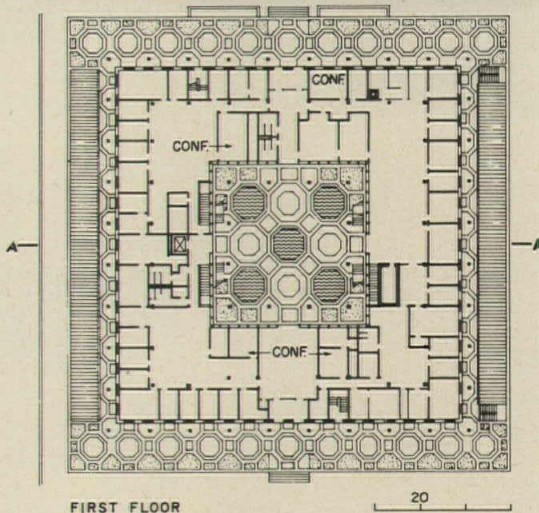
Slender columns rise from the podium to support a wide, pierced overhanging roof in this reinforced concrete building. The facade is composed of two-story windows with adjustable aluminum jalousies alternating with panels of glazed white brick.

The building provides a total of 67,000 square feet of space. On the top floor, reached by graceful stairways from the interior courtyard, are executive and other offices, drafting rooms, conference rooms, reception area and secretary pool areas. On the first floor, in addition to the ceremonious two-level lobby, are more office, reception and conference facilities. Located in the basement are cafeteria and private dining areas, computer area and additional office space. The jalousies are repeated on the interior courtyard to provide privacy and light control.

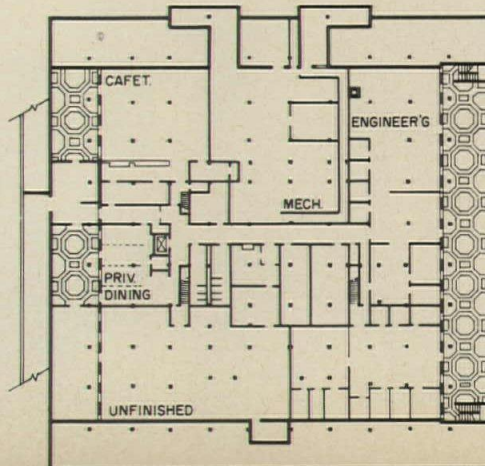
LEVITT & SONS EXECUTIVE OFFICE BUILDING, Lake Success, Long Island, New York. Architect: *Edward Durell Stone & Associates*; structural engineer: *Schupack & Zollman*; mechanical engineer: *Cosentini Associates*; landscape architect: *Edward Durell Stone, Jr.*; contractor: *E. W. Howell Company*.



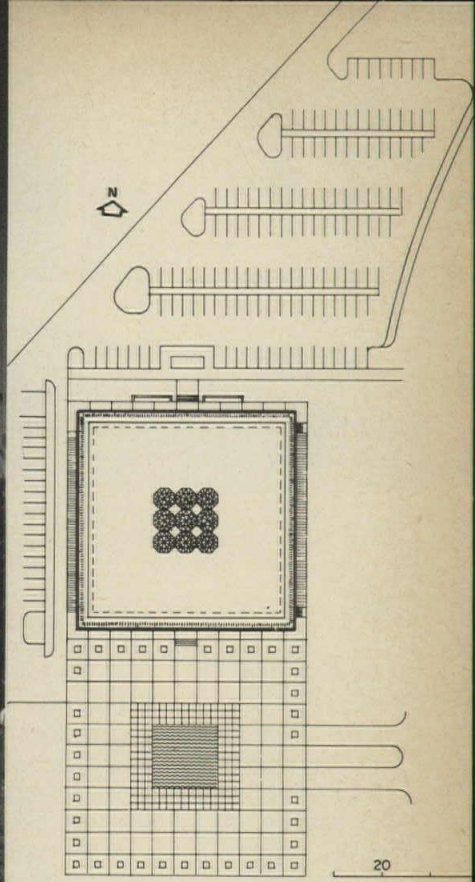
SECTION A-A



FIRST FLOOR





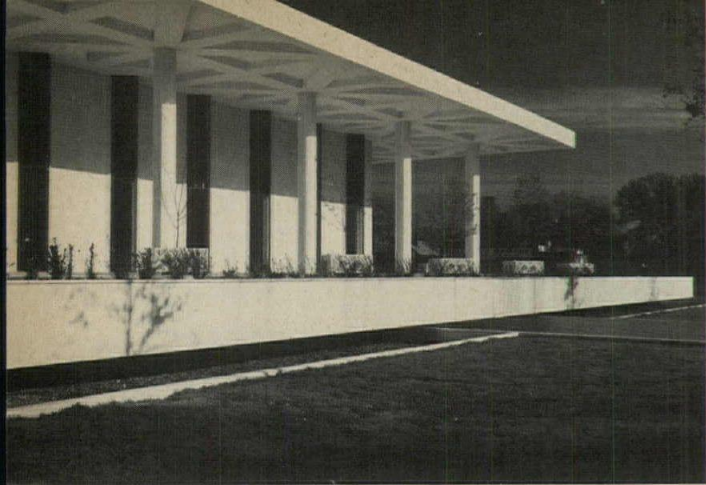


This small and elegant office building for Levitt and Sons, Inc., residential builders, is the first of three structures proposed for a 14-acre site at Lake Success, just outside the city limits of New York City and within 10 miles of two major airports. The three projected structures will occupy less than 15 per cent of the site, leaving the rest for a landscaped park. The graceful, two-story building gains sun protection from a broad roof overhang and from adjustable aluminum louvers located on the exterior and facing the two-story skylit interior courtyard-lobby which dominates the interior.

© Ezra Stoller (ESTO) photos







## Dramatic atrium for a small city hall

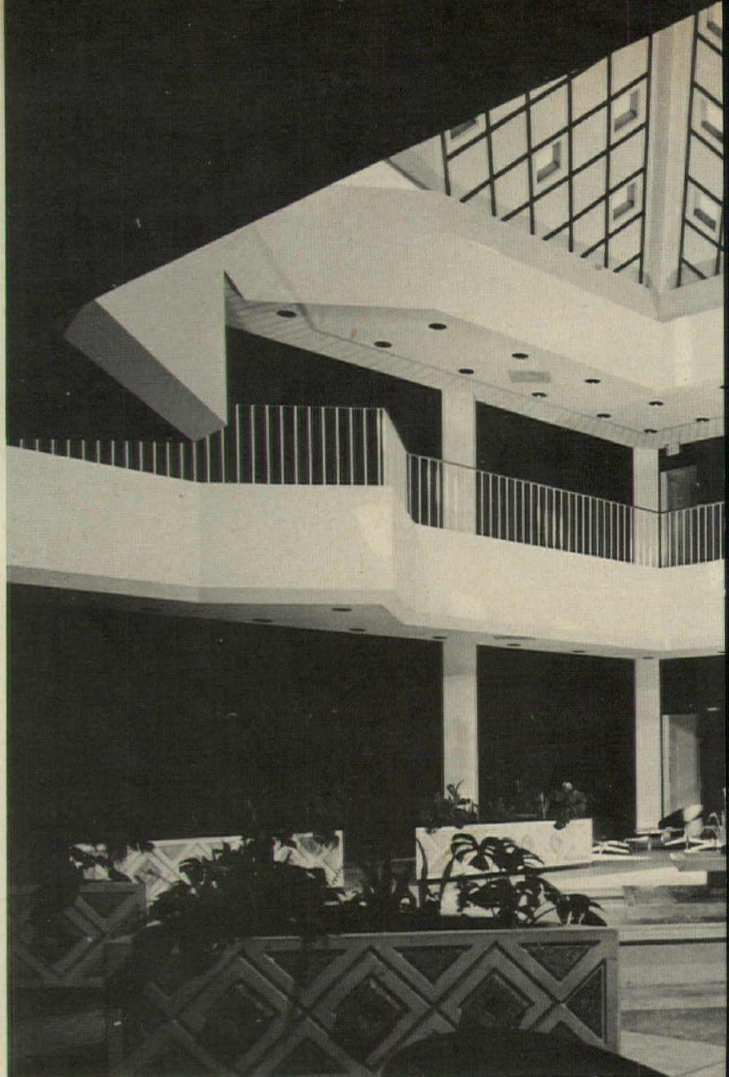
This city hall serves as a concrete and gleaming symbol of progress for this Ohio River community of 40,000. The architect has deftly arranged and ordered the myriad functions of a small municipal government into a two-story plus basement building rising from a 216-foot-square podium encircled by a moat.

The dramatic highlight of the interior is a two-story, 60-foot-high atrium with a fountain at the center, topped by a pyramidal lantern skylight extending 20 feet above the roof line. On the top floor are executive offices, council chamber and smaller conference rooms, all served by a mezzanine balcony overhanging the interior court. In the basement are complete police facilities including a jail and police court, reached from a drive-through ramp under the building.

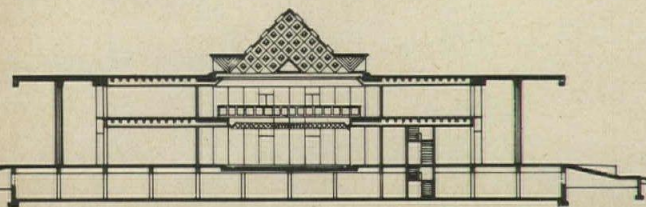
The roof, with its 30-foot-wide overhang on all sides, is supported by a two-story colonnade. The exterior is of white, precast, exposed-aggregate concrete panels, echoed by the texture of the undersides of the slab roof overhangs. The sculptured pattern of the soffit on the roof overhang expresses the diagonal structural system. This pattern is echoed and reinforced by the pattern of exposed aggregate paving on the plaza and by triangular, two-story high bay windows on all four sides.

Walls of the central lobby court are walnut paneled, with the remaining interior walls painted a soft off-white. Executive areas in the \$1.5-million structure are carpeted in red.

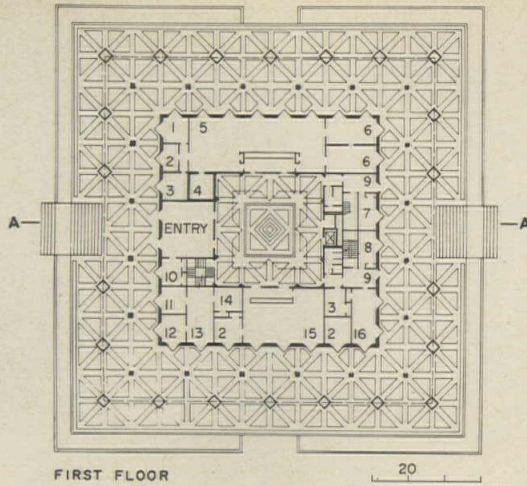
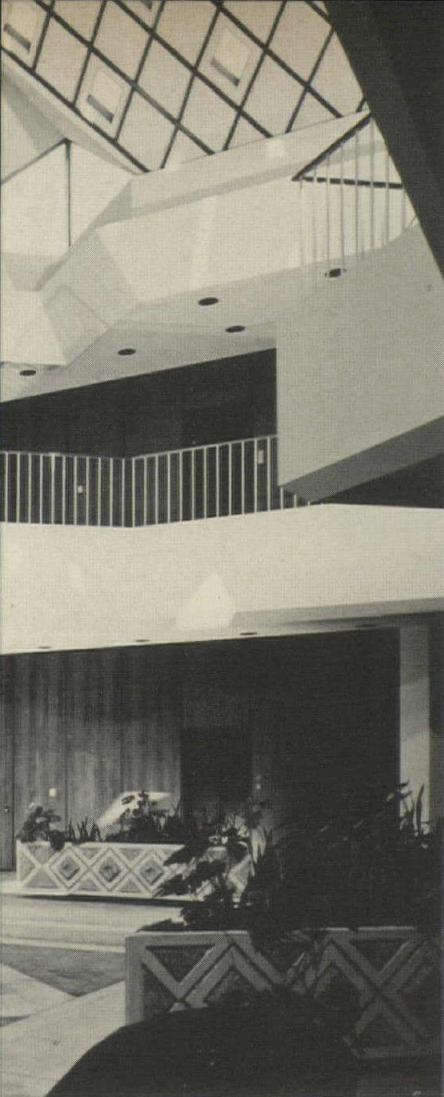
CITY HALL, Paducah, Kentucky. Architect: Edward Durell Stone & Associates; associate architect: Lee Potter Smith & Associates; consulting engineers: Edward T. Hannan & Associates; contractor: Seth E. Giem & Associates.



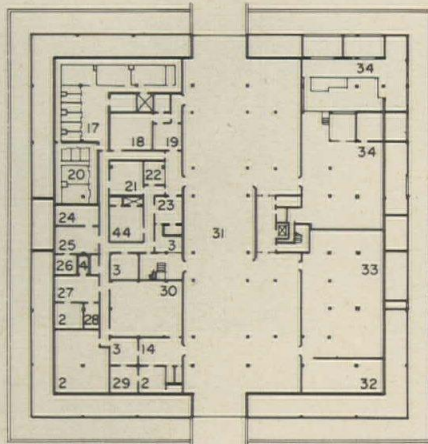
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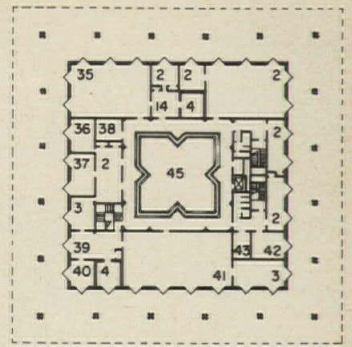




FIRST FLOOR

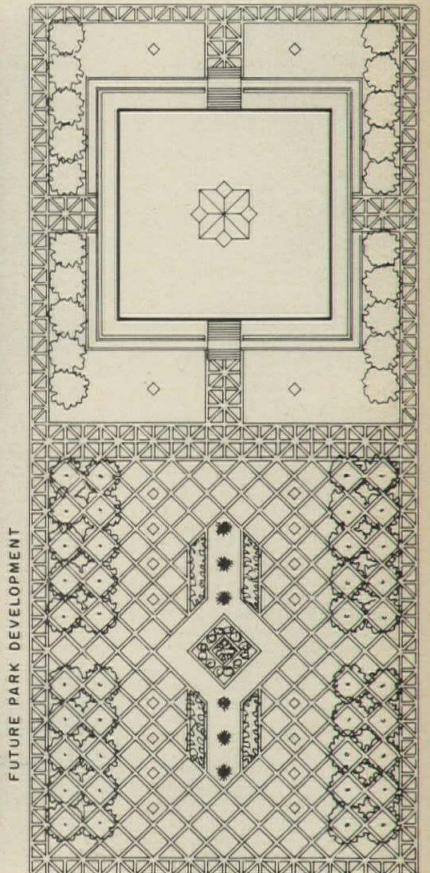


BASEMENT FLOOR



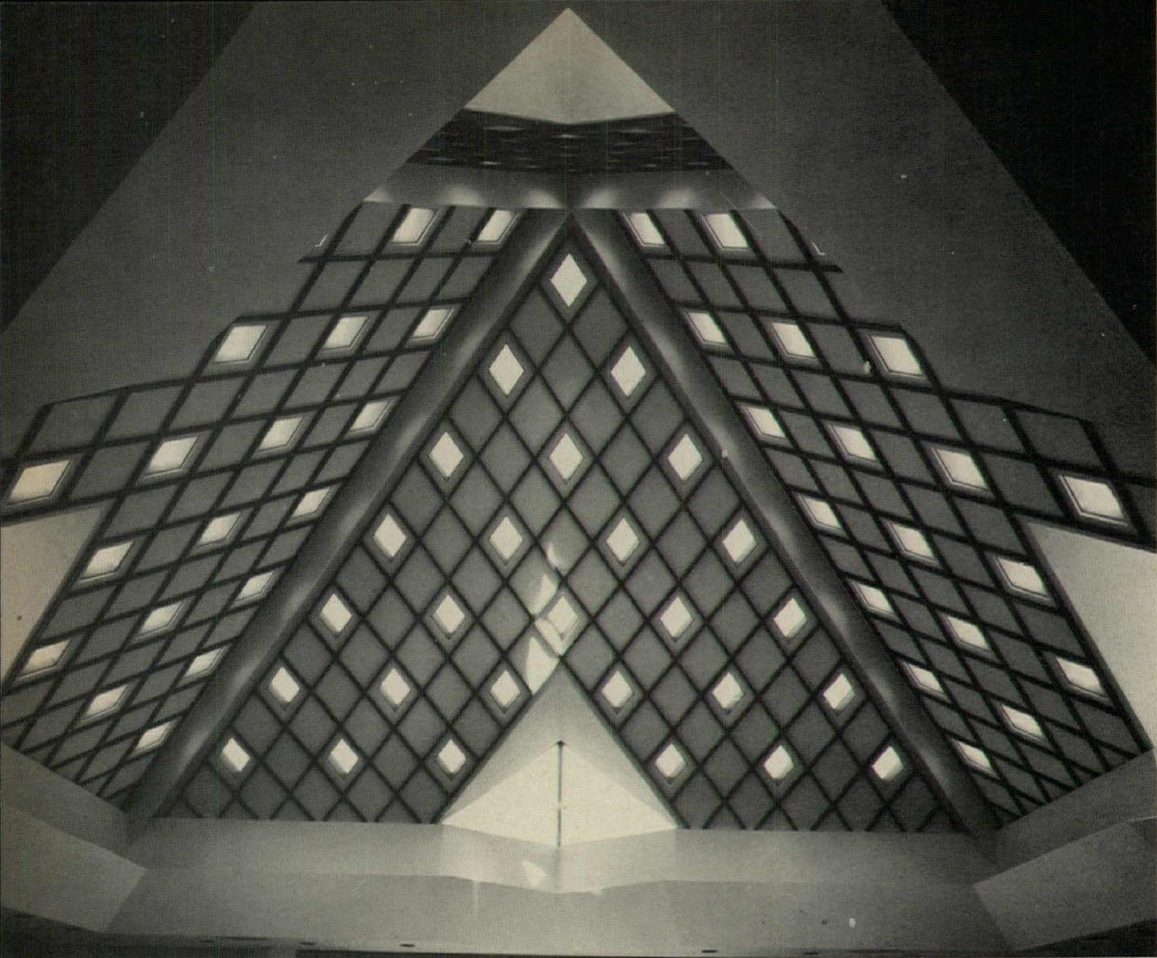
SECOND FLOOR

- |                            |                            |
|----------------------------|----------------------------|
| 1. Treasurer               | 27. Chief of detectives    |
| 2. Office                  | 28. Lie detector           |
| 3. Conference              | 29. Judge                  |
| 4. Vault                   | 30. Police court           |
| 5. Finance department      | 31. Parking & drive        |
| 6. Business machines       | 32. Storage                |
| 7. Parks & recreation      | 33. Maintenance department |
| 8. City county development | 34. Mechanical             |
| 9. Vestibule               | 35. Engineering drafting   |
| 10. Information            | 36. City manager           |
| 11. Building inspector     | 37. Mayor                  |
| 12. City planning          | 38. Press                  |
| 13. Drafting               | 39. City clerk             |
| 14. Reception              | 40. Corporation council    |
| 15. Assessor               | 41. Council chamber        |
| 16. Urban renewal          | 42. Lounge                 |
| 17. Men's cells            | 43. Coats                  |
| 18. Kitchen                | 44. Lockers                |
| 19. Jailer                 | 45. Upper court            |
| 20. Women's cells          |                            |
| 21. Roll call              |                            |
| 22. Radio sergeant         |                            |
| 23. Chief of police        |                            |
| 24. Dark room              |                            |
| 25. Record room            |                            |
| 26. Interrogation          |                            |

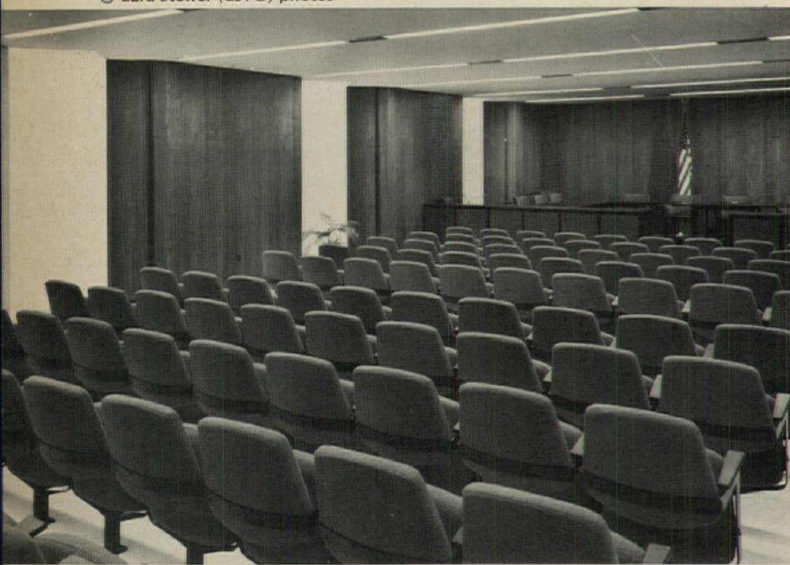


FUTURE PARK DEVELOPMENT





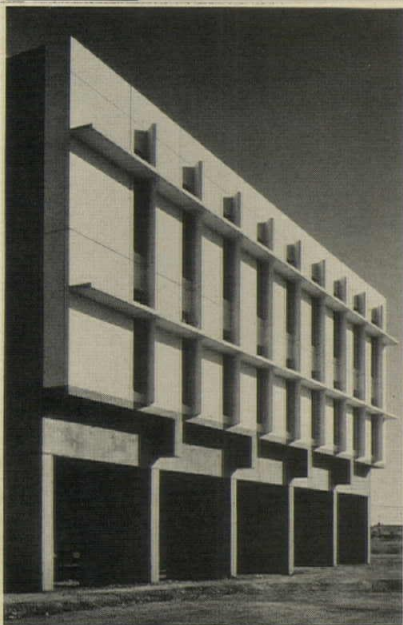
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Highlight of the interior is the pyramidal lantern enclosing the two-story high, 60-foot-square atrium. The lantern extends above the roof line, and peaks 60 feet above the centrally located fountain. The lantern is studded with 108 lozenge-shaped panes of frosted solar glass, bathing the courtyard with changing effects of light. The large council chamber and other facilities located on the second floor are served by a mezzanine balcony which runs around the building's interior and overhangs the ground-level court. All of the other rooms on the two main floors are also accessible from the atrium or balcony.

The Paducah City Hall, replacing a 77-year-old building, came about as a result of an \$18,000 survey of the city's municipal assets and liabilities by a Chicago consulting firm. The survey called for a new building to be designed by an internationally known architect, which would be "an indication to citizens and visitors alike that something new is happening in Paducah. The psychological effects of such a new building, having good land use planning and architectural design, will be of considerable value in changing Paducah's image."

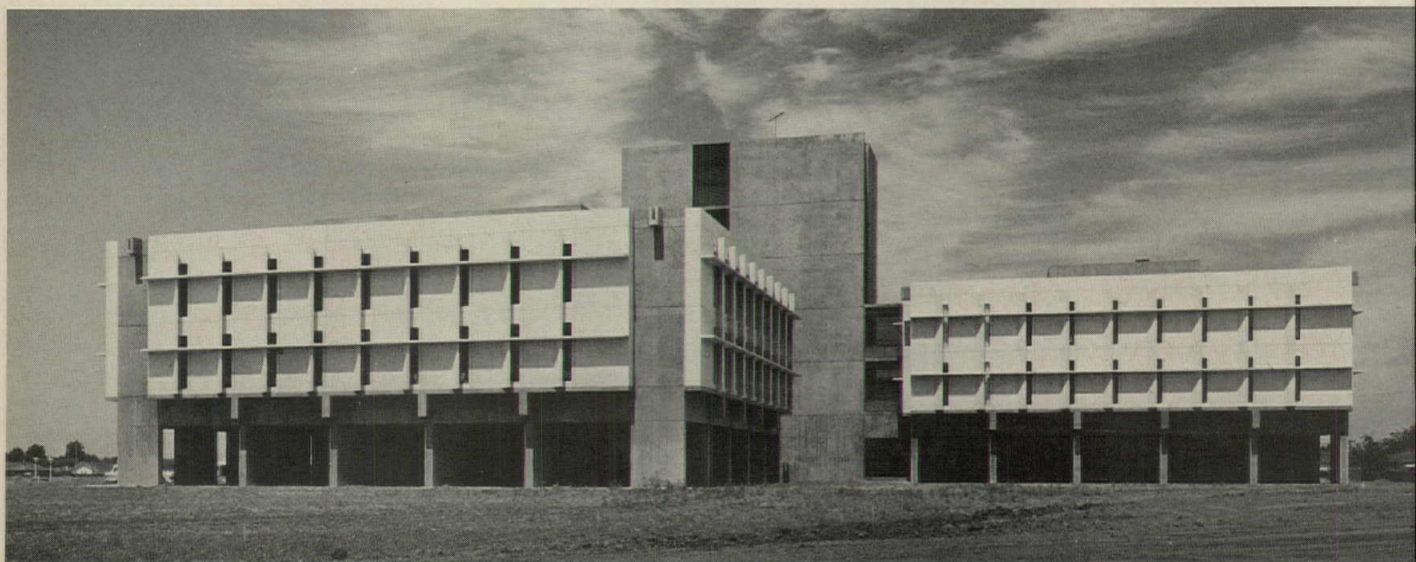




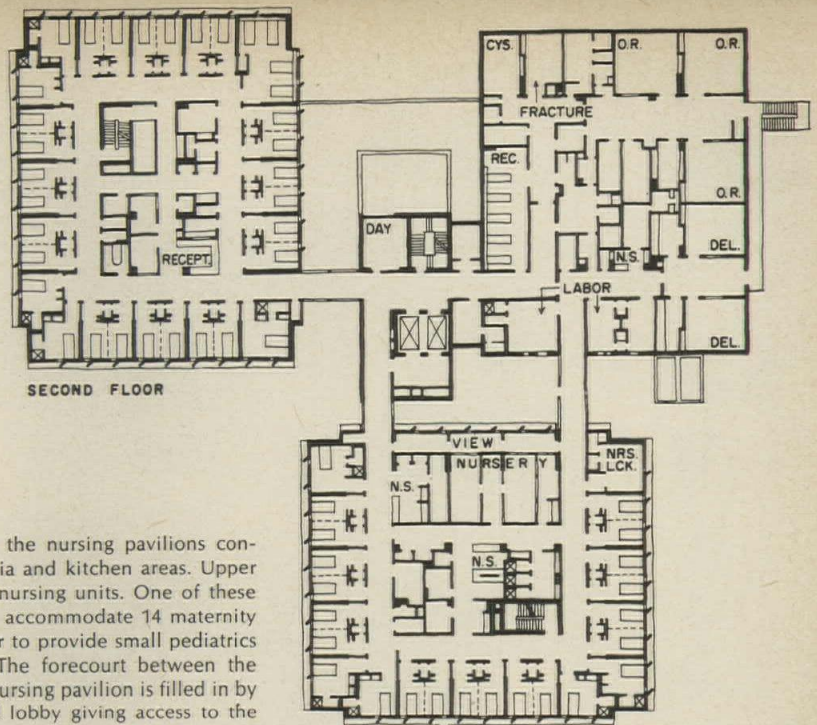
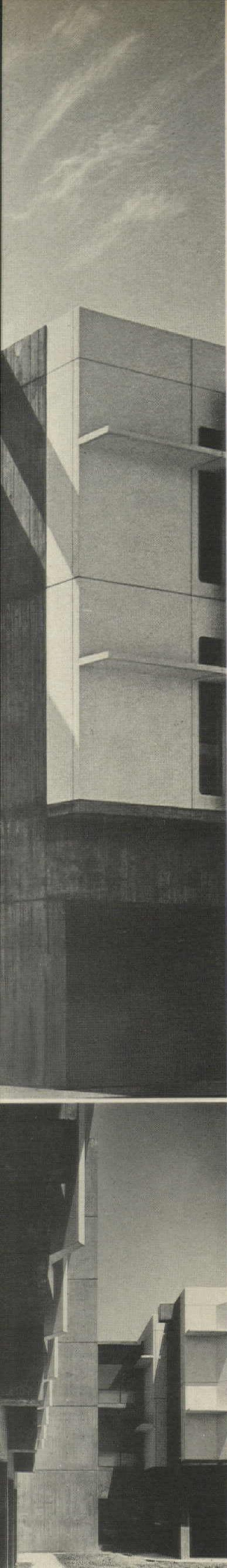
## INNOVATIVE DESIGN FOR A COMMUNITY HOSPITAL

Inventive marshalling of mass and detail, a plan for growth—and a new room configuration—distinguish the design of Woodland Memorial Hospital. Architect Rex Whitaker Allen has taken advantage of a generous 20-acre site to develop a master plan for expansibility through unusual dispersion of services in three satellite pavilions grouped around a central elevator and stairwell tower. In virtually certain anticipation of growth in this fast-moving California community, the administration (now moving from out-moded and restricted facilities downtown) has invested part of a \$4-million budget in a full six-story development of the tower. Thus, they are assured of long-range economy in vertical expansion of the two nursing service pavilions which are three stories each in this 81-bed first phase

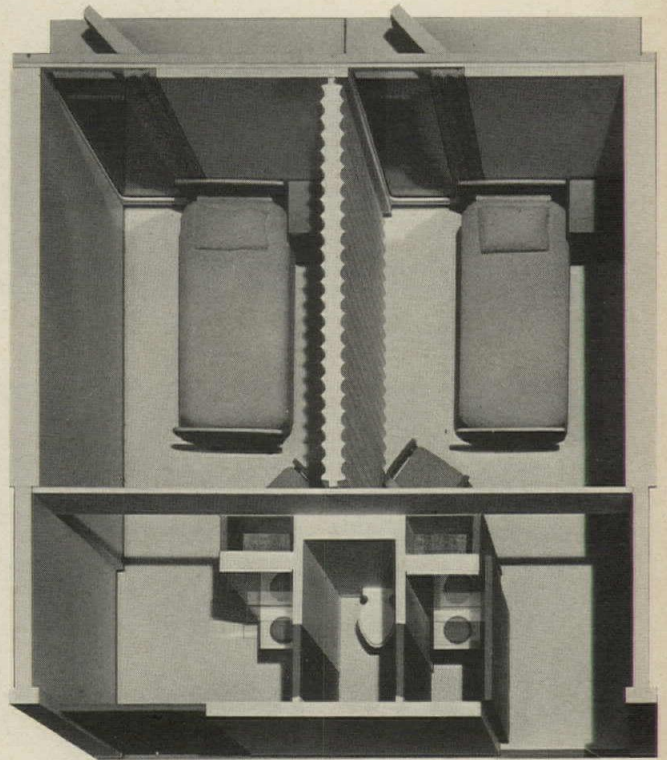








Recessed ground floors of the nursing pavilions contain administration, cafeteria and kitchen areas. Upper floors are typically 30-bed nursing units. One of these units has been modified to accommodate 14 maternity beds and a nursery, another to provide small pediatrics and intensive care units. The forecourt between the service pavilion and front nursing pavilion is filled in by a one-story, glass-enclosed lobby giving access to the vertical circulation tower.

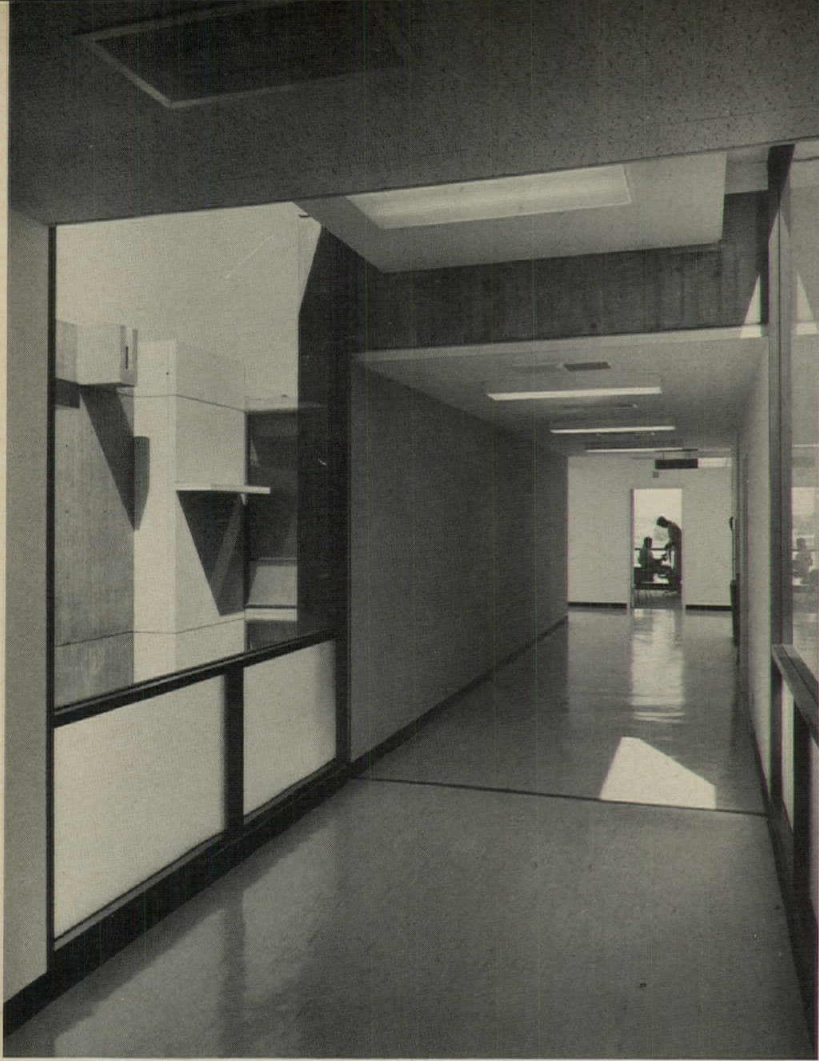


of construction. The third pavilion, an almost windowless two-story structure, houses operating rooms, delivery and labor rooms, x-ray, physical therapy, emergency and out-patient departments. It is designed to expand horizontally as demand for these services warrants. Ultimate capacity of the hospital will be 225 beds.

Pavilions and tower are interconnected at each level by glass-enclosed passageways through which carts and conveyors maintain efficient circulation. Thus, modern devices for hospital traffic permit dispersed planning for growth without the constraining requirement that all services be compactly joined together.

A new kind of patient room called a "duo-room" offers semi-private accommodations (important under provisions of most insurance contracts) that are convertible by means of a soundproof folding partition into what is effectively two single rooms. Each patient then has his own outside window and his own door from the corridor. Two patients in a duo-room share a toilet which is accessible





Glass-enclosed passages, left, join nursing pavilions and vertical circulation tower to surgical and diagnostic services. Recessed glass wall of ground floor in nursing pavilion provides covered colonaded walkway and outside view from cafeteria. One-story fill-in between pavilions is reception and lobby area with access to elevator tower.



from either side of the extended partition, but each has a separate washbasin. The advantages of the duo-room include not only an opportunity for privacy at semi-private rates but flexibility of room assignments that permits practically 100 per cent occupancy, whereas most semi-private nursing floors are limited by sex and diagnostic incompatibility to about 80 per cent occupancy.

Basic structure and framing are reinforced concrete. Nursing pavilion walls are precast, exposed-aggregate panels with vertical and horizontal fins shading tall, narrow windows.

The hospital occupies the southern portion of the site, with parking located between it and a doctors' office building to the north.

WOODLAND MEMORIAL HOSPITAL, Woodland, California. Architect: *Rex Whitaker Allen and Associates*; structural engineers: *Pregnoff and Matheu*; mechanical engineers: *Kasin, Guttman and Associates*; electrical engineer: *Mel Cammisa*; general contractors: *Mac-Donald and Nelson, Inc.*



# URBAN HOUSING: NEW APPROACHES AND NEW STANDARDS

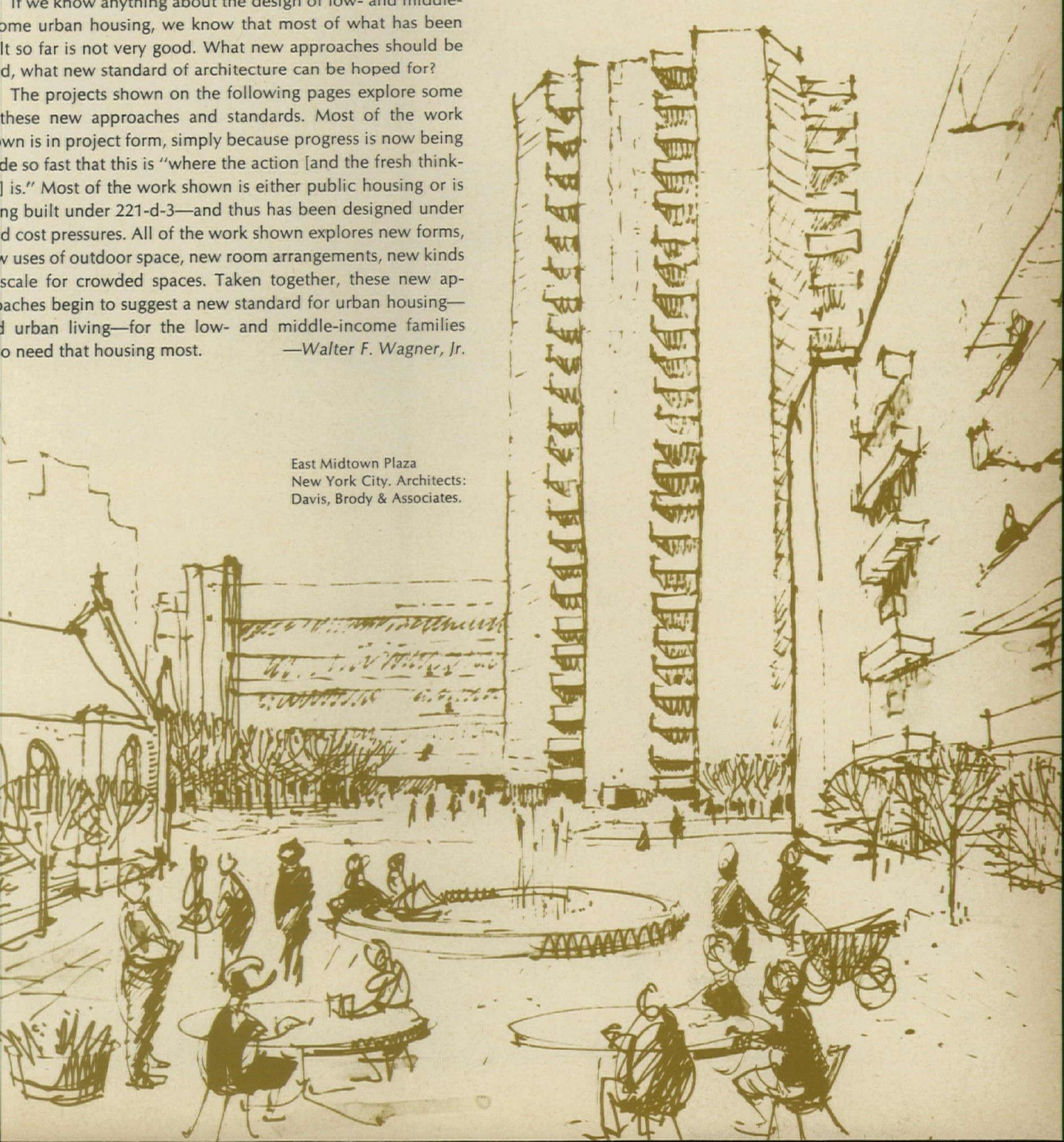
demand for something new and better in urban housing of course one of the central issues of our time. Everyone from top officials of our government to the rioters in the streets are now heavily committed and heavily involved—and watch carefully and anxiously to see what contribution the architect can make. This is a point in time to succeed.

If we know anything about the design of low- and middle-income urban housing, we know that most of what has been done so far is not very good. What new approaches should be used, what new standard of architecture can be hoped for?

The projects shown on the following pages explore some of these new approaches and standards. Most of the work shown is in project form, simply because progress is now being made so fast that this is "where the action [and the fresh thinking] is." Most of the work shown is either public housing or is being built under 221-d-3—and thus has been designed under hard cost pressures. All of the work shown explores new forms, new uses of outdoor space, new room arrangements, new kinds of scale for crowded spaces. Taken together, these new approaches begin to suggest a new standard for urban housing—good urban living—for the low- and middle-income families who need that housing most.

—Walter F. Wagner, Jr.

East Midtown Plaza  
New York City. Architects:  
Davis, Brody & Associates.



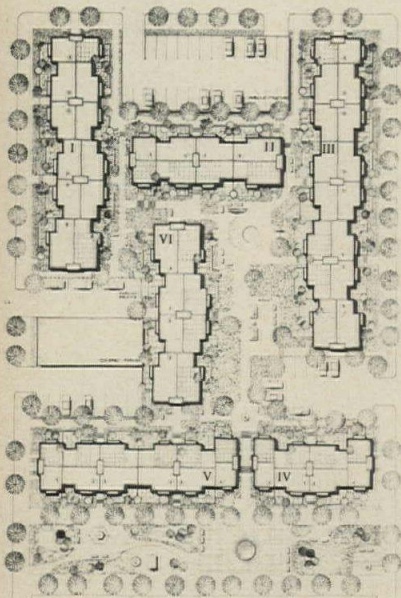


**TOWNHOUSE DESIGN  
CREATES PRIVACY AND  
"SENSE OF PROPERTY"**

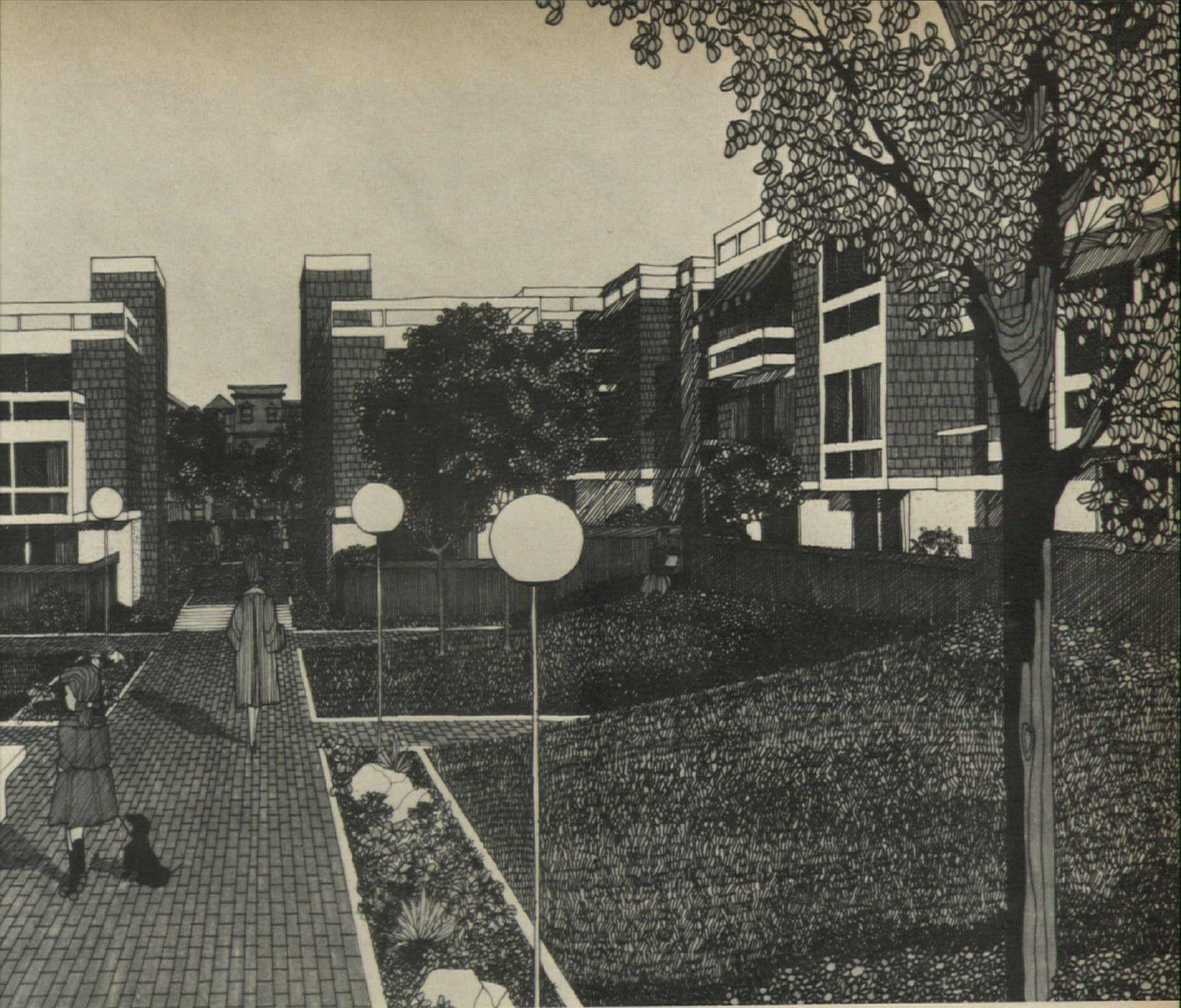
This group of town-house-type buildings, covering a city block, won a San Francisco Redevelopment Agency competition for 221-d-3 apartment housing. Besides being attractive and generally 10 per cent larger than accepted standards, the units stay well within the stringent economic limitations. All utilities are grouped in a central spine running down the length of the building. This, plus the low (3.5 per cent) area of public hallways and the fact that changes in grade are taken advantage of are important economic factors.

An important asset of the project is the variety, not only in size and location of buildings, but in design of the 116 individual units. There are one-, two-, three-, and four-bedroom units, the larger of which offer more privacy for families, while smaller units, typically occupied by young adults or older persons, have the added security and sociability of shared hallways.

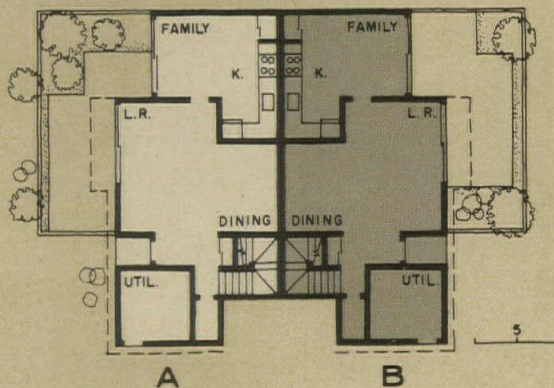
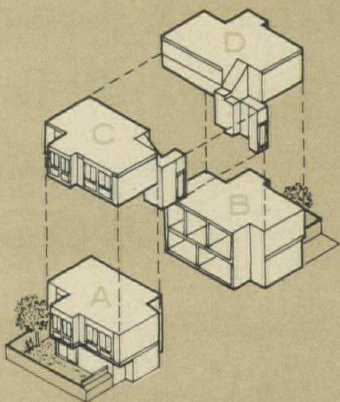
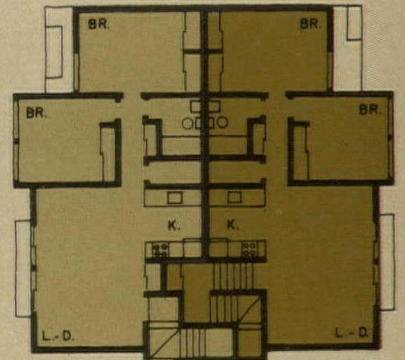
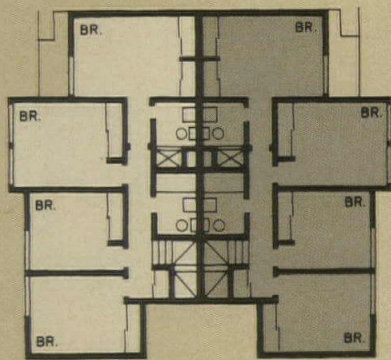
MARTIN LUTHER KING SQUARE, San Francisco. Client: Mortimer Fleishhacker, Jr. and Mortimer Fleishhacker, III, and Fillmore Community Development Association. Architect: Kaplan and McLaughlin; structural engineer: Gilbert, Forsberg, Diekman & Schmidt; mechanical engineer: Yanow & Bauer; developer: Herman Christensen & Sons.







The design takes advantage of the natural slope of the ground. The typical module consists of two two-story units placed back to back, each with its own garden. Above these units are either a pair of smaller units or, in some instances, a larger, split-level unit. The smaller units cluster in groups of four about a common entry way. All three- and four-bedroom units—and many two-bedroom units—have private entrances and gardens.





## FRESH FORMS AND SCALE FOR THE MEDIUM-RISE UNIT

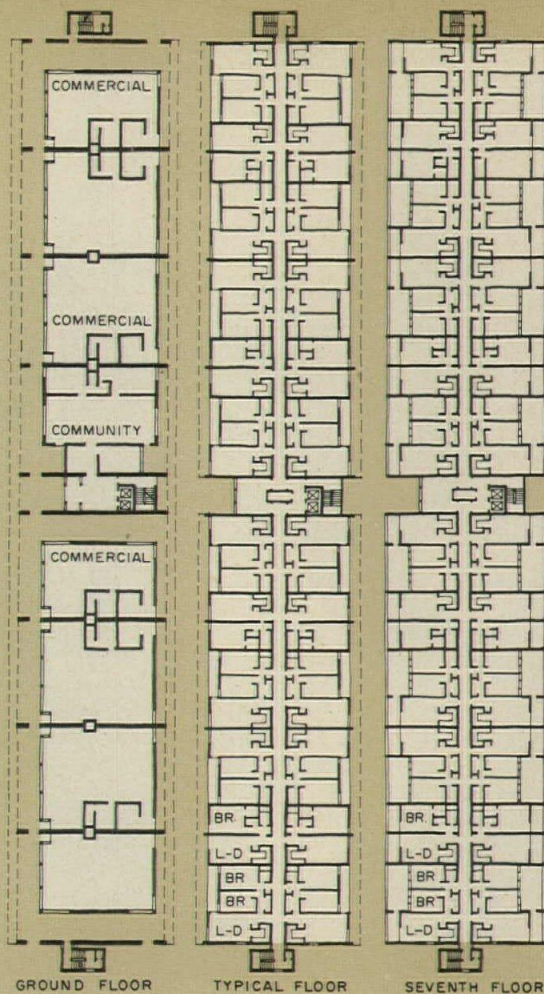
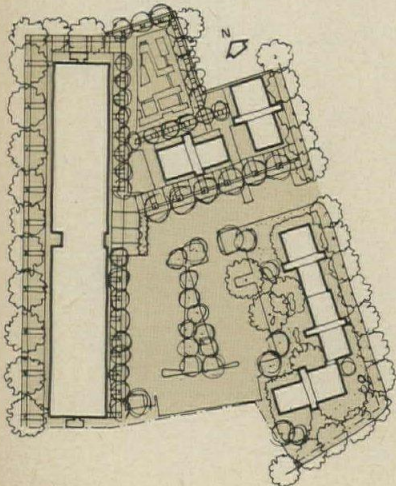
The medium-rise apartment building is a difficult design problem—it has not the human scale of the low-rise building nor the drama possible in the high-rise. But TAC has given this seven-story building both scale and drama by giving it the longest length possible on the site, by creating a series of strong horizontal lines with the faces of the balconies, by breaking the plane of the facade with a set-back lower level and cantilevered upper level, and by strongly expressing concrete technology.

The 8-inch concrete bearing walls are 44 feet on center, and spanned by 10-inch deep by 3-foot, 4-inch cored, precast, concrete planks. This building—with 48 one-bedroom and 96 two-bedroom units, and 18,000 square feet of rentable commercial space, community recreation and laundry spaces on the ground floor—will be primarily for the elderly.

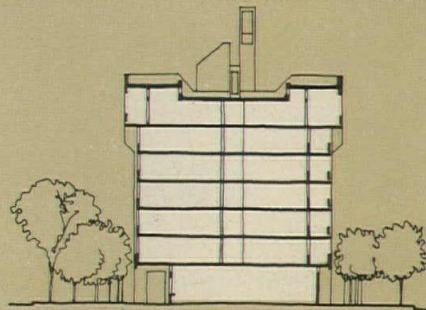
The three-story walk-ups completing the complex have a total of 228 units, and are based on the same construction system. The site plan provides one-to-one parking for the walk-ups, 30 per cent parking for the seven-story building.

Construction of the project is to begin this year.

ROXSE HOUSING, Boston. Client: Roxbury South End Corp. Architect: *The Architects Collaborative—Alex Cvijanovic, principal in charge, Henry Ortega, job captain; consulting architect: Stull Associates; structural engineer: Sepp Firnkas Consulting Engineers; mechanical engineer: Joseph Schneider; developer: Development Corp. of America.*

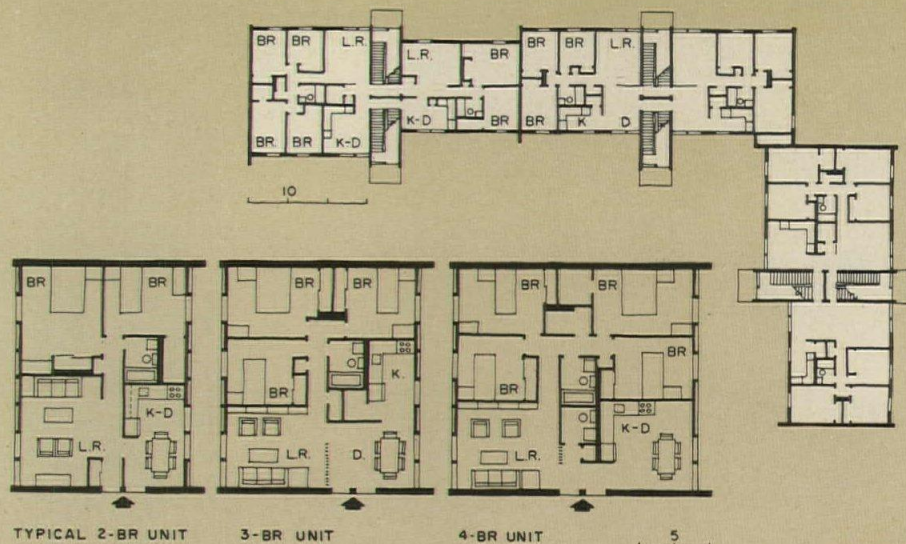


GROUND FLOOR      TYPICAL FLOOR      SEVENTH FLOOR



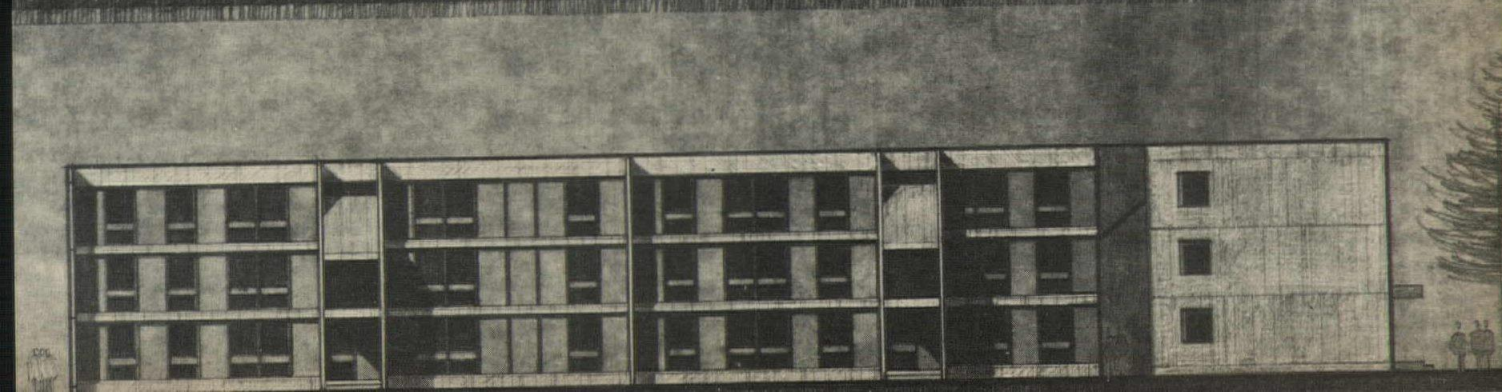
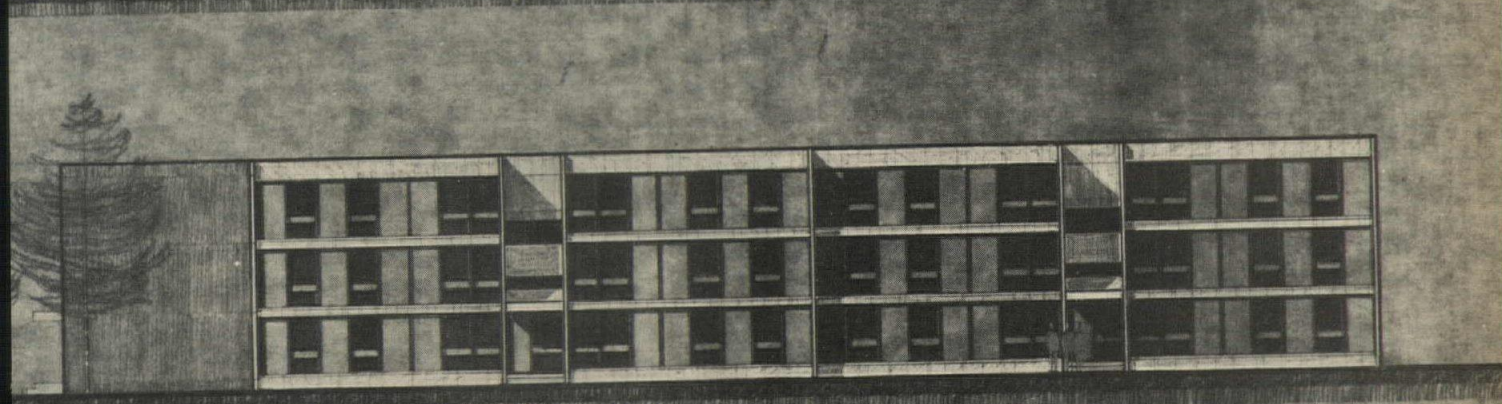
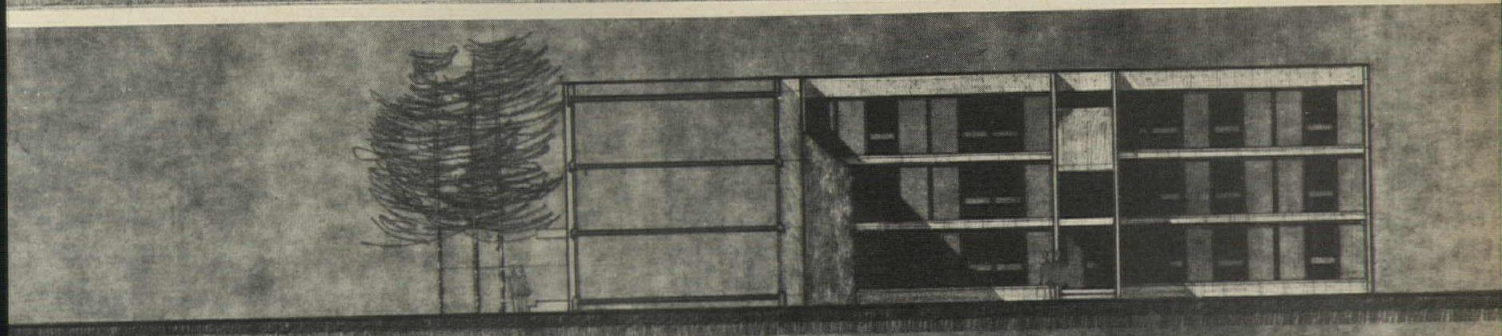
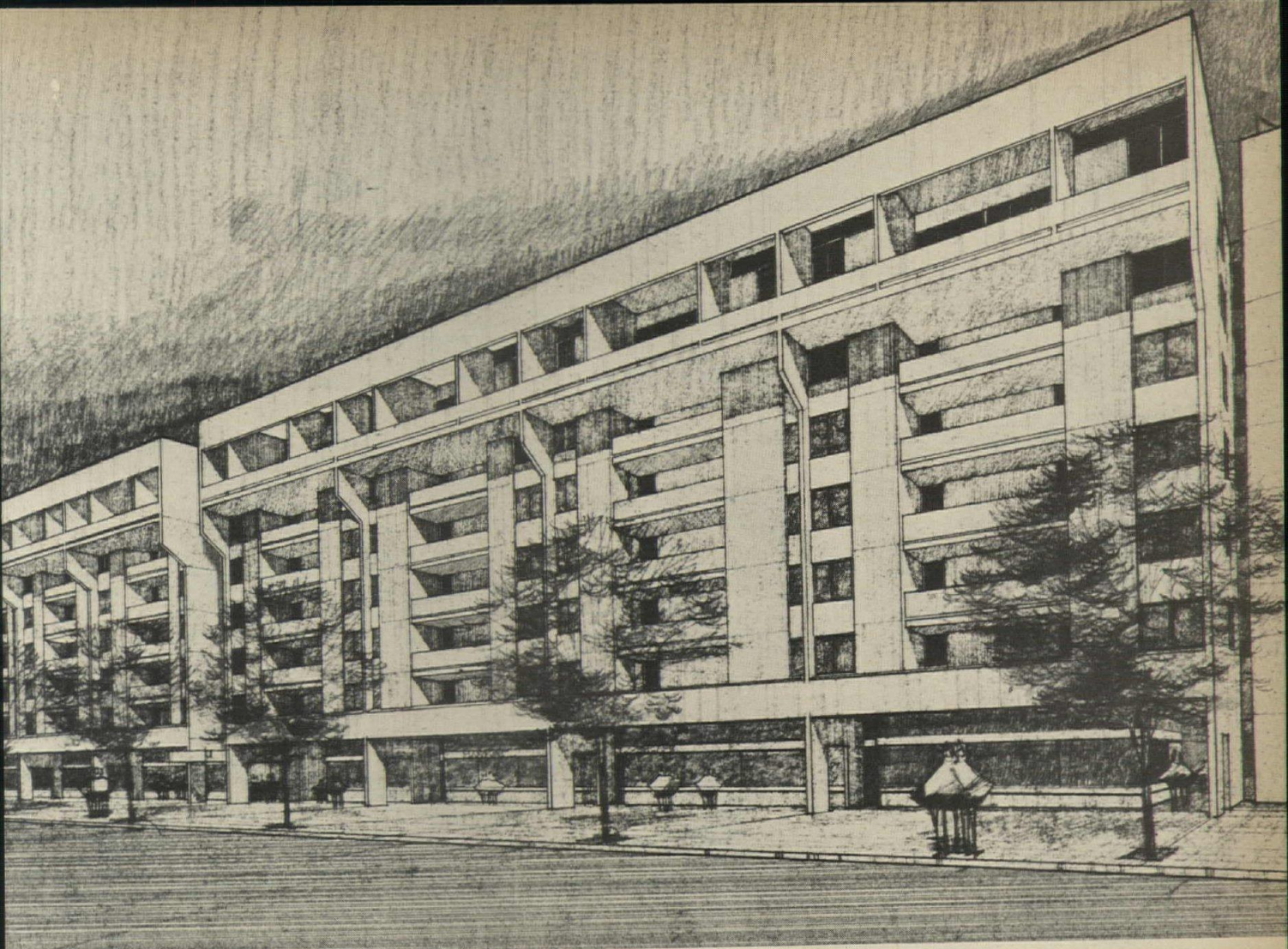
In the seven-story building, the 4-foot width within each "module" formed by the bearing walls contains one two-bedroom apartment and half (either the living room or the bedroom) of a one-bedroom unit. Doors cast into the bearing walls connect the rooms of the one-bedroom units. The top-floor apartments (i.e., those in the cantilevered section) have basically the same plan—the only difference is deeper rooms and balconies.

The low-rise buildings have a total of 48 two-bedroom, 102 three-bedroom, and 78 four-bedroom units.



TYPICAL 2-BR UNIT      3-BR UNIT      4-BR UNIT







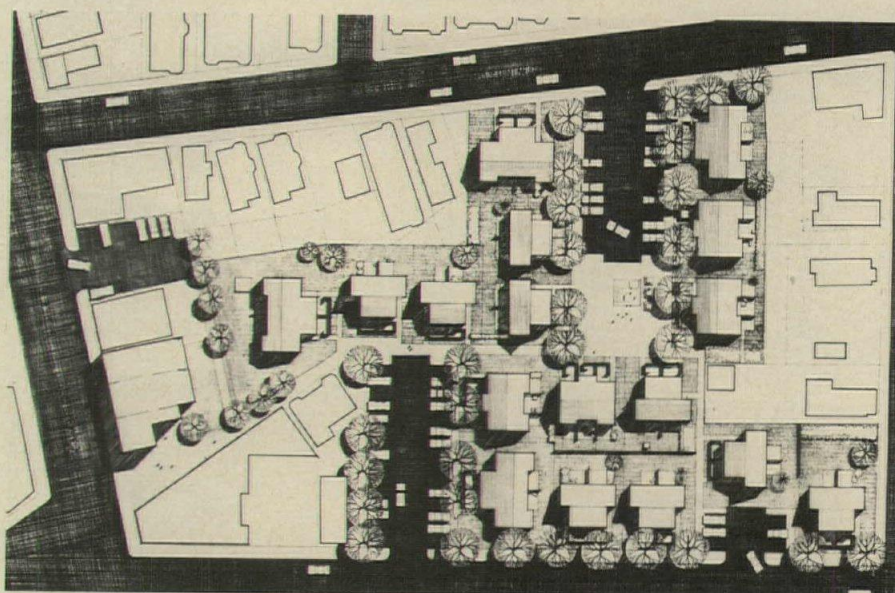
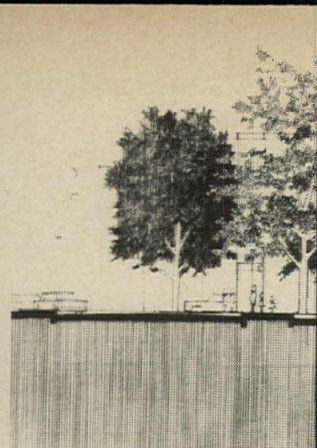
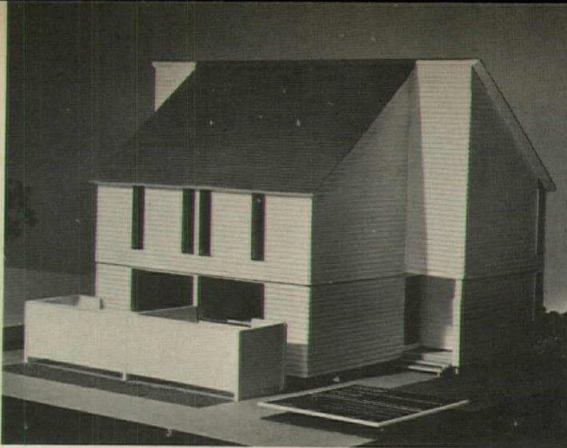
FOR AREAS WITH  
 RUN-DOWN HOUSES:  
 RENEWAL IN SCALE

Small sections of deteriorating residential areas can be redeveloped with three residentially scaled building types, according to this proposal for moderate income housing. They are adaptable to a variety of locations.

The area shown here consists of two triangular parcels separated by a diagonal street. The perimeter contains a number of buildings in good condition, which will be saved. The plan proposes to close the diagonal street and create a continuous pedestrian area for the new housing. Parking areas will be opened up off the perimeter.

PROPOSED HOUSING FOR WELLINGTON-HARRINGTON URBAN RENEWAL AREA, Cambridge, Mass. Client: The Cambridge Corporation. Architect: Huygens and Tappé.

Phokion Karas

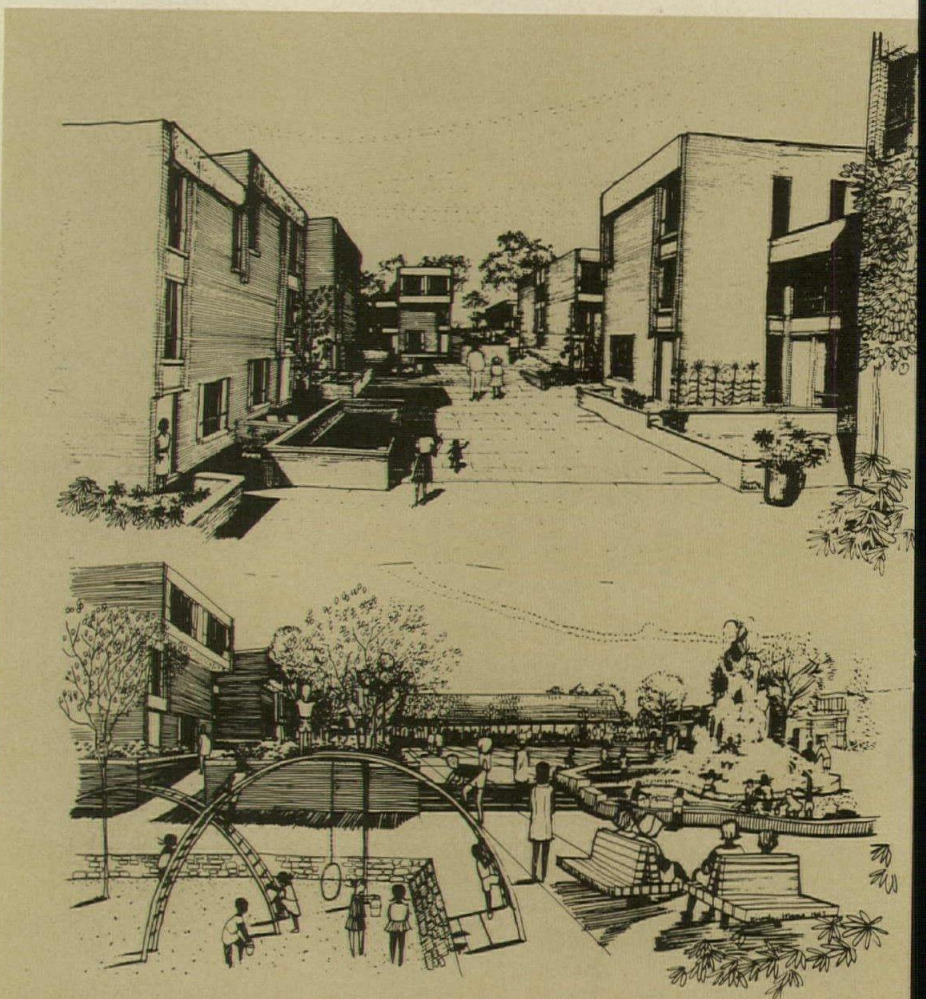


PUBLIC HOUSING:  
 DESIGN FOR  
 LARGE FAMILIES

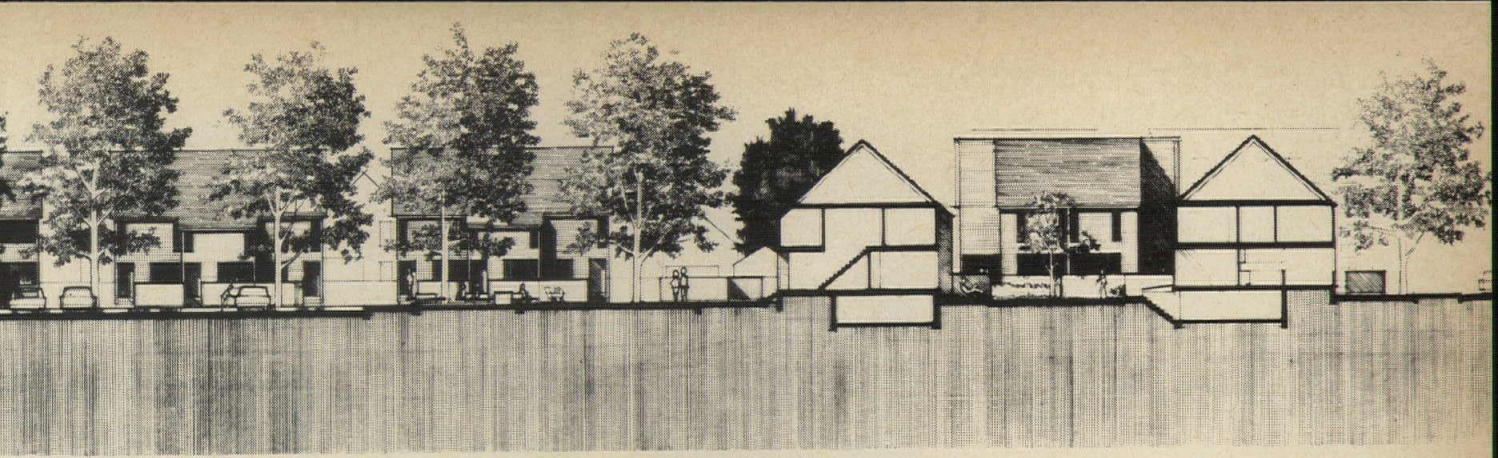
The expected population of this 15-acre project is 2,400, with as many as 1,800 children. Thus, all of the 320 units will have three, four, or four-and-a-half bedrooms. The placement of the buildings creates spatial continuity throughout the site, and creates varied outdoor spaces for the use of the residents. Some areas are furnished with play equipment, others with shade trees and benches, and others are used as plazas.

A central square provides a large open area for block dances and parades, and acts as the community focus.

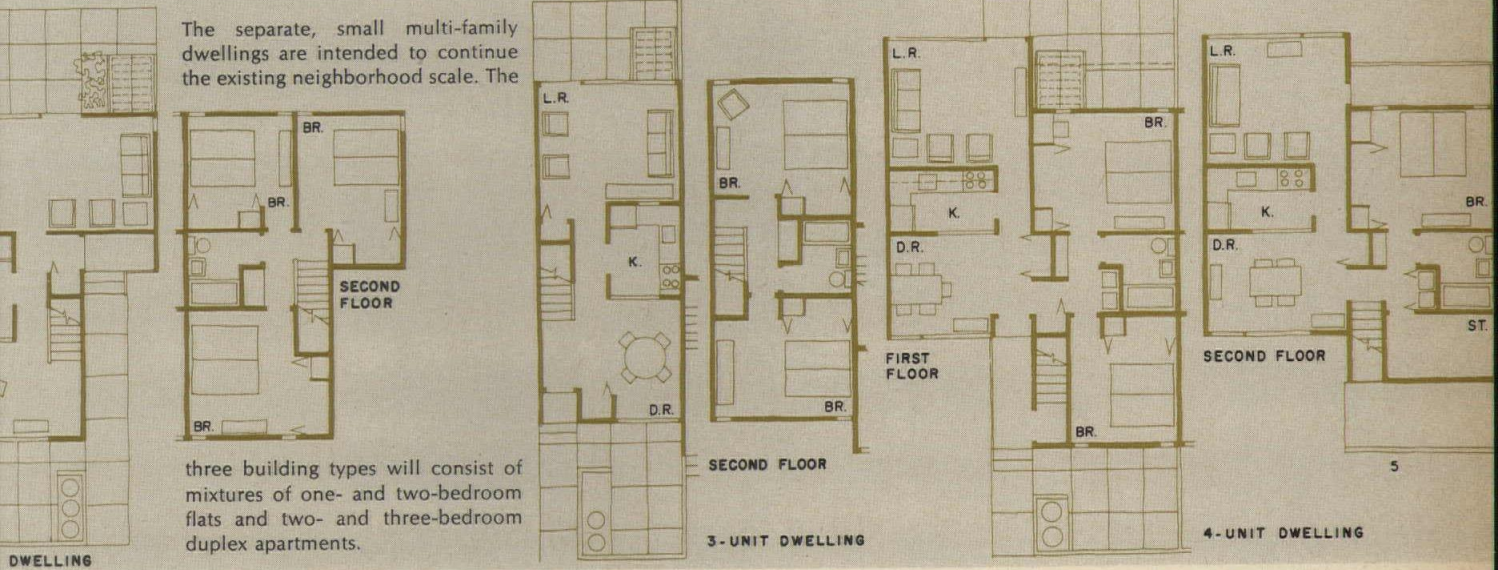
HIGHLAND EXTENSION, Washington, D.C. Architect: Brown, Wright, Mano—Patricia Schiffelbein, site designer, Wayne Schiffelbein, planner and job captain; site engineer: Edwin Albrecht; mechanical engineer: Shefferman & Bigelson; structural engineer: Strassburger & Soto.



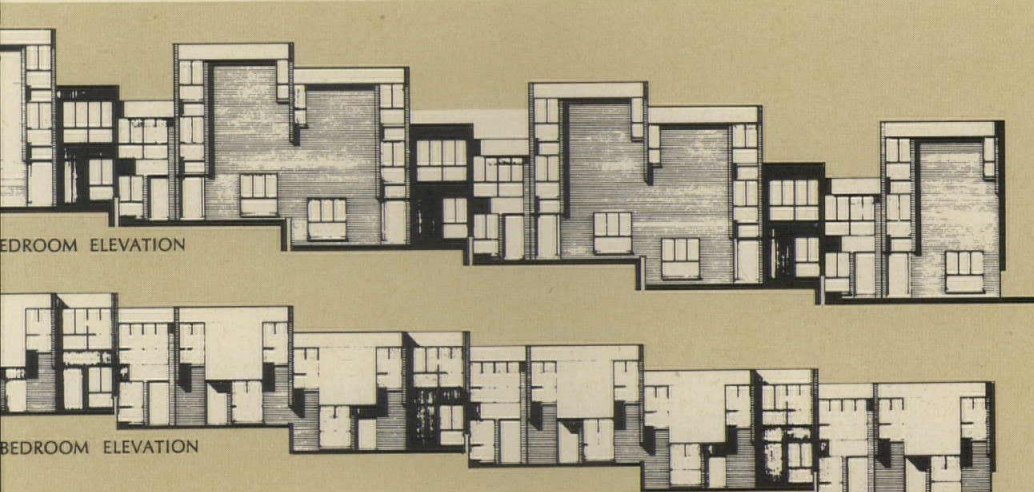




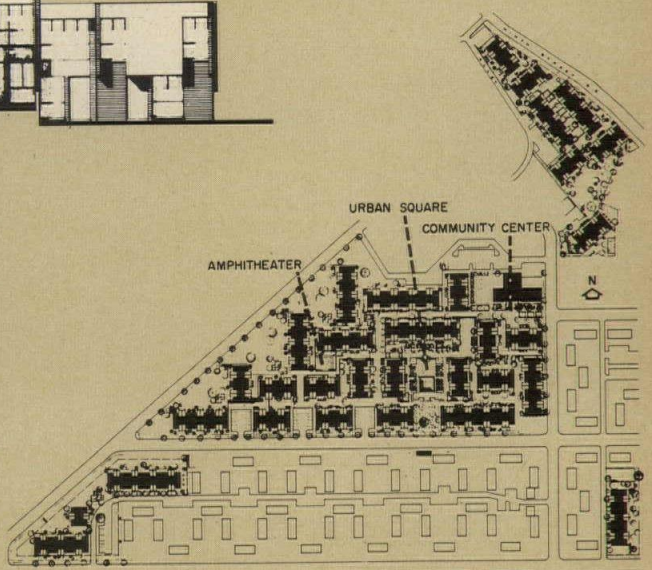
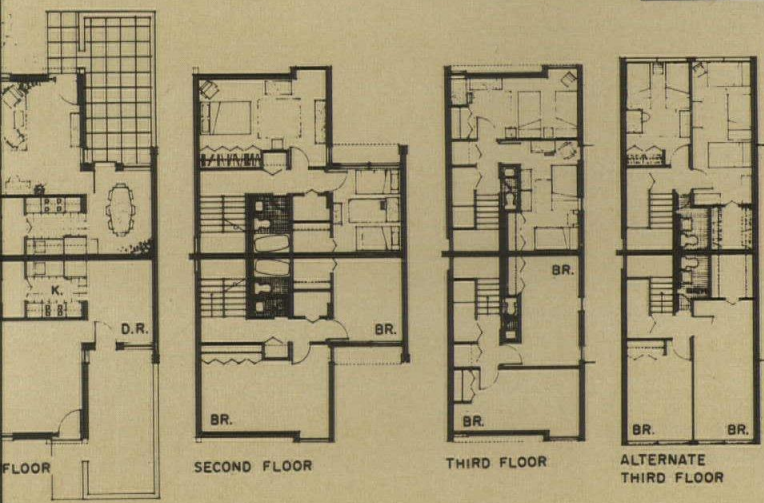
The separate, small multi-family dwellings are intended to continue the existing neighborhood scale. The



three building types will consist of mixtures of one- and two-bedroom flats and two- and three-bedroom duplex apartments.



Consistent design, construction system, and landscaping of the pedestrian streets gives visual continuity to the project. The buildings are simply constructed: slab on grade, masonry exterior and party walls, wood framing, aluminum windows with Plexiglas glazing. Two units are placed back-to-back, and each has its front entry court set off from the public walk-way by a planting bed. Each unit has its own on-grade entrance, giving tenants a sense of proprietorship rare in apartments.





## GOOD ENVIRONMENT, CHILD ORIENTED SPACE FOR BUDGET HOUSES

Great economies of design and construction have been combined here to produce an extremely pleasant community of multi-bedroom row houses.

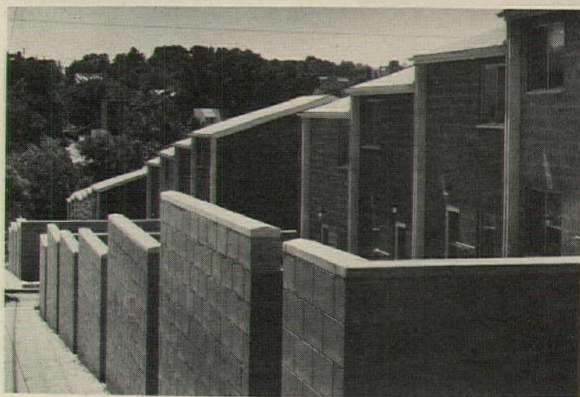
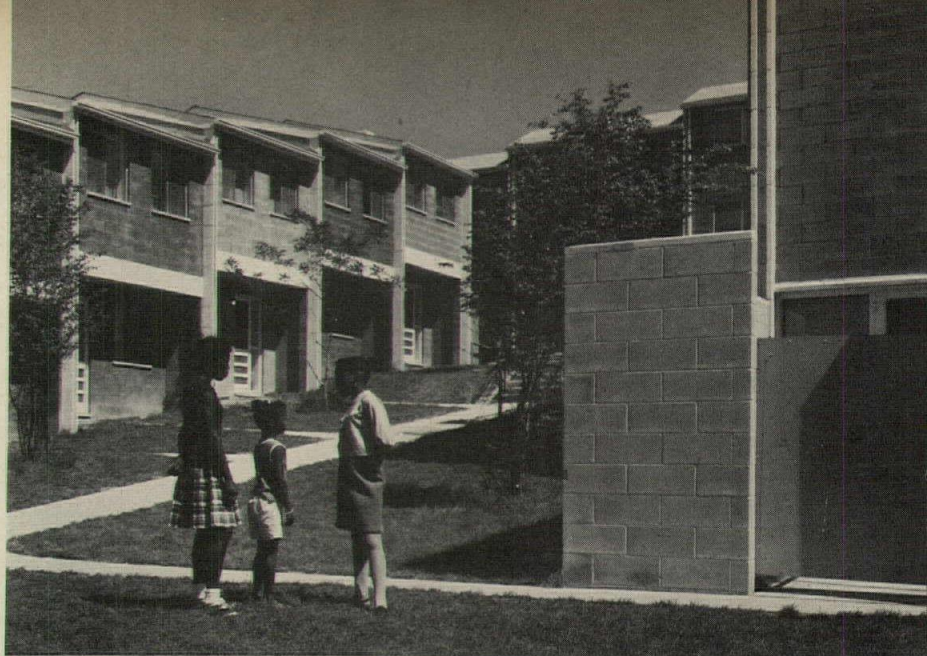
Expressly programed to be child-safe and child-oriented, the project was planned to house 230 families (estimated at 1,750 persons, including 1,300 children) in individual units with three to six double bedrooms each.

The hilly, 15-acre site was carefully developed to provide an interior pedestrian circulation system, free of automobile traffic, and connecting all the houses with tree-edged "tot-lots", a large playing field, a community building and a grassy amphitheater. Off-street parking is kept on the perimeter, and all internal streets are *cul-de-sacs* to eliminate through traffic. They are designed without parking lanes to prevent curb-side parking and the consequent obstruction of drivers' vision of children playing in the sidewalk-street area.

The architects comment that, "to beat the hilly economics, split, bilevel, and flat dwelling units were designed into the stepped buildings so that structures could be oriented at will without using banks and retaining walls." In each house, the "front" doors face the interior pedestrian way, and kitchen doors and the adjoining walled-in service-play yards face the street for convenience in trash-disposal, and other services.

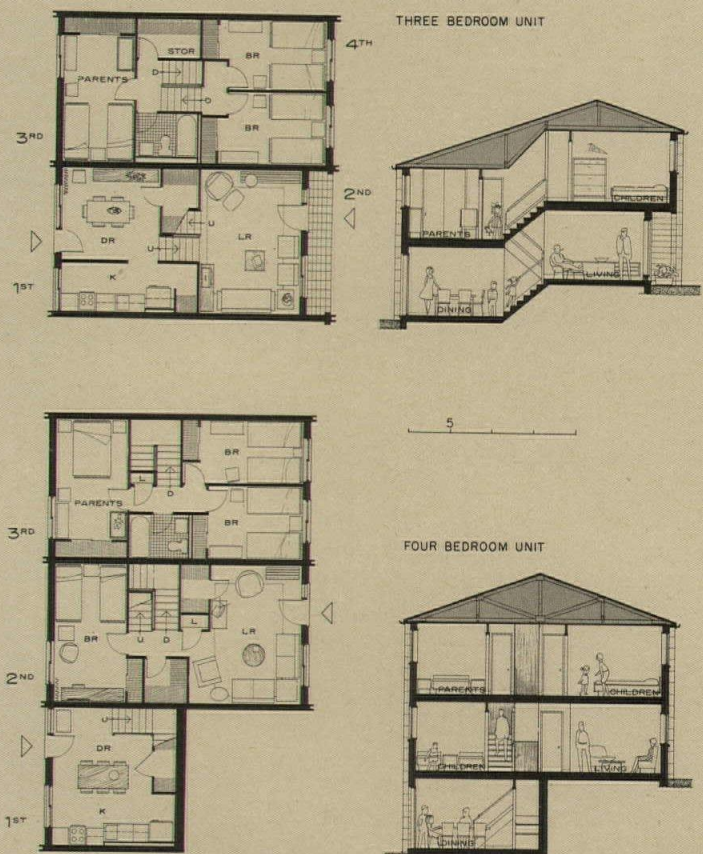
The houses are wood frame with integrally colored concrete block exteriors in various shades of gray-brown. Exterior accents are white precast concrete, and downspouts are stock, bond beam, white concrete blocks, set vertically in place. Roofing is asphalt shingle over plywood and wood truss-rafters. There are five basic row-house types in the project, but, because of variations in slope, color and the like, no two houses are exactly alike.

EASTGATE GARDENS, Washington, D.C.  
Owner: National Capital Housing Authority. Architects: Chapman & Miller; contractor: Merando, Inc.

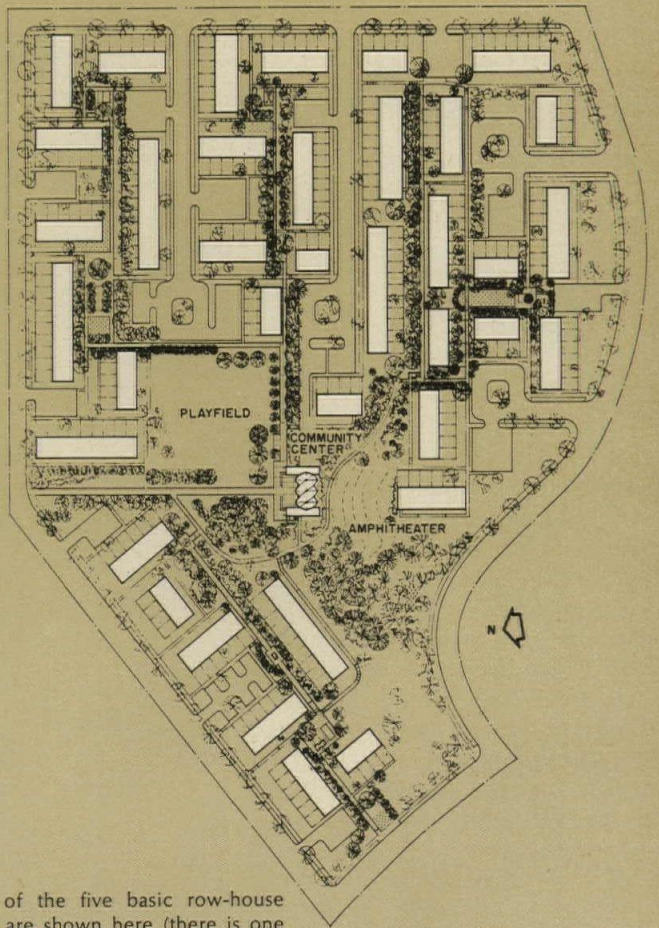
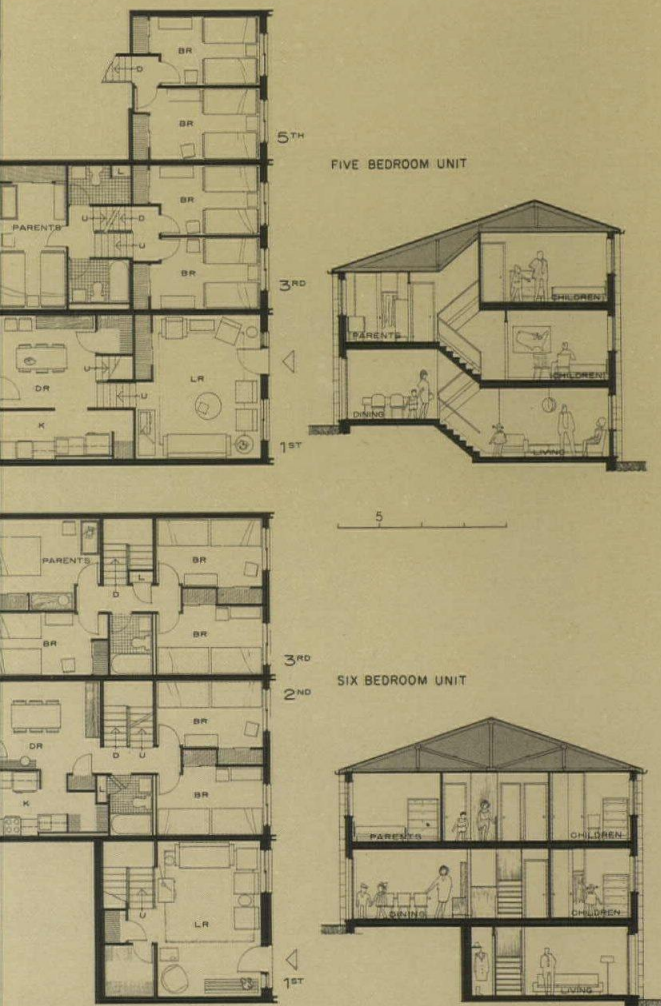
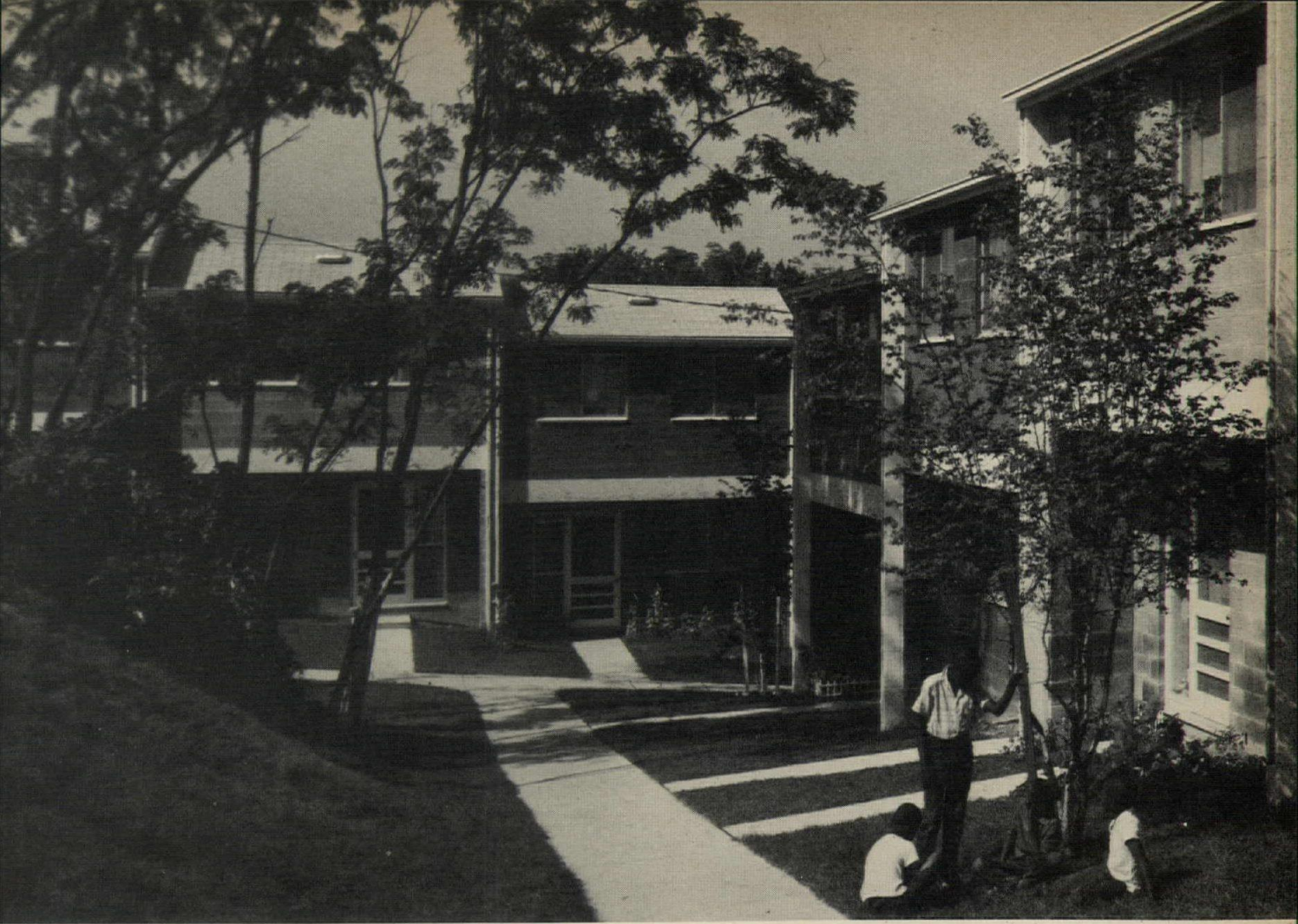


The architects of this housing development believe that "the project demonstrates how a satisfying community can be designed despite the severe restrictions of a tight budget and the forced selection of the least expensive materials."

From the garden-like fronts of the row houses along the interior pedestrian ways (right) to the practical, screened-off play and service yards on the street sides (left), all aspects of the houses are extremely pleasant, comfortable and convenient. And the total is a unified, well-designed neighborhood.







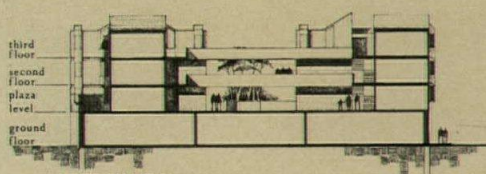
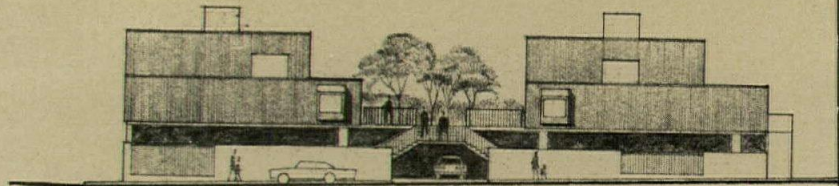
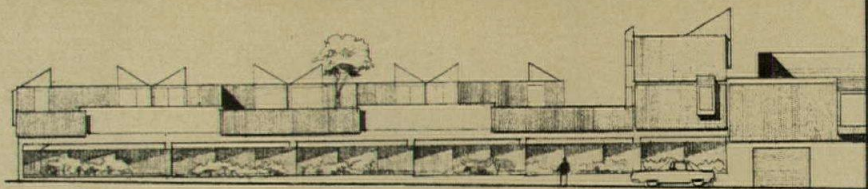
Four of the five basic row-house types are shown here (there is one extra, a non-split-level three-bedroom model). The extensive community land shows in the plot plan.



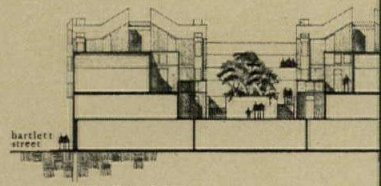
**AIR-RIGHTS UNITS:  
A PROPOSAL FOR  
SPACE OVER GARAGES**

In San Francisco where land for low-cost housing for the elderly is practically non-existent, a design that makes double use of City-owned land is sensible and exciting: This proposal is designed to be built atop platforms erected over parking lots in the heart of neighborhood shopping centers. The reinforced concrete deck, supported on reinforced columns, would make possible an addition of 110 studio and one-bedroom apartments. Apartments are grouped around two small courts that open on a large central community plaza. Each unit has either a private patio or balcony.

PROPOSAL FOR AIR RIGHTS HOUSING, San Francisco. Architect: *Anshen and Allen*.



SECTION B-B

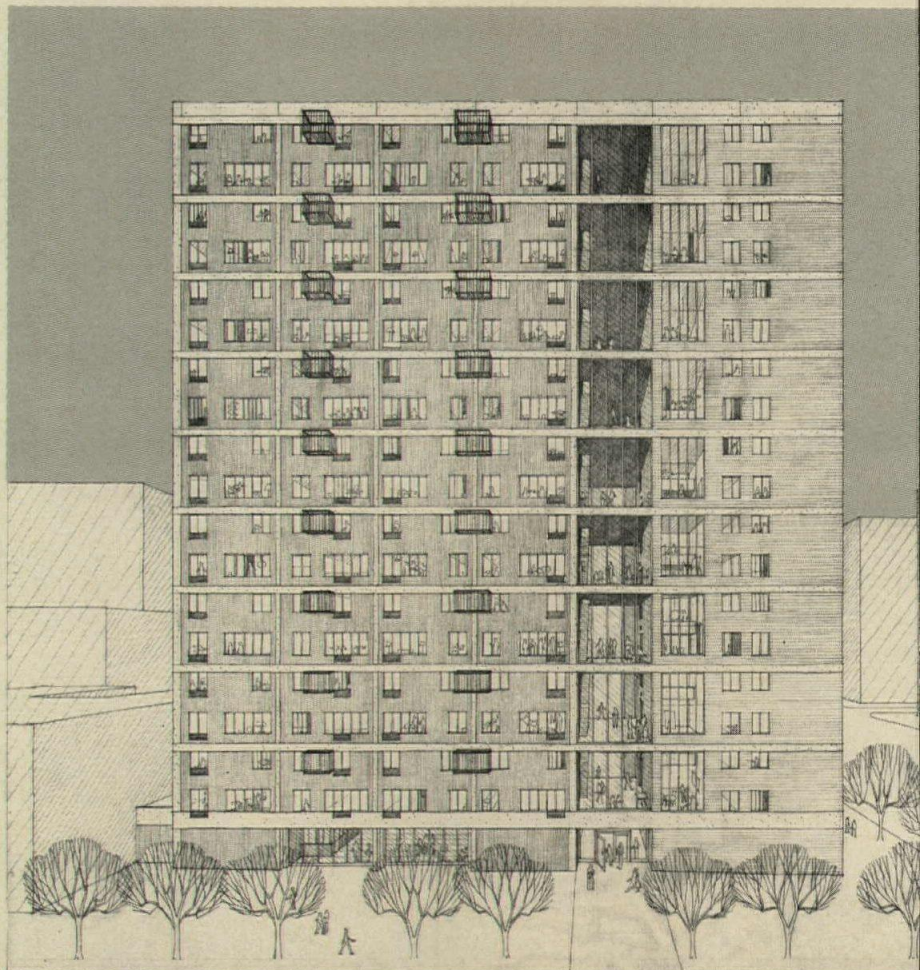


SECTION C-C

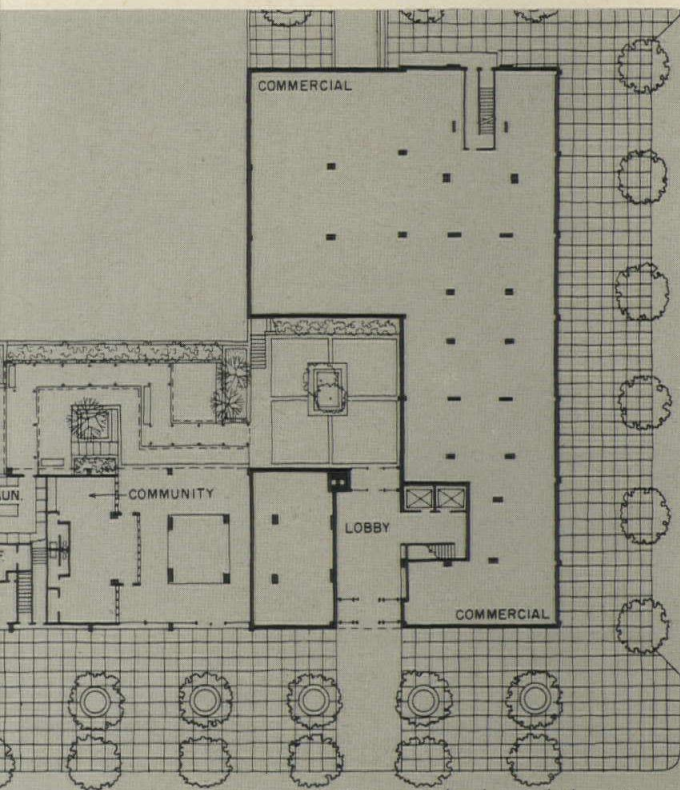
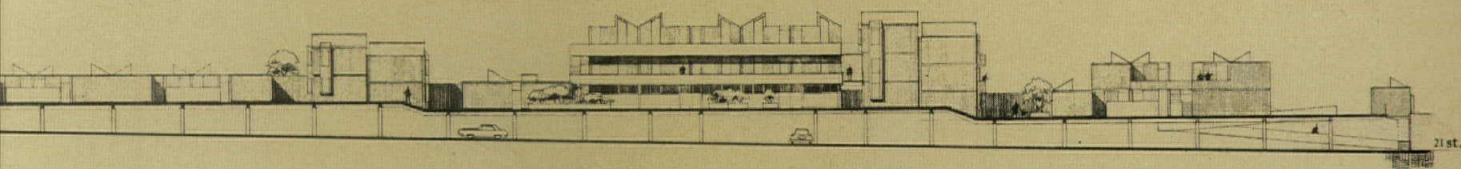
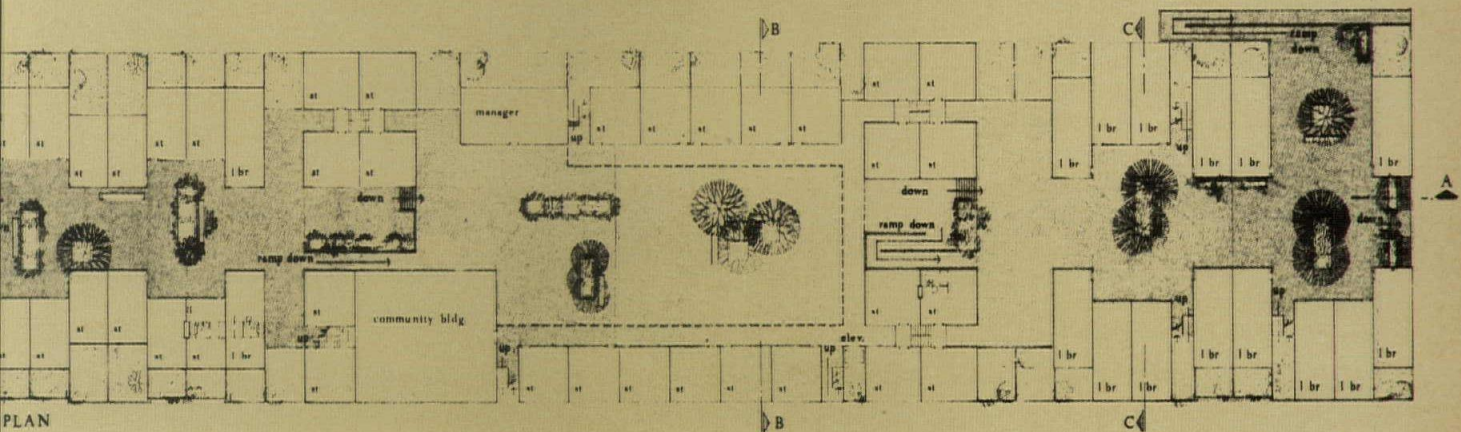
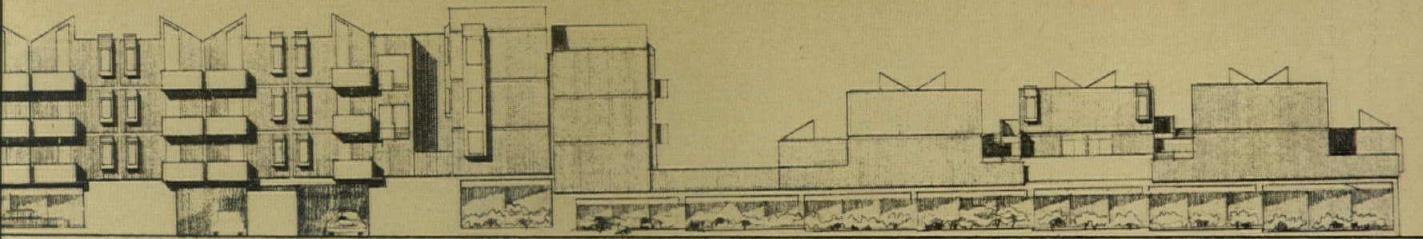
**DUPLEX APARTMENTS:  
FRESH LOOK AT AN  
ELEGANT OLD IDEA**

This L-shaped building, with primary financing under 221-d-3, is composed entirely of duplex units. Flexibility of apartment types is achieved on alternate floors where bedrooms can be changed from one apartment to another. The 22-foot exterior vertical module defines the width of a kitchen and living area on one level, and two adjacent bedrooms on another. The duplex concept is expressed by the exposed concrete spandrels on every other floor.

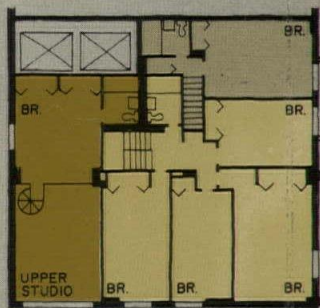
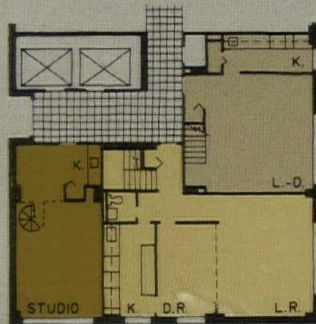
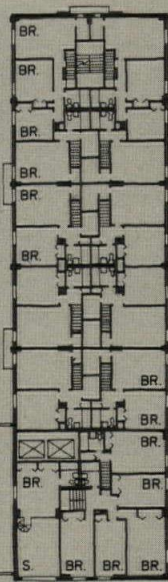
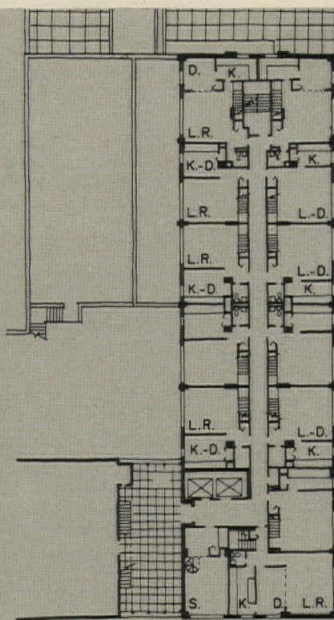
TURIN HOUSE, New York City. Architect: *Holden, Yang, Raemsch & Corser—John Yang, partner-in-charge of design*; structural engineers: *Zaldos & Meagher*; mechanical engineers; *Ian Grad & Assoc.*







Between the legs of the "L" are open breezeways, each two stories high. Besides two-story artists' studios, there are a variety of one- to four-bedroom duplex apartments. Public halls and elevator stops are required only on every other floor where entrances are located.



TYPICAL LIVING ROOM FLOOR

TYPICAL BEDROOM FLOOR



## COMPONENT SYSTEM FOR QUICK IN-FILL OF EMPTY CITY LOTS

An ingenious proposal to help solve the problems of family relocation caused by urban renewal demolition, the Boston Infill Program ("BIP" as it is called locally) seeks to use the countless parcels of existing empty land which are scattered over the city, and quickly build houses made of modular, pre-cast components.

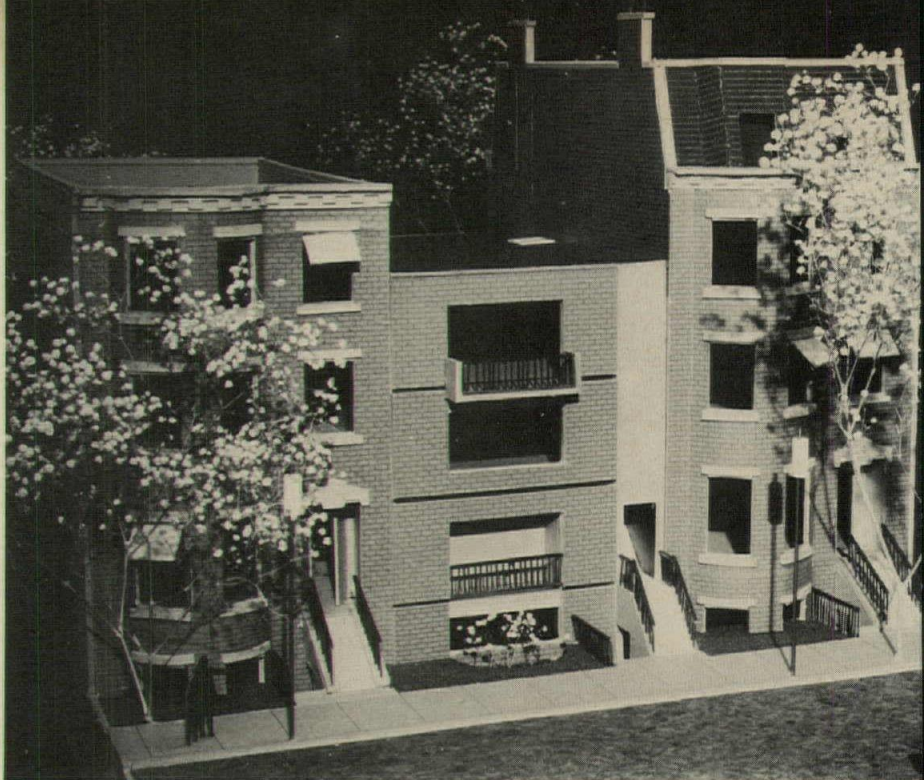
As the lots are of widely varying sizes, and in all sorts of neighborhoods, a quiet, flexible design with brick-veneer facades has been developed.

The program is conceived as one that can be executed on a crash basis: "only if a massive input of large, low-income family housing is available during the next 12 months will it be possible to avoid serious hardship for displaced families. To achieve this goal, it is proposed that planning, financing, community programing and site acquisition for 1,000 units of such housing be compressed into a 60-day period by total cooperation and maximum effort of all parties involved. Construction would be organized on a CPM system based upon intitial occupancy within six months." The 1,000 units would be 30 per cent 3-bedroom, 50 per cent 4-bedroom, and 20 per cent 5-bedroom. From the financial point of view, it would be a "program of private, low-income, subsidized family housing."

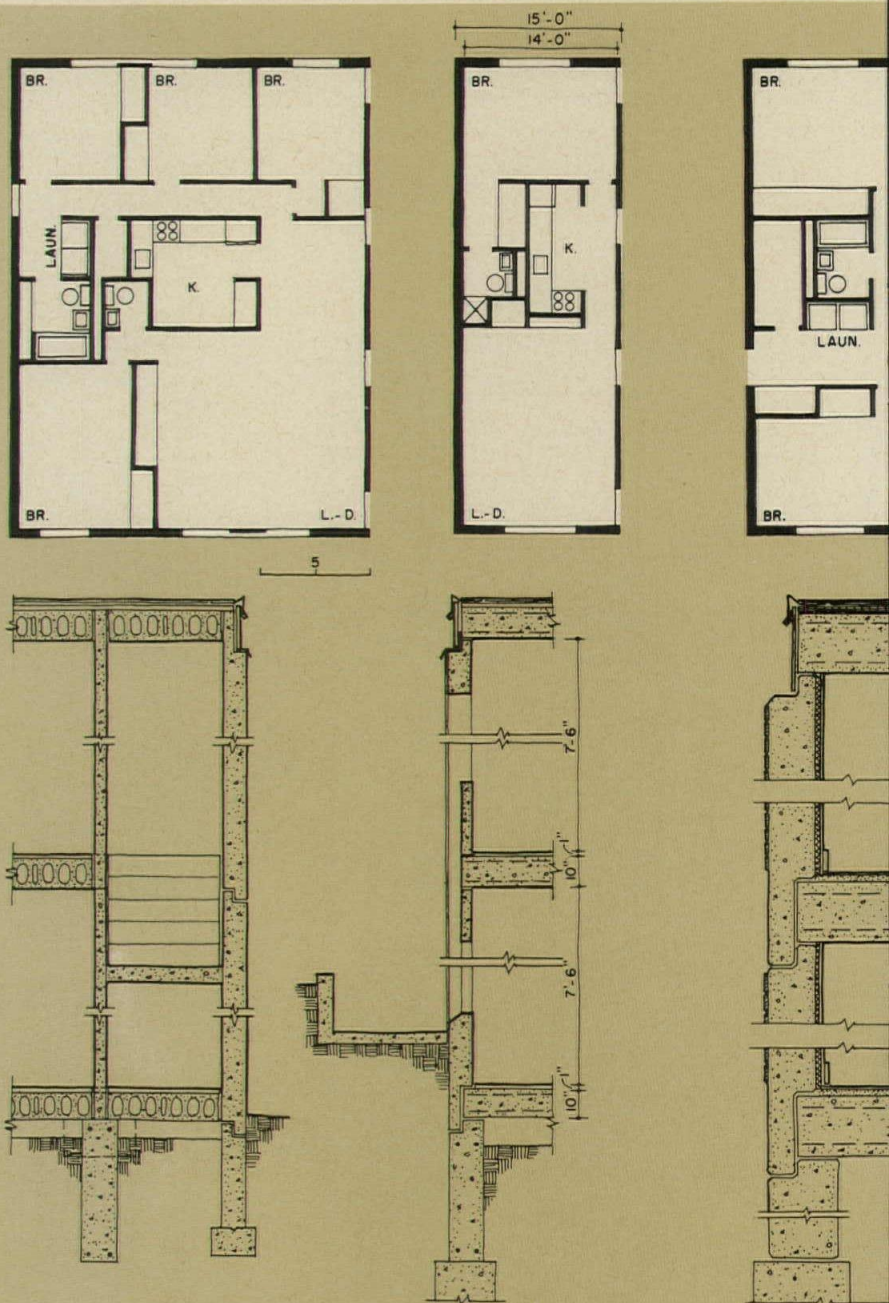
The construction system incorporated a series of pre-cast, pre-stressed concrete wall, floor and roof panels which can be rapidly erected into modular concrete boxes with door and window units cast into the walls. The brick veneer facade will also be pre-cast into the exterior walls.

Of standard depth, the units will vary in width by assembling a variable number of concrete components into each building. Stairs and mechanical systems are designed as individual packages to be quickly installed.

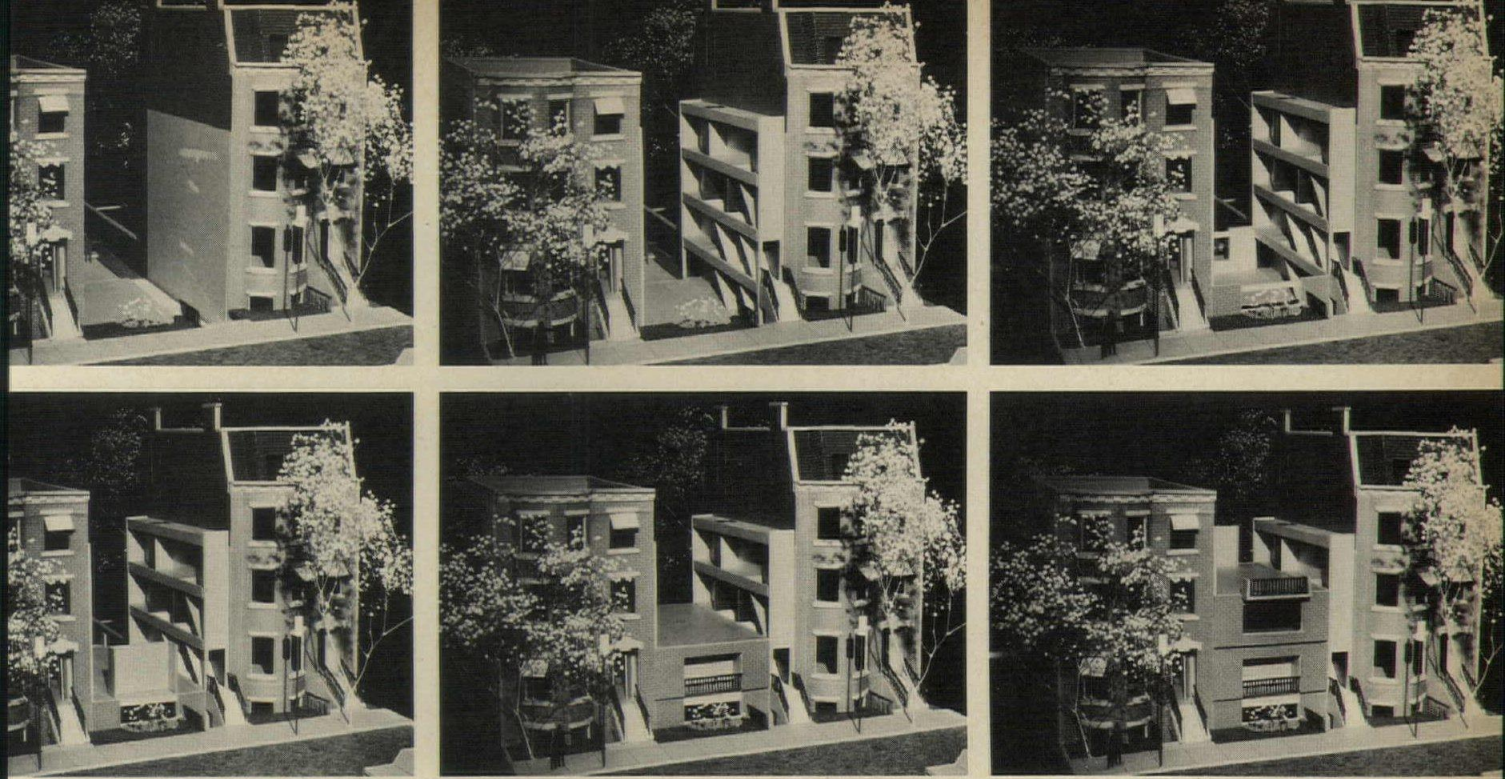
BOSTON INFILL PROPOSAL. Architect: *Stull Associates, Inc.*; engineers: *Sepp Firnkas Engineering (consulting), Engineering Design Associates—Peter S. Myers, president (mechanical and electrical)*; developer: *Development Corporation of America.*



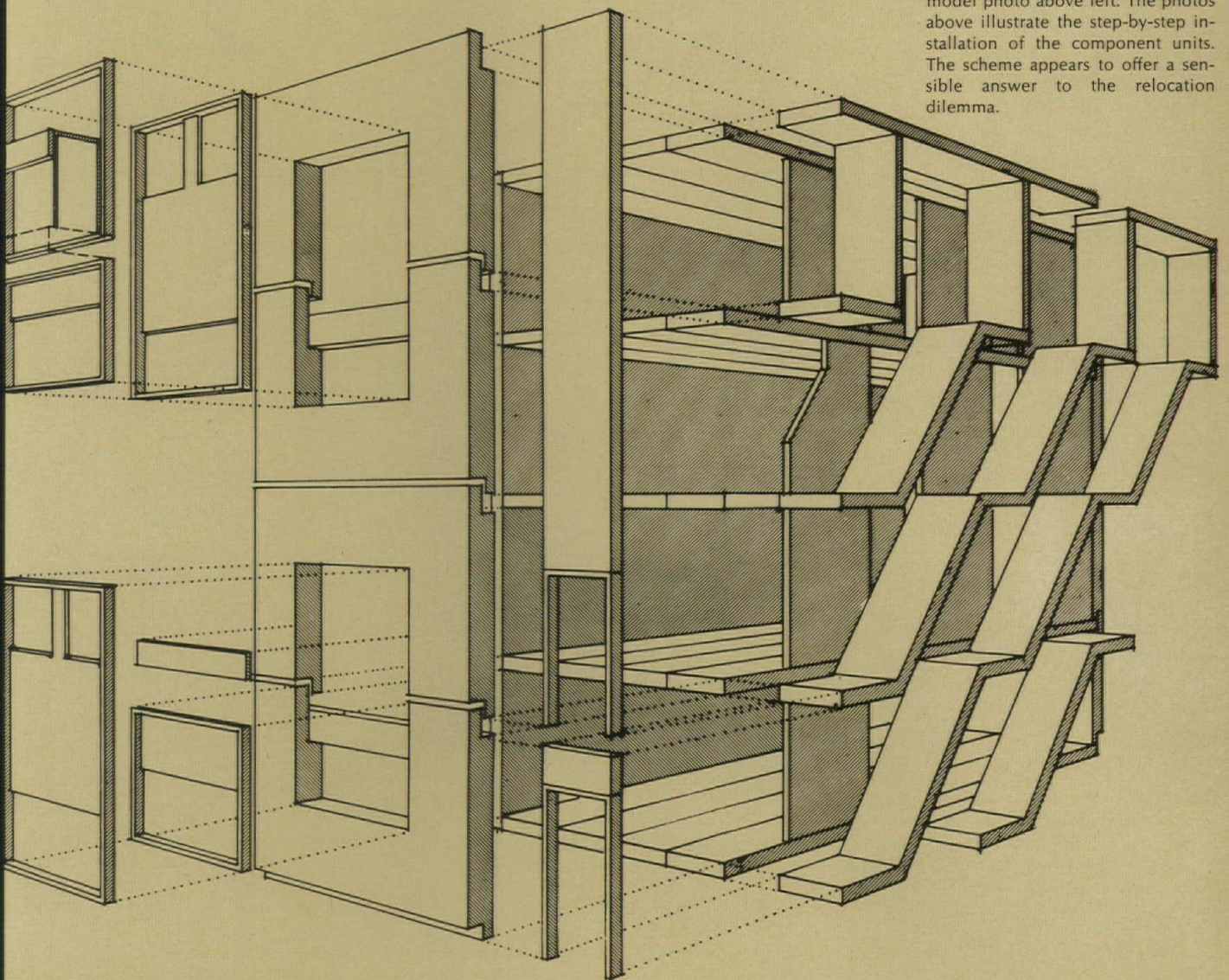
Kimball / Rankin photo.







From the system of basic components shown in the diagram below, houses of a variety of plans and sizes can be speedily constructed to fill existing empty lots. A typical completed house is shown in the model photo above left. The photos above illustrate the step-by-step installation of the component units. The scheme appears to offer a sensible answer to the relocation dilemma.





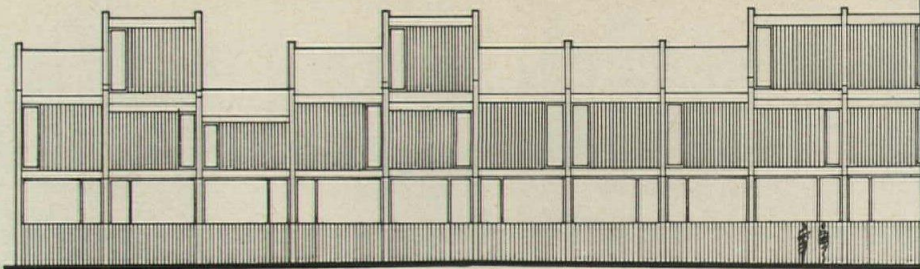
"HOUSE IN THE SKY"  
—WITH TERRACE—  
UNDER 221-D-3

Paul Rudolph has attempted, in the design of the low-rise project shown here and the 10-story project on the following pages, to overcome two architectural problems common in our cities: "Too many high-rise units are scaleless and inhuman; and we have not learned how to relate high-rise to low-rise in scale." In these buildings—with a stepped-back "hillside-village" form and ever-changing rooflines within a simple construction discipline—Rudolph has given both low- and high-rise the same, very residential scale. "It's my hope," says he, "that these units will seem like houses in the sky, not drawers in a cabinet." Another advantage of these innovative forms is the creation of major private outdoor living spaces for almost every unit. And they are real terraces (drawings on next pages)—not balconies, which Rudolph calls "useless."

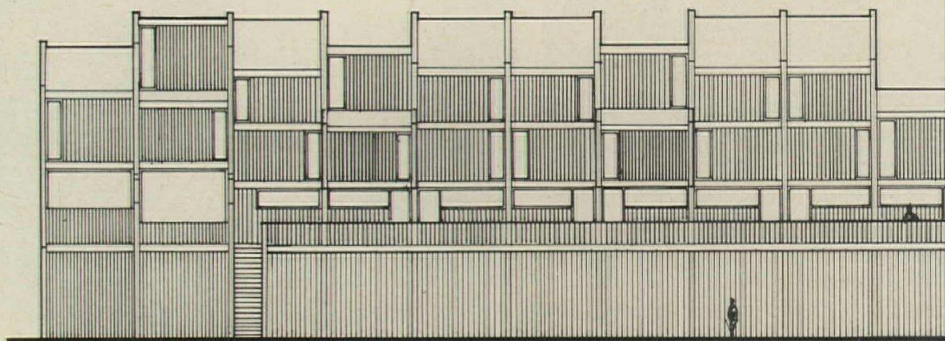
Both low- and high-rise units are of bearing wall construction: floor and roof framing in the low rise is wood; in the high-rise, precast concrete planks 8 inches deep. The block used for the walls is cast with hexagonal cores, then split, to create the strong striated pattern shown in inset photo, lower right. This technique creates, at concrete-block cost, the same striated pattern first used by Rudolph in his Arts and Architecture Building.

There are a total of 166 units in the high-rise building, 46 units in the low-rise. The two projects shown are only two sections of Northwest 1, for which Rudolph did the master plan and for which he is coordinating architect. Other architects involved, also with non-profit sponsors, are Collins and Kronstadt; Madison, Madison, and Madison; Chloethiel Smith; and Keyes, Lethbridge and Condon.

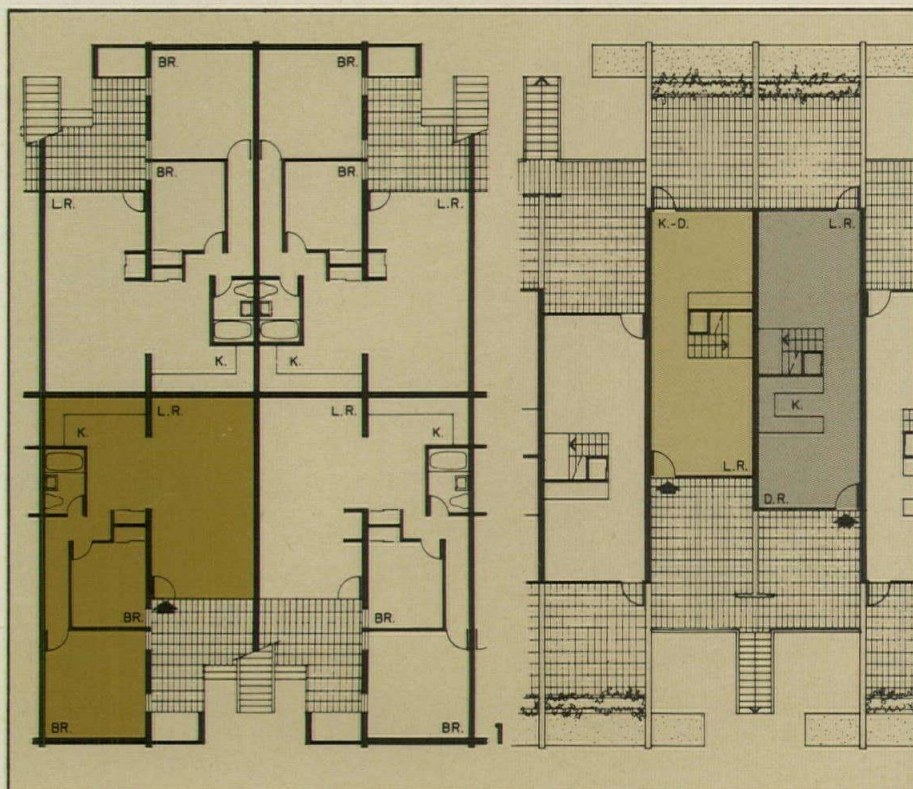
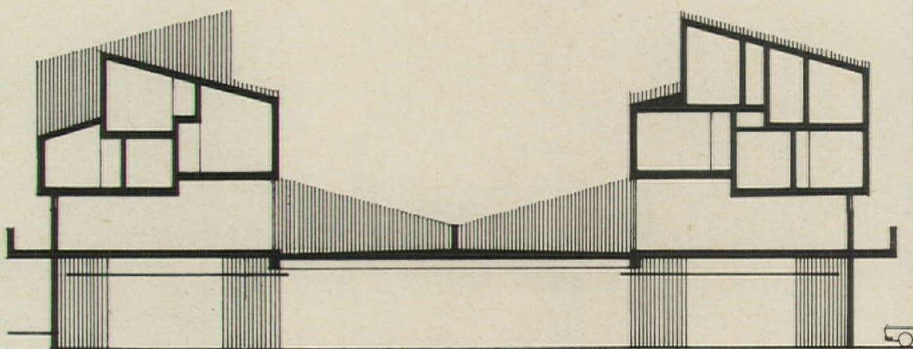
TWO PROJECTS FOR NORTHWEST 1 URBAN RENEWAL AREA, Washington, D.C. Clients: Prince Hall (212 units, low-rise and part of high-rise) and Golden Rule (40 units, part of high-rise), both non-profit organizations. Architect: Paul Rudolph; structural engineer: Howard Keller and Associates; mechanical engineer: Schefferman and Bigelson.



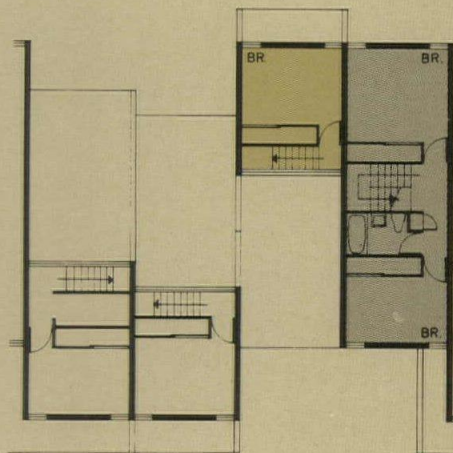
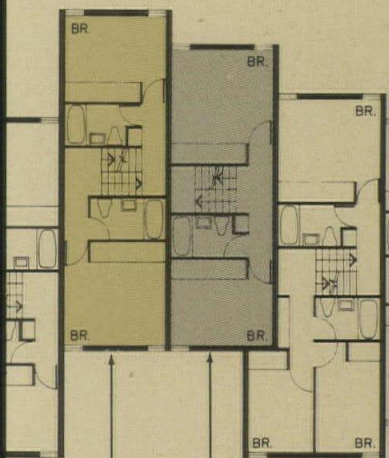
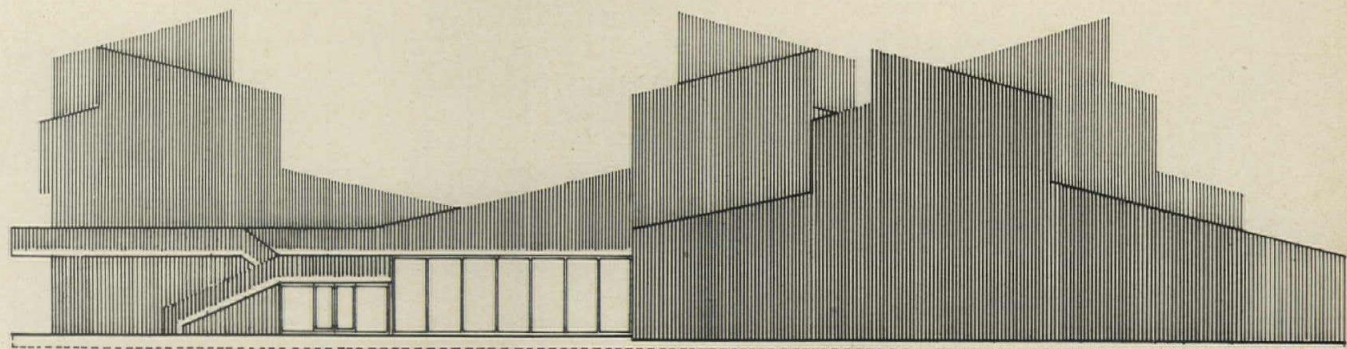
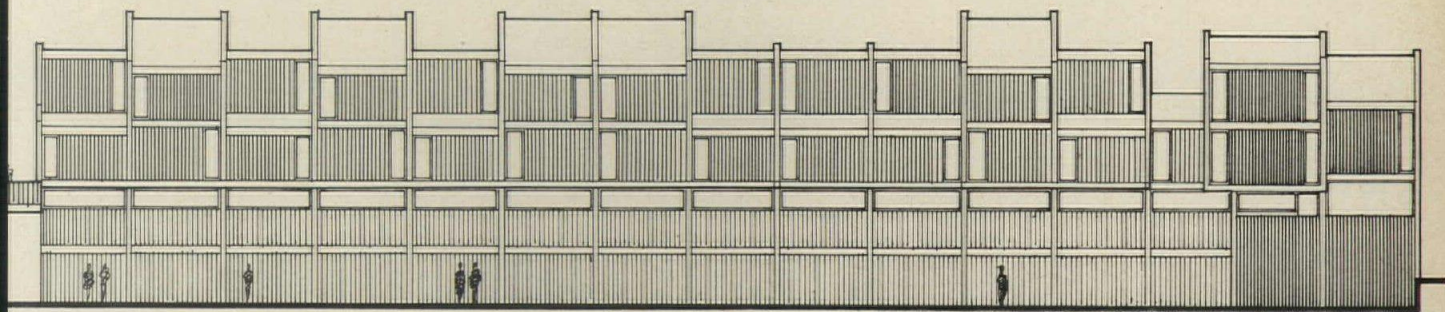
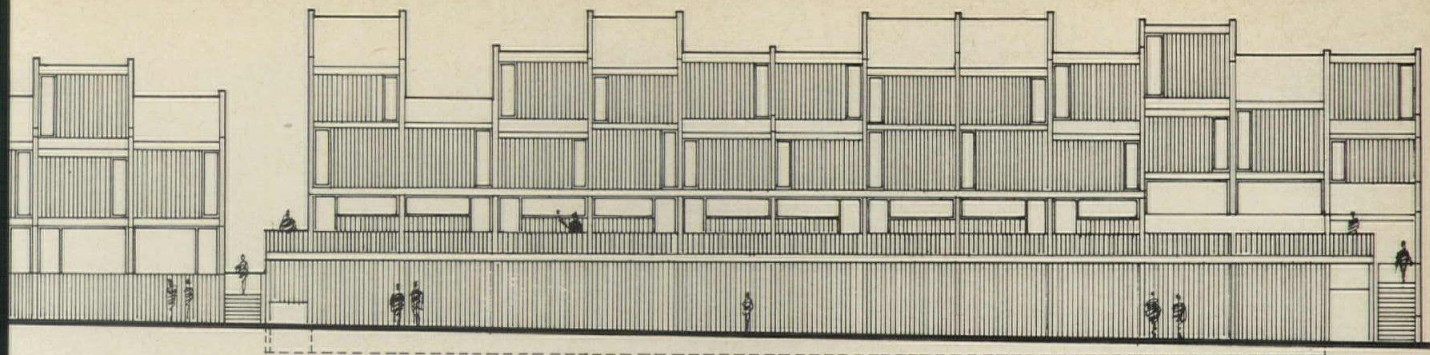
WEST ELEVATION



EAST ELEVATION





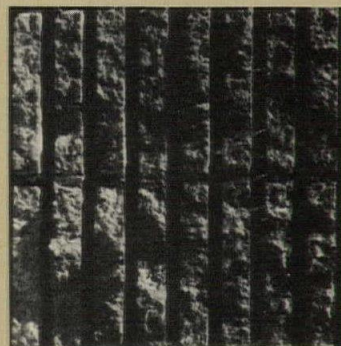


3-BEDROOM  
TRIPLEX

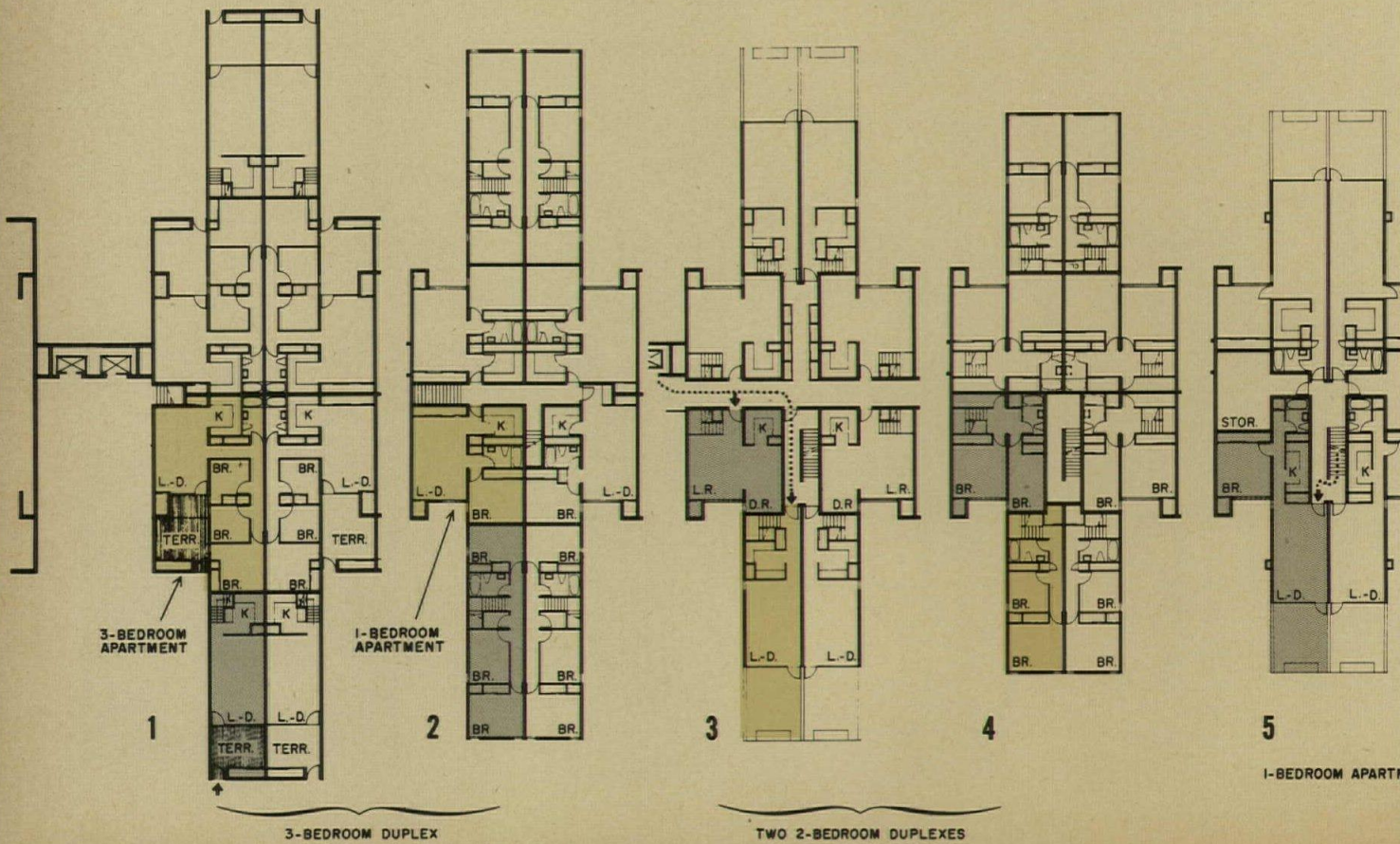
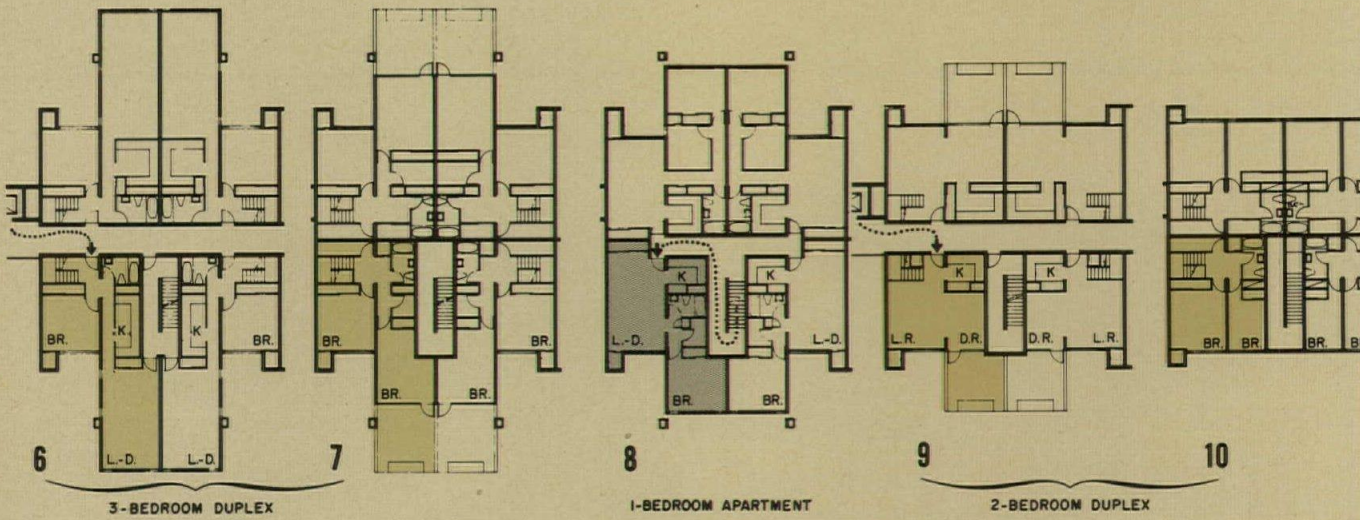
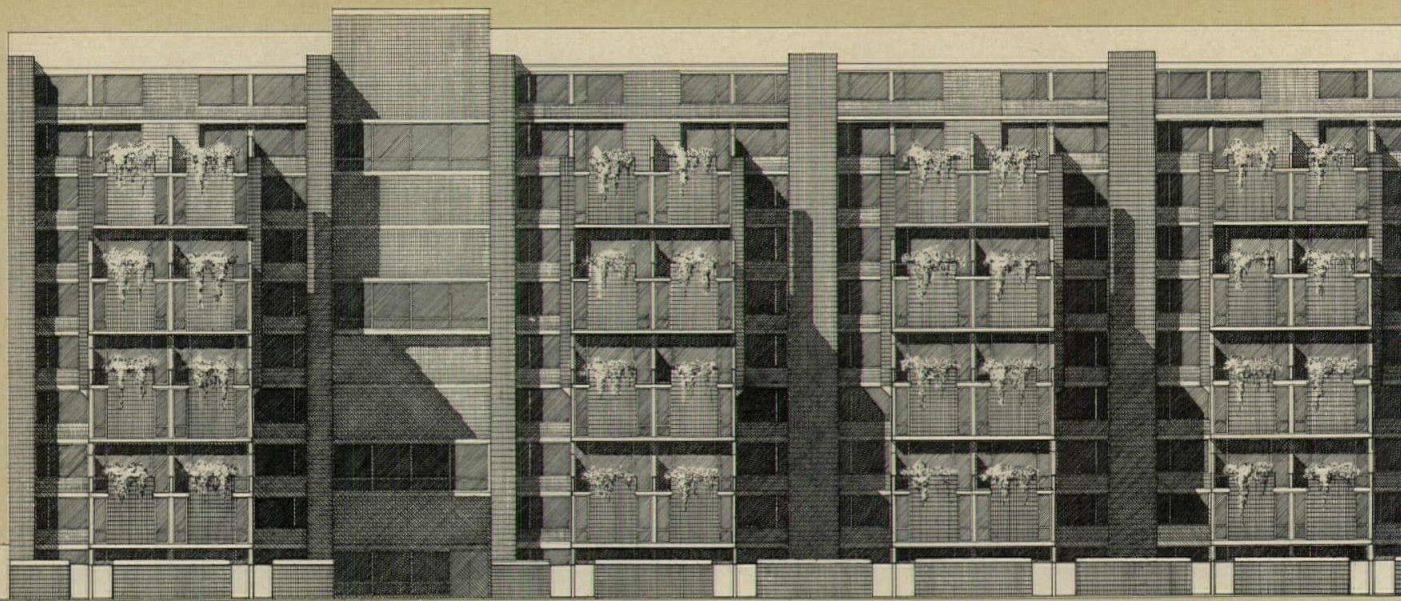
4-BEDROOM  
TRIPLEX

4

Plan of low-rise units puts two-bedroom apartments on lowest floor. The upper three floors are triplex units with three or four bedrooms. Striated finish of concrete block (photo below) is created by cast hexagonal cores and the split face of the block. Blocks are 16 by 8 inches, 6 inches thick. Horizontal mortar joints are scarcely visible; vertical joints are hidden in the grooves every 16 inches. Weathering will stain the grooves and wash the outer split face, adding to the strength and character of the finish.

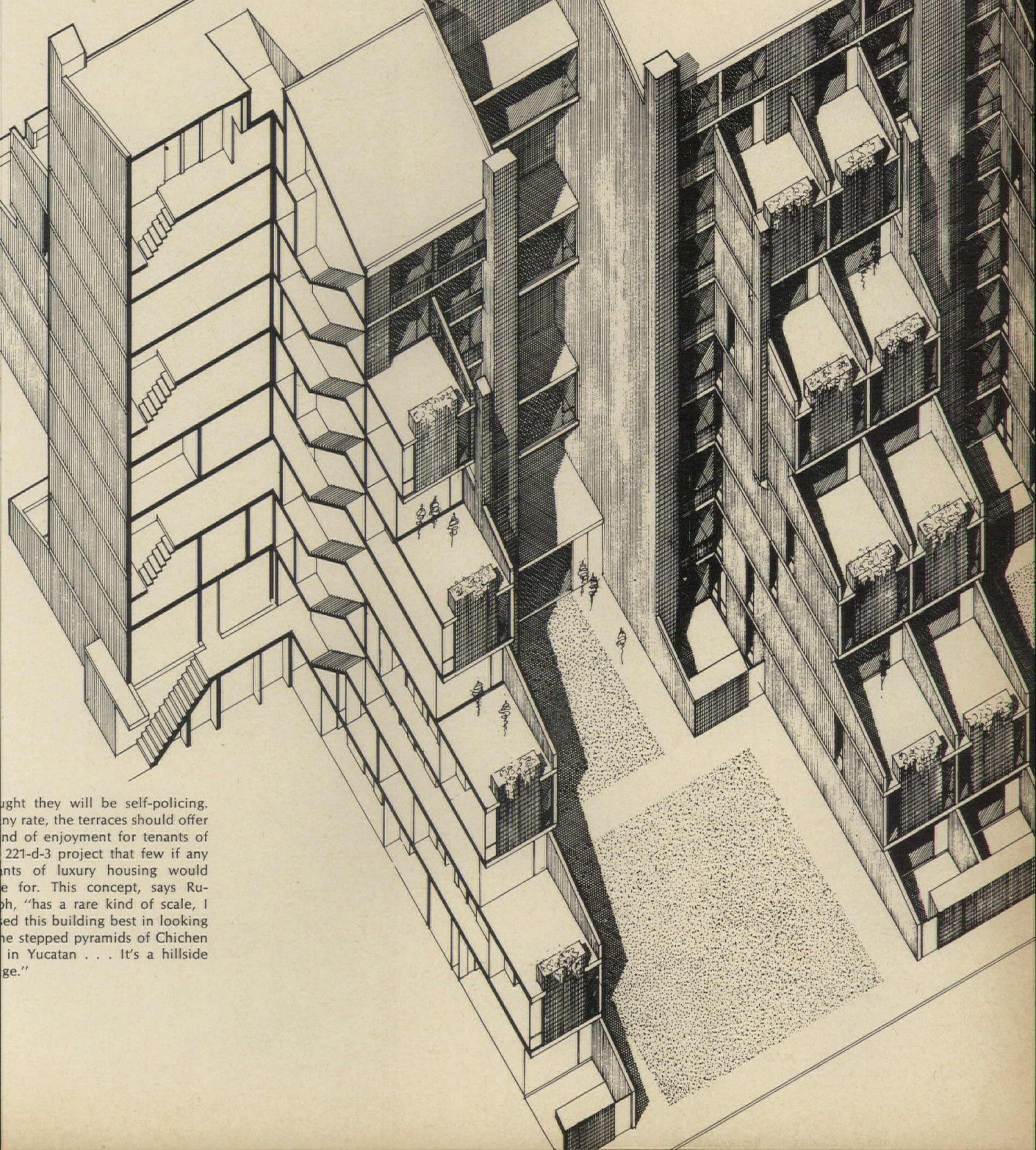








olph's high-rise unit for North-  
t 1 has a complex but beautifully  
ked out plan. Most apartments  
duplexes with large terraces off  
living room; but some one- and  
ee-bedroom apartments are  
ked in close to the spine on the  
er floors, and on the eighth  
r. There was some discussion  
ce resolved in favor of this  
eme) about the quality of the  
t entering from the courtyards—  
ch are deep at the lower floors;  
about the possibility of trouble  
n the terraces caused by things  
pping or being thrown from  
ve. Since the terraces are private  
d any blame quickly placed), it is



ught they will be self-policing.  
ny rate, the terraces should offer  
nd of enjoyment for tenants of  
221-d-3 project that few if any  
ants of luxury housing would  
e for. This concept, says Ru-  
ph, "has a rare kind of scale, I  
ed this building best in looking  
he stepped pyramids of Chichen  
in Yucatan . . . It's a hillside  
ge."



## A NEW KIND OF URBAN SPACE AND SENSE OF COMMUNITY

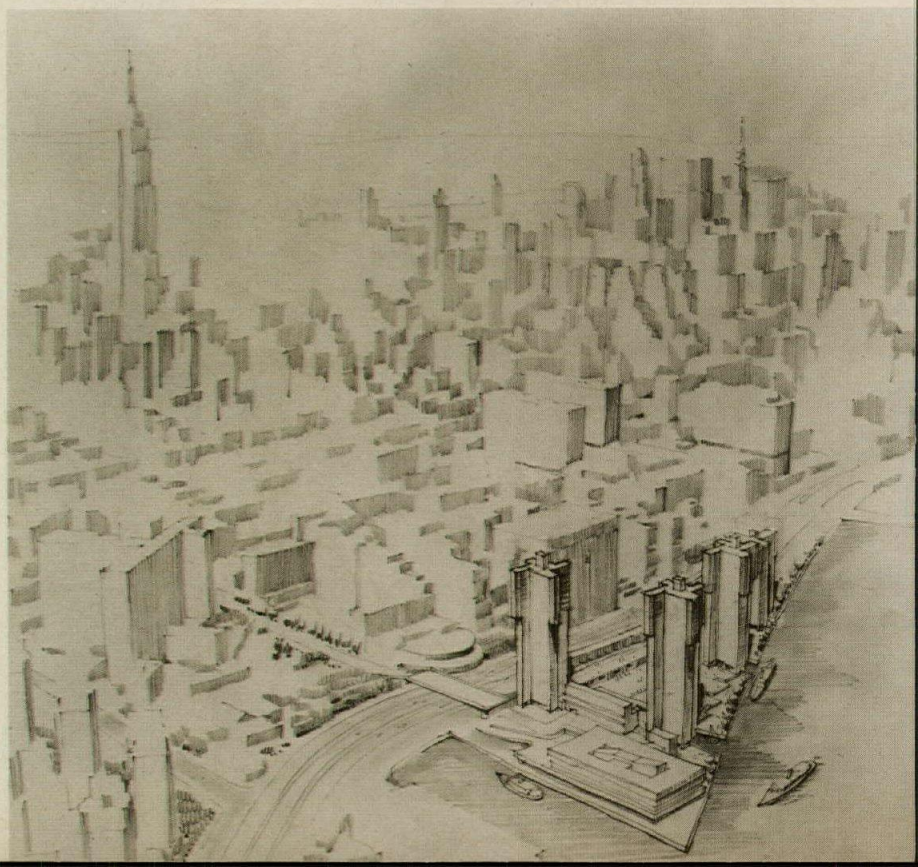
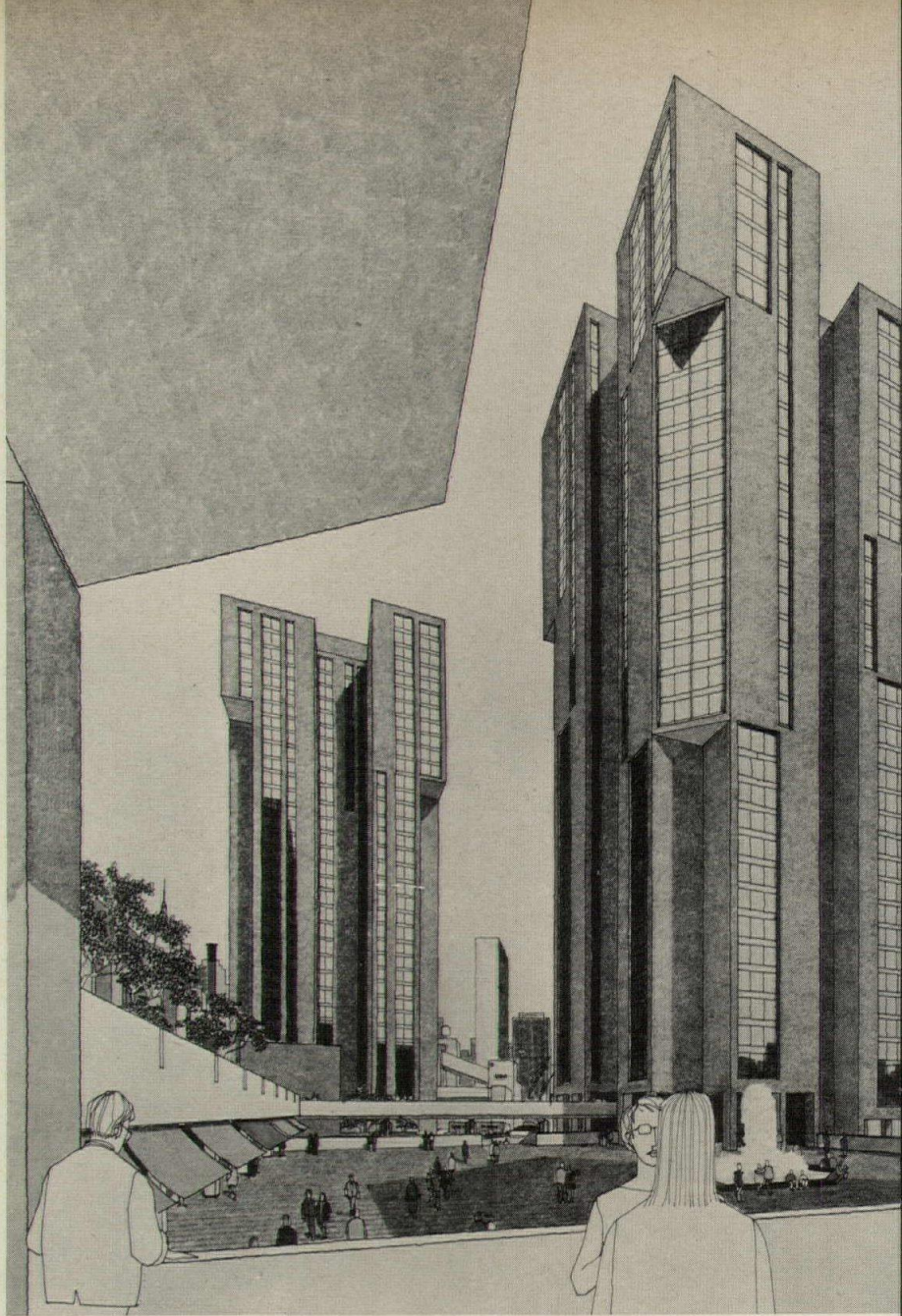
In New York City's first comprehensive redevelopment project to serve families of varied income levels, rents in four towers and four stories of duplex townhouses will range from public housing levels to upper-middle income levels. The design of the plazas, some for use by residents only and some that will invite the public, will create a rare sense of community. Residents will have the private use of a series of promenades overlooking the major plaza and separated from the townhouses by a series of private yards. The public area, some 150,000 square feet, will include a waterfront promenade, a proposed restaurant, a cinema, and boat docks.

The fresh forms of both the low-income (left in the rendering) and the middle-income towers, will dispel the bleak and monolithic look and feeling so common in urban housing. In addition, the forms will create some unusual and diverse floor plans.

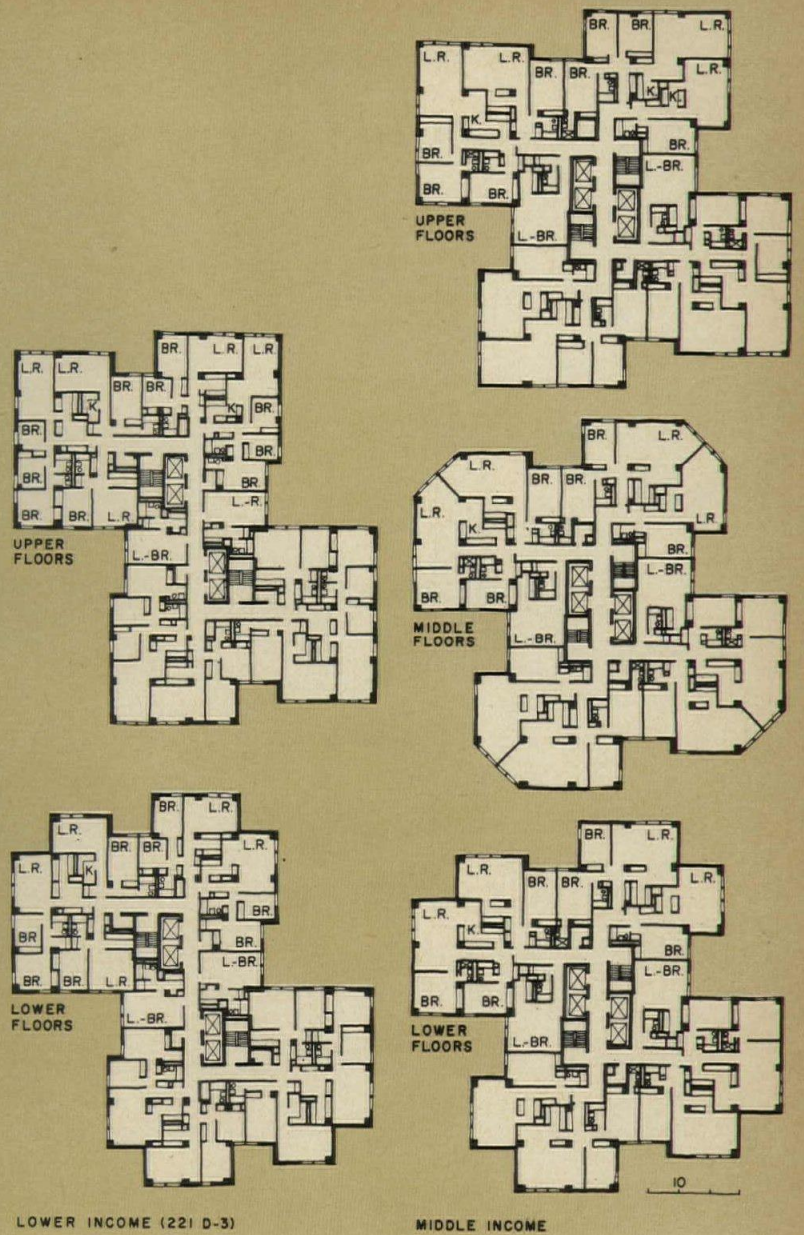
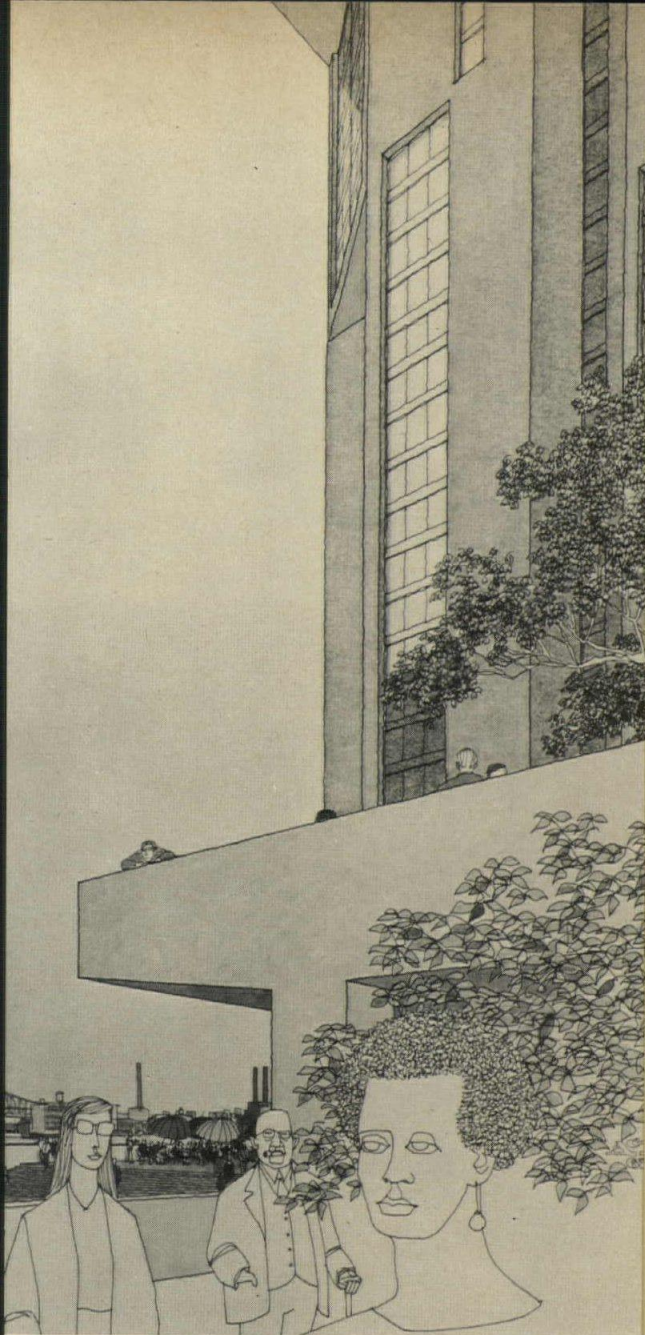
One of the towers, which has 350 units, will be financed under the FHA 221-d-3 with some 20 to 25 per cent of these units further subsidized by the Federal Rent Supplement Program or the NYCHA to reach public housing levels. The remaining units will be financed at market interest rates with an average of 50 per cent tax abatement, except for the commercial facilities which will pay full taxes. Rents in the market-rate section will be skewed from Mitchell-Lama rental levels.

Since the area is presently occupied by decaying city-owned piers, relocation of families is not required.

WATERSIDE, New York City. Client: HRH Construction Corporation. Architect: Davis, Brody and Associates; structural engineer: Robert Rosenwasser; mechanical engineer: Cosentini and Associates; developer: HRH Construction Corporation.





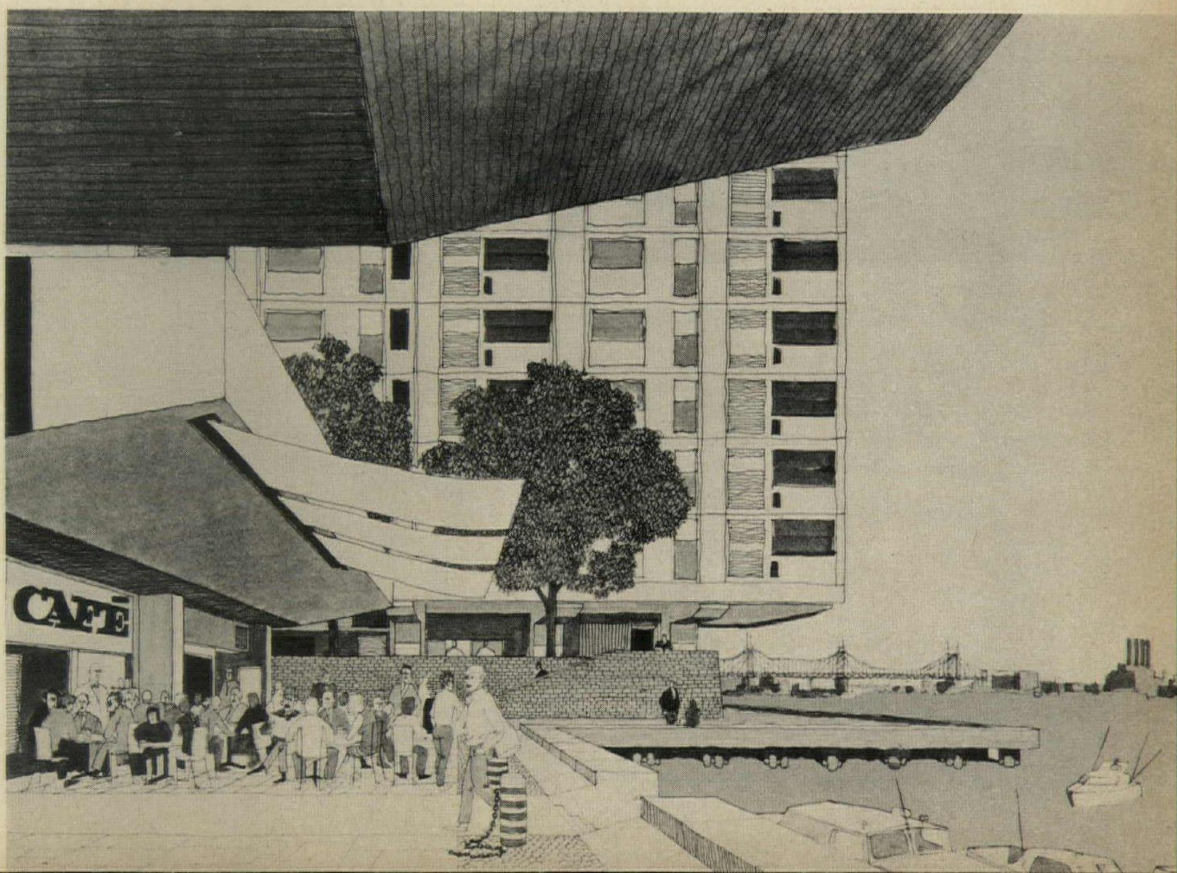


LOWER INCOME (221 D-3)

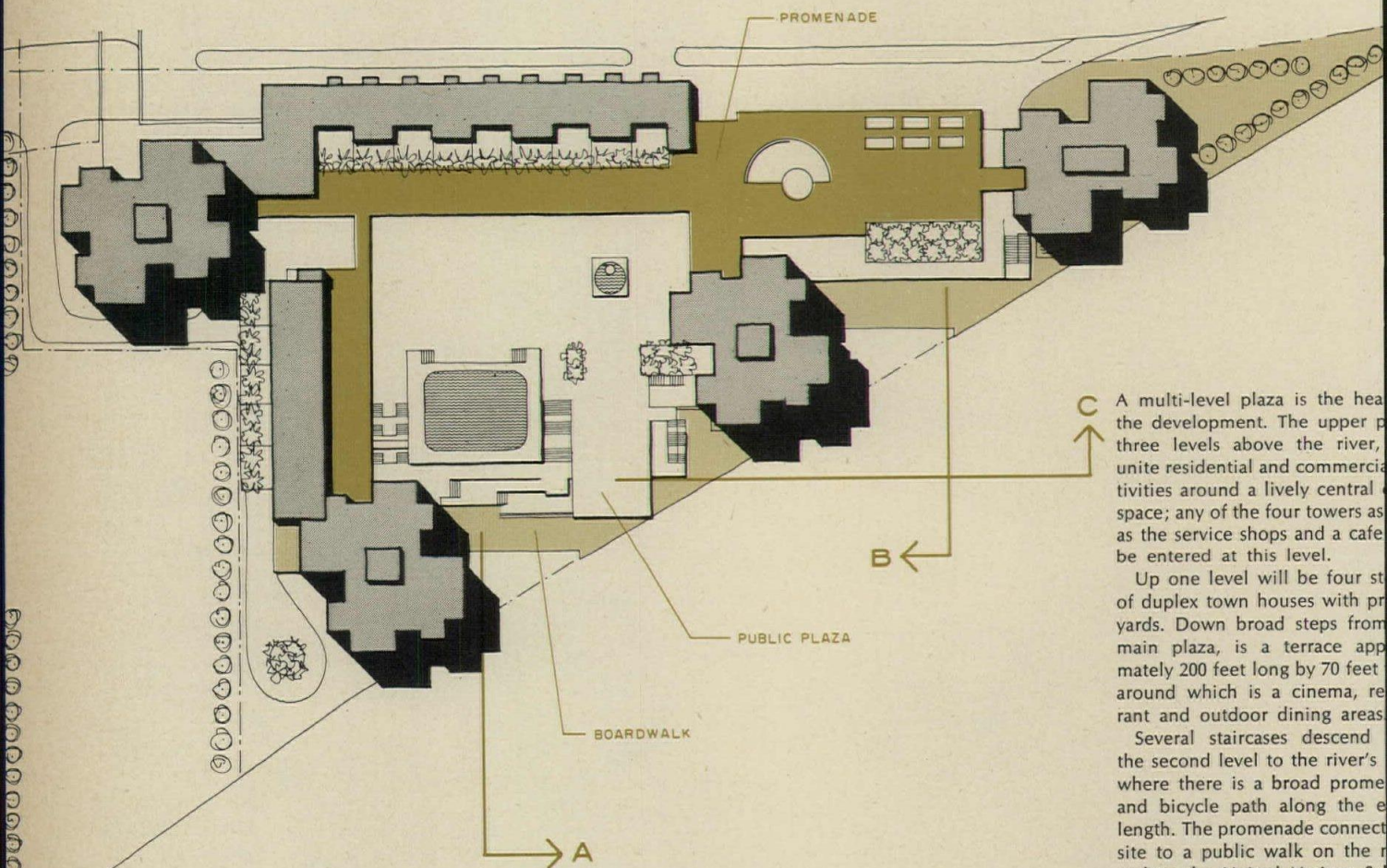
MIDDLE INCOME

varied floor plans, the result of a fresh design of the towers themselves, are an additional positive factor in this new approach to urban housing.

The project is located on Manhattan's east side between 25th and 26th streets. The site is presently unattractive and a blight on the surrounding community of housing and recreational facilities. Waterside Park, providing housing, will include over 150,000 square feet of public outdoor space for recreation and relaxation for the people of New York.



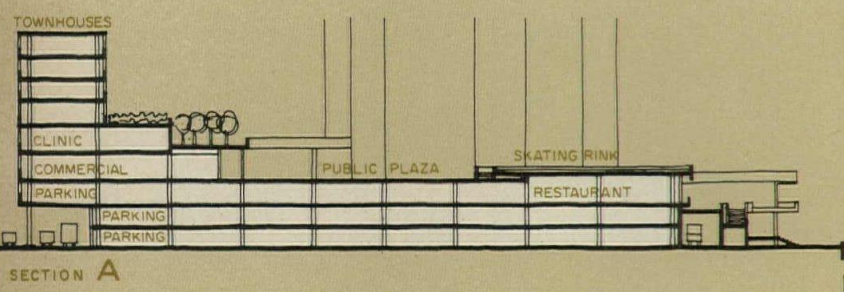




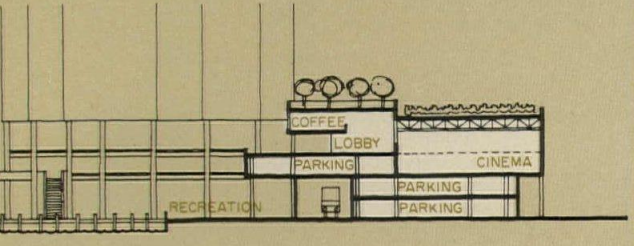
A multi-level plaza is the heart of the development. The upper part, three levels above the river, unite residential and commercial activities around a lively central space; any of the four towers as well as the service shops and a cafe can be entered at this level.

Up one level will be four stories of duplex town houses with private yards. Down broad steps from the main plaza, is a terrace approximately 200 feet long by 70 feet wide around which is a cinema, restaurant and outdoor dining areas.

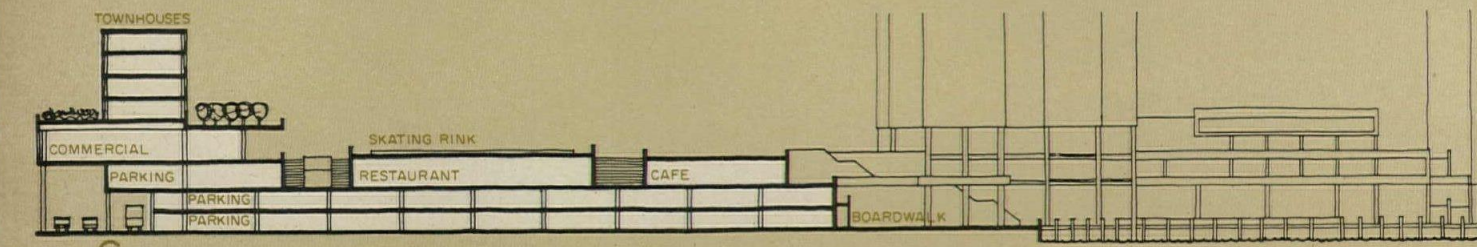
Several staircases descend from the second level to the river's edge where there is a broad promenade and bicycle path along the entire length. The promenade connects the site to a public walk on the north and to the United Nations School now under construction, on the south. Parking for about 780 cars will be provided under the plaza levels and in certain on-grade locations adjacent to commercial facilities.



SECTION A



SECTION B



SECTION C



## Prospects look good for new plumbing standard

After clearing some unforeseen hitches, it now appears that in three month's time there may be a new USASI, "Minimum Requirements for Plumbing A40.8," which was last revised in 1955. (USASI is the United States of America Standards Institute—a reorganized version of the American Standards Association.) On May 9, at the end of a tedious three-day meeting, the A40.8 committee voted, with only one negative vote cast, to submit a new draft of the standard to letter ballot. The vote was taken on a motion proposing the use of a November 1966 draft reworked so as to conform to the same format as the 1955 standard, known as the National Plumbing Code, and to include some new and revised plumbing definitions that were a source of much argument and wrangling the first two days of the meeting.

There have been two main hurdles blocking a new standard. The first was considerable competitive struggle among materials producers as well as other differences in opinion on whether or not plastic pipe should be included for drainage, waste and vent (DWV). The second hurdle has been the worry of various trade groups that they might be deprived of some of their traditional areas of work; or, on the other hand, by some contracting groups and appliance manufacturers that journeymen plumbers might attempt to gain work not generally being done by them such as sprinklers, and pipes, process piping, etc.

The draft that is now being re-edited conform to the 1955 format is the same as the November 1966 draft except for the addition of a series of new definitions. It was temporarily dropped from consideration, apparently because cer-

tain procedural matters had been contested by several producer, contractor and union groups. Quite a furor ensued, with the battle being waged in the pages of industry journals and newsletters, as well as in the Congressional Record.

■ *The hassle over the 1966 draft* resulted, as was mentioned earlier, mainly over the inclusion of plastic pipe for drainage, waste and vent piping. The conflict was bound to arise in any case, but it was made worse by the chain of events that led to its inclusion in the November 1966 draft. Plastic pipe was not included in a draft of March 1966. At a committee meeting called in April, ostensibly to consider the appendices, a motion was narrowly passed to include plastic pipe for use in water distribution and drainage systems for one- and two-family dwellings. This action was later challenged by some committee members because there were only 15 members voting out of a total of 48 committee members. Some had not attended; others left the meeting before the vote was taken because the motion was originated late in the day. A new draft of the section on materials dated August 1966 was voted upon, resulting in 16 members for and 10 members against the inclusion of plastic pipe. The then-secretary of the USASI A40 sectional committee, Malcolm Hope of the U. S. Public Health Service, took this vote to mean that the

proposed revision of the National Plumbing was ready for submission to the Construction Standards Board of USASI for review and promulgation as the recommended National Plumbing Code. But strenuous objections were raised against this proposal by committee members casting negative ballots, particularly the Cast Iron Soil Pipe Institute. Because of the furor raised, USASI did not proceed to process the November 1966 draft.

In December, one of the standard's sponsors, the National Association of Plumbing-Heating-Cooling Contractors, submitted a new draft which, upon letter ballot, did not receive a consensus, said to be five-sixths of those voting.

During the following year USASI began to evaluate the situation, and early this year announced that it was terminating the sponsorships of the co-sponsors, the American Public Health Association and the National Association of Plumbing-Heating-Cooling Contractors, who were said to favor different drafts for the revised code. USASI had decided to appoint its own Construction Standards Board as sponsor pro tem in the hopes of finding some new approach to resolving committee member differences. But then when the May meeting of this year was announced, APHA and NAPHCC reappeared as co-sponsors. In the meantime the A40 committee acquired a new chairman, Raymond Brandes, who is vice-chairman of the Construction Standards Board, and a new secretary, Lawrence Carvey, staff engineer with USASI.

■ *The May meeting appeared to be getting nowhere* the first two days because agreement could not be reached on, for example, the definitions of "plumbing", "plumbing appliance," and "plumbing system." Only a small part of the disagreement had to do with any technical matters—most of it involved

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jurisdictional matters, municipal purview and responsibilities of plumbing inspectors. This snarl was unraveled when the chairman finally appointed a small committee of volunteers to revise the definitions at an evening session, headed by Louis S. Neilsen, plumbing engineer with New York State's Bureau of Building Codes, Division of Housing & Community Renewal, and technical editor of Plumbing-Heating-Cooling Business. On the final day of the meeting definitions were accepted without difficulty. This meant that one of the two major hurdles toward agreement on a draft had been overcome.

▪ *The plastic pipe matter, of course, came up again.* Presentations were made by the Cast Iron Soil Pipe Institute and by representatives of the plastic pipe industry. Apparently, however, most of the committee members were ready to accept plastic pipe for drainage, waste and vent piping for one- and two-family dwellings. The cast-iron interests maintained that the existing standards on plastic pipe did not provide sufficient protection to either the building owner or the installer (in the event of litigation). The plastic-pipe proponents offered evidence that there had been no complaints from owners of homes having plastic drain, waste and vent piping.

But after the new definitions had been accepted so readily by the committee members, following their presentation by the volunteer committee, there appeared to be little inclination to haggle any further over the substance of proposed drafts. The National Association of Plumbing-Heating-Cooling Contractors withdrew a draft submitted by them dated March, 1968 that was, for the most part, the same as the November 1966 draft, known as the "Hope" or "PHS" draft, except that it followed the format of the original 1955 standard. It was then, the afternoon of the last day of the meeting, that the members attending voted overwhelmingly to submit the November 1966 draft to letter ballot, but modified to include the new definitions and reworked according to the original 1955 format.

▪ *What finally brought things to a head?* In the first place the co-sponsors were anxious to have a new standard—their differences had been primarily on format. They were basically in favor of the content of the November 1966 draft which contained a number of substantive changes that amounted to major advances, according to those familiar with plumbing engineering. Such changes included: changes in permissible stack loadings; permissible lengths of vents; new figures for storm water drainage; new curves for water supply demand

versus fixture units. Thus after the definitions had been resolved to the satisfaction of various trade groups, the argument regarding format evaporated.

The USASI A40.8 standard is considered by those close to code work to serve mainly as a technical reference. It is rarely adopted in toto by a municipality. Portions of it, of course, may indeed be used in a given state code or municipal code. Hardly ever, it is pointed out, do code authorities relinquish their control over what materials are approved and disapproved in a given locality. Thus approval of materials in a USASI standard is seen more as a marketing tool for various manufacturing groups and unions, than as assurance that these materials will be necessarily approved in local codes, even though these codes may reference many sections of USASI A40.8.

### Graduate course on building materials outlined

If advances are to be made in the economics and performance of building materials, then it is necessary for some civil engineering students to specialize in the science of building materials. This is the view of Torben C. Hansen, professor of building materials at the Technical University of Denmark in Copenhagen. Professor Hansen, who was at one time a development engineer at the Portland Cement Association, and later lectured on building materials at the University of California and at Stanford University, has proposed a tentative program for engineers in building materials that could lead to a Ph.D. degree. The program, which is heavily weighted with courses in chemistry and materials science, includes such subjects as solid-state thermodynamics; structure and properties of silicate materials, organic materials and composites; electron microscopy; experimental stress analysis and computer analysis; statistic experimental design and quality control.

Professor Hansen, in discussing his proposal in the July 1967 issue of the ASTM magazine, *Materials Research & Standards*, points out that, "in the development of new building materials or improvement of traditional materials, we are, for economic reasons, limited to use of low-cost materials that are abundant such as clay, sand, gravel, rock, solid waste materials, lime, water, iron ore, artificial hydrocarbons, wood, and other naturally occurring organic materials. In order to develop new, and improve traditional materials," he continues, "we must educate materials engineers in the technology of silicate and organic materials, rather than metallurgy. Such engineers

will be concerned with the use of metals and alloys and should have a good knowledge of the mechanical properties and durability of metals, but will generally not be responsible for development and production of alloys. The major emphasis in the education of building materials engineers should be on mechanical properties and durability."

### Minimum property standard for rehabilitation

New design and construction standards have just been issued by the Department of Housing and Urban Development that are written in terms of performance as a means of promoting rehabilitation. When local rehabilitation standards reach the level broadly outlined in HUD's new guide (HUD PG-50), FHA will give blanket mortgage insurance to acceptable borrowers.

HUD says the new guide has three objectives: 1) to promote residential habitation by assisting local FHA offices to establish realistic and easily understood standards for either single or multiple family dwellings; 2) to provide a basis upon which local renewal agencies can establish physical standards for improvement of properties in Federally assisted urban renewal areas or code enforcement projects; 3) to assist localities and model code organizations in interpreting and clarifying present code provisions and to make housing and building codes more effective tools for stimulating and guiding rehabilitation.

HUD points out that building codes deal mainly with physical standards that will be met by new construction. Housing codes, on the other hand, deal with health, safety and welfare in existing buildings. HUD says that experience has shown that literal interpretation and application of new construction standards is, "not only unrealistic, but also is likely to be self-defeating by driving the cost of rehabilitation beyond the means of the residents."

### Federal funds set for fire research

Five million dollars in research funds have been authorized through fiscal 1969 for fire research and for the establishment of a Presidentially-appointed National Commission of Fire Prevention and Control. The bill calls for a fire research and safety program to be administered by the National Bureau of Standards. In addition, research grants may be awarded to state and local governments, and non-profit institutions.

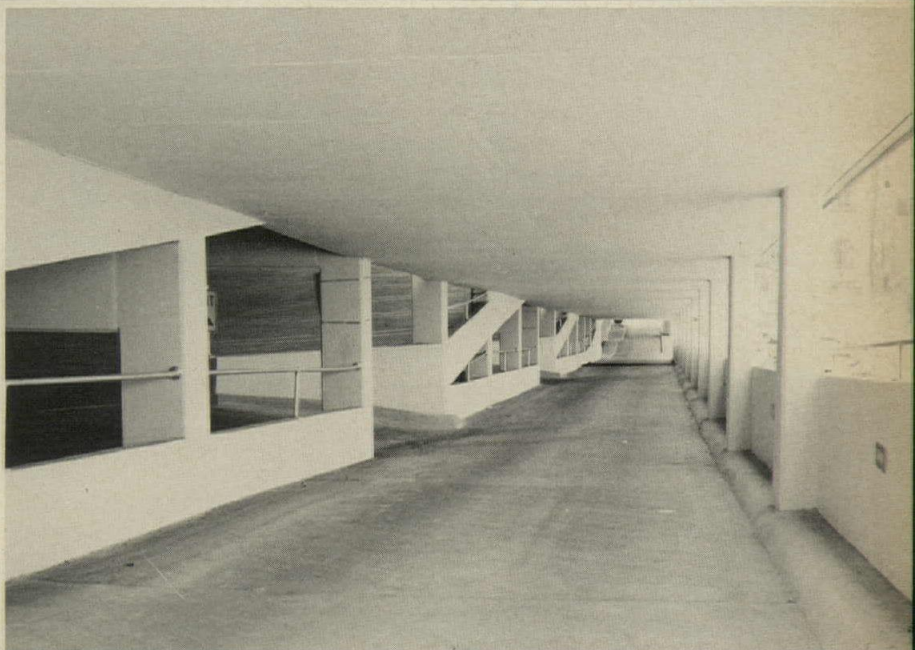




Clear-span construction provides wide drive aisles and easy-angle parking. The beams are color-coded (strip in center) for patron's ease of reference. The exit ramp is of the straight-down type; ramp entrances are shown at two levels.

## Engineering pointers for parking decks

William J. Rouke, President  
 Rouco Associates, Inc., Architects/Engineers



for a number of reasons, but primarily for safety. The most common parking deck being built today is the self-service type in which the owner of the car, by parking and unparking his own vehicle, eliminates the parking attendant. The self-service garage, itself, falls into two basic types: 1) transient, or fast turnover; 2) contract, monthly or all-day parking.

In the design of a transient, fast-turnover parking garage the object is to provide the most convenient flow of traffic, with stalls properly angled to make them easy to enter and leave. This is ordinarily accomplished by a completely one-way traffic system, with no crossing or conflicting traffic.

A typical parking deck width is 54 ft, with an 18 ft drive path down the center and a lane of angle-parked cars on either side. The stalls are usually striped at 60 degrees and are usually 8 ft 6 in. wide.

There is a flexibility in the angle of parking, with 60 degrees being nearest to the ideal. If it is necessary to work with a narrower module, the parking angle can be reduced to 55 degrees, or even 50 degrees, but this reduces the parking capacity of the facility by as much as 10 per cent. Below 50 degrees is extremely inefficient striping, and above 70 degrees becomes too difficult for most drivers to negotiate in one sweep.

Because a parking deck is primarily a structure, the structural engineer should be involved in the early decision making processes. Reason: 80 per cent of the cost of construction of a well-designed parking deck is the frame and foundation.

Most building codes classify an open parking structure as a distinct building and require that at least 50 per cent of two sides be open. In order to take advantage of the benefits in the code (pri-

marily less fire protection) the designer must stay within this requirement.

Although there is a premium in cost for clear span structures, this is compensated for by increased flexibility—for example in ease with which the stalls can be restriped should the width or length of cars so dictate.

### Code requirements: ways to cut costs

As noted before, most codes today recognize open parking structures as distinct buildings, and as long as 50 per cent of two sides remain open, sprinklers and mechanical ventilation can be eliminated and distance to exit can sometimes be increased.

The most variable item in all of the codes across the country is the live-load requirement for parking cars. It ranges from 40 lb per sq ft up to 100 lb per sq ft, being higher in the older codes.



The average load under a car is 30 lb per sq ft. On a normal floor, with cars parked in stalls, the average load drops to about 15 lb per sq ft. Combining knowledge of this actuality and the fact that the height limitation prohibits heavier vehicles, the structural engineer can successfully appeal the live load limit and reduce it to a more reasonable 50 lb per sq ft.

There are times, however, when the time and effort consumed in appealing a requirement are not worthwhile, and, if one fails in reducing the live load requirements he may still gain a substantial difference by being allowed to make a reduction in the supporting beams. For example, a 75 lb per sq ft live load requirement which allows a reduction in relation to the supported area produces a very logical loading on a beam supporting 500 sq ft or more.

The requirements of the codes are not keeping pace with the insurance statistics of parking structures, although some more progressive state inspection bureaus have, in recent years, reduced the occupancy charges of parking garages, which would tend to lower insurance rates. Today there is virtually no incidence of fire in parking structures, and the very few reported could have been handled best with a fire extinguisher. A fire extinguisher should be kept in a cabinet to thwart theft.

The conscientious fire marshal regards accessibility to the fire as the chief requirement of a building and will therefore be more cooperative in his interpretations if he knows that he can reach a fire without delay in a parking structure that is open on two sides.

It goes without saying that below-grade parking structures require mechanical ventilation as well as sprinklers. Sprinklers should be of the spray type which starves a fire of oxygen.

Except in larger parking structures, only two fire stairs are normally required. Unless the stair can be tucked into a dead corner of the building, it can represent a substantial loss of income (as high as \$600 per year per space) because it will require at least one parking space per floor.

In a sloped floor design with an express exit ramp, the floor itself is an exit. The exit ramp provides an escape to the outside. In fact, it is possible, in some cases, to include the exit ramp as one of the two required exits. In the sloped floor structure, the driver can proceed in almost any direction away from a fire and be able to exit from any floor. It is apparent, therefore, that a too-literal interpretation of the code often can result in more exiting requirements than are realistically needed.

### Some important design criteria

For the sake of brevity, this discussion will be confined to the physical characteristics of the various elements of one type of parking garage construction (among the three most common) and that is cast-in-place conventionally reinforced concrete.

**Floor slopes:** good parking deck floor design calls for a maximum of 3½ per cent slope upward combined with a gentle slope of the floor downward away from the drivepath into the stall sufficient to offset the upward floor pitch so that the car is actually heading down into the stall.

This serves two purposes:

- 1) It eliminates the possibility of the car rolling back into the aisle in case it has not been braked properly; and
- 2) It makes parking easier because it is easier to coast downward into a stall than it is to drive up into it; hence the driver is more likely to put the car all the way into the stall and not leave the back of his car in the drivepath.

Slopes of both upward and downward ramps should not exceed 10 per cent, and, in the case of a circular ramp, this should be measured at the outer extremity of the drivepath. Outside diameter is a minimum of 70 ft and, for easier driving, these ramps are, of course, banked.

Standard headroom for a parking deck is 7 ft. This is sufficient for the purpose and also acts as a barrier against heavier vehicles which, of course, would mean heavier load requirements. This headroom can be reduced somewhat at the foot of a car stall, but wherever a pedestrian can walk, and in the drivepath, 7 ft should be the minimum.

In order to reduce exit driving to a minimum, an access to the exit ramp should be provided at each floor level. The treatment of the juncture of the floor and the exit ramp, which is, in effect, changing from an upslope to a downslope, is critical. The blending of these slopes to provide a smooth transition may have to be done several times before the whole geometry is comprehended. It helps to build clay models in order to visualize the transition from one direction to another.

Whether straight or circular, the downramp should be wide enough to be comfortable for the driver. Because of the path which the car scribes in turning, the circular ramp, of course, should be wider than the straight run ramp. Fifteen feet is standard for a one-lane downward circular ramp; two or three feet less than this will be adequate for a straight run ramp.

**Columns:** For both short and long spans, it is important to keep column

sizes to a minimum, because any loss floor area due to the columns must be compensated by greater module width.

**Long span beams:** On long span beams the engineer will do well to call for a 2-in. to 2½-in. camber. Although only a portion of this is lost through dead load deflection, the optical illusion of a sagging beam is eliminated.

Among the many practices recommended by concrete specialists is restricting the length of pours. Experience will demonstrate that this significantly reduces cracking due to shrinkage during curing.

Cracks which result in leaks are surely the biggest nuisance in cast-in-place concrete. And parking structures, because their constant exposure to the elements are more vulnerable to the weather than enclosed buildings.

If the building contains commercial space with finished ceilings, a more positive, waterproofed surface is required. This can be achieved through modern surface treatments which incorporate a membrane and wearing surface and require no depression.

The finishing of parking deck floors is somewhat different from the finishing of concrete floors in most buildings. In general, they are much rougher surfaces. The parking areas are wood floated, machine floated and left without further treatment. Drivepaths have a medium broom finish, probably a little heavier than a sidewalk, with the direction of the brooming parallel to the direction of travel. The purpose of this is to reduce wear on the brushes which are used to clean the floors.

High slope ramps require a heavy broom finish sloping downward and in the inside face of the ramp for good drainage. Steel trowel finishing would defeat the purpose, which, of course, is to provide traction on a rough surface.

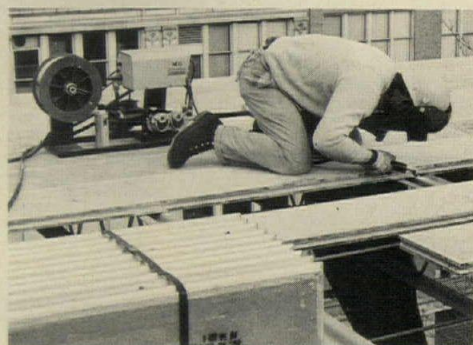
Good drainage is the best method of controlling leakage. A positive pitch of the floor of no less than 1 per cent, ¼ in. per ft, is recommended; any less will result in standing water. The drain riser should be tucked up tight in the corners at columns and protected with metal guards and never located in the parking areas.

Bumper stops are preferred over wheel stops for two reasons: the differences in the overhang of cars and the greater ease of cleaning the floor. The usual bumper stop is an upturned concrete parapet 2 ft high, or it may be a highway guard rail. A 3½-ft parapet pipe rail or cable rail above the bumper is used to restrict pedestrians.

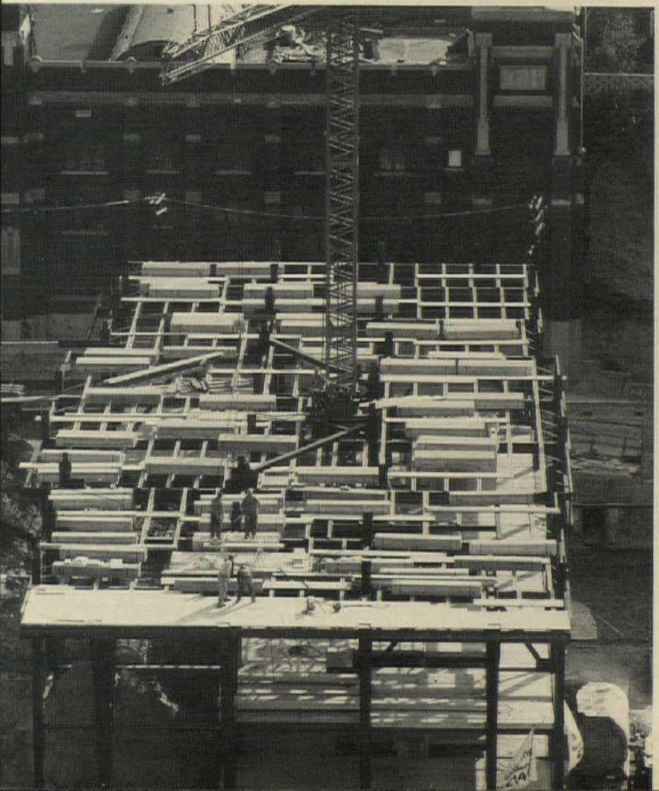
The rule to follow in the matter of curbs in parking deck design is: if the question about need, leave it open.



## ry floor system for steel high-rise apartments



or structure is steel-edged gypsum planks attached to bar joists. Plank edges are welded to the joists and to each other to form a diaphragm. Planks form a working platform for the workmen.



Major savings in cost, weight and time resulted from the use of a gypsum-plank floor system with a steel frame for the new Cricklewood Hill apartment building in Pittsburgh. The building was originally designed in flat plate concrete, but poor foundation conditions increased the overall cost of the project to the extent that the developer was unwilling to bear the cost. The architect, Joel Hillman, and his structural engineer, William Schmidt, then turned to the gypsum plank system which grew out of a study by Tishman Research Corporation and the School of Architecture, Pratt Institute. Purpose of the research project was to develop a low-cost, floor-ceiling construction for low income, high-rise housing under HHFA and Ford Foundation grants.

Though metal-edge gypsum plank has been used for roof decks for at least 40 years, it has been used as floor decking for only a few buildings. Two developments have greatly enhanced its prospects for floor decking however: 1) the gypsum core is impregnated with asphalt to make it water resistant; 2) welding equipment has been developed that permits economical welding of the light-gauge metal edges of the plank to each other and to the bar joists. U.S. Steel collaborated with the U.S. Gypsum Company in refining the plank system.

The system is "dry" and can be installed regardless of the weather. The tongue-and-groove planks are laid dry, without grouting, on bar joists, spaced up to 4 ft o-c, depending on the live load. The plank edges are welded to the joists and adjacent edges are welded together so that the floor will act as a diaphragm to transfer wind loads to the braced frames in the interior of the structure. The ceiling consists of  $\frac{5}{8}$ -in. gypsum board attached to furring channels which have been wired to the joists. Then, before or after the dry-wall partitions have been erected, the planks are coated with a  $\frac{1}{2}$ -in. layer of mastic that provides a smooth surface for the floor covering. This particular floor system (plank and mastic) weighs only 17 psf. This construction by itself would not meet current FHA impact noise requirements; addition of carpet would make it acceptable. The impact noise rating of the basic floor construction can be improved considerably by adding 1-in. thick sheets of sound-deadening board and increasing the mastic thickness.

While acknowledging the many benefits accruing to the system's light weight, the architect for Cricklewood Apartments, Joel Hillman has said that the system is not a "panacea." Like any system, it requires consideration of planning, site and code matters.

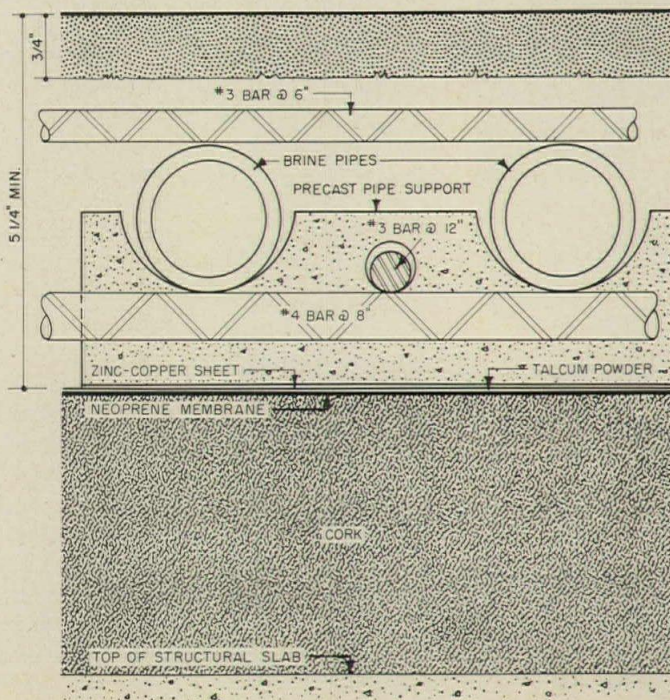


# Slab design for the Madison Square Garden rink



A. M. Byers Company  
Kalman Floor Company

The ice rink is one huge, jointless, concrete slab filled with closely-spaced wrought-iron pipes for freezing the ice. A special slip plane was provided to allow the slab to move freely.



The new Madison Square Garden in New York City is probably best known for its columnless space—provided by a cantilever type roof. But what is more important to the athletes, performers and maintenance personnel is a sound floor slab, particularly the 202- by 93-ft area used for the ice rink. This was not an easy task because this huge area had to be jointless yet still not crack. Further, design criteria called for a “self-polishing” floor surface, requiring the top of the slab to be very dense.

Because of the “jointless” criterion, the slab had to be free to move as temperature was changed by means of a grid of pipes to freeze or thaw the ice. A thick layer of ice used for hockey matches and ice extravaganzas. If the slab were to crack, it could be quite damaged by water seeping to the underside of the rink slab and undoubtedly cause heaving as well as further cracking.

Freedom of movement for expansion and contraction was made possible by setting the ice-rink slab on top of a sheet of zinc-copper. The basic design for the floor, which is covered by the Carpenter patent, has as its purpose the provision of an underlayment or slip sheet. The components of the system applied over the main structural slab, as follows: 1) 4-in.-thick high-density cork set in hot tar, 2) 1/4-in.-thick neoprene sheet that serves as a waterproofing membrane, 3) 1/4-in. layer of sandstone, 4) zinc-copper sheet, 5) precast concrete pipe supports, 6) grid of 1/2-in.-diameter wrought iron pipes 4 in. on center. Total thickness of the rink slab is 5 1/4 in. Because of the difficulty in placing the 5,000 psi-strength concrete, it had to be vibrated continuously as it was placed. The upper 3/4 in. of the slab consists of a topping applied by the Absorption Process. Enough water was added to achieve good workability during mixing and placing; when workability is no longer needed, the water is absorbed by means of absorption blankets and a drier material. It took 22 1/2 hours to place the whole concrete floor. The two steps took 11 hours each.

Three 18-ton chillers are used to freeze the ice. When the ice is to be removed, hot brine is pumped through the pipes to break the bond between the ice and the slab. The broken ice is then shoveled to chutes by motorized equipment.

Architects for Madison Square Garden Center were Charles Luckman Associates. Syska & Hennessy, Inc. were mechanical and electrical engineers. Mechanical contractor was Kerby Saunders Inc.; and general contractor was Turner Construction Company—Del E. Webb Corporation.



## Acrylic-type semi-gloss enamels feature high performance

Gerould Allyn, Resins Department, Rohm and Haas Company

After their introduction shortly after World War II, water-based flat paints have virtually captured the interior flat coatings market. Latex exterior house paints—introduced fewer than 10 years ago—are also showing rapid and widespread acceptance. Among the major reasons for this popularity are the many application conveniences water-based paints offer: fast recoat time, absence of solvent odor, and quick cleanup.

Until recently, however, these paint advantages were restricted to flat coatings—high performance latex enamel was not available. Consequently, it was necessary for architects to specify solvent-thinned paints for interior areas. These required the added hardness, durability and washability provided by a semi-gloss enamel.

This is no longer the case. Now acrylic semi-gloss coatings are available which offer performance that is equal or, in some cases, superior to existing solvent-thinned enamels.

The first satisfactory acrylic latex interior semi-gloss enamels were introduced in 1965. Today nearly 200 paint manufacturers offer acrylic latex semi-gloss enamels, despite the fact that all of them also produce excellent solvent-thinned semi-gloss paints.

This means that architects can now recommend the use of total water-based interior wall paint systems. The total latex system consists of primer-sealers, flat finishes for most interior walls, and semi-gloss latex enamels for high humidity areas such as kitchens, lavatories, bathrooms and locker rooms and for dirt-prone, high traffic areas.

### Key shortcomings of latex enamels

Although some latex enamels have been available in the past, they have all suffered from several shortcomings. For example, their appearance did not equal that of solvent-thinned semi-gloss paints. Also, their fast drying time and limited leveling and leveling characteristics caused noticeably brush and lap marks.

Immediately after being brushed on, the paint film has an irregular surface

showing visible grooves made by brush bristles. Viewed in cross section, the irregularities appear as peaks and valleys. The flowing out of these marks before the paint film sets is called leveling.

Until the development of the new acrylic latex semi-gloss enamels, the flow and leveling characteristics of early latex-based enamels were inherently poor. The resulting brush marks are definitely unacceptable in higher sheen coatings.

Key to the solution of the flow and leveling problems was an acrylic emulsion vehicle called *Rhoplex AC-22*, with unique application characteristics. Thickeners are required in latex paint systems to increase viscosity to a practical level and to inhibit pigment sedimentation. However, thickeners are detrimental to good leveling in most polymer emulsions. Thickeners also tend to flocculate the system and reduce gloss.

*Rhoplex AC-22* emulsion is inherently thixotropic, i.e., it becomes "thinner" the more it is stirred or worked; then it becomes thick again when this action stops. Consequently, a desirable viscosity level can be attained with low thickener concentrations. Thus the paint flows and levels well; sagging is minimized.

This behavior provides acrylic latex semi-gloss enamels with an excellent balance of flow, leveling and sag resistance properties as demonstrated by figures 3 and 4. The solvent-thinned control sample has a flow rating of five but a poor sag rating of eight. In comparison, the latex semi-gloss paint has the same flow rating, but its sag index is only five.

### Eliminating lap marks

Another characteristic that affected the appearance of previous latex enamels was their short open, or wet-edge, time. This is the length of time a coat of paint remains wet enough to allow "brushing-in" of laps. While lap marks do not seriously detract from the appearance of a flat paint, they do mar the appearance of glossy or semi-gloss finishes.

Open time in semi-gloss enamels formulated with *Rhoplex AC-22* acrylic emulsion is adjusted during manufac-

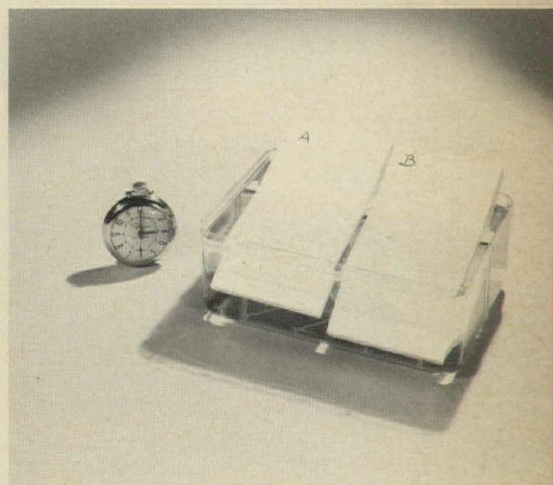


Figure 1: test panels show superior wet adhesion of acrylic semi-gloss enamel compared with earlier latex enamels. Panel A is the acrylic; panel B, the earlier latex. Both have been applied over a dark gloss alkyd enamel undercoat. Panels are scribed to permit water penetration.

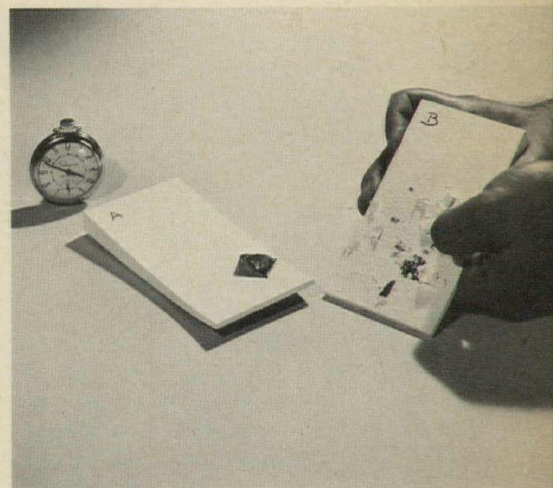


Figure 2: after 45 minutes of immersion, panel B blistered badly, and both coats of latex enamel are readily peeled off. In contrast the acrylic enamel is extremely difficult to peel, and when peeled does not separate from the undercoat.



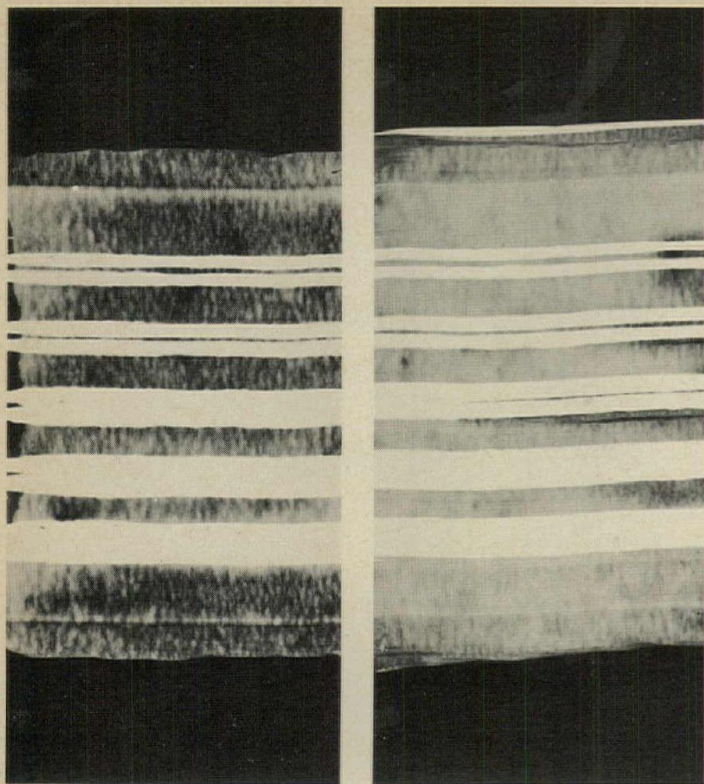


Figure 3: both acrylic latex semi-gloss enamel (left) and solvent thinned enamel (right) have good leveling properties.

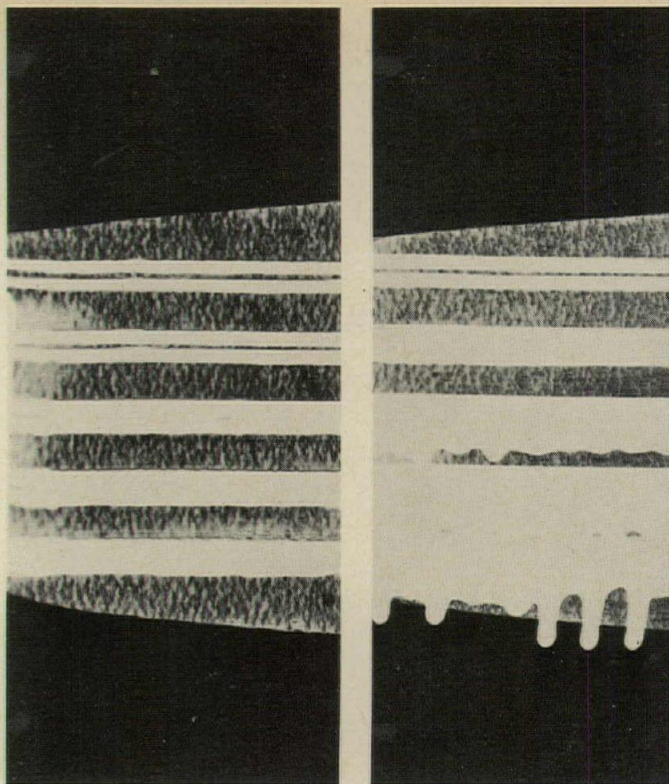


Figure 4: acrylic latex paint has better sag resistance than solvent thinned paint—a rating of 5 against 8 (10 is poor resistance).

ture by adding propylene glycol. This slows down the drying time of the paint and provides up to 20 minutes wet-edge retention, eliminating lap marks. As a result acrylic semi-gloss enamels do not dry as quickly as latex flat paints. However, they do dry as quickly as oil or alkyd enamels, and most formulations are ready for recoating in four hours. This compares with seven to 16 hours between coats for typical alkyd enamels. Thus a surface can be given two coats of an acrylic latex enamel in the same day.

#### New enamels have good adhesion

Although unsatisfactory appearance has been the most noticeable fault of previous latex enamels, poor adhesion to old glossy surfaces was another shortcoming. Semi-gloss systems used for repaint work are normally applied to the mechanically smooth surface of an old oil-based or alkyd enamel. Consequently, poor adhesion was an especially serious shortcoming.

The unique chemical composition of the acrylic polymer on which the new latex enamels are based has solved this adhesion problem. The new acrylic latex enamels adhere well to virtually every type of clean, previously painted surface, including old oleoresinous enamels. Among the new surfaces that have been coated successfully with latex enamels are plaster, concrete, brick, concrete block, wood, wallboard and properly primed metals. The alkali resistance of the acrylic vehicle permits application

over new or patched plaster without danger of lime burn.

Wet adhesion is particularly important in enamels commonly used in bathrooms, kitchens and other areas where high humidity and spills can be expected. Earlier latex enamels have lacked wet adhesion, but paints based on *Rhoplex AC-22* emulsion have this property as shown in figures 1 and 2.

#### Washability an outstanding quality

Along with wet adhesion, washability is a prime requirement for any semi-gloss enamel. The scrub resistance of the new acrylic latex semi-gloss enamels exceeds that of interior paints made with other emulsion polymers and compares favorably to that of alkyd enamels. High alkali and water resistance enables them to withstand detergents. They show no perceptible film damage or loss of gloss with repeated scrubbing. Grease, common household stains, pen, pencil and crayon marks are easily removed with soap and water.

The polymeric film formed by these paints is typically tough and flexible and retains these properties on aging. White acrylic latex enamels resist yellowing with age. Color retention is excellent.

While originally intended for conventional enamel applications, the new finishes are also replacing latex flat paints for many jobs. Although specific reasons for each change vary with the application, one common advantage seems to apply in all cases: the paints combine the

low maintenance and durability of semi-gloss enamels with the application convenience and low odor of flat paints.

An increasing number of public housing authorities now use latex enamels in place of latex flat wall paints. Schools, hospitals, hotels, motels and restaurants are also making use of the new enamels. Fast occupancy of accommodations and lack of residual odor among the important considerations terminating their use.

Acrylic latex semi-gloss enamels are available in premixed colors or in a white tint base with compatible tint systems. They are applied the same as latex flat paints, with brush, roller or spray. Only soap and water are needed for cleaning.

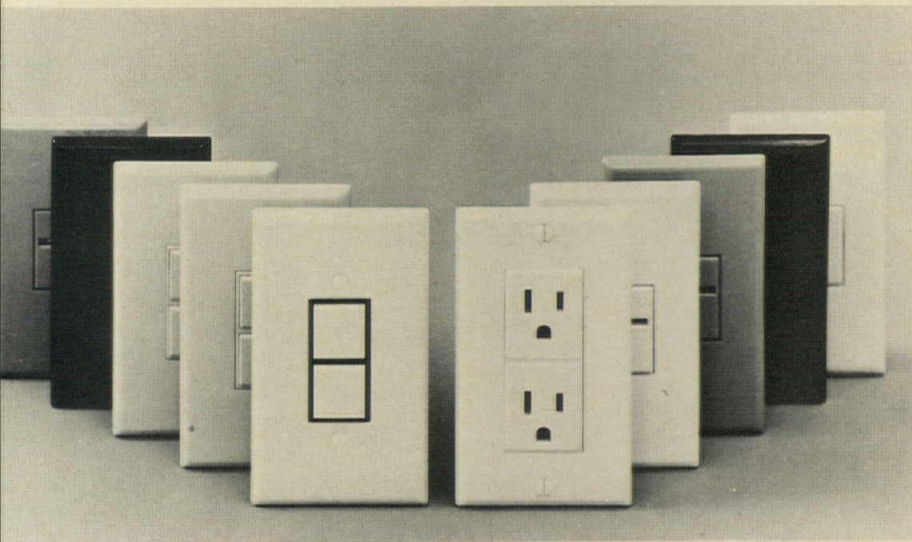
As previously stated, the new acrylic latex enamels will adhere to virtually any properly prepared substrate. New unpainted surfaces should be prepared according to the manufacturer's directions or as described in "A Guide to the Use of Acrylic Paints" (ARCHITECTURAL RECORD, November 1965).

Development of satisfactory latex semi-gloss enamels is probably the most significant advance in modern paint technology since the introduction of durable water based exterior paints over a decade ago. However, further improvements in modern paint chemistry are predicted. Future developments are expected to include higher gloss systems, the development of acrylic latex semi-gloss exterior trim paints, and interior latex flat wall paints with greater durability and washability.



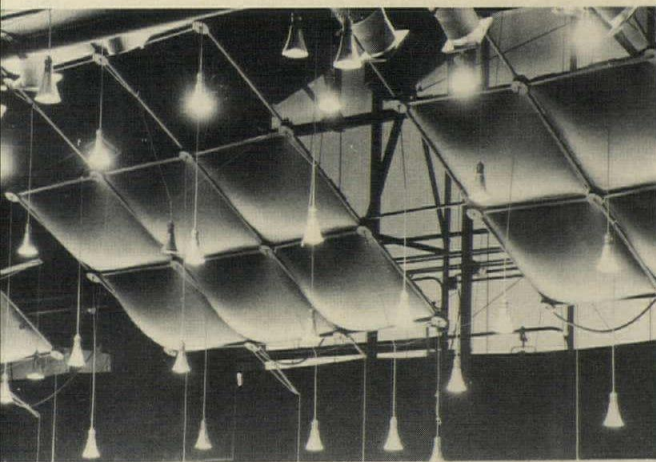
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## Twenty-five-year guarantee plus new pushbutton line



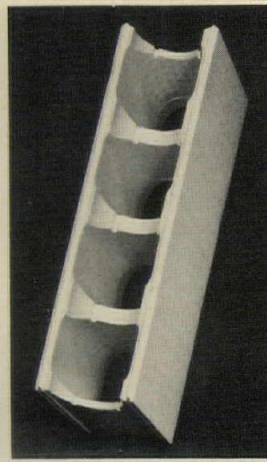
Specification grade switches and receptacles will be backed by an unprecedented 25-year Guarantee of Performance effective May 1. The Guarantee covers several hundred products in five basic categories and states that the company will replace any item listed in the 8-page Guarantee Program Catalog, if it does not perform the function for which it is designed. If a malfunctioning device has been superseded, replacement will be made with a current model. Photo shows the new *Centura* line of push-button switches and grounding receptacles, available in nine colors for commercial and residential use. ■ Leviton Manufacturing Co., Inc., Brooklyn, N.Y.

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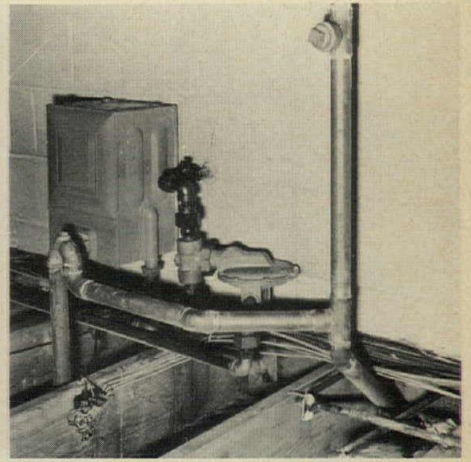
**CILING TUNING** / An adjustable plastic ceiling that can be "tuned" to the sound of music has been designed by Russell Hanson, acoustical consultant of Bolt, Beranek & Newman Inc. for the Fine Arts auditorium at Calvin College, Grand Rapids, Mich. The movable ceiling consists of 104 pieces of Rohm and Haas Company's black *Kydex* acrylic-PVC sheet. The 3/16-in.-thick panels have cylindrical shaped edges which snap over a framework of conduit piping. Steel cords and pulleys permit raising and lowering the ceiling. ■ Klise Manufacturing Company, Grand Rapids, Mich.

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**MOULDING UNIT** / *Foam-Form* polystyrene blocks eliminate the need for framework in erection and become an integral part of the wall itself. *Foam Form* provides a permanent insulation greater than the requirements for electric heating and makes a base for interior finishes. The material is cored with concave top and base to receive concrete and reinforcing rods, and tests showed that *Foam Form* poured concrete walls withstood a weight of 430,000 lbs. Cores provide space for installation of air conditioning, pipes and wiring. ■ *Foam Form Limited*, Oakville, Ontario.

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**STAINLESS STEEL TUBING** / *Ti-Krome*, a titanium-modified chromium stainless alloy has good properties for plumbing and heating. The tube is reported to have a high resistance to corrosion, to have great strength, yet to be lightweight, and have low thermal expansion to reduce strain on joints and noise in heating and hot water systems. In addition, it has a low susceptibility to tube-choking mineral deposits. Field tests have shown *Ti-Krome* satisfactory in residential and commercial installations. ■ *Tubotron, Inc.*, Somerset, N.J.

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more products on page 185



## OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 269-270

**BUILDING PANELS** / A 12-page booklet presents laminated, non-insulated veneer and insulated spandrel panels. ■ Mirawal Company, Port Carbon, Pa.\*

Circle 400 on inquiry card

**BUILT-UP ROOFING** / The 1968 catalog and specification manual describes products for "every built-up roof." ■ The Philip Carey Manufacturing Company, Cincinnati, Ohio.\*

Circle 401 on inquiry card

**AIR FILTER** / The *Side-carb* side servicing carbon odor filter with removable trays is described in a 4-page bulletin. ■ Cambridge Filter Corporation, Syracuse, N.Y.

Circle 402 on inquiry card

**FLOORING** / The 1967 catalog entitled "Floor Fashion Collection" is a 20-page color pictorial index that shows an entire collection of Asbestos flooring. ■ The Flintkote Company, East Rutherford, N.J.

Circle 403 on inquiry card

**FIRE-SAFE PIPE** / A 20-page booklet presents complete information on fiber glass pipe insulations that have been awarded composite fire and smoke safety ratings. The booklet reports that the new insulations reduce greatly the incidence of fire in commercial buildings. Another catalog presents guide specifications for other safety products—pipe insulation, duct liner, fiberglass duct systems, calcium silicate insulations, and jobsite applied accessories. ■ Johns-Manville, New York City.\*

Circle 404 on inquiry card

**INDUSTRIAL INSULATIONS** / A 12-page catalog lists all types of industrial insulations and insulating cements for power, chemical, petroleum, petrochemical, commercial and manufacturing industries. ■ The Philip Carey Manufacturing Company, Cincinnati, Ohio.

Circle 405 on inquiry card

**ARCHITECTURAL STAMP** / An 8-page booklet presents some top designs—trees, cars, people—of *Clearstamp*, vinyl printing surface bounded to a concrete block. The stamp, for plans, elevations and perspectives, requires an ordinary inkpad and can be cleaned with water. ■ Architectural Delineations, San Francisco.

Circle 406 on inquiry card

**HEATING/COOLING** / The case for the second-generation heat pump and the trend to pre-engineered heating and cooling equipment are examined in "Central Heating/Cooling With Electric Package Units," a 20-page, illustrated booklet in the Electrical Design Library. Other subjects include use of "wasted space" in locating equipment, mechanical cores, equipment noise, heat pumps as components of unitary systems, an approach to cost analysis, and the fundamentals of heat recovery. ■ National Electrical Contractors Association, Washington.

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**PANELING** / A 12-page catalog features a complete line of plastic-finished hardboard wall and ceiling paneling. Illustrations show textured panels (walnut, chestnut, oak, tapestry, travertine and leather), solid colors and patterns, and woodgrains. ■ Marlite Paneling, Dover, Ohio.

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

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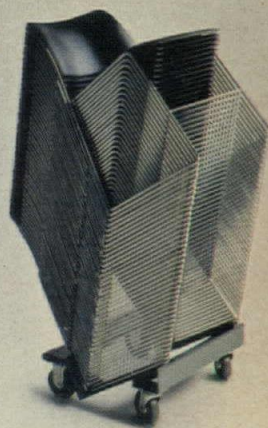
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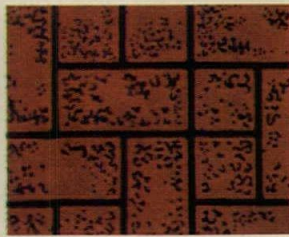
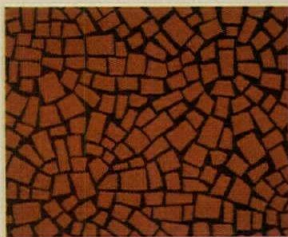


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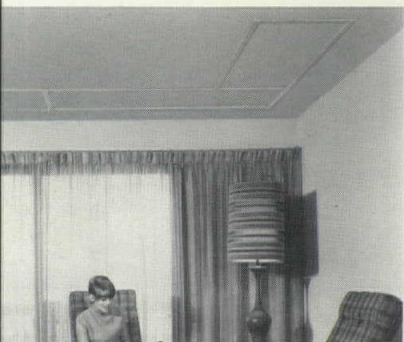
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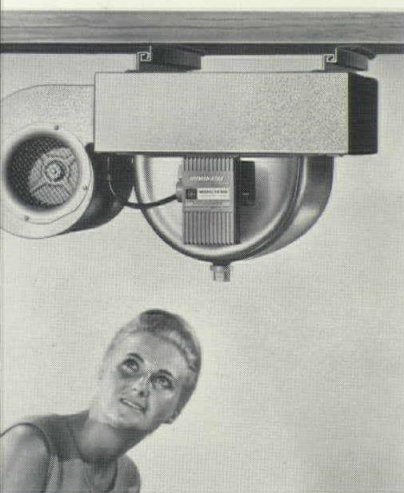
**THERMOSTAT** / The Electromode thermostat adjusts with the total load it controls. A snap-acting switch eliminates radio and television interference, and temperature-limit stops can be adjusted to desired high and low settings and locked into tamper-proof position. This thermostat is equipped with an anti-cycling bi-metal activator for better sensitivity to air temperature differential and cycling rate. ■ Singer Company, Auburn, N.Y.

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**HEATING** / Flush mounted heating panels come ready to be mounted directly to standard ceiling joists during construction and pre-wired in flexible conduit. Once the panels have been mounted, drywall, plaster or ceiling tile is installed around them, resulting in a continuous flat ceiling. ■ Harsco Company, St. Paul, Minn.

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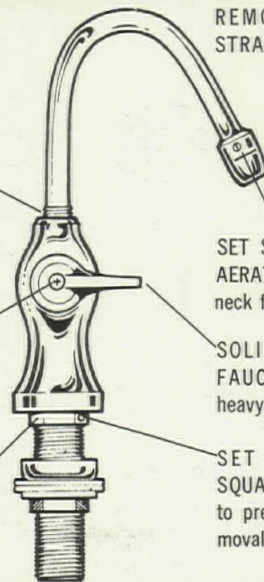
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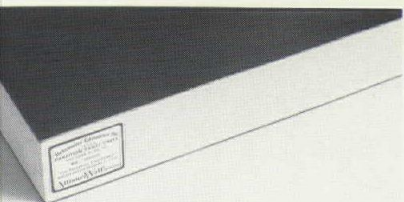


# Cabin Crafts carpet specified again at Salishan Lodge



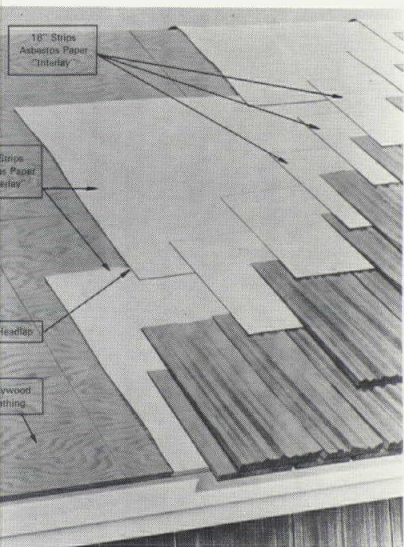


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**CELAIN BUILDING PANEL** / A light-weight porcelain enamel building panel received Underwriters' Laboratories, classification of 1½ hours protection against the passage of flame and the dangerous transmission of heat. The units tested consisted of a 2-in. thick mineral composition core faced on one side with galvanized steel and on the other side with porcelain enamel. Also, following 1½ hours exposure to fire, the assembly withstood persistent streams of water in the "hose stream test" with no penetration of the panel. Panels are produced by fusing porcelain enamel to steel at temperatures in the 1400 deg. F range. Colors will not fade, corrode or show staining despite direct weathering or unfavorable conditions. ■ Alliance Wall Corp., Allentown, Pa.

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**RETARDANT ASBESTOS** / A protective felt made of asbestos and reinforced at quarter-inch intervals with glass fiber strands has been developed for cedar shake and shingle roofs. The material will not dry out, shrink or expand and will not drip at any temperature. The resistance to fire and water will not deteriorate with age. ■ Nitro Industries, Inc., Florham Park, N.J.

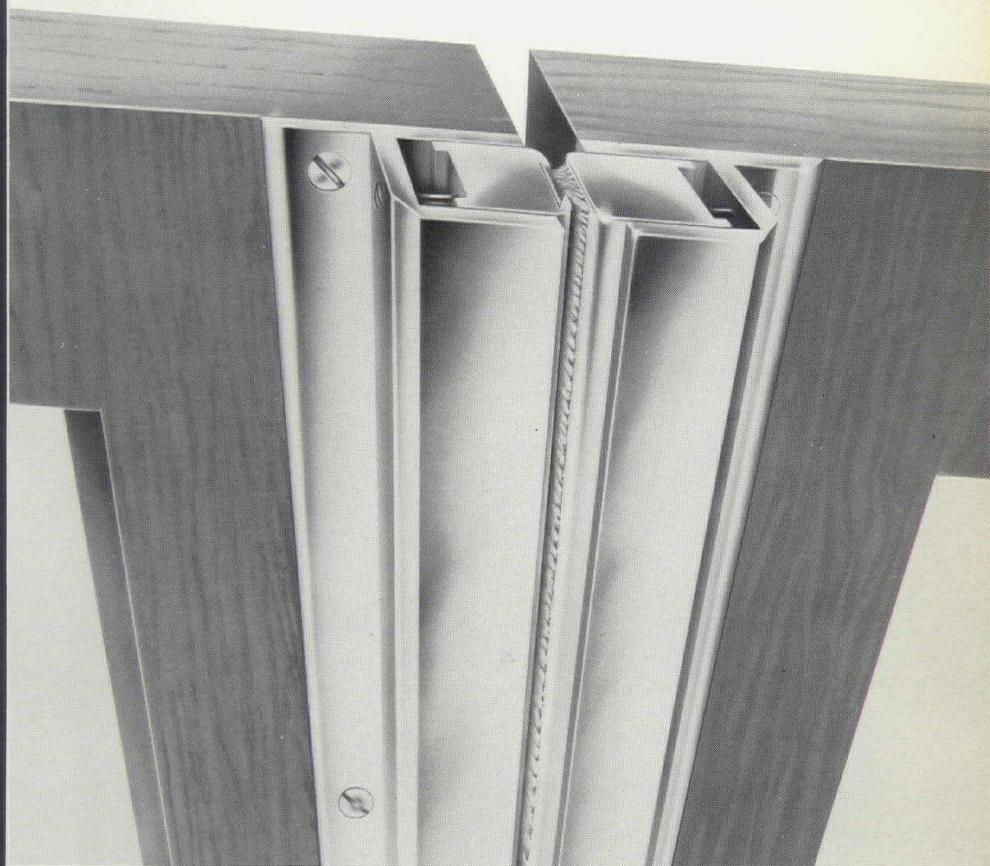
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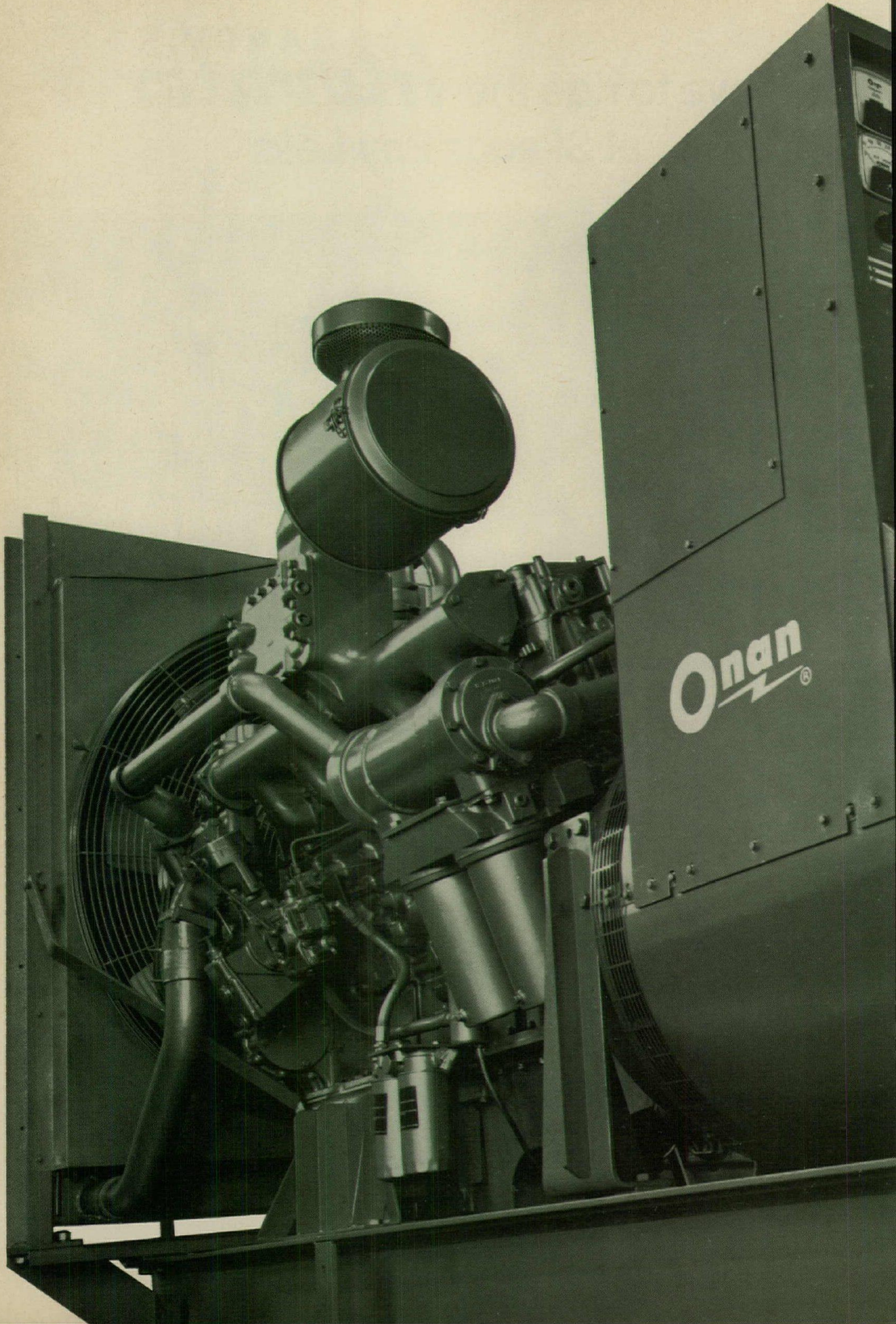
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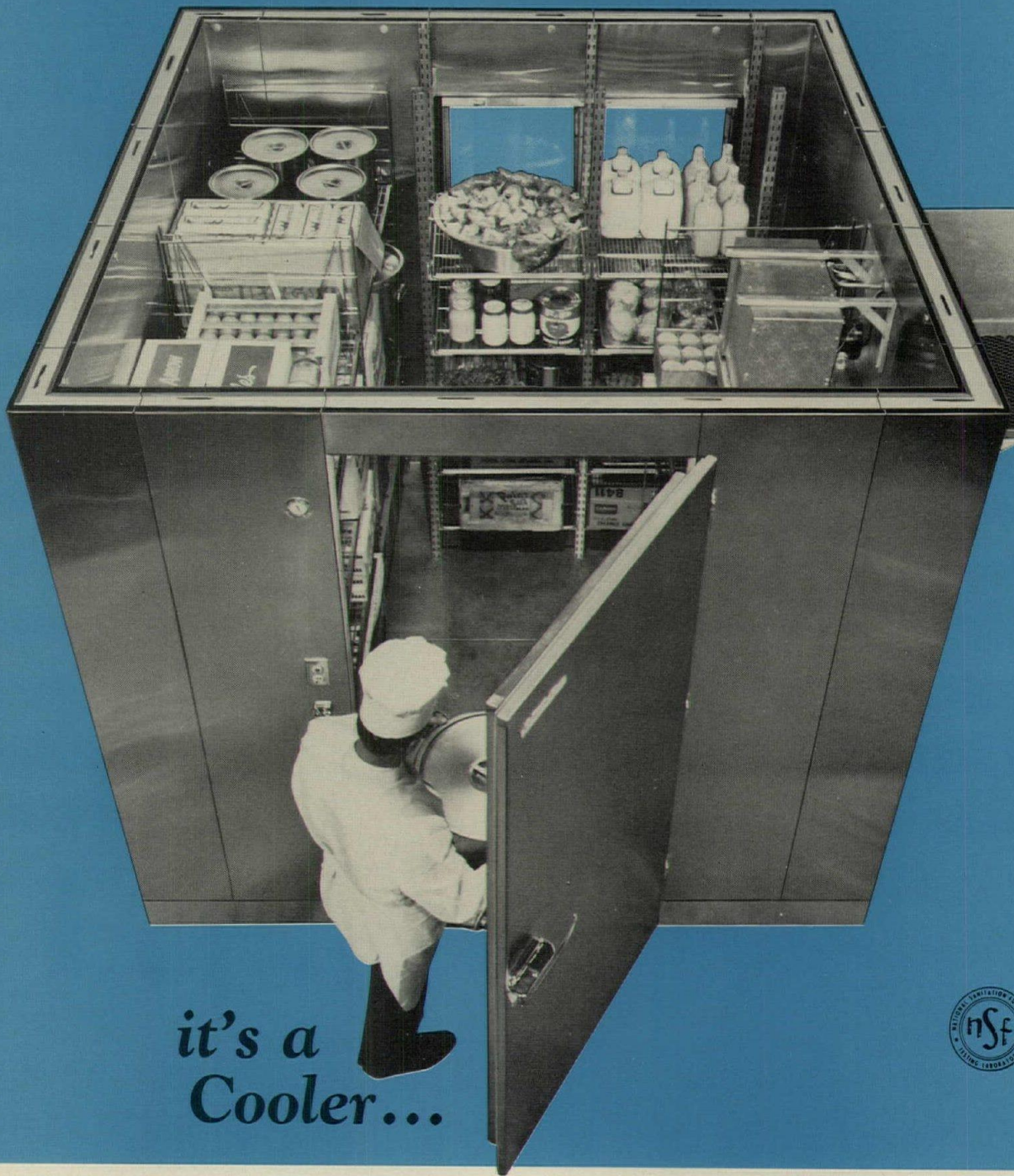
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# Faster TO CONVERT



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Freezer...



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th ready to plug in.  
d if you want to keep the cooler but need  
reezer space, use the insulated modular panels to  
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u've got and add on another room. Any way

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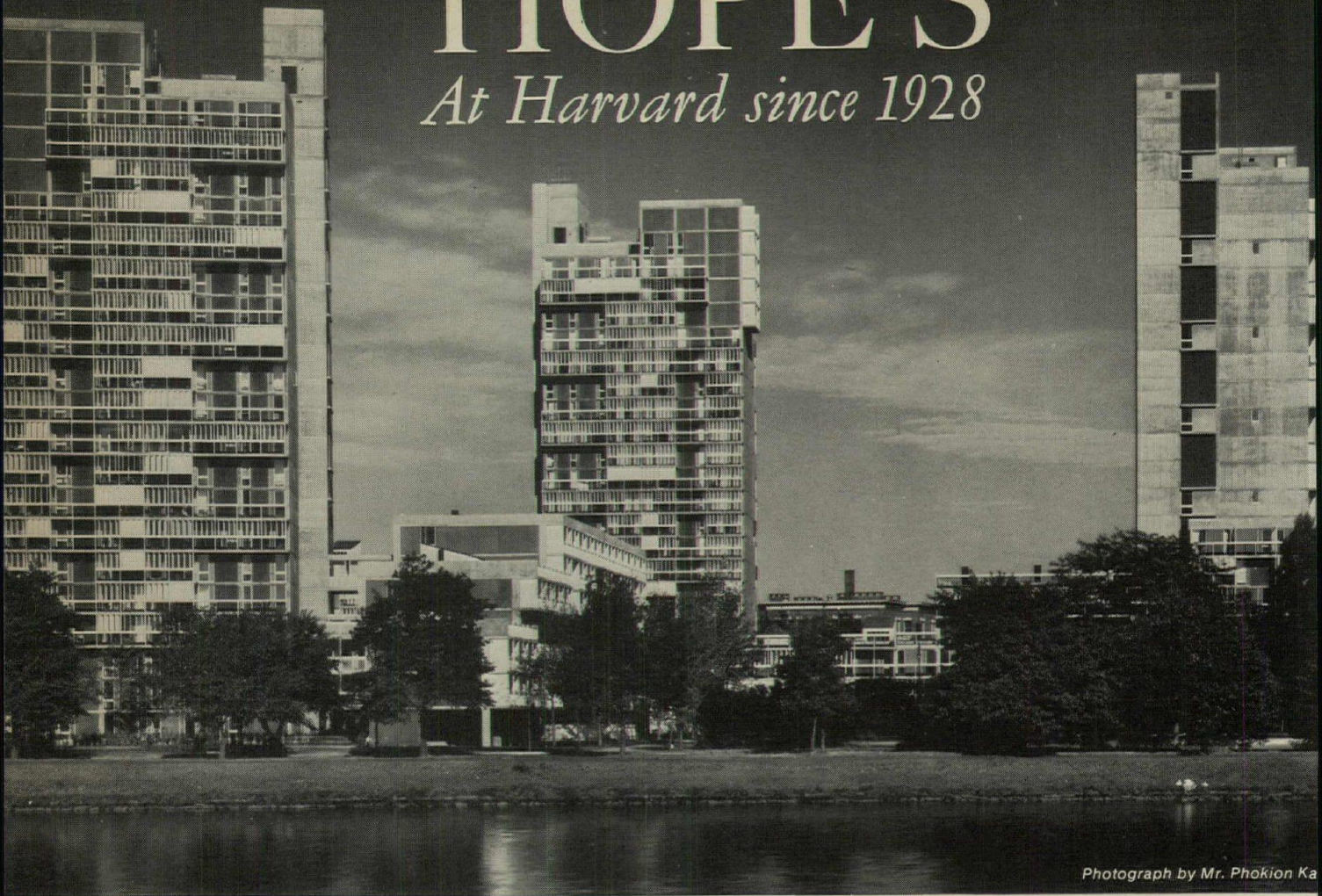
the convenience people

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# HOPE'S

*At Harvard since 1928*



Photograph by Mr. Phokion Ka

1963 Francis Greenwood Peabody Terrace, Married Students Housing, Harvard University, Cambridge, Mass. Sert, Jackson & Gourley, Architects

In 1928, the architectural firm of Shepley, Rutan & Coolidge specified Hope's windows for installation in Langdell Hall, Harvard University. A partial list of buildings at Harvard in which Hope's windows were specified and installed in the following forty years is recorded below. We are proud of this record of continued confidence.

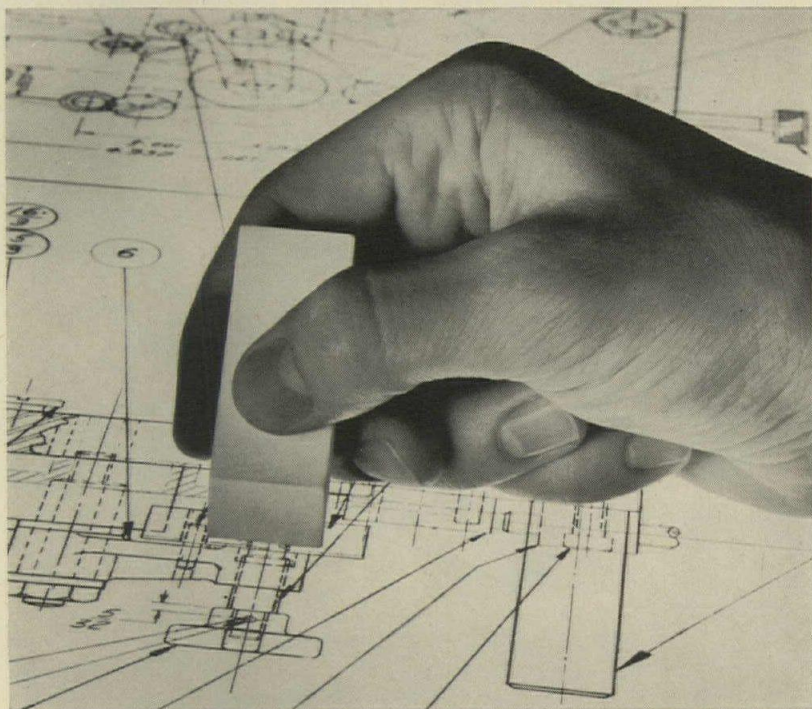
- |      |  |      |  |
|------|--|------|--|
| 1928 | Langdell Hall (Addition)<br><i>Architects: Shepley, Rutan &amp; Coolidge</i>                           | 1960 | Andover Hall Library — Harvard Divinity School<br><i>Architects: Shepley, Bulfinch, Richardson &amp; Abbott</i>      |
| 1937 | Lowell House and Eliot House<br><i>Architects: Coolidge, Shepley, Bulfinch &amp; Abbott</i>            | 1961 | Arnold Arboretum Head House<br><i>Architects: Griswold, Boyden, Wylde &amp; Ames</i>                                 |
| 1949 | Botanic Garden Apartments<br><i>Architects: Des Granges &amp; Steffian</i>                             | 1961 | Gordon McKay Applied Science Laboratory<br><i>Architects: Shepley, Bulfinch, Richardson &amp; Abbott</i>             |
| 1949 | Graduate Center<br><i>Architects: The Architect's Collaborative</i>                                    | 1962 | David & Arnold Hoffman Laboratory of Experimental Geology<br><i>Architects: The Architect's Collaborative, Inc.</i>  |
| 1951 | Gordon McKay Applied Science Laboratory<br><i>Architects: Coolidge, Shepley, Bulfinch &amp; Abbott</i> | 1964 | Computing Center, (Alterations & Additions)<br><i>Architects: Shepley, Bulfinch, Richardson &amp; Abbott</i>         |
| 1953 | Observatory<br><i>Architects: Harvard University</i>   | 1967 | Law School Faculty Office Building<br><i>Architects: Benjamin Thompson &amp; Associates, Inc.</i>                    |
| 1958 | Quincy House<br><i>Architects: Shepley, Bulfinch, Richardson &amp; Abbott</i>                          | 1968 | Law School Classroom & Administration Office Building<br><i>Architects: Benjamin Thompson &amp; Associates, Inc.</i> |
| 1959 | Leverett House, New Dormitories<br><i>Architects: Shepley, Bulfinch, Richardson &amp; Abbott</i>       |      |  |

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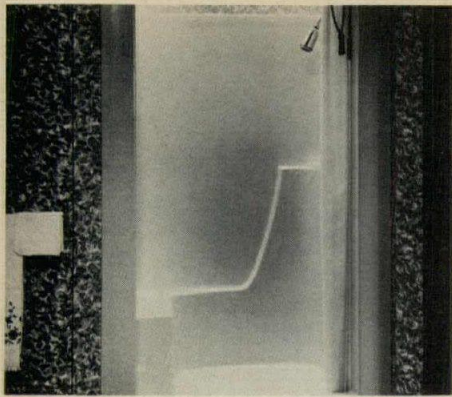
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## DRAWING REPRODUCTION SYSTEMS BY KODAK

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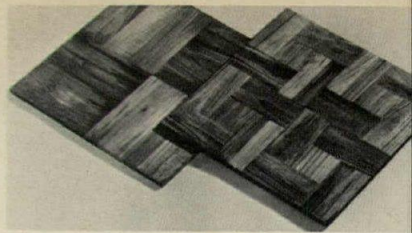


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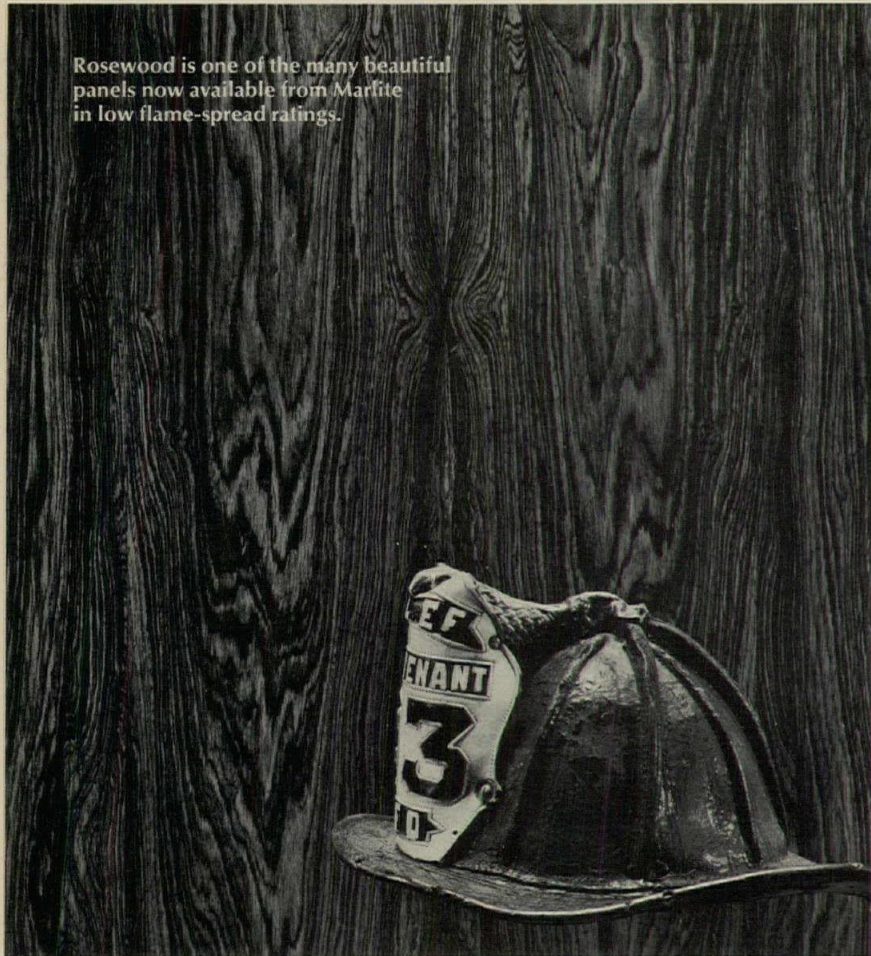
**ONE-PIECE SHOWER** / This 36-in. by 48-in. *Fiberglas-reinforced* shower stall is reported to incorporate many of the Cornell Study's recommendations for bathing convenience and safety. The top of the pillar serves as a built-in soap dish within easy reach. The curve of the pillar forms a shelf against the back wall and a seat against the far wall. There are no seams or joints, and the unit resists stains, chipping and household chemicals. ■ Owens-Corning Fiberglas Corporation, Toledo, Ohio.

Circle 309 on inquiry card



**PARQUET TEAK TILES** / Individual consist of carefully-matched and contrasted rectangles of heartwood of Bangkok teak arranged in two traditional patterns. ■ Walker and Zanger, New York City.

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**KING-SIZE TUB** / The *Caribbean* shown in a setting of other modern fixtures—is 6-ft. long, 36-in. wide and has a sloping back for bathers who wish to recline. Safety features include glass rails and a safety bottom. The tub is enameled iron and is produced in white, avocado and five pastels. The fittings shown are from the *Flair* series and, the grip rails, are available in brushed chrome or gold electroplate. ■ Kohler Co., Kohler, Wisc.

Circle 311 on inquiry



**BUILT-IN APPLIANCES** / Crisp black and white wallpaper on one wall is inserted into the white cabinets combine with the handsome double wall ovens and *Cooktop 'N Grill* to create the most modern kitchen. The barbecue grill is interchangeable with a griddle. General Electric, Louisville, Ky.

Circle 312 on inquiry

more products on page



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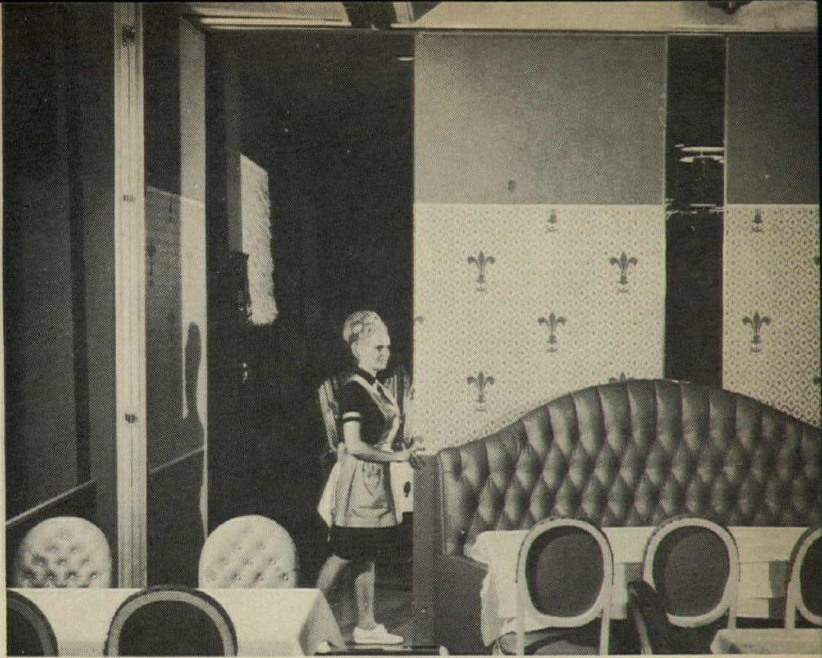
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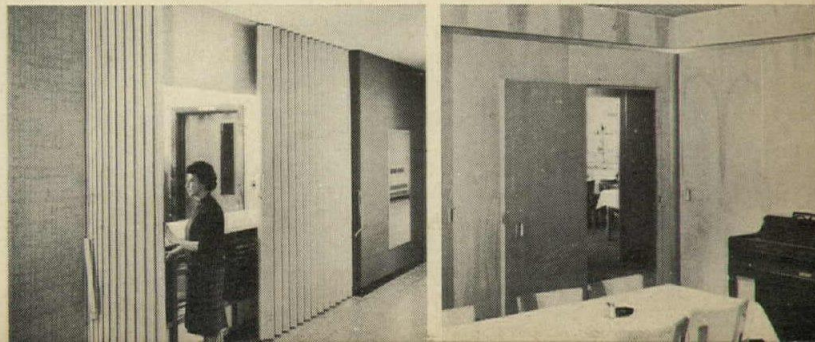
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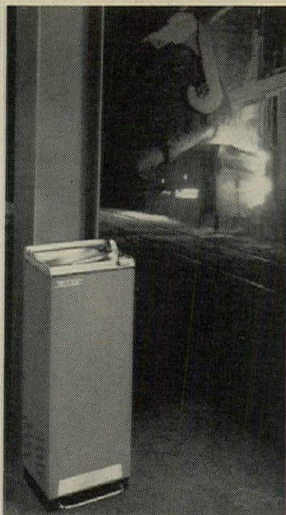




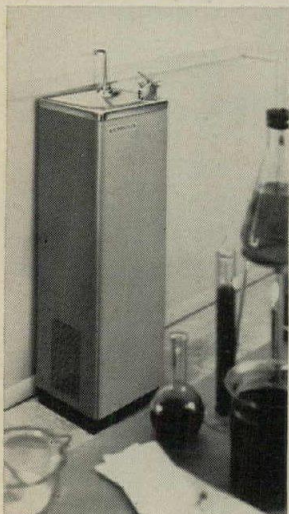
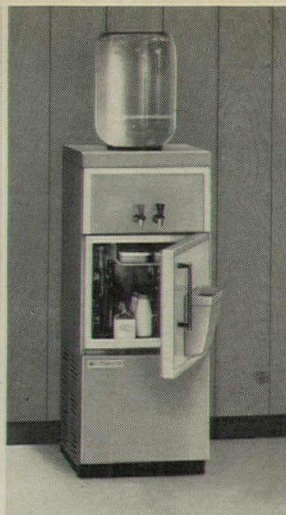
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#### OFFICE LITERATURE

continued from page

**HEALTH CARE PRODUCTS / Hospital Home Product News 1968 Annual Product Review** is a 375-page volume said to describe all equipment announced in the industry last year. This encyclopedia contains more than 1500 products, services and equipment. \$6. ■ Market Publications, Inc., 134 Main Street, New Canaan, Conn.

**ROLLING DOORS /** A 24-page catalog updates details on any design improvements and allied products. A auxiliary product—a smoke detector release switch—is one of the items included. ■ Kinnear Corporation, Columbus, Ohio.\*

Circle 410 on inquiry

**MASONRY WALL /** A 16-page illustrated booklet on masonry wall reinforcement and allied products discusses truss designed and ladur-type wall reinforcement, adjustable and continuous rectangular wall ties, and rapid control joints. ■ D. O-waL, Cedar Rapids, Iowa.\*

Circle 411 on inquiry

**SAFETY SHOWER ACCESSORIES /** *7dem Safety Mates* have been developed to aid "architects and specifying engineers concerned with the design of hospitals, nursing homes and housing for the elderly." A 16-page manual describes their application. ■ Symm Engineering Company, Boston.

Circle 412 on inquiry

**SHAPES /** A new edition of "Standard Extruded and Drawn Shapes" is a 16-page booklet that contains sections on extruded angles, channels, T section shapes, *Everdur* structural shapes, tangular rod and rectangular and square tube. ■ Anaconda American Brass Company, Waterbury, Conn.

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**GRATINGS AND TREADS /** An 8-page catalog presents aluminum gratings and treads that are "equally practical in the foyer of a modern skyscraper or in the boiler room of an ocean liner." ■ Alliance Steel Products Company, McKeesport, Pa.\*

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**INSULATION /** An 8-page brochure presents *Zero-lite*, "the modern expanded polystyrene building insulation." ■ Johns-Manville, New York City.\*

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

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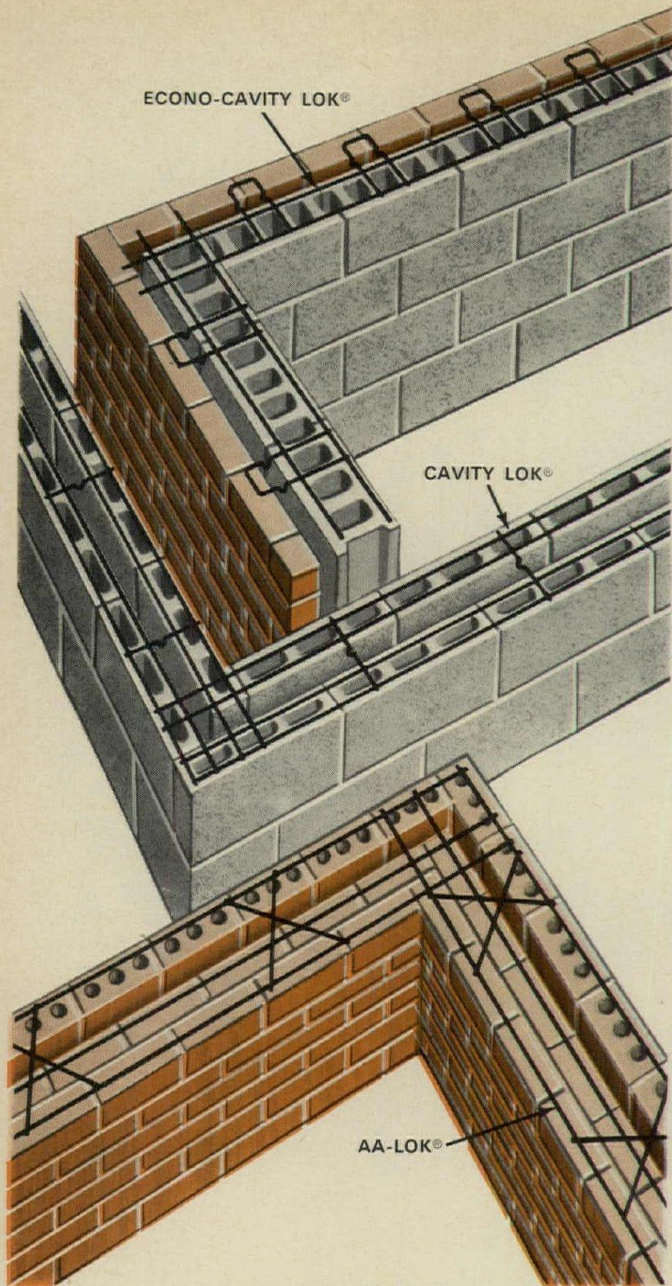
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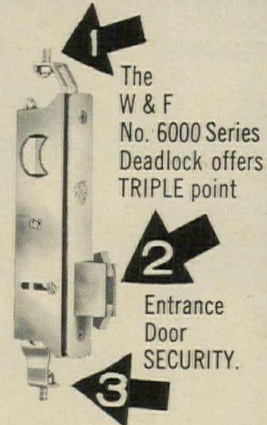
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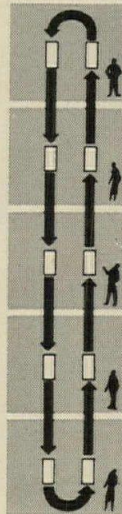
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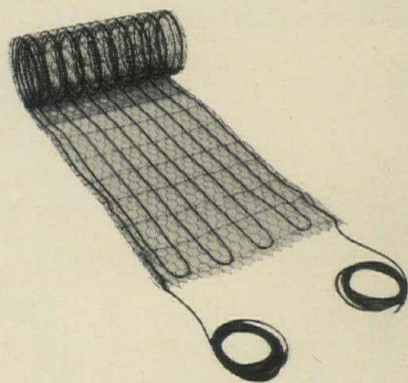
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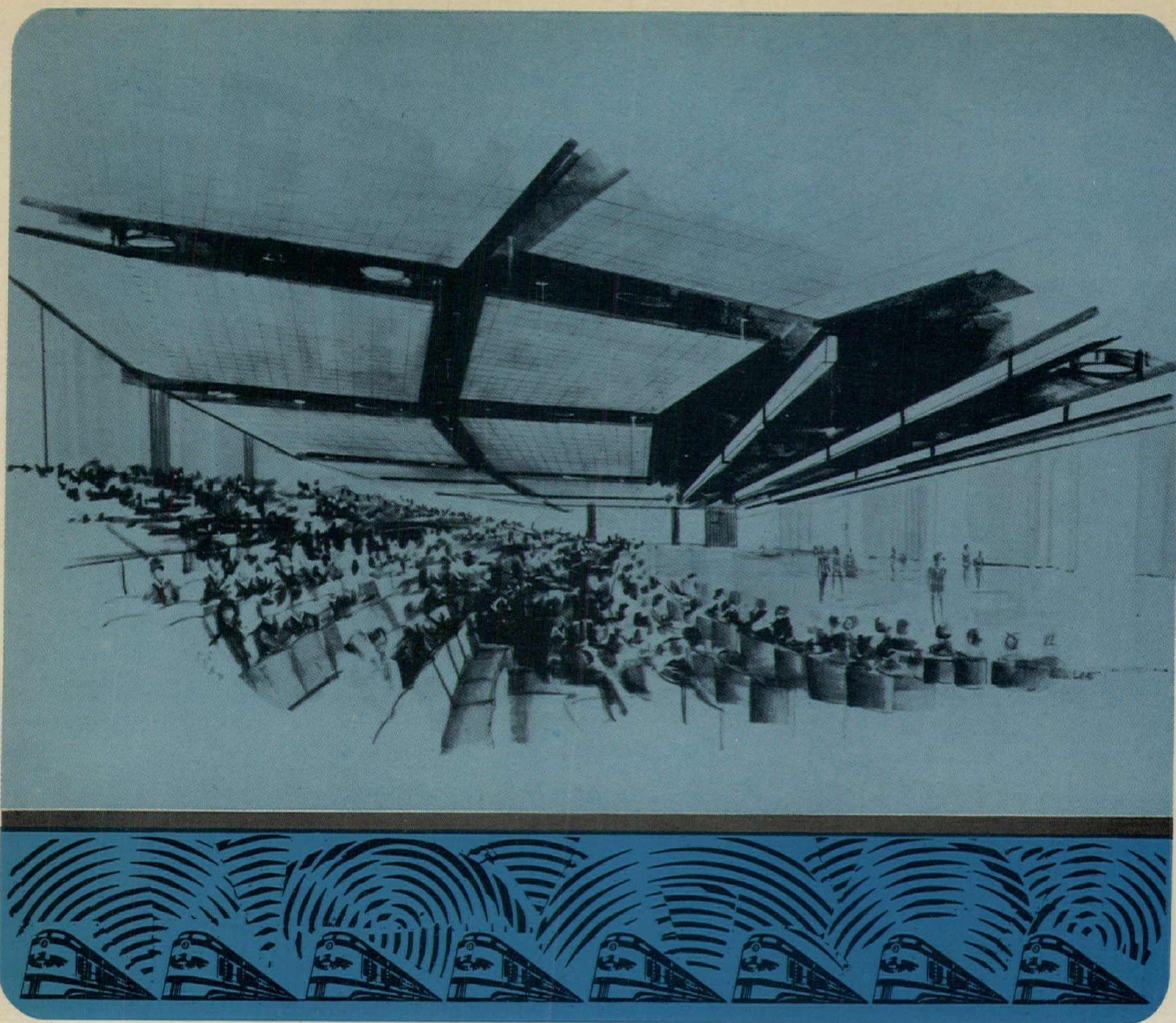
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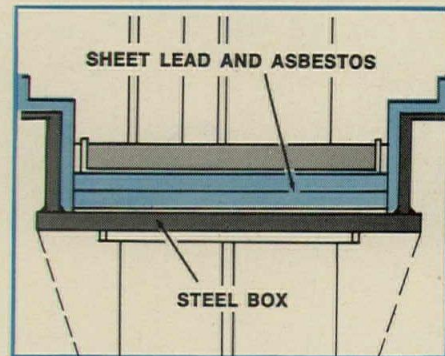
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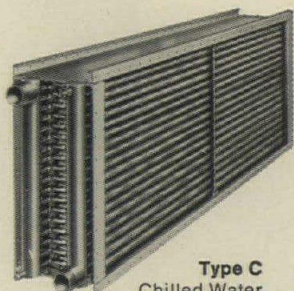
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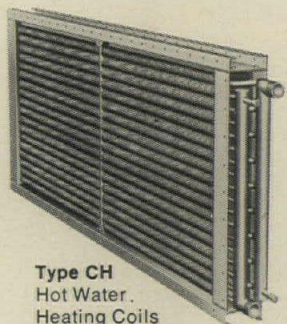
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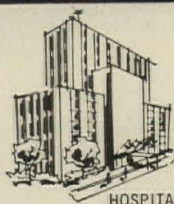
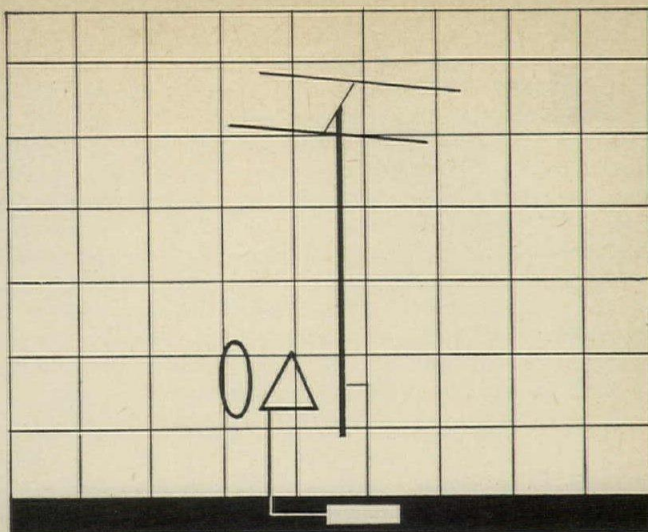
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Hot Water  
Heating Coils

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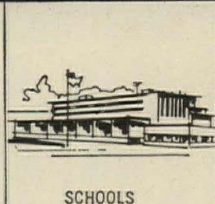
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For more data, circle 122 on inquiry card



Construction dust is part of construction. Even the most careful sealant mechanic can't keep it out of every joint.

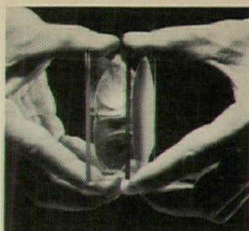
Never mind. MONO has been proving itself against construction dust as well as other job-site hazards for more than 10 years.

MONO is a "deliberate" sealant. In its own good time it penetrates any construction dust that may have gotten in its way. It surrounds the dust particles — actually swallows them up — and takes a firm adhesive grip on the joint surface.

MONO's distinctive ability to remain pliable and adhesive gives it a life expectancy of 20 years or more in moving joints. MONO meets government specifications U.S. TT-S-230a and Canadian 19-GP-5.

See this minor dirt-eating miracle for yourself. Ask your Tremco representative to show you the MONO demonstration while he fills you in on all the rest of the Tremco sealant family.

**THE TREMCO MANUFACTURING COMPANY**  
Cleveland, Ohio 44104 • Toronto 17, Ontario



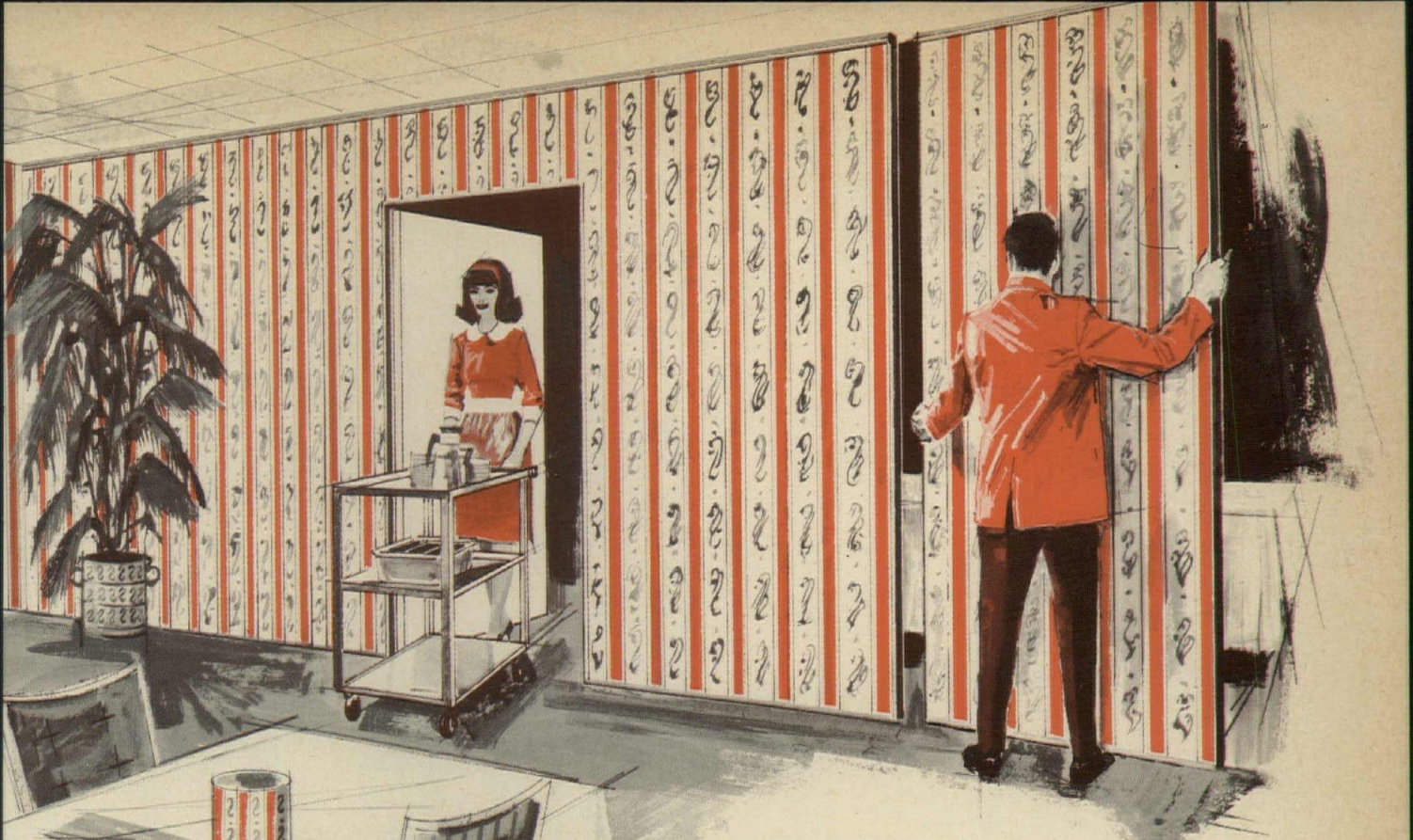
**TREMCO**

PRODUCTS AND TECHNICAL SERVICES FOR  
BUILDING MAINTENANCE & CONSTRUCTION

**Mono  
eats dirt  
(...if it has to.)**







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 CO., Box 319, Dept. AR  
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

For more data, circle 123 on inquiry card



# GIVE YOUR CEILINGS A BRIGHT FUTURE

**With the New —  
Easy to Install  
Perforated Diffuser  
that Controls Smudge**



All ceilings in the State Mutual Savings Building, Los Angeles, have a very bright future.

Thanks to a new concept in air distribution that controls ceiling smudges caused by secondary air. Smudging particles are deposited in the center of the perforated plate, due to center aspiration. Perforated plate can be quickly and easily removed for cleaning, saving maintenance costs.

Series 1100 diffusers are available in 1, 2, 3 and 4 way patterns with adjustable air deflection vanes.

All models provide proper balance and aesthetic appeal for use in all types of ceilings.

Remember, for brighter ceilings — Krueger Controls Smudge.

**STATE MUTUAL SAVINGS BUILDING** — Los Angeles, Calif.  
Architect: Langdon & Wilson, Los Angeles, Calif.  
Engineer: E. B. Hilton, Los Angeles, Calif.  
Contractor: ACCO, Glendale, Calif.



State Mutual Savings used our model 1100, designed for Concealed Spline ceilings. Unit features an exclusive Cam-Lock fastener for ease of installation.



**KRUEGER MANUFACTURING CO., INC.**

TUCSON • DETROIT • TORONTO

There's a Krueger Sales Engineer in every major city from coast to coast. He'll be most happy to help you with any air-distribution problem.

For the name of the one nearest you or a free copy of our "New Concepts in Air Distribution" brochure, write: Krueger Manufacturing Co., Inc., P.O. Box 5155, Tucson, Arizona 85703.

For more data, circle 124 on inquiry card



# Are you still specifying 10,000 volt carpeting?

## SHOCKING!

At a temperature of 75° F, with a relative humidity of 20%, a person can generate in excess of 10,000 volts of static electricity by walking across conventional carpeting.

That's a pretty shocking situation. Just touch a light switch and you'll forget all about the bad pun.

Today, 18 leading carpet makers\* are producing a new kind of carpeting that is 100% shockproof. *Permanently shockproof.* It relies upon Brunsmet®—a unique, stainless steel textile fiber developed by the Technical Products Division of Brunswick Corporation.

Brunsmet® is blended right into the carpet yarn. It's soft as wool, finer than silk, more durable than nylon, strong as steel. You can't see it or feel it! And, of course, it's a perfect (and considerate) choice in any situation where static build-up is a nuisance to employees, customers, students, residents, guests.

If you are called upon to exercise your professional judgment in carpet specification, you should have a file of Brunsmet® information. Just mail the coupon and we'll see that you get one.

*\*Beauty Tuft, Bigelow, Carleton, Carolina, Chatham, Commercial, Gulistan, Highstown, Lee's, Magee, Oxford, Roxbury, Stephen-Leedom, Stratton, Universal*

Brunswick Corporation/Technical Products Division  
69 West Washington Street/Chicago, Illinois 60602

Tell me more about Brunsmet carpeting and  
what it will do for my clients.

Name \_\_\_\_\_

Firm Name \_\_\_\_\_

Position \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_



**BRUNSMET®**  
METAL FIBERS



TECHNICAL PRODUCTS DIVISION

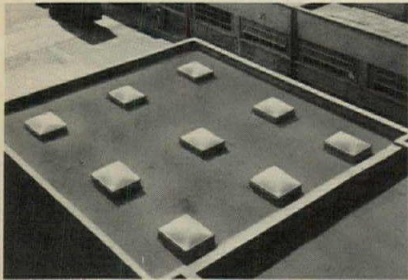
**Brunswick**

For more data, circle 125 on inquiry card



# for the life of your building, put **WASCO**<sup>®</sup> in your plans

For 33 years, construction products bearing the WASCO<sup>®</sup> brand name have enjoyed an unexcelled reputation for quality, durability and trouble-free service. That's why WASCO<sup>®</sup> brand products are still today the most specified products in their respective fields.



## WASCO<sup>®</sup> SKYDOMES

Still the best known, most specified line of plastic dome skylights. Over 300 shapes, types and sizes, plus custom-built units. *Sweet's Architectural File*, Catalog 22a/AM . . . and *Sweet's Industrial Construction File*, Catalog 17a/AM, contain complete descriptive data and model specifications.



## WASCO<sup>®</sup> FLASHINGS

Still the one complete, most specified line of building flashings for waterproofing from foundation to roof. *Sweet's Architectural File*, Catalog 21g/AM, contains complete descriptive data and model specifications.

When specifying flashing and skylights remember . . . for the life of your building put WASCO<sup>®</sup> in your plans.

# WASCO<sup>®</sup>

## SKYDOMES/FLASHINGS

AMERICAN CYANAMID COMPANY • BUILDING PRODUCTS DIVISION  
Dept. No. FIF8, P.O. Box 350, Wakefield, Massachusetts 01880

continued from page 222

**CHIMES** / An 8-page color catalog includes new chime designs, lighted push-buttons, and other chime accessories. ■ Emerson Electric Co., St. Louis, Mo.  
Circle 416 on inquiry card

**STEREO** / "At Home with Stereo" presents handsome music centers for many types of interiors. Typical rooms are shown in full color. ■ H. H. Scott, Inc., Maynard, Mass.  
Circle 417 on inquiry card

**CEDAR LUMBER AND SIDING** / A 4-page color brochure describes properties, grades, and sizes of both smooth surface and saw-textured patterns. ■ Western Wood Products Association, Portland, Ore.\*  
Circle 418 on inquiry card

**PANELING AND SIDING** / A 24-page color catalog describes interior paneling. Charts show samples of prefinished hardwood plywoods, prefinished woodgrain paneling, and vinyl overlaid plywood and hardboard. There are also installation photos. Another brochure presents vertical, horizontal-lapped, and panel siding. ■ Evans Products Company, Corona, Calif.\*  
Circle 419 on inquiry card

**PATIO LIGHTING** / A 4-page brochure presents a "torch" line of patio lighting. The torches are being produced in three style groups, with a single light and chandelier in each. Photos show different models with background settings that include wood, brick, and trees. ■ J. C. Cristen Manufacturing Co., St. Louis, Mo.  
Circle 420 on inquiry card

**EXTERIOR PRODUCTS** / A 16-page color booklet shows aluminum siding, roofing, soffit and fascia, and rain carrying systems. Featured is the rustic-shingle aluminum siding, which gives the look of hand-split shakes. ■ Kaiser Aluminum & Chemical Corporation, Oakland, Calif.  
Circle 421 on inquiry card

**LABORATORY FURNITURE** / An 82-page color catalog gives complete information on all interchangeable steel modules in a line of full-color furniture. Included are tipped-in chips of slate gray, shell white, beige, green, orange, and yellow. Units can be reassembled to fit any size or type of laboratory. ■ Fisher Scientific Company, Pittsburgh.  
Circle 422 on inquiry card

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

more literature on page 248

The "or" in  
"or equal"  
usually ends  
up in . . .

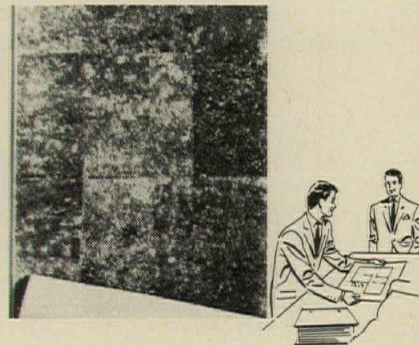
# "inferior"

Those two words—"or equal"—in your specifications section can lead to considerable disappointment in a finished project. Particularly in vinyl wallcoverings. A moment of inattention, a persuasive salesman, a rash attempt to save a few dollars and you agree to a substitute for Vicrtex. Sometimes, the substitution is even made without your knowledge.

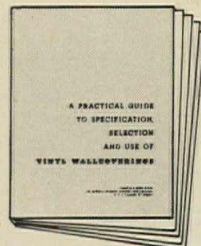
There's only one way to guarantee that you get superior stain-resistant finishes, attractive textures, unique patterns and lustrous colors of Vicrtex vinyl wallcoverings. By tight specs and double-checking along the way.



If you know enough  
about vinyl wallcoverings  
to specify VICRTEX,  
make sure you get Vicrtex.



Write today for our helpful booklet:  
"A Practical Guide to Specification, Selection and Use of Vinyl Wallcoverings."



**L. E. CARPENTER & CO.**  
Empire State Building  
New York 10001  
(212) LOnacre 4-0080

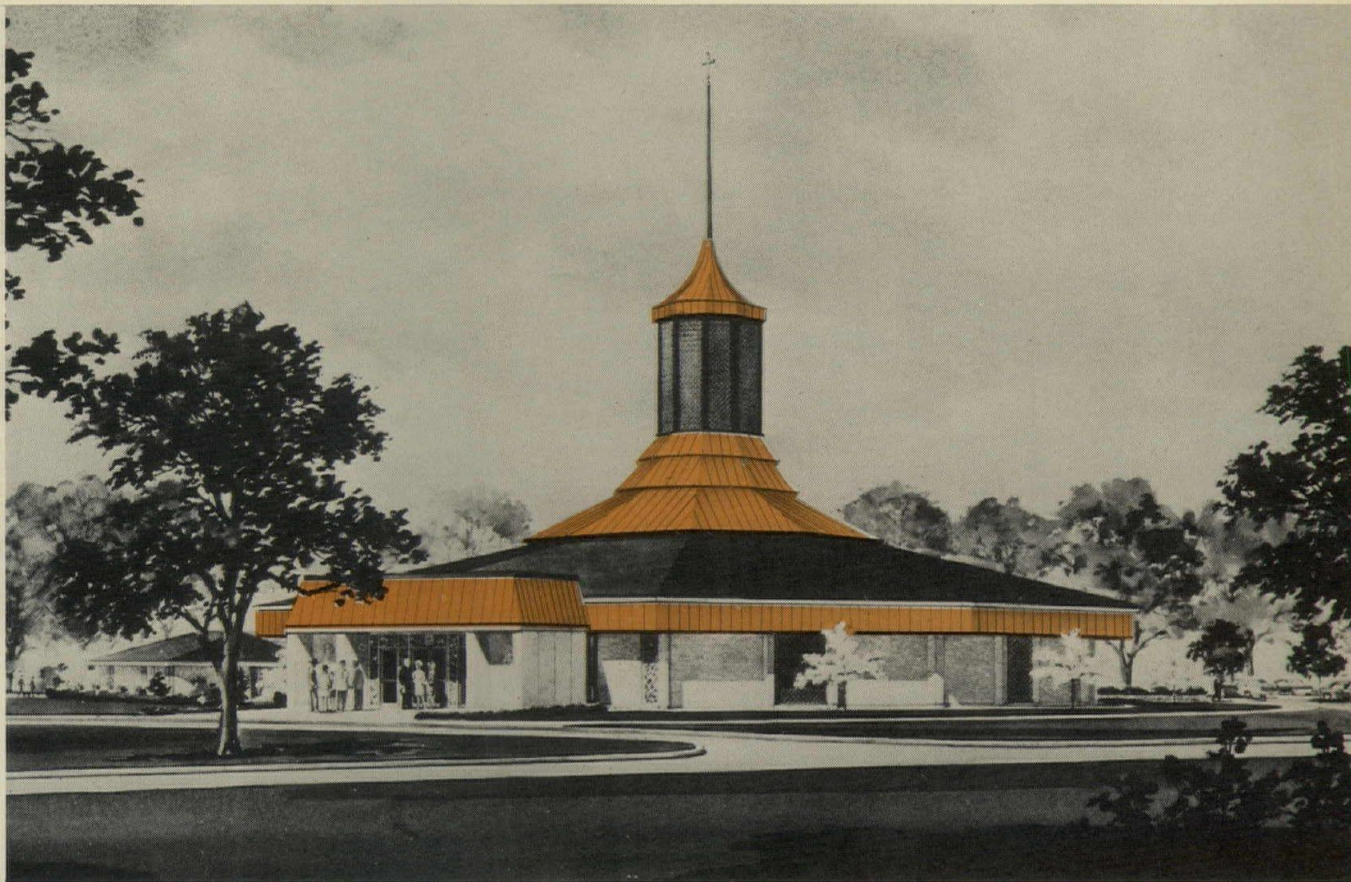


For more data, circle 127 on inquiry card



# Inspiring application.

ST. TIMOTHY CHURCH, RECTORY AND PARISH OFFICE COMPLEX, WARWICK, R. I. ARCHITECTS: ROBINSON, GREEN AND BERETTA, PROVIDENCE.



Beauty is only one contribution made by TI-GUARD\* TYPE S building material to the fascia and various roofs of this inspired design. Fully annealed TI-GUARD\* TYPE S combines everything you admire in copper with everything you expect from stainless steel (like greater strength, lower cost). Consisting of two outer layers of pure copper bonded metallurgically to stainless core, TI-GUARD\* TYPE S

- Meets requirements for exposed, concealed, and special applications;
- Can be cut, formed, lead-coated, soldered, welded, and otherwise worked like copper;
- Comes in standard .012, .015, and .018 in. gauges to meet specifications for standard copper gauges;
- Cuts costs, speeds installation, resists corrosion wherever you

used to specify copper — roofing, flashings, valleys, gutters, downspouts, spandrels, termite shielding.

We have a new presentation for architects that tells the dramatic TI-GUARD\* TYPE S story. For your showing, write or call TI Building Materials Manager, Attleboro, Massachusetts 02703. Telephone 617-222-2800.



\*TRADEMARK OF TEXAS INSTRUMENTS INCORPORATED

## TEXAS INSTRUMENTS INCORPORATED

For more data, circle 128 on inquiry card



# CONWED<sup>®</sup>Ceramic

Ceilings for enduring beauty

## **New Heritage Ceramic Acoustical panels provide complete resistance to moisture and humidity.**

Often high humidity conditions during construction or during normal occupancy limit architectural ceiling product selection. Today, *Conwed* Ceramic Ceiling panels provide solutions to both problems while extending architectural design opportunities.

The new *Conwed* Ceramic panels feature the "Heritage" pattern . . . a delicately eroded surface combined with acoustical perforations for beauty and acoustical effectiveness.

You can specify *Conwed* Ceramic Ceiling panels with complete confidence even over swimming pools or in damp industrial plants . . . or wherever high humidity is

a problem. They can also be used under canopies or soffits normally exposed to extremes in humidity and temperature.

Panels are formed from completely inorganic mineral fibers in a ceramic bond . . . no sag . . . no warp. They may be washed or painted without appreciably affecting acoustical efficiency. *Conwed* Ceramic panels also qualify for 2 hr. fire-rated construction.

Your *Conwed* representative can provide complete product detail information and assistance in job planning where desired. For more information contact your local *Conwed* representative or write.



  
**Conwed**  
CORPORATION

332 Minnesota Street, St. Paul, Minnesota 55101

For more data, circle 129 on inquiry card



C. F. MURPHY AND THE  
PERKINS & WILL PARTNERSHIP  
*Architects and Engineers*

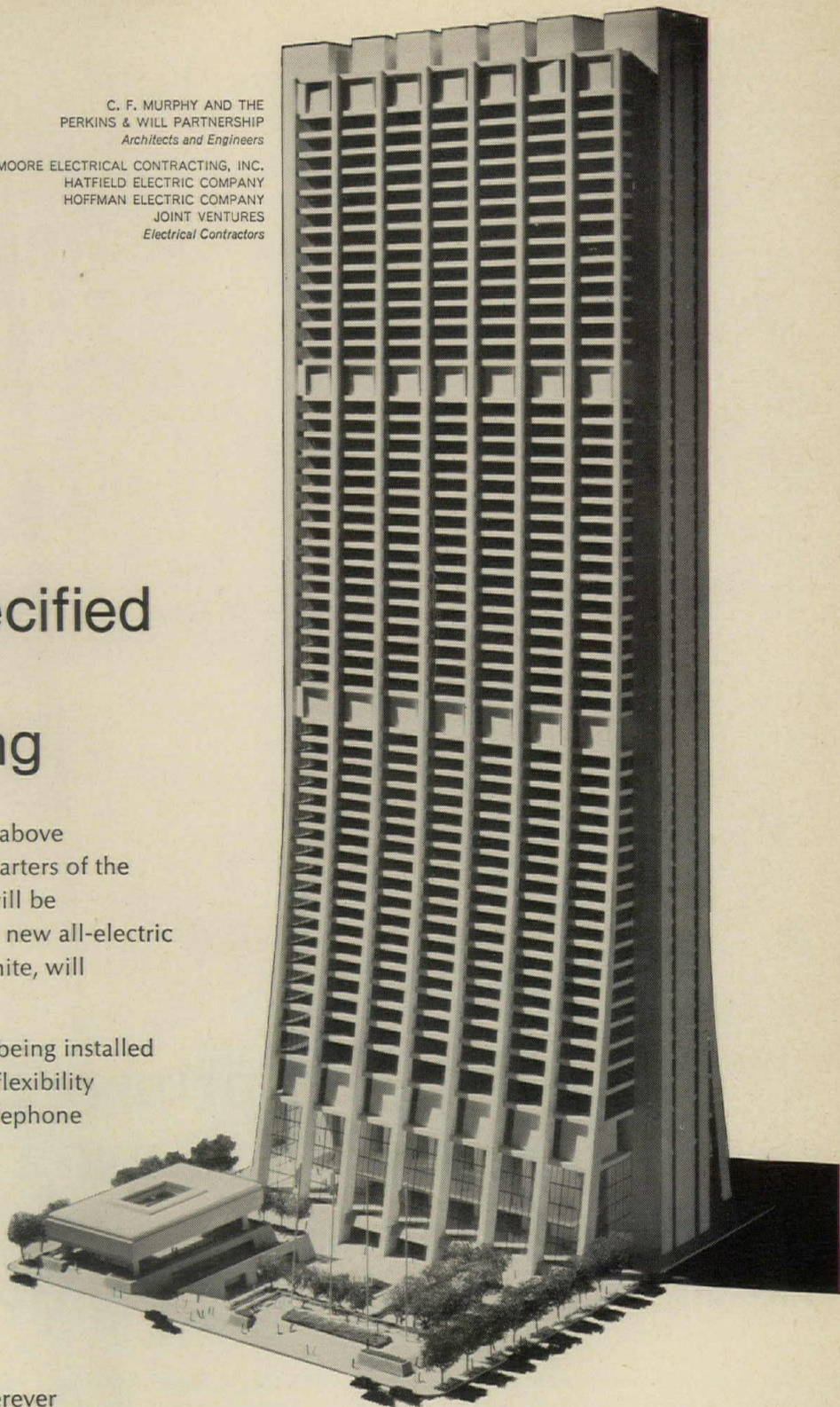
FISCHBACH & MOORE ELECTRICAL CONTRACTING, INC.  
HATFIELD ELECTRIC COMPANY  
HOFFMAN ELECTRIC COMPANY  
JOINT VENTURES  
*Electrical Contractors*

## Square D products specified for Loop's tallest building

Towering 60 stories and 850 feet above Chicago's Loop, the new headquarters of the First National Bank of Chicago will be completed in 1969. The dramatic new all-electric building, faced in pearl grey granite, will contain 2.2 million square feet.

Square D underfloor raceway is being installed throughout to assure maximum flexibility in the layout of the electrical, telephone and communication systems. In addition, all of the lighting and power panelboards are being furnished by Square D.

Square D products perform similar jobs in buildings and factories around the world. In fact, you'll find Square D wherever electricity is distributed and controlled.



**SQUARE D COMPANY**  
*Executive Offices • Park Ridge, Illinois*

*For more data, circle 130 on inquiry card*





## Could joist primer paint, supplied at no extra cost, be as good as the "special" primers?

In four separate endurance tests involving 14 reputable steel joist primer paints, Armco Red Oxide Primer equaled or out-performed its more costly competitors.\*

Yet this Armco primer is "standard equipment" on all Armco Joists. There's no extra charge. And it's made to meet Federal Specifi-

cation TT-P-636c. In tests involving salt spray, humidity, accelerated weathering, and water immersion, Armco Red Oxide Primer showed equal or better resistance as compared with these other primers. When you consider that the special primers represent extra cost if you specify them, doesn't it make

good sense to use our "standard?"

Perhaps you don't know about Armco Red Oxide Primer. If not, we would be happy to send you additional joist primer information. Just send us your name and address. Armco Steel Corporation, Department W-658B, 7000 Roberts Street, Kansas City, Missouri 64125.

\*results of tests substantiating this claim are available upon request

**ARMCO STEEL**



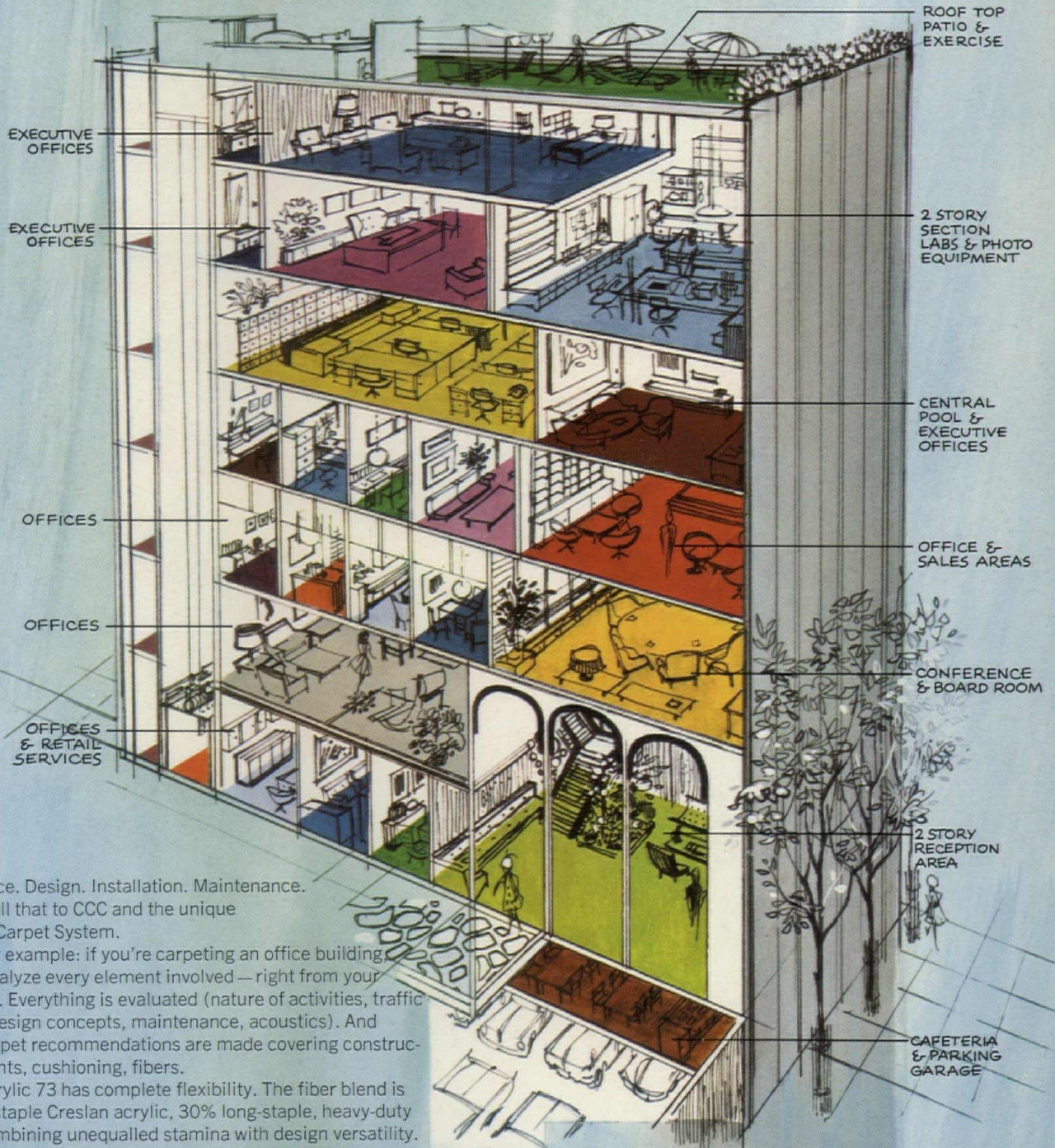
For more data, circle 131 on inquiry card

For more data, circle 132 on inquiry card



# Carpet System from CCC with Acrylic 73

Engineered to cover every detail of your carpet project.  
The benefits are yours. The responsibility is CCC's.



Performance. Design. Installation. Maintenance.  
You leave all that to CCC and the unique  
Acrylic 73 Carpet System.

For example: if you're carpeting an office building,  
CCC will analyze every element involved — right from your  
blue-prints. Everything is evaluated (nature of activities, traffic  
patterns, design concepts, maintenance, acoustics). And  
precise carpet recommendations are made covering construc-  
tions, weights, cushioning, fibers.

Acrylic 73 has complete flexibility. The fiber blend is  
70% long-staple Creslan acrylic, 30% long-staple, heavy-duty  
nylon — combining unequalled stamina with design versatility.

With CCC engineering, there's no overcarpeting or  
undercarpeting — each area gets exactly what's needed. And  
the carpet is produced in appropriate widths — minimizing  
waste and installation costs.

CCC will arrange for certified installation, warrant it,  
and set up a complete carpet maintenance schedule.

CCC is the world's largest manufacturer of commercial  
and institutional carpet systems. That's why if you're after  
top-to-bottom carpet coverage, all you do is send in the coupon.  
CCC experts will do the rest.

Creslan is a product of American Cyanamid Company, New York.

**CYANAMID** **Creslan**<sup>®</sup>  
LUXURY ACRYLIC FIBER

## CCC

Commercial Carpet Corporation  
Dept. 112  
10 West 33rd Street  
New York, New York 10001

Attention: Mr. Walter Brooks  
Please send me a copy of the booklet, "Office Carpet Systems, with  
Acrylic 73".  Please have a CCC consultant contact me.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_





## As close to forever as you can get for \$50.

Early in 1939 we made this diamond of Du Pont LUCITE® acrylic resin for display at the New York World's Fair. To the eye it was indistinguishable from an almost priceless ball of rock crystal. Yet it cost less than \$50.

Since then it's been shipped all over the United States and parts of Europe and exhibited at hundreds of trade shows. Today it is still as crystal-clear as when it was cast a generation ago.

Over the last 30 years, you've seen LUCITE in many more practical

forms: defying time and weather in brilliant, colorful signs and displays. In millions of automotive taillight lenses. In non-yellowing lighting shields. In tough, shatter-resistant skylights and industrial glazing. In vandal-resistant windows for modern schools. In decorative appliance medallions—and in durable, highly styled building faces.

In most applications, LUCITE begins with a visual appeal. It's clear, colorful, beautiful. But it continues with an economic appeal. Year after year, it cuts the costs of upkeep and of regular replacement. And your business or installation always looks

its best. These are the dividends of quality.

If your area of responsibility includes any light-handling applications, send for the booklets Du Pont has prepared on LUCITE for (1) Signs, (2) Lighting, (3) Glazing and (4) Building faces. Write: Du Pont Company, Room 5896-B, Wilmington, Del. 19898.



Better things for better living  
...through chemistry

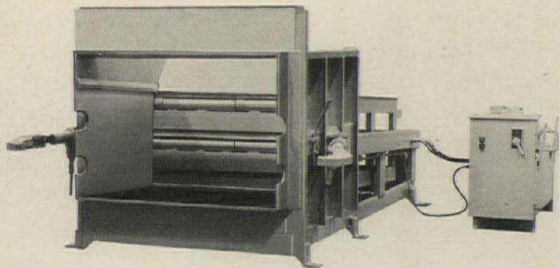
**Paying dividends  
of durability  
for over 30 years  
LUCITE®**  
ACRYLIC RESINS

For more data, circle 133 on inquiry card



## How to get more space, cut costs and handle refuse... without air pollution!

Design an E-Z Pack Fixed Packer system into your plans and reduce refuse disposal to a minor operation. Our experts will survey your needs and advise you how to minimize these problems of refuse removal.



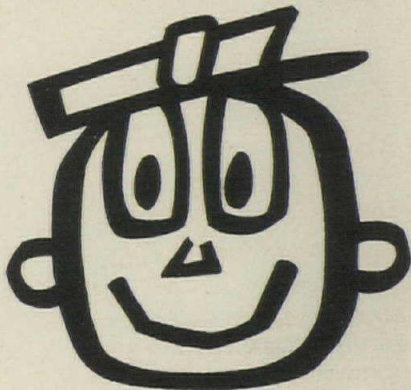
Write for free literature today.



E-Z PACK COMPANY  
Division of Hercules Gallon Products, Inc.  
Galion, Ohio 44833

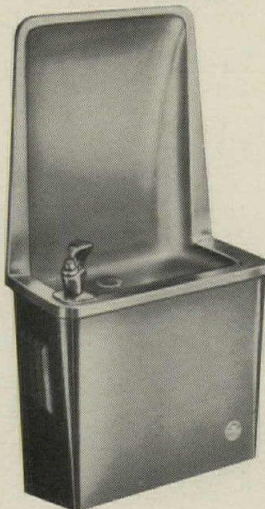
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So that you can have faster, more efficient mail service.



is the finishing touch... because:

Sunroc leads with innovations in engineering and design features acknowledged by imitators...

Is first with designs like the semi-recessed and fully recessed drinking fountains...

And first with engineering features such as lefthand bubbler, package cooling, and vandal proof drain...

With realistic pricing to meet most any construction budget...

With constant attention to the small as well as large engineering details, to assure lasting satisfaction for your most exacting client.

See Sweet's Architectural File or Mechanical Products Catalog for basic specification data, or write for A.I.A. Catalog.

## SUNROC

Box 36  
Glen Riddle, Pa. 19037

S-800

For more data, circle 145 on inquiry card



# Face your

Is your problem an old eyesore that needs a new look? A renovation? A tight budget?

O.K. Face it with Wheeling expanded steel mesh.

We can give you a choice among four configurations. In the sizes and modules you specify. They'll all

give you a clean, elegant light look. (And they'll probably save money.)

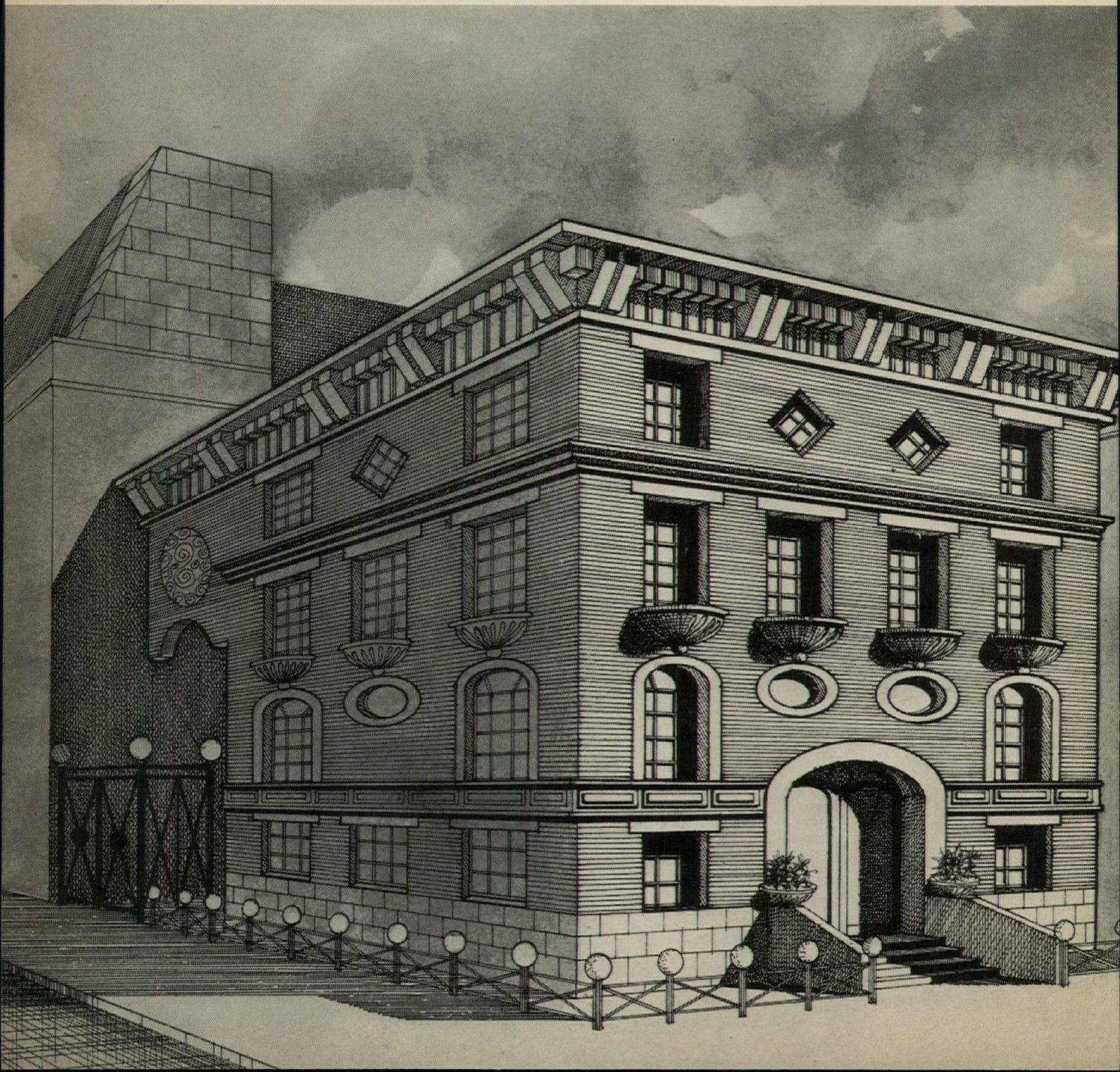
What's more, Wheeling expanded metal can be painted, lacquered, bronzed or galvanized. And it will look great.

One thing that doesn't meet the eye: Wheeling expanded steel mesh

is stronger per foot and lighter pound than the sheet of steel made from. Interesting?

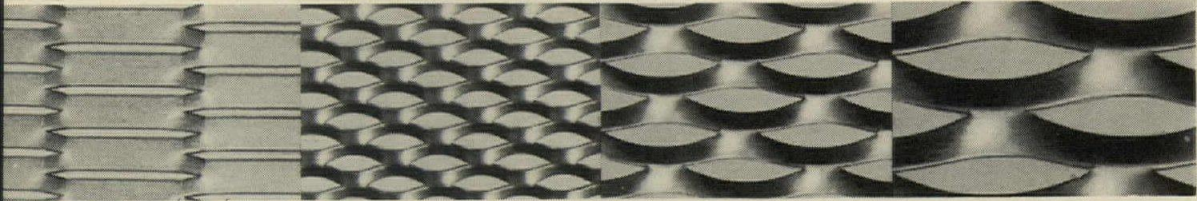
Mind you, we aren't in favor of obscuring beautiful old buildings. Just the ones that aren't beautiful.

Write us about it. (May beauty is only skin deep.)





# problems.

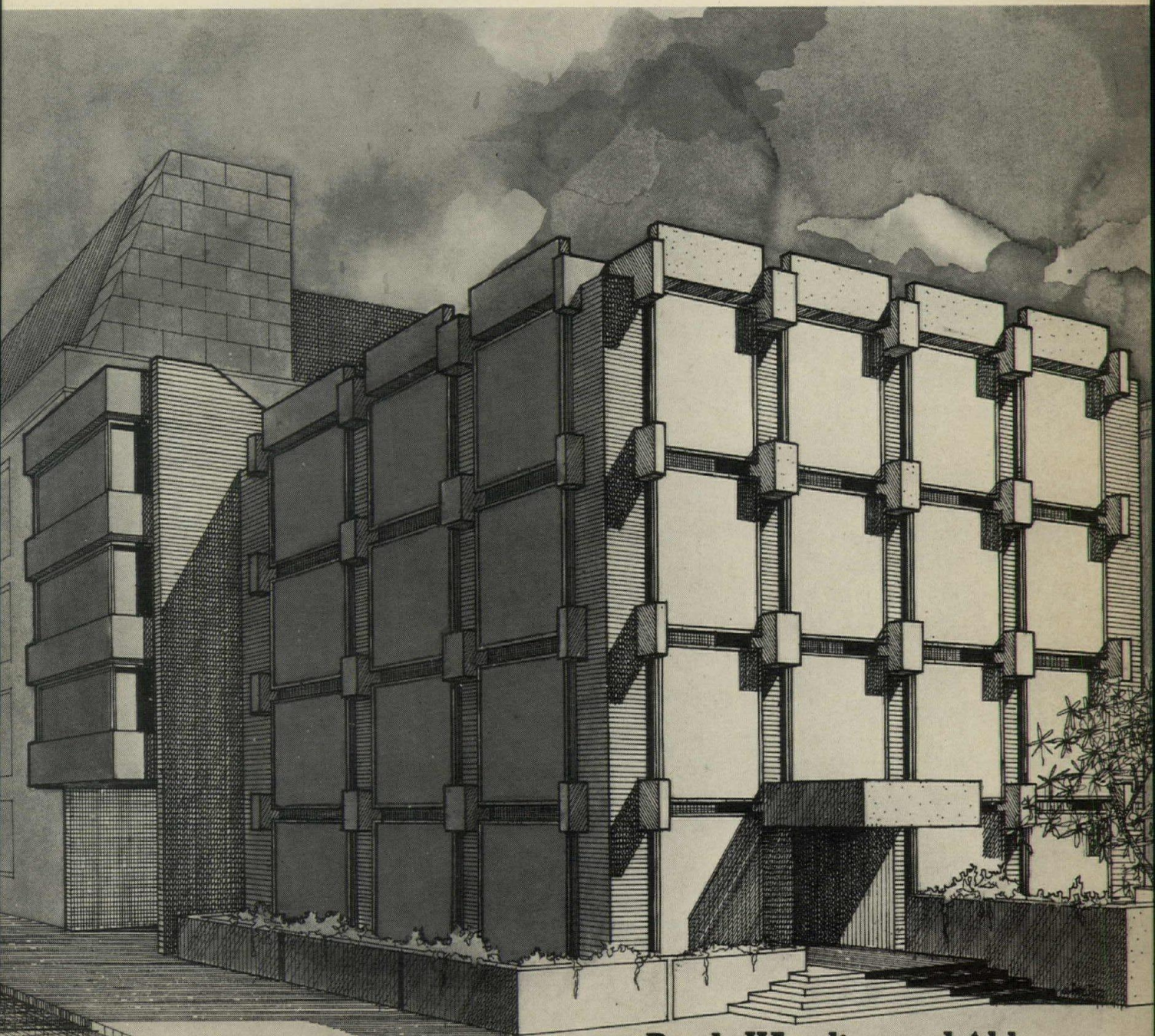


Louver mesh

1/2" facade

1 1/2" facade

No. 4 facade

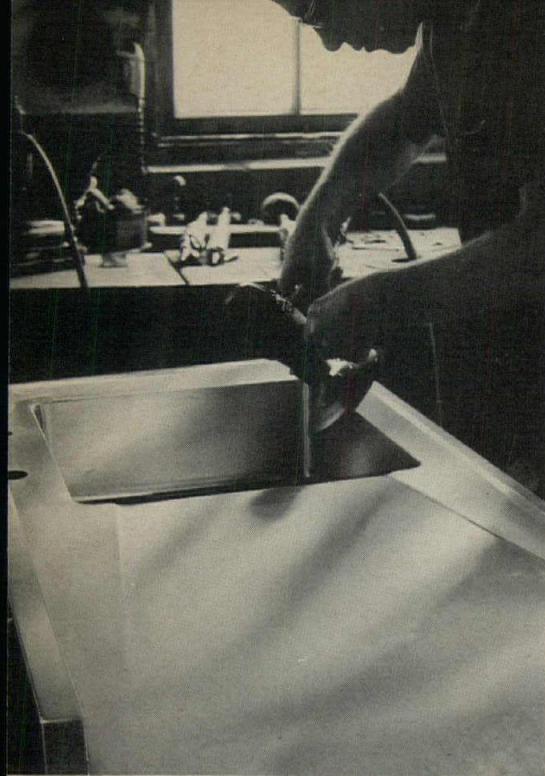


**Ready, Wheeling and Able**

Wheeling Corrugating Co., Div. Wheeling Steel Corp., Wheeling, West Virginia

For more data, circle 146 on inquiry card





## Before you design your next hospital...

check the advantages of custom-built stainless steel sinks.

Any AVM JAMESTOWN sink can be custom-built to your design requirements. You can have any shape and with the bowl in any location. They're made to fit the space available . . . no stock sizes to squeeze or stretch.

Fabricated in our own plant, exact gauge is maintained . . . no stretching, no paper-thin bends or corners. Joints are all heliarc welded and ground smooth; then hand-polished to a uniform finish.

Write Dept. 87 for full particulars, shop drawings and specifications.

Please send me: Dept. 87

"Specifications for Metal Hospital Casework"

"Hospital Casework"

"Blanket and Solution Warming Cabinets"

Name \_\_\_\_\_

Company \_\_\_\_\_

Street and No. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**AVM CORPORATION** JAMESTOWN PRODUCTS DIV.  
 (formerly Jamestown Metal Products, Inc.)  
 178 Blackstone Ave., Jamestown, N.Y. 14701  
 For more data, circle 147 on inquiry card

### REQUIRED READING

continued from page 249

COMPUTER INFORMATION SYSTEMS IN PLANNING AND RELATED GOVERNMENTAL FUNCTIONS. Edited by Mrs. Dorothy Tucker. Council of Planning Librarians, Exchange Bibliography 22. Exchange Bibliographies, Post Office Box 229, Monticello, Ill. 61856. 22 pp. \$3.00.

UTZON AND THE SYDNEY OPERA HOUSE. Morgan Publications, 104 Bathurst Street, Sydney 2000, Australia. 128 pp., illus. Paperbound, \$1.40.

HENRY HOBSON RICHARDSON AND HIS WORKS. By Mrs. Schuyler van Rensselaer. The Prairie School Press, 117 Fir Street, Park Forest, Ill. 178 pp., illus. \$25.00.

CITY AND COUNTY BOROUGH OF MANCHESTER. By J. S. Millar. City Planning Dept., P.O. Box 488, Town Hall, Manchester 2, England. 109 pp., illus.

SANDAK ARCHITECTURE CATALOG. Sandak, Inc., 4 East 48 Street, New York, N.Y. 10017. 48 pp. No charge.

BAUTEN PROJEKTE II. By Franz Heinrich Sobotka and Gustav Muller. Verlag Ernst Wasmuth, Tubingen, Germany. 218 pp., illus.

CONCRETE TECHNOLOGY AND PRACTICE. American Elsevier Publishing Company, Inc., 52 Vanderbilt Avenue, New York, N.Y. 10017. 650 pp., illus. \$15.00.

THE NEW SCULPTURE. Environments and Assemblages. By Udo Kultermann. Frederick A. Praeger, Publishers, 111 Fourth Avenue, New York, N.Y. 10003. 236 pp., illus.

LANDSCAPE INTO CITYSCAPE, Frederick Law Olmstead's Plans for a Greater New York City. By Albert Fein. Cornell University Press, Ithaca, N.Y. 14850. 490 pp., illus. \$12.50.

VICTORIAN EDINBURGH. By J. Brian Crossland. Hillary House Publishers Ltd., 303 Park Avenue South, New York, N.Y. 10010. 95 pp., illus. \$6.50.

#### 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.

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PRESENT MAILING LABEL  
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CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

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TITLE OR OCCUPATION \_\_\_\_\_

Mail to:  
 Fulfillment Manager  
 Architectural Record  
 P.O. Box 430  
 Hightstown, N. J. 08520

# Success is something you can't leave a son

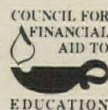


In today's complex and specialized world, success depends more and more on whether he gets a college education.

But he may not be able to get one unless the nation's colleges can answer some serious questions: How to cope with rapidly increasing student enrollments? How to keep the quality of education constantly improving with more modern laboratories, better libraries, new classrooms? How to attract able new faculty members?

Your support will help colleges answer these questions . . . help them make your son ready for his world.

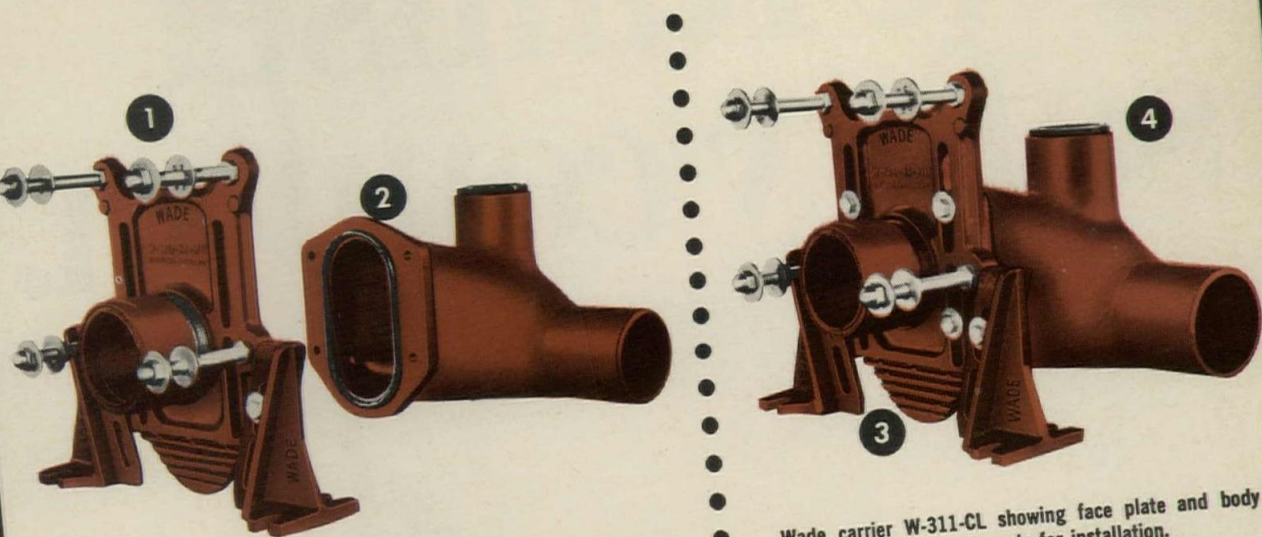
Give to the college of your choice.



advertising contributed for the public good



# WADE CARRIER-FITTINGS



Wade carrier W-311-CL with face plate and body fitting parted to show positive seal gasket feature.

Wade carrier W-311-CL showing face plate and body fittings assembled and ready for installation.

## NOW COMPLETELY IMPROVED TO DO THE JOB BETTER!

Wade's entire line of rugged commercial and industrial Carrier-Fittings have been redesigned and improved to provide the ultimate in quick installation and life-time service. A complete selection for every modern application is available — vertical or horizontal; standard or extra-long spigots. All have these new, improved features . . .

1. **EXCLUSIVE WADE BOWL-SAVER NUT** prevents breakage of siphon-jet water closets.
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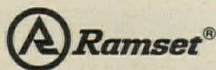
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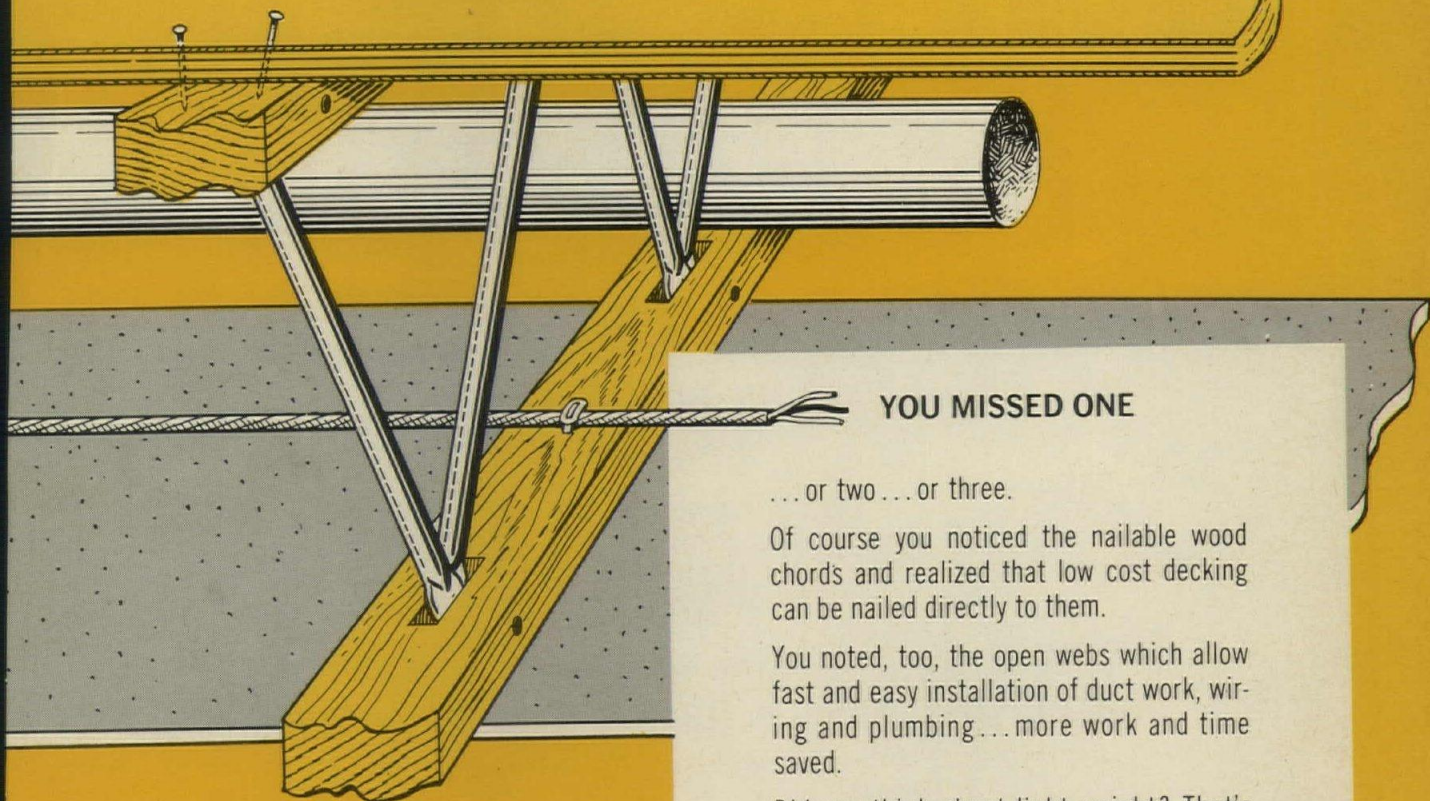
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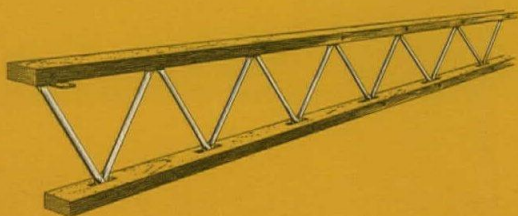
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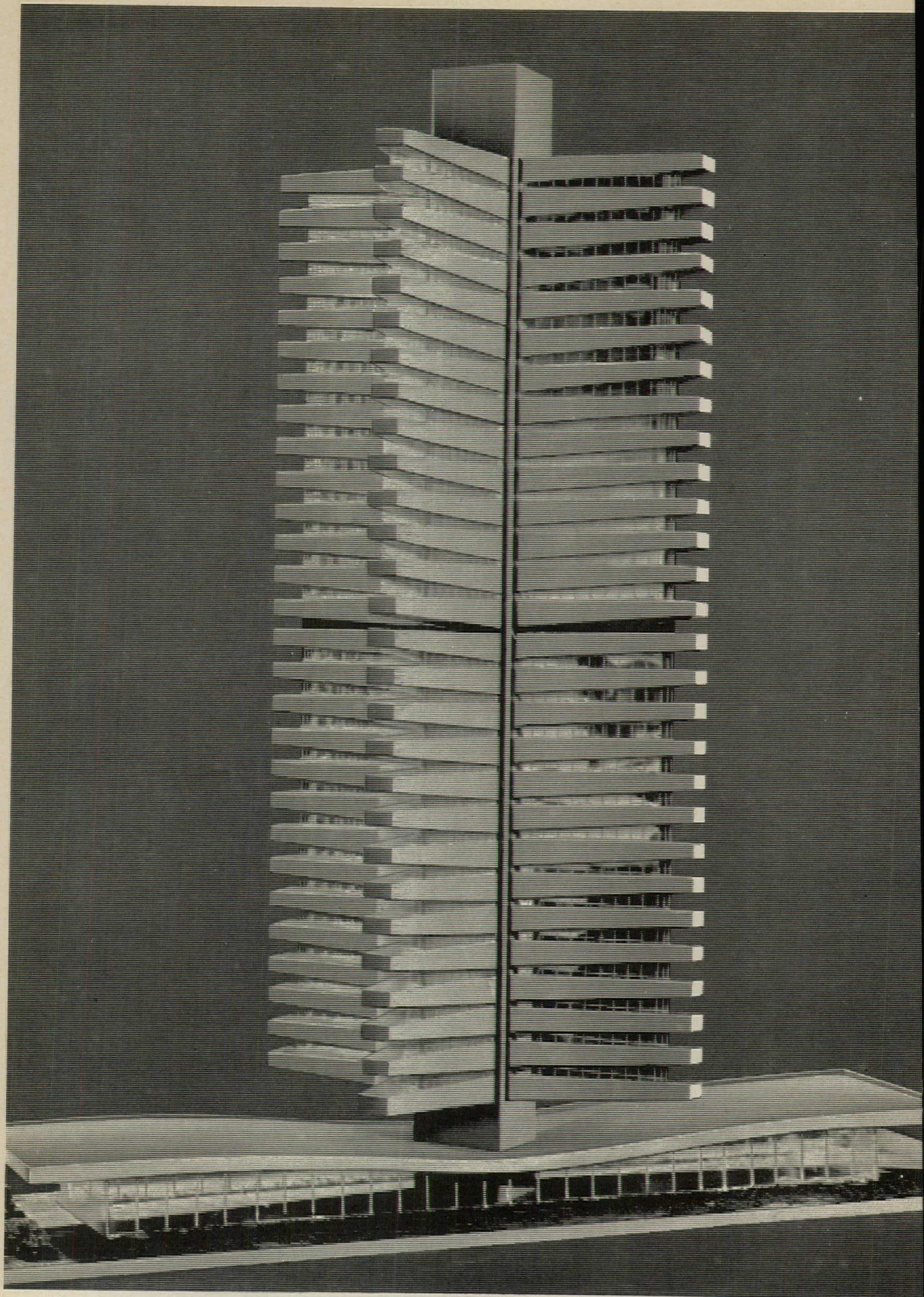


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