



KALLMANN & MCKINNELL'S NEW ATHLETICS FACILITY AT PHILLIPS EXETER ACADEMY

BUILDING TYPES STUDY: SMALL OFFICE BUILDINGS

SPECIAL REPORT: NEW TRENDS IN AUDIO-VISUAL DESIGN

A RENOVATION: VIGOROUS MODERN IMAGES WITHIN THE ORDERLY FORMS OF THE PAST

SEMI-ANNUAL INDEX ON PAGES 220-223

FULL CONTENTS ON PAGES 4 AND 5

# ARCHITECTURAL RECORD

# Brighten the outlook. With



# stylable standard doors.

No specials. Just full flush doors that we or our distributors can louver and light the way you wish! Sturdy, honeycomb inner structure plus quickly fitted snap-on glazing beads make it easy for you to customize Republic full flush doors for *any* decor or function. And *beautifully*.

You get one-of-a-kind doors at mass production prices!

Add full choice of colors, craftsman's attention to detail and finish, plus matching standard or fit-anywhere doorframes and it's probably the best door buy you can make, *anywhere*.

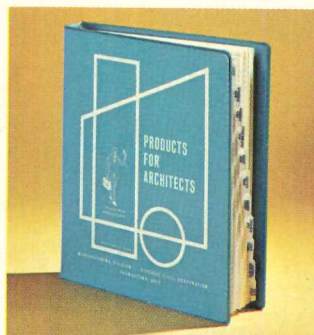
Then, for the walls that create the room behind the door—Republic's economical, easy-up FRAME-A-LITE stick system! Easily fitted steel sections frame in walls, halls, and entries fast. Assured square, too—no planing or mortising on the job. And FRAME-A-LITE sticks won't ever sag, rot, shrink, or warp due to moisture!

Our representative in your area has demonstration samples.

For more complete product information, write for our architectural products manual or call Republic Steel Corporation, Manufacturing Division, Youngstown, Ohio 44505.



Republic FRAME-A-LITE stick system — unlimited design flexibility for entrances, halls, windows, or entire walls. No costly planing or mortising. The excellence of your own design with the cost savings of standard components



Write for our architectural products manual.



**Republicsteel\***  
Manufacturing Division

\*A trademark of Republic Steel Corporation

For more data, circle 2 on inquiry card

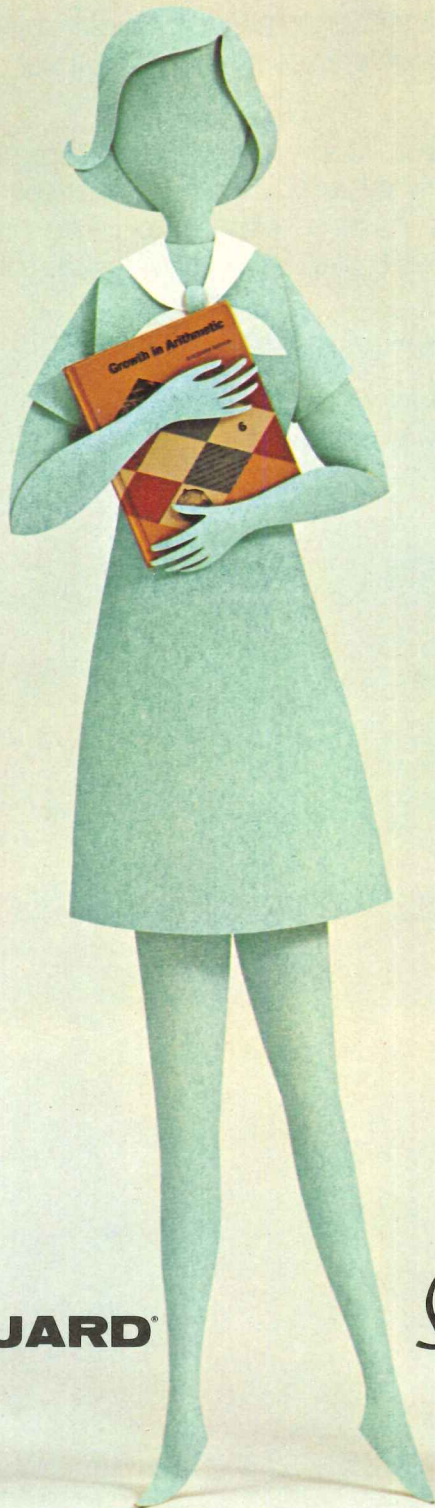
*You can make  
a theatre lobby  
as exciting as  
Broadway with  
"Bright Lights"  
on the walls.*

*You can make  
a classroom  
as tough as  
new math with  
"La Plata"  
on the walls.*

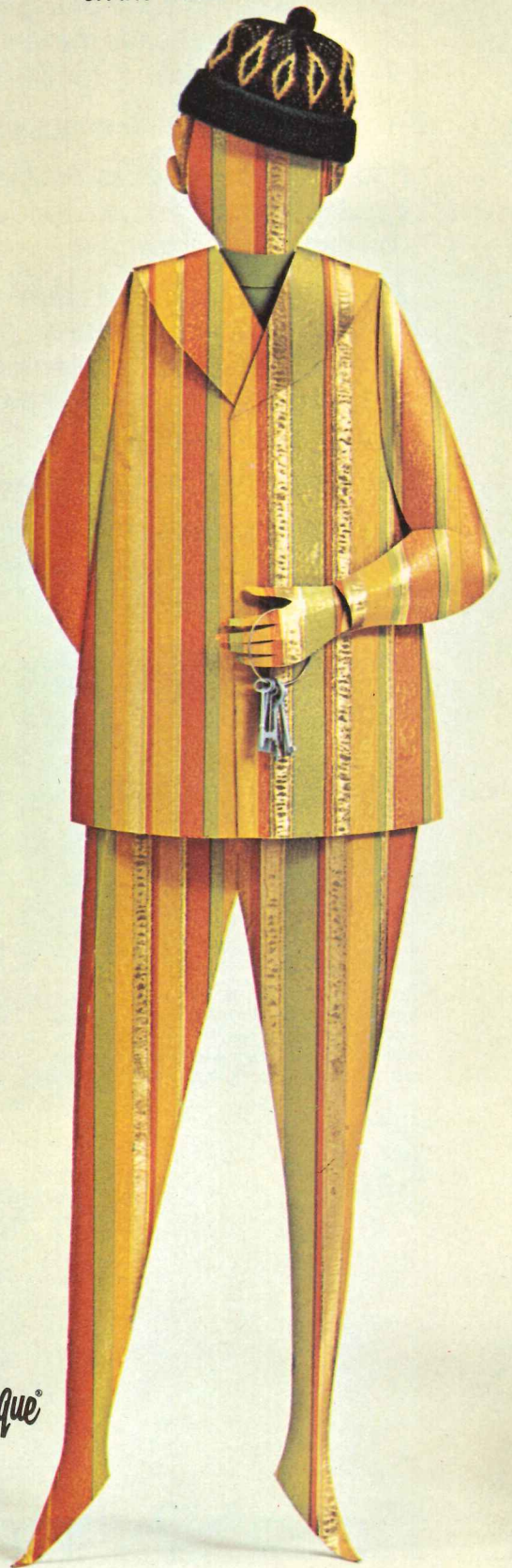
*You can make  
a ski lodge  
as invigorating  
as schussing  
with "Holiday"  
on the walls.*



**Wall-Tex**



**GUARD**



*Satinesque*

# Our wallcoverings can make your interiors exciting, tough, invigorating...and more.



Whatever you want an interior to be or do or go through, just look to Columbus Coated Fabrics. In our three basic lines — Guard®, Satinesque®, Wall-Tex® — we offer over 1200 fabric-backed vinyl wallcoverings, the industry's largest collection. Something for any style, any setting, any need, really, and if you can't find exactly what you want, our Custom Design Center will make it. But that's not all. Our staff of professionals will give you any advice you need, even go on site to make sure everything's right before, during, and after installation. Then, consider these other advantages: our wallcoverings are easy to hang, pre-trimmed for perfect matching, a cover-up for imperfections in walls when renovating, washable, long lasting, and easy to remove when it's time to change. Of course, they meet building codes and are UL listed. Write. We'll send you complete specifications. Then you can see for yourself . . . how much more we can do for you.



COLUMBUS COATED FABRICS  
Division of Borden Chemical, Borden, Inc.  
Dept. B, Columbus, Ohio 43216

For more data, circle 3 on inquiry card



Cover: New Athletics Facility, Exeter, New Hampshire.  
Architects: Kallmann & McKinnell  
Photo: Ezra Stoller © ESTO

#### EDITOR

WALTER F. WAGNER, JR., A.I.A.

#### MANAGING EDITOR

HERBERT L. SMITH, JR., A.I.A.

#### SENIOR EDITORS

ROBERT E. FISCHER  
WILLIAM B. FOXHALL  
MILDRED F. SCHMERTZ, A.I.A.  
ELISABETH KENDALL THOMPSON, F.A.I.A.

#### WASHINGTON EDITOR

ERNEST MICKEL, Hon. A.I.A.

#### ASSOCIATE EDITORS

ROBERT JENSEN, A.I.A.  
JAMES D. MORGAN, A.I.A.

#### ASSISTANT EDITORS

BARCLAY F. GORDON  
JONATHAN HALE  
ANNETTE K. NETBURN

#### EDITORIAL ASSISTANT

DANISE PICONE

#### DESIGN

ALEX H. STILLANO, Director  
ALBERTO BUCCHIANERI, Associate  
JUDY GEIER, Assistant  
SIGMAN-WARD, Illustration  
JAN WHITE, Consultant

#### EDITORIAL CONSULTANTS

EDWARD LARRABEE BARNES, F.A.I.A.  
ROBERT F. HASTINGS, F.A.I.A.  
PAUL RUDOLPH, F.A.I.A.

#### INDUSTRY CONSULTANTS

GEORGE A. CHRISTIE, JR., Economics  
WILLIAM H. EDGERTON, Building Costs

#### McGRAW-HILL WORLD NEWS

WALTER A. STANBURY, Director  
20 domestic and  
international news bureaus

#### PUBLISHER

BLAKE HUGHES

#### SALES MANAGER

LOUIS F. KUTSCHER

#### CIRCULATION MANAGER

HUGH S. DONLAN

## THE RECORD REPORTS

### 9 Editorial

Some random thoughts  
on the eve of the Convention

### 35 News in brief

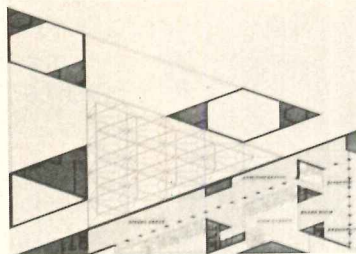
Short items of major national  
interest, as well as award-winners  
and announcements.

### 36 News reports

Tokyo plans radical transit  
solutions; tempest in a San  
Francisco fountain; a group  
of sculptors goes architectural.

### 40 Buildings in the news

Includes 1971 A.I.A. Honor  
Awards; I.M. Pei's National  
Gallery addition (below); a  
church within a church in  
Louisville; and a day care center  
designed to help tie its  
neighborhood together.



## ARCHITECTURAL BUSINESS

### 69 A professional approach to construction management and project administration

Construction management is taking on some of the aspects of a new profession as architects, contractors and consultants are being commissioned on a fee basis to provide cost and construction method expertise during design development as well as during post-bid coordination of multiple contracts and phased construction, increasingly applied to large projects in educational, medical and public buildings. This extract of a book now in work sorts out some of the professional lines of agency toward clients and puts into perspective some of the apprehensions natural to such new developments.

### 76 Construction labor in the sixties: the phenomenon of scarcity

Taking a look at the unbalanced growth and shifting mix of building types in the last decade, economist James E. Carlson sees some cause for optimism in the future as artificial shortages of labor in certain construction categories respond to stabilizing influences.

### 80 Indexes and indicators

Look behind the numbers

ARCHITECTURAL RECORD (combined with AMERICAN ARCHITECT, ARCHITECTURE AND WESTERN ARCHITECT AND ENGINEER, June 1971, Vol. 149, No. 7. Title © reg. in U.S. Patent Office © copyright 1971 by McGraw-Hill, Inc. All rights reserved. Copyright not claimed on four-color illustration on front cover and on pages 102, 107, 109, 110, 118, 119. Indexed in Reader's Guide to Periodical Literature, Art Index, Applied Science & Technology Index, Engineering Index, and The Architectural Index. Published monthly, except May when semimonthly, by McGraw-Hill, Inc. Quotations on reprints of articles available. Every effort will be made to return material submitted for possible

publication, but editors and corporation will not be responsible for loss or damage. EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 330 West 42nd Street, New York, N.Y. 10036. Other Editorial Offices: 425 Battery Street, San Francisco, Cal. 94111; 1249 National Press Building, Washington, D.C. 20004. PUBLICATION OFFICE: 1500 Eckington Place, N.E., Washington, D.C. 20002; second-class postage paid at Washington, D.C. OFFICERS OF McGRAW-HILL PUBLICATIONS COMPANY: John R. Emery, president; J. Elton Tuohig, senior vice-president—services; George H. Reppert, group vice-president; vice presidents: Ralph Blackburn, circulation; John

**FEATURES**

**97 A prep school athletics building**

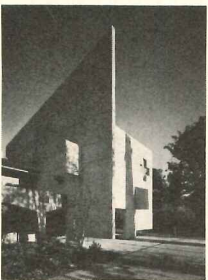
Phillips Exeter Academy's new physical education facility designed by Kallmann & McKinnell suggests new directions, not just for gym design but for architecture itself.

**107 Clinton Youth and Family Center**

by James Stewart Polshek Associates, and Walfredo Toscanini. This small, brightly painted renovation project has turned a former New York City Court building into an outstanding neighborhood recreation and learning center.

**111 Three religious buildings**

An Episcopal church by Paul Thiry, a Presbyterian church by Burton Rockwell and Richard Barwell, and new parish facilities for a Unitarian church by Callister, Payne and Rosse, point up the broadening community use of religious buildings.



Morley Baer

**117 Designs for California City**

A new city near Los Angeles has hired Venturi and Rauch to apply some of their controversial design ideas to the creation of new architectural images and signs for the area.

**BUILDING TYPES STUDY 423**

**121 Low-rise office buildings**

Many companies have reassessed their need for office space in downtown areas as land costs and parking needs increase.

**122 Headquarters for Union Camp Corporation**

on a 50-acre wooded site by Schofield and Colgan, architects.

**124 Volkswagen Northeastern Distributor, Inc.**

Administration, training center and warehouse by Drummey Rosane Anderson, Inc., architects

**126 CBS' major West Coast headquarters**

for TV program and motion picture production by Daniel L. Dworsky & Associates, architects.

**128 Alza Corporation**

Headquarters and laboratory for a pharmaceutical company by McCue, Boone Tomsick, architects.

**130 Ward Plaza, Honolulu**

Rental offices in a four-building complex by Au, Cutting, Smith & Associates, architects

**132 Headquarters Building, Kissinger Petroleum Ltd.,**

by Rogers, Nagel Langhart, Inc., architects

**134 Western States Bankcard Association**

A single-user speculative building, designed, delivered and in operation in one year by M. Arthur Gensler & Associates, architects

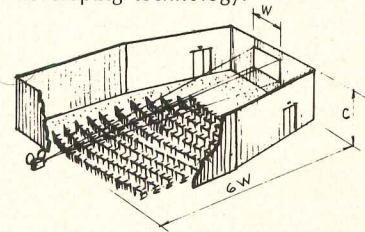
**136 American Forest**

Office building and warehouse by Fletcher, Finch & Associates, architects.

**ARCHITECTURAL ENGINEERING**

**137 The planning disciplines of audio-visual facilities**

If audio-visual communications are to work effectively, then their requirements must be considered in the very early stages of building design. This special report discusses some of the specific design guides involved in providing for both good sight and good sound—which may suffer if the implications of the "rules" are not fully understood. Further, provisions must be made for the future because of growing client interest and the rapidly developing technology.



**149 Products Reports**

**182 Office Literature**

**194 Personal Business**

**215 Record Impressions**

**220 Semi-Annual Index**

**224 Advertising Index**

**226 Classified Advertising**

**227 Reader Service Inquiry Card**

R. Callahan, editorial; William P. Giglio, administration; David G. Jensen, manufacturing; Jerome D. Luntz, planning & development; Joseph C. Page, marketing; Robert M. Wilhelmy, finance.

CORPORATION OFFICERS: Shelton Fisher, president; Joseph H. Allen, group vice president—publications and business services; John J. Cooke, senior vice president and secretary; Ralph S. Webb, treasurer.

SUBSCRIPTIONS: Subscriptions solicited only from architects and engineers. Position, firm connection, and type of firm must be indicated on subscription orders; CHANGE OF ADDRESS or subscription service letters should be forwarded to Fulfillment Manager, ARCHITECTURAL

RECORD, P.O. Box 430, Hightstown, N.J. 08520. Provide old and new addresses, zip code or postal zone number. If possible, attach issue address label. Annual subscription prices: U.S., U.S. possessions and Canada: \$7.50 for architects, engineers and other individuals in the fields served, all others \$20.00. Other countries: \$18.00 to architects, engineers; others \$24.00. Single copies \$3.00. UNCONDITIONAL GUARANTEE: Publisher agrees to refund that part of subscription price applying to unfilled part of subscription if service is unsatisfactory. ASSOCIATED MCGRAW-HILL SERVICES: Daily Construction Reports (Los Angeles)—Dodge Building Costs Services—Dodge Construction News (Chicago, Denver, San

Francisco)—Dodge Construction Statistics—Dodge Reports—Dodge Spec-Fax—Management Control Service—Sweet's Construction Catalog Systems—Sweet's Canadian Construction Catalog Services—Sweet's Information and Library Centers—Sweet's Microfilm Systems. THIS ISSUE is published in national and separate editions. Additional pages of separate edition numbered or allowed for as follows: Western Section 32-1 through 32-8. POSTMASTER: Please send form 3579 to Fulfillment Manager, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, N.J. 08520.



We grew up in New York...





but the next time you're in Los Angeles, Toronto,  
Louisville, San Francisco, Montreal, Milwaukee,  
Washington, D.C., Chicago, Houston,  
etc., etc., etc.,  
stop in and see us.

We grew up in New York. Every elevator manufacturer should be so lucky. Nothing builds strength and develops talent like stiff competition. And you won't find keener competitive spirit among elevator manufacturers than there is in New York City. For obvious reasons, it's the Grand Prix, the "Indy 500" of elevatordom. Growing up in New York was a great beginning . . . but just a beginning. Today, Armor capability is right next door . . . from coast to coast and

throughout Canada. We can take you as high as you want to go . . . in buildings of any size, shape or kind. So whether you are building or renovating, stop in and see us . . . wherever you are. For further information, ask for our "Guide for Elevator Planning" or refer to the Armor Catalog in Sweet's. Armor Elevator Company, Inc., 3533 N. 27 Street, Milwaukee, Wisconsin 53216. Plants in Louisville, New York, Los Angeles, Toronto, and Vancouver. Offices everywhere.

**Armor**  
ELEVATOR

A SUBSIDIARY OF **RSmith** CORPORATION

For more data, circle 4 on inquiry card





# The Unspoiler:

## A new look in automatic sprinklers

It's out of sight. The *only* truly concealed automatic sprinkler around. Perfect for the interiors you really care about.

Hidden up there behind a perfect ceiling-matched cover plate...THE UNSPOILER is ready to pop out—then spray away when fire threatens. And it's Factory Mutual Approved.

So fit out your best looking interiors to snuff out fires—beautifully. Write for our complete, fact-packed, full-color brochure on THE UNSPOILER.

Star Sprinkler Corp.,  
4545 Tacony St., Phila., Pa. 19124



For more data, circle 5 on inquiry card

## Some random thoughts on the eve of the Convention

On June 20th, the 1971 A.I.A. Convention and National Building Products Exposition will convene in Detroit. I hope it has the biggest attendance ever, because it is a critically important convention, relating directly to the most important problems of our time—both as citizens and as professionals.

**There are two major "think" sessions involved: First, Bob Hastings' professional program on "The Hard Choices."** Hard Choice No. 1: "Will Americans accept a national program for urban growth?" Hard Choice No. 2: "How do we best use our resources to meet basic human needs?" Hard Choice No. 3: "What do we have to give up to create a livable environment?" Hard choices indeed, cutting right to the problems that affect our industry, the profession . . . and all the people. The problems of how much taxes we are really willing to pay not just to maintain our own communities but other communities that desperately need help; educate not just our own children, but other children who desperately need help; see to the health needs and job needs not just of ourselves and our neighbors, but others who have great needs and no means to meet them. Given the quality and qualifications of the speakers and panelists (which include Canada's Minister Without Portfolio for Housing, Hon. Robert K. Andras; Kenneth Gibson, the mayor of the desperately troubled city of Newark, N.J.; Common Cause's John Gardner; architect Paul Ylvisaker, professor of public affairs and urban planning at Princeton and a foremost authority on social study and innovation affecting the public; and Russell Train, chairman of the Council on

Environmental Quality) this program should effectively come to grips with the real problems that so affect the way we live and the quality of our living—whether we are rich or poor or inbetween. Questions of racial problems, unemployment problems, the monstrous injustices and imbalances of our welfare programs, land speculation. Do we really want to rebuild our cities? Are we really ready to start diverting some of the enormous funds poured into roads into mass transit? Are we willing to pay the enormous price to rid our air and water of its poisons—a price measured not just in money (for treatment), but perhaps in reduced services (no SST) and conveniences?

Well, we all know the problems. Now the question is (and the question to be discussed at the Convention) is how much of a commitment are we—as architects, and as citizens—ready to make to get on with solving them? And what kind of goals should the profession set?

For in these areas of human involvement—on questions affecting the nature of our environment—who is better equipped (indeed, who has a greater responsibility) to set goals than the design professions? For architects, in increasing numbers and with growing influence, are into these real problems—education, minority opportunity, advocacy planning and low-income housing both individually and through the Community Design Centers; large-scale planning through the government agencies; environmental concerns through local action groups and the A.I.A.'s effective nationwide advertising campaign.

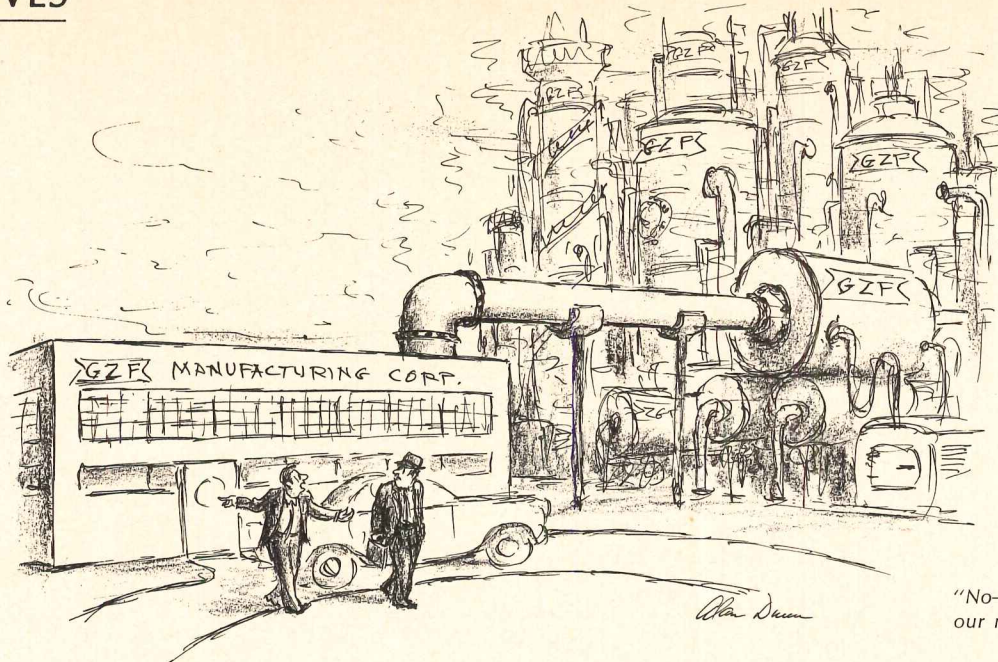
The Federal government is, of course, talking more about such goals than ever be-

fore—one could imagine he sees progress towards a national land use policy (RECORD, May, page 117); and progress towards a rational welfare policy. And the government has set up new agencies concerned with pollution.

But in addition as large and prestigious an organization as the American Institute of Architects might very well, it seems to me, emerge from its discussions at the Convention with its own set of goals. For if—in the matter of how we are to live—the design professionals cannot come up with an agreed upon set of goals and techniques to reach those goals, then who can? What could the A.I.A. do to promote those goals? As a voice from the crowd said two conventions ago: "The A.I.A. *could* make 23,000 times as much noise as Ralph Nader."

**The second major think session is the Building Team Conference, co-sponsored by the A.I.A. and Producers' Council** as a "convention within a convention". This session is a bit more "within the family"—relating to *how* we are going to build to meet the goals of "The Hard Choices." Its objectives: "To put the future role of the building team into perspective; keep you abreast of new developments in construction management and technology; provide an annual gathering place for all members of the building team. . . ."

Those are, of course, important objectives; and knowledgeable and respected men have been gathered to discuss them—with the keynote being set by former Chairman of the Board of U.S. Steel, Roger Blough. Other panelists include the GSA Commissioner Arthur Sampson, his assistant commissioner for construction management, Walter Meisen, and Frank Matzke of the New York State University Construction Fund (two of the biggest clients in the history of the world); three architects from firms which have really been there when it comes to phased construction and construction management (Thomsen of CRS,



"No—this is our factory—That's just our new pollution-control unit."

Meathe of Smith, Hinchman & Grylls, and George Heery of Heery & Heery); Norman Rutgers of Lennox (a manufacturer which really knows its systems because it was there—SCSD et al); William Collins of big and experienced builder Del E. Webb Corp., Robert Blake of HEW (which is moving heavily into speeded-up construction), and Michael Brill of the School of Architecture and Environmental Design, State University of New York at Buffalo. The panels will discuss construction management, phased construction, "building team management and the changing role of traditional disciplines," systems and interface problems, aggregating markets and mass purchase of components, and "how smaller firms can get a piece of the action."

It's an important set of ideas, which of course all of us have been talking about, and a great many architects have been working with, for some time. A.I.A. and Producers' Council hope to attract to this session engineers, general contractors, sub-contractors, owners, manufacturers, government officials, developers, administrators, and financiers. These are of course traditional members of "the building team"—and it is good to see them meeting on the traditional and professional ground of the architects (as it is encouraging to see architects and interior designers meeting on common ground at NEOCON in Chicago, June 23-25). I've said what I had to say (editorial, April) about the "new consultants" and "paraprofessionals who are not architects and who do not really understand design, all checking up on each other and undercutting the architect's professional decisions." All I would add now is that I hope that with the members of "the team" assembled on the architects' ground on June 21st, the word "professionalism" comes up, and that the critical and essential difference between professionalism and skills is made clear. Senior editor Bill Foxhall, in the preface to a book on construction management soon to be published

jointly by A.I.A. and RECORD, puts it well (for more details, see page 69): "Professionalism is an essential and inherent quality of every human process that combines both specially trained knowledge and dedicated action on behalf of a client. This is so because professional skill and integrity provide the only bulwark against failure or corruption of the process—be it judicial, medical, or architectural. Further the processes that must be served by the professions are the basic ones by which the human condition is uplifted and sustained.

"Management itself [whether it is carried out by an architect, a general contractor, or a super-janitor] is not of and by itself professional within the context of the traditional role of architect (or lawyer, or doctor) as agent for the owner. Neither is architecture—or engineering—or medicine—or law—professional when these are entrapped in business without free and responsible agency towards their clients. . . ."

This fundamental difference between professionalism and skill is critical to understanding of the team concept. If we divide the building process into its pieces—take, say, Bob Hastings' "decision, design, delivery" concept—we find different teams (or, if you prefer, sub-teams within "the building team" or, different mixes of the whole process team) involved at each stage:

At the decision stage, we have the owner and the architect, plus whatever programming consultants are appropriate. This is the stage at which normally you might have engineers, planners, real-estate consultants, management consultants, financial consultants and others as "a programming team"—supplying professional advice on what the client needs and how much he can spend to build it. "This service," Bob Hastings argued in a RECORD article (November 1968), "Must be provided professionally, as distinguished from an entrepreneurial production service, so that the advice that is presented can be unbiased advice and can help a client make the very im-

portant decisions as to whether or not it is good judgment to go ahead with the project in the first place."

In the design stage, we have the architect and the owner, plus whatever consultants are needed to solve the design problem. Here, at this creative stage, we might see involved with the architect and owner such consultants as engineers, planners, landscape architects, sociologists, psychologists, economists, and cost consultants—all providing the architect with the professional inputs he needs to make the best possible design solution within the framework established by the decision stage. At this stage, if normally entrepreneurial skills (manufacturers' engineers, or contractors who might be involved in the actual construction, or delivery, phase) are involved, they should be provided on a professional, non-biased basis—not as a consideration for entrepreneurial advantage—or the client cannot get non-biased counsel, and has no agent. The design stage, then, involves a second team, or a second sub-team within "the building team."

At the delivery stage, we see a third team or "sub-team"—the general contractor, sub-contractors, and materials suppliers—applying their production skills to the final stage of the process—construction. The architect's traditional role here has been one of inspection and approval on behalf of the client—again a professional role of agency. If, as is happening, alternates develop in the delivery stage (for example, a construction manager is required to handle multi-contract phased construction where there is no general contractor in a conventional role) then these construction managers (whether they are architects, or GC's, or ex-prize fighters) must act as professionals and assume professional responsibility for their work.

The alternate to professionalism is, it seems to me, an environment where the lowest common denominator becomes standard.

—Walter F. Wagner Jr.

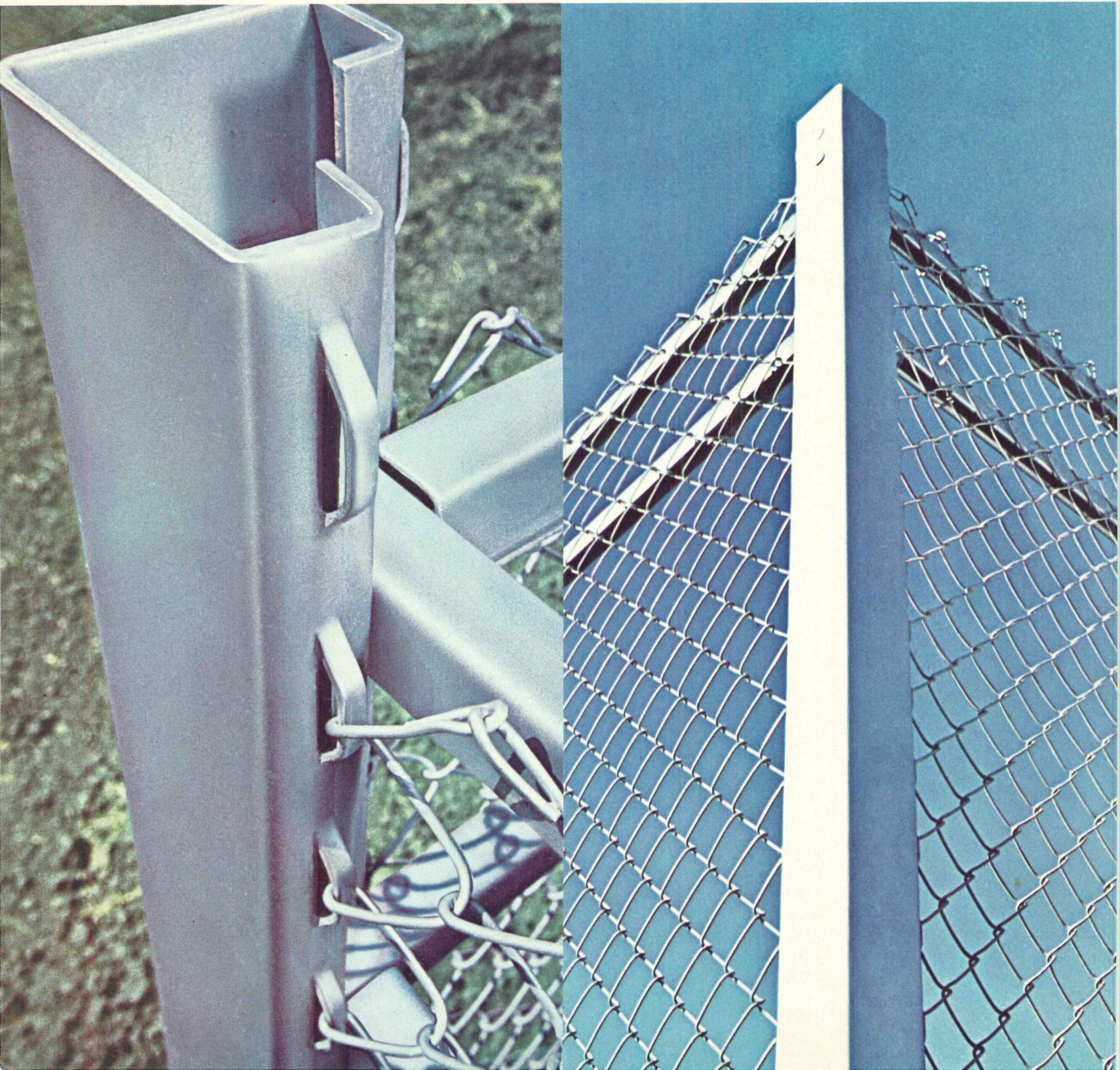


**What's happened to the necessary evil?**

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

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

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

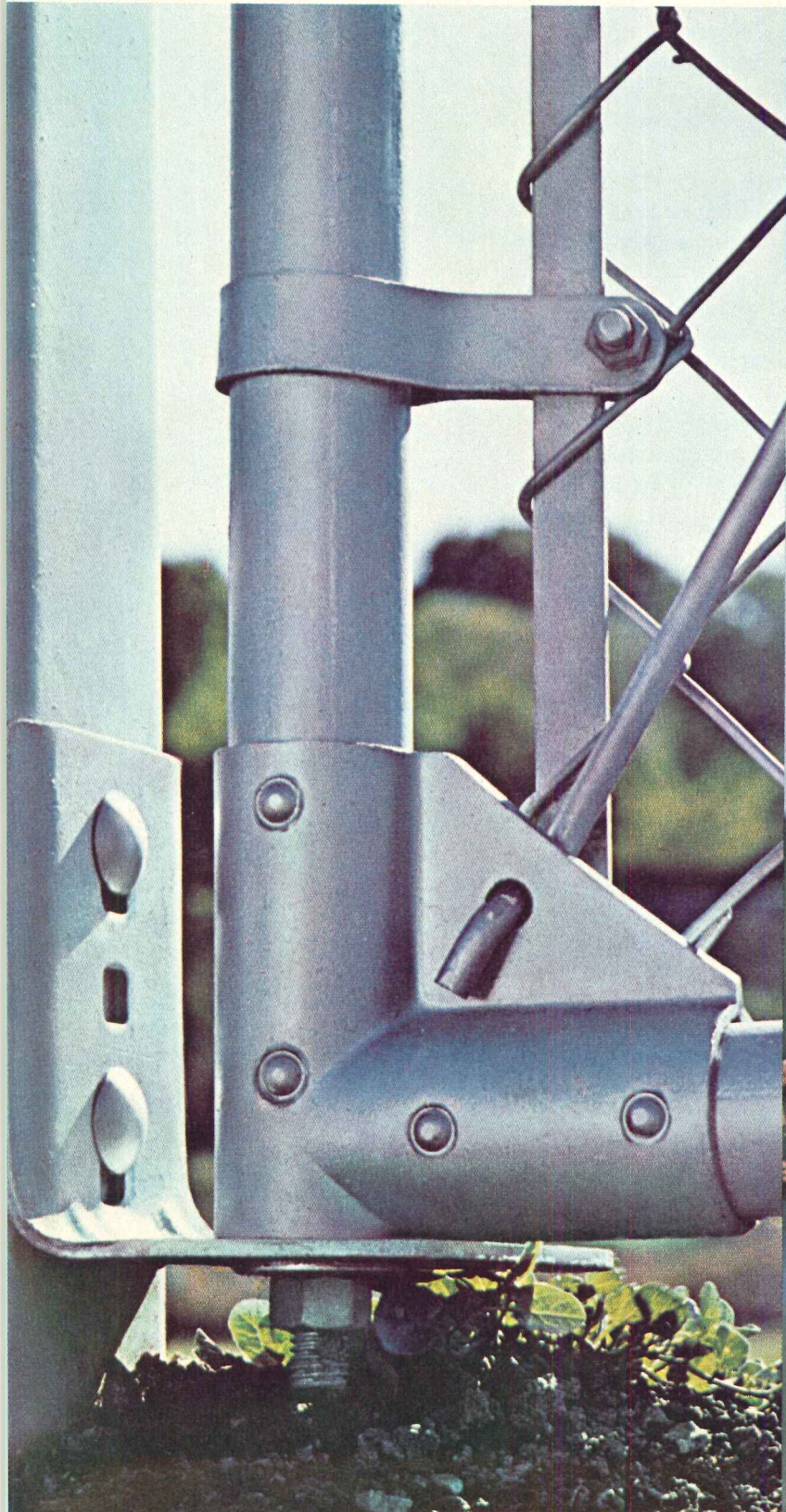


# USS Cyclone Fence

USS & Cyclone are registered trademarks

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

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



# How to specify the new technology in fence:

Basic Specifications\* (Circle one of each):

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

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

Barbed Wire: 3 strands, 6 strands, none

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

Line Posts: 2.7#H or 4.1#H

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

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

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

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

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

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

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

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

\*Non-restrictive specifications



## Cyclone Fence

USS & Cyclone are registered trademarks

For more data, circle 6 on inquiry card





# Has the Coast Guard gone soft?



U.S. Coast Guard Barracks  
Elizabeth City Air Base  
North Carolina

Architect:  
Office of Engineering  
U.S. Coast Guard  
Washington, D.C.

General Contractor:  
Fred C. Gardner, Co., Inc.  
Kinston, North Carolina

Panel Manufacturer:  
Southern Block & Pipe Corp.  
Norfolk, Virginia

Not on your life! If it had, it wouldn't have chosen precast exposed aggregate concrete panels for its beautiful new barracks at Elizabeth City, North Carolina. Concrete is still the toughest, most versatile building material known to man.

More and more of today's striking architecture is being done with precast concrete panels. The reasons: panels permit fast building completion, demand little or no maintenance, and can be fashioned into just about any shape or size the designer demands. This is not to mention the color variety, textural delicacy, and the light and shadow interplay that can be achieved through the use of panels.

Precast concrete panels have made the old tar paper palace a thing of the past. They just don't build barracks the way they used to anymore.

Has the Coast Guard gone soft?

Negative.

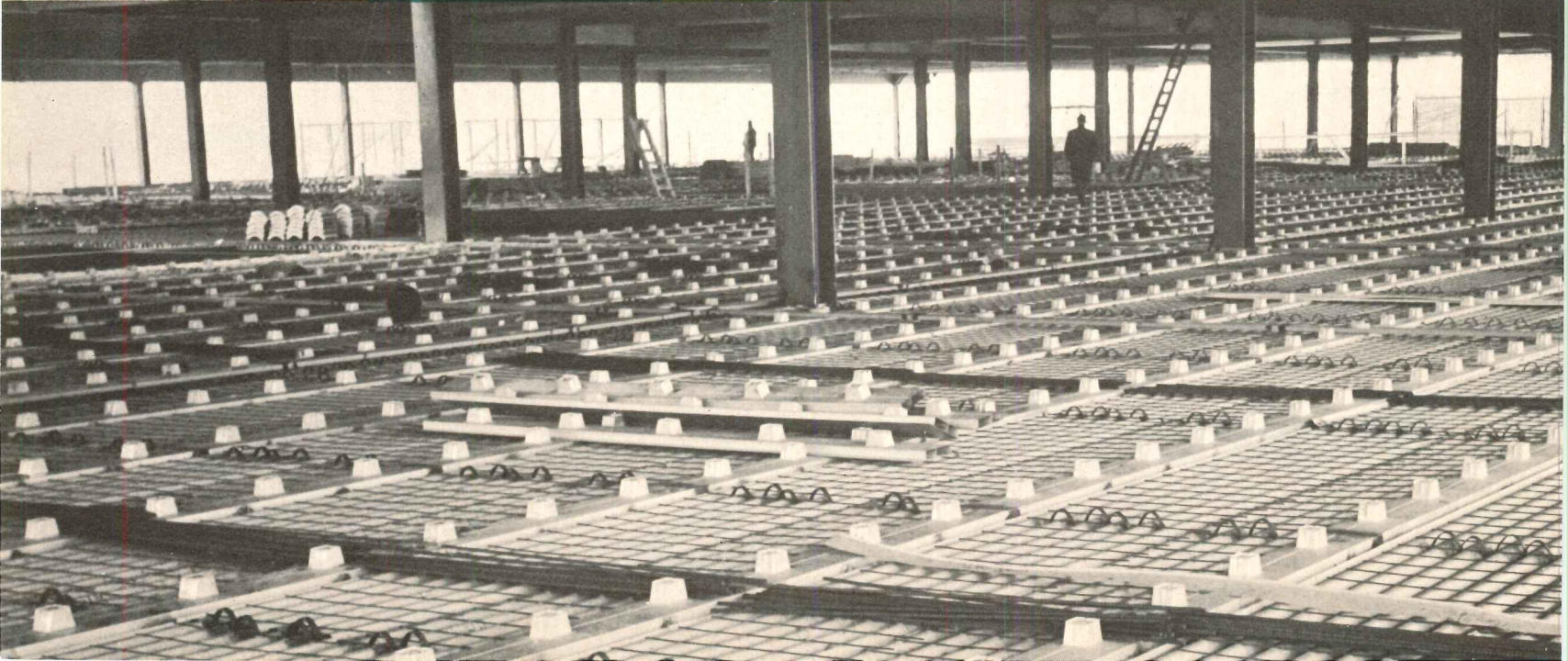
*Trinity White*  
Portland Cement

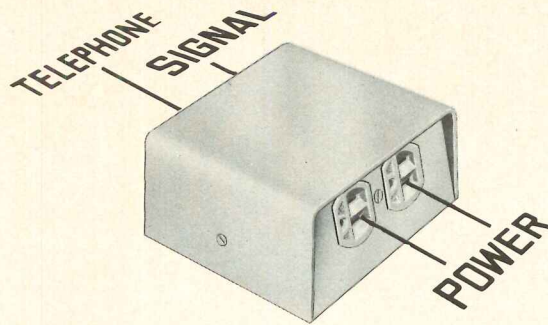


**General Portland Cement Company**

Offices: Dallas • Houston • Tampa • Miami • Chattanooga • Fort Wayne • Kansas City, Kansas

For more data, circle 7 on inquiry card





## CEL-WAY®/COFAR®

### *The blended floor system for in-floor electrification*

It's a combination that adds up to a complete system. Cel-Way supplies power, telephone and signal service in the floor slab to any desired location. It includes dual or triple electrical cells, with factory-installed inserts for easy access to cells, and a variety of large capacity feeder systems. Cel-Way features compact 4" x 4" floor fittings for triple, dual or single service. For the structural deck, Granco's widely used Cofar combined form and reinforcement makes the system complete!

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

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

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

38% of business telephones are changed or relocated each year. A significant percentage of power and signal service outlets, too, must be changed, relocated or added annually to meet business demands. Cel-Way's factory-set inserts make changes or additions fast, clean and far less expensive by eliminating costly, messy concrete core drilling.

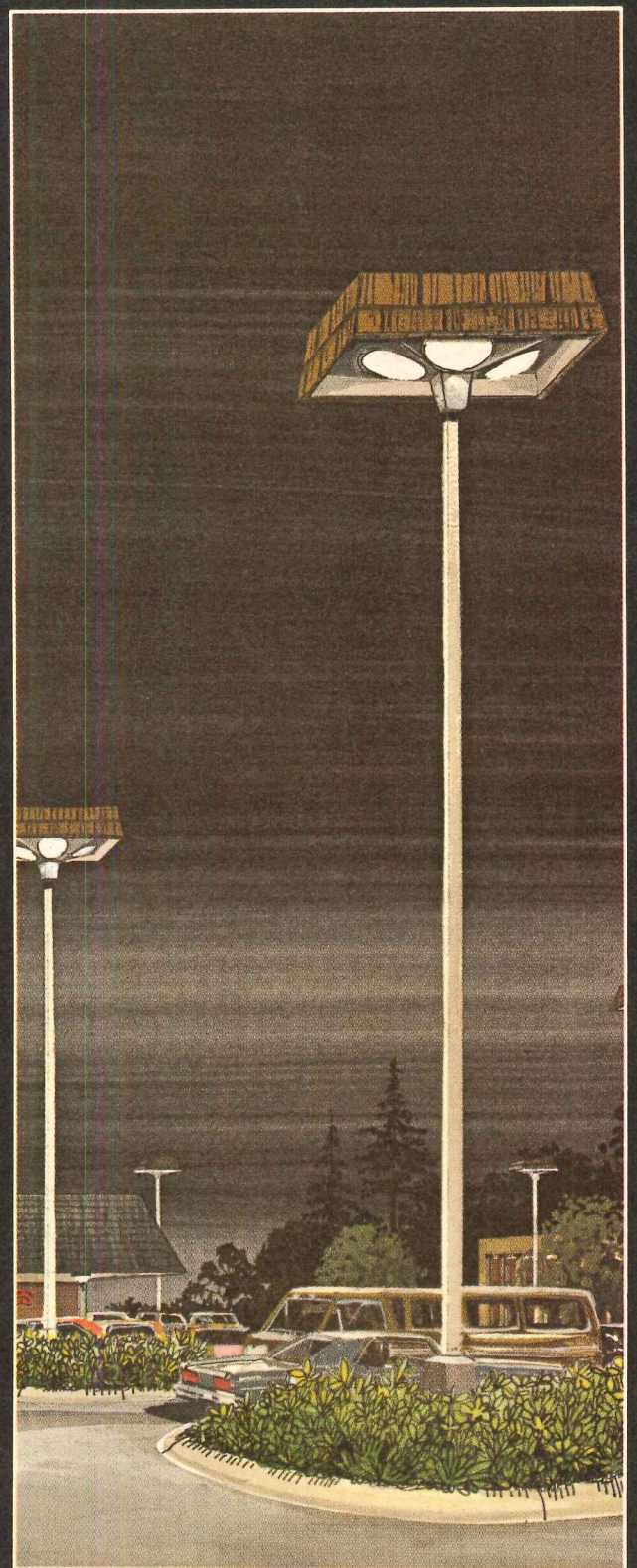
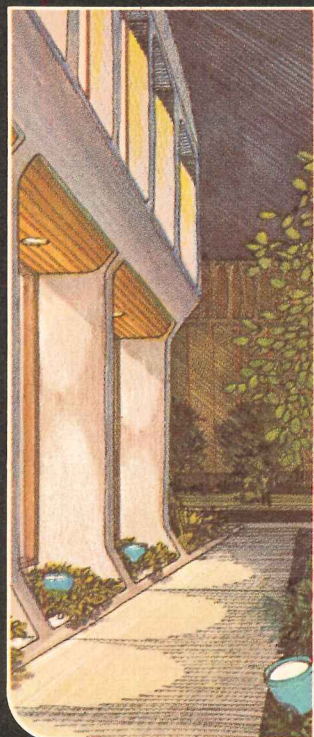
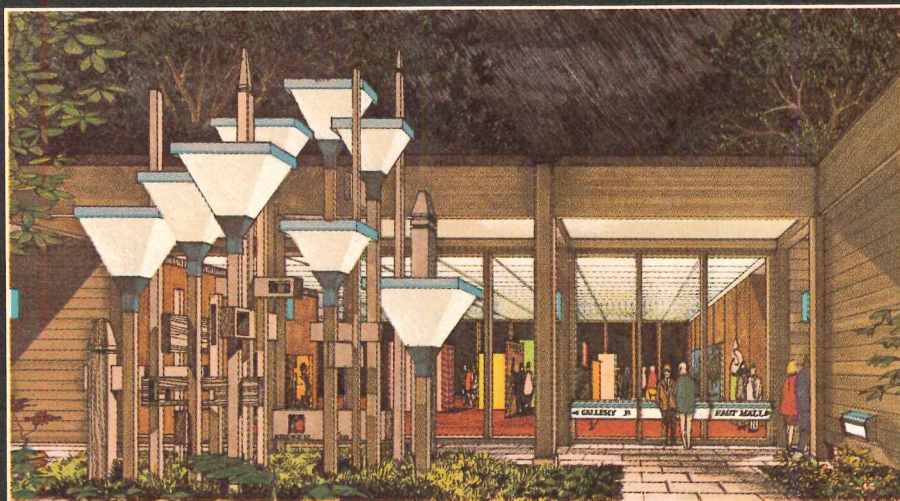


IMAGINATION IN STEEL



For more data, circle 8 on inquiry card

# Light takes on form. By day, as well as night.



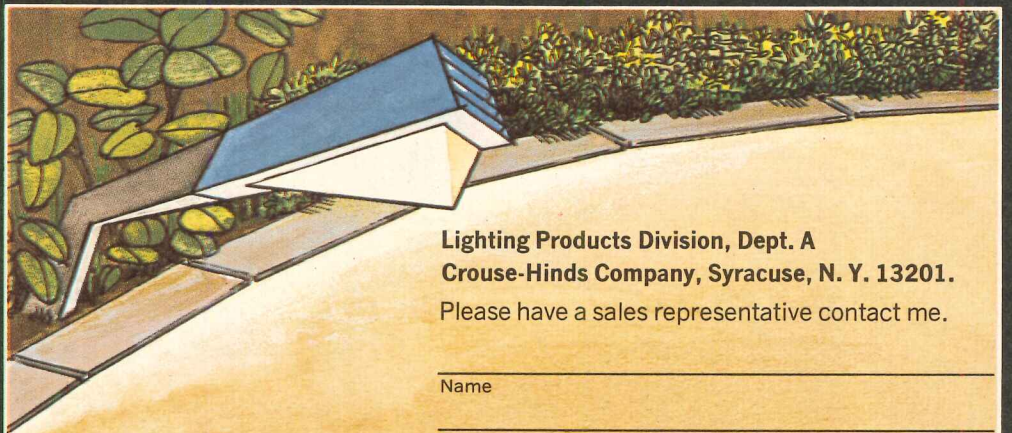
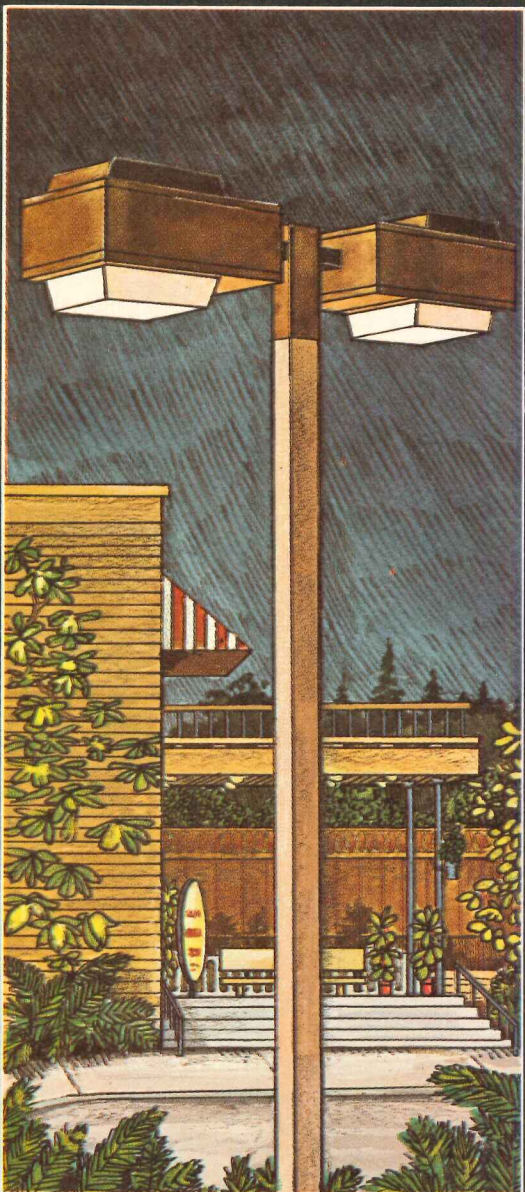
Burnish a brick facade. Splash safety on a footpath. Make bold a bas relief. Shine security on parking areas.



Until now that sort of lighting all too often came in ugly packages. The photometrics were nice. The esthetics weren't.

That's no longer true, as you can see on these pages. Good looks by day complement good light by night. Now, fixture designs complement architectural creativity, complement landscape features, complement other lighting.

We've packaged lighting function inside lighting form in many new ways. Let us show you. And let's talk about creative custom designs, too. The coupon opens the conversation. Send it now.



Lighting Products Division, Dept. A  
 Crouse-Hinds Company, Syracuse, N. Y. 13201.  
 Please have a sales representative contact me.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

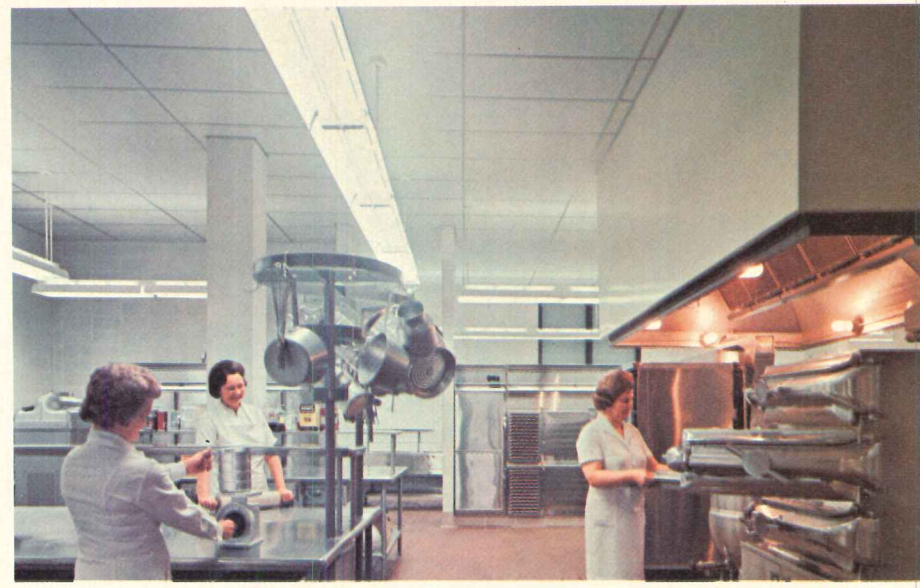
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_



**CROUSE-HINDS**

**What makes  
these ceilings  
right for this job?**



# The way they adapt to each other and to varying requirements.

The ceilings are Armstrong Ceramaguard®, Ceramaguard with a coating of Mylar\*, and Ceramaguard in combination with Armstrong C-60/30 Luminaire. The requirements they adapt to range from meeting sanitation standards in the kitchen to providing plenum accessibility throughout; from matching the working-module size of the building to achieving excellent light reflectivity—both with vaulted lighting modules and pendent-mounted units; from providing moisture and chlorine resistance in the swimming-pool area to meeting local building code requirements for fire protection; from allowing for partition attachment to the pure esthetics of blending with massive poured concrete textures.

What can Ceramaguard, C-60/30 Luminaire or any of the other Armstrong ceiling systems do for you? Write for our folio and find out. Armstrong, 4206 Rock Street, Lancaster, Pa. 17604.

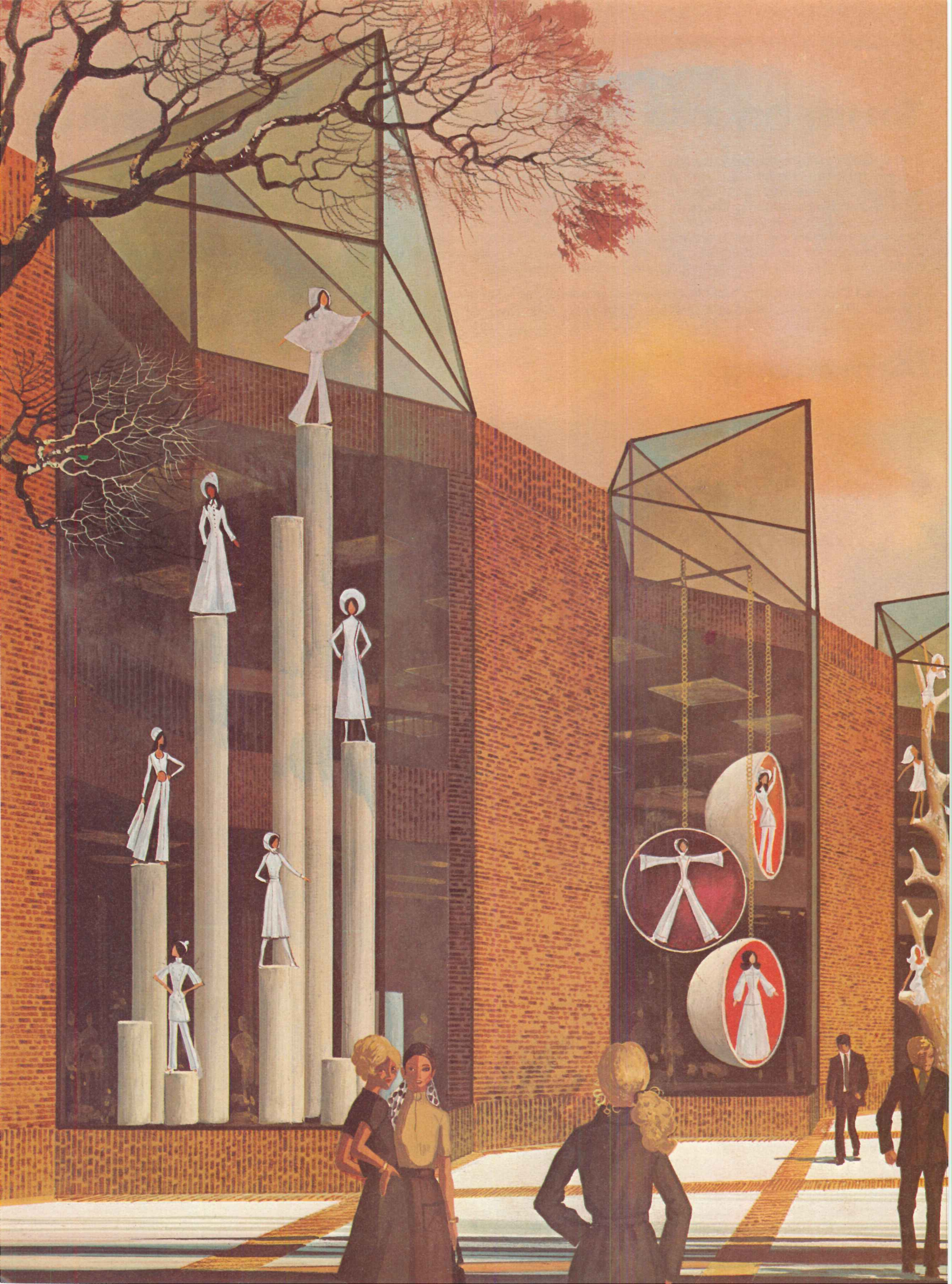
\*© Du Pont Company

For more data, circle 1 on inquiry card

**Armstrong** / **CEILING  
SYSTEMS  
THAT WORK**

Alexandria Senior High School, Alexandria, La.  
ARCHITECT/ENGINEER: Barron, Heinberg and Brocato, Alexandria, La.  
GENERAL CONTRACTOR: Southern Builders, Shreveport, La.  
ELECTRICAL ENGINEER: Pan American Engineers, Alexandria, La.  
CEILING SYSTEMS CONTRACTOR: Skip Converse, Inc., Pineville, La.







**INNOVATION IN DESIGN.** One of a series created for DAP Architectural Sealants. Design and rendering by Richard P. Howard Associates, Architectural Illustrators, Sylvania, Ohio. Harold R. Roe, A.I.A.

# reliability

Depend on DAP '1231'® Flexiglaze® to withstand weather, temperature and vibration extremes when used for channel glazing and setting glass and curtain wall panels. This mastic compound is formulated with 100% pigment, natural and synthetic elastomer solids, assuring the adhesion, cohesion and flexibility called for by the demanding requirements of contemporary glazing practice. DAP '1231' adheres to wood, metal, stone, glass, porcelain.

For interior and exterior face glazing with metal sash, specify DAP '1012'® Glazing Compound. Its handling and knifing characteristics are excellent for aluminum, steel, stainless steel, bronze and bonderized galvanized steel sashes. Standard aluminum gray color blends well with aluminum sash without painting. Also available in natural and other colors. For catalog on full line of DAP Architectural Sealants, write DAP Inc., General Offices: Dayton, Ohio 45401. Subsidiary of *Plough, Inc.*

**DESIGN CONCEPT.** Dramatic two and one-half story, clear glass diamonds form high fashion display windows in this shopping center plan. Dark grey interior glass scheme provides backdrop for merchandise displays, yet admits light to second floor.



**DAP**<sup>®</sup>  
**ARCHITECTURAL**  
**SEALANTS**

Also available in Canada

For more data, circle 9 on inquiry card



# Architectural Awards of Excellence—1970

American Institute of Steel Construction

## JURY OF AWARDS:

Robert P. Burns, Jr., AIA—Head, Department of Architecture, School of Design, North Carolina State University at Raleigh, Raleigh, North Carolina

Francis D. Lethbridge, FAIA—Vice President of AIA, Keyes, Lethbridge & Condon, Washington, D.C.

Gyo Obata, FAIA—Hellmuth, Obata & Kassabaum, Inc., St. Louis, Missouri

Marjorie Phillips—Chairman, Washington State Arts Commission, Seattle, Washington

Louis W. Riggs, F., ASCE—President, Tudor Engineering Company, San Francisco, California

## CREDITS:

### Manufacturers Hanover Trust Company Operations Building

Owner: Manufacturers Hanover Trust Company, New York, New York.

Architect: Carson, Lundin & Shaw, New York, New York.

Structural Engineer: Edwards & Hjorth, New York, New York.

Steel Fabricator: Bethlehem Steel Corporation, Bethlehem, Pennsylvania.

General Contractor: George A. Fuller Company, New York, New York.

### Currihan Exhibition Hall

Owner: City and County of Denver, Department of Public Works, Denver, Colorado.

Architect: A joint venture. Muchow, Associates, Architects; Haller & Larson, Architects; James T. Ream, Architect.

Structural Engineer: Ketchum, Konkel, Barrett, Nichol and Austin, Denver, Colorado.

Steel Fabricator: Burkhardt Steel Company, Denver, Colorado.

General Contractor: F. R. Orr Construction Company, Inc., Denver, Colorado.

### New England Center for Continuing Education

Owner: University of New Hampshire, Durham, New Hampshire.

Architect: William L. Pereira Associates, Planners, Architects, Engineers, Corona del Mar, California.

Structural Engineer: LeMessurier Associates, Inc., Boston, Massachusetts.

Steel Fabricator: Augusta Iron Works, Div. of Cives Corp., Augusta, Maine.

General Contractor: Davison Construction Co., Manchester, New Hampshire.

### Knights of Columbus Headquarters

Owner: Knights of Columbus, New Haven, Connecticut.

Architect: Kevin Roche John Dinkeloo and Associates, Hamden, Connecticut.

Structural Engineer: Pfisterer, Tor & Associates, New Haven, Connecticut.

Steel Fabricator: Belmont Iron Works, Eddystone, Pennsylvania.

General Contractor: Koppers Company, Inc., Pittsburgh, Pennsylvania.

Structural steel for these award winning buildings was supplied by Bethlehem Steel.

## BETHLEHEM STEEL

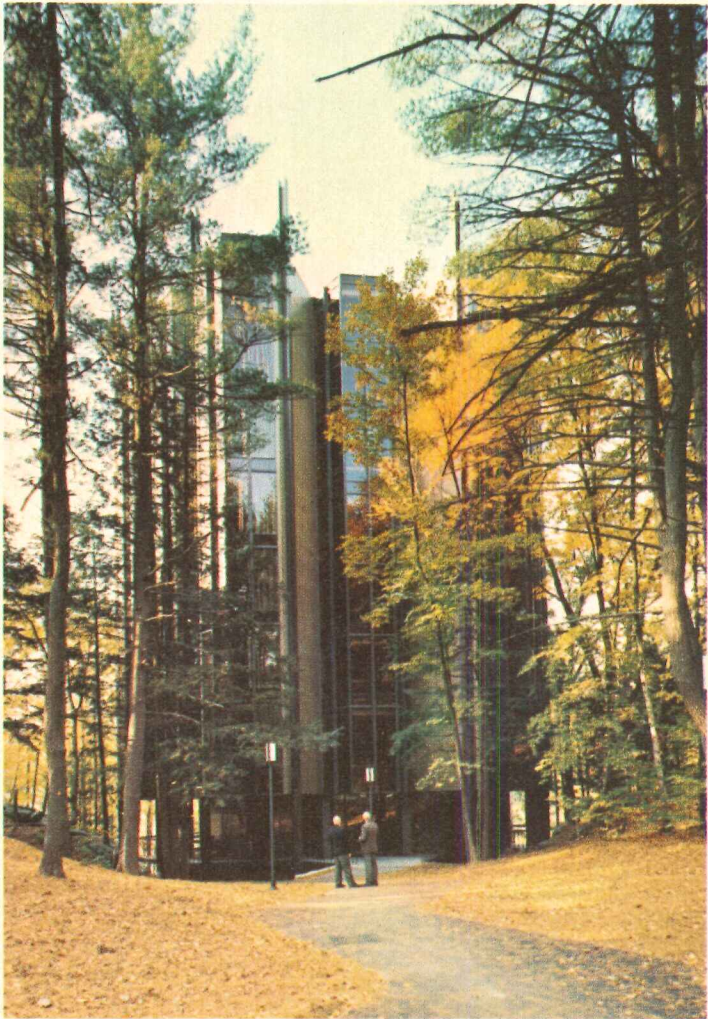
BETHLEHEM STEEL CORPORATION, BETHLEHEM, PA



**Knights of Columbus Headquarters, New Haven**—"This building is executed in a positive, vigorous idiom. It is very strong visually, but does not overpower its surroundings. The exposed steel framing, contrasted with the corner brick shafts, defines the structure with great clarity."



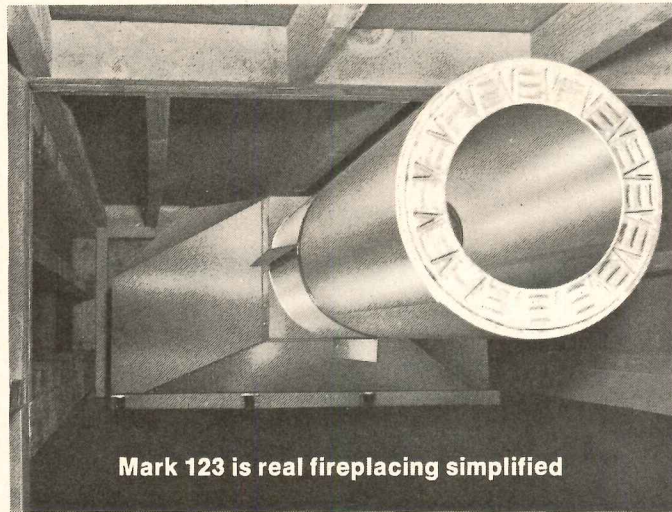
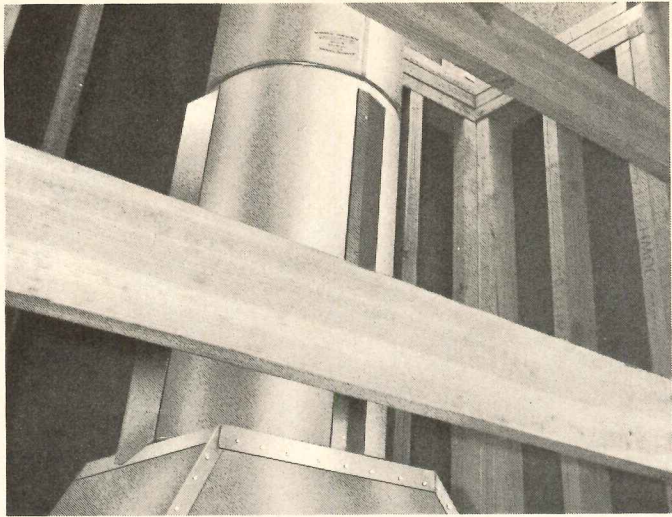
**Currigan Exhibition Hall, Denver**—"This building is distinguished by its tremendous space frame that gives the entire structure a sense of dramatic power. The interior expression is particularly impressive."



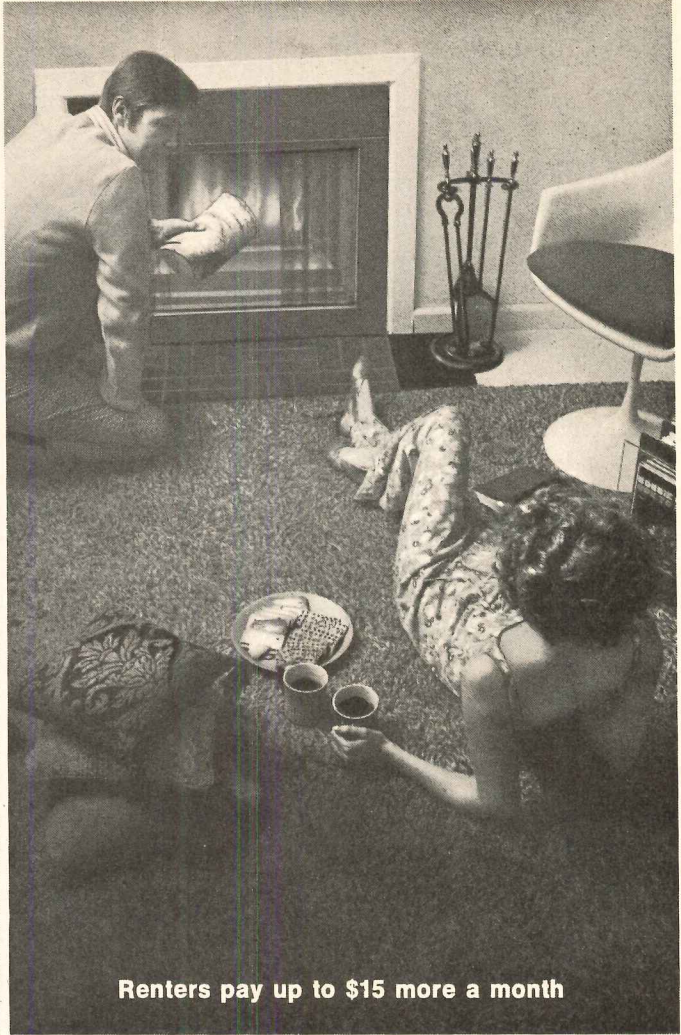
**New England Center for Continuing Education, Durham**—"This attractive building takes maximum advantage of a lovely and natural setting. The interior spaces are beautifully and carefully developed. The designer has created an appealing total environment for education."



**Manufacturers Hanover Trust Company Operations Building, New York**—"A strong, straightforward, simply executed design—clearly organized and well planned. This is a handsome building that makes effective use of masonry."



Mark 123 is real fireplacing simplified



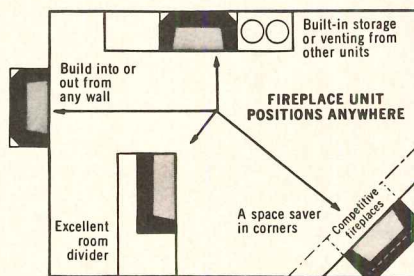
Renters pay up to \$15 more a month

## Your clients save and earn more with a Heatilator fireplace

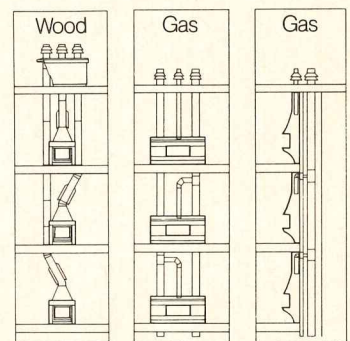
The Mark 123 is so simplified that you save in a combination of unmatched ways.

**First, the complete system**—fireplace, flue and roof termination—arrives jobsite at amazingly low cost. Second, if you choose you're free to customize the Mark 123 to any architectural plan, plus support and surround it with combustible materials. Third, installation is fast because the twist-lock feature secures flue sections in seconds. Last, heating costs are lower since full-pack insulation shuts out cold air (and eliminates noise transmission and condensation).

**Now consider earnings.** To people, a Mark 123 fireplace offers the lure of relaxed escapism—a strong selling feature. So they'll pay up to \$15 more rent per month. That means more cash flow, rental profit, loan or sales value for builders and investors.

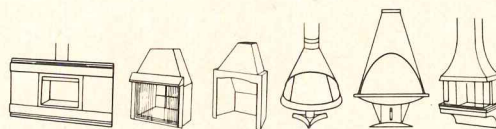


**Send for the Heatilator Architectural File.** Wood- and gas-fireplace systems are detailed in full color catalogs and representative architectural drawings. Write: Vega Industries, Inc., 3361 W. Saunders St., Mt. Pleasant, Iowa 52641. Also available in Canada.



Multi-level venting for Wood or Gas systems. Choice of manufactured or job-built roof termination.

**heatilator**<sup>®</sup>  
America's Leading Fireplace Systems



Built-in/Free-standing/Wall-hung

For more data, circle 10 on inquiry card



## Explore new dimensions in inner space from Keene: The Interiors People.

From now on when you're thinking interior building components, think Keene.

Because we've made interiors our specialty. In fact, Keene alone offers you manufacturing capabilities in all key areas of interior construction. Seven of our plants produce compatible lines of acoustical ceiling products, lighting and air distribution systems and movable walls.

In all Keene interior products, the accent is on advanced engineering tech-

niques. Like ceiling systems that give you instant access to overhead utilities. Movable walls that are literally a snap to install. We've even combined technologies to pioneer complete modular interior systems.

Keene interior products feature exciting styling, too. For example, our movable walls come in colorful finishes to match any decor. And Keene lighting fixtures are available in a wide choice of types and geometries, or can be custom-designed to meet your special needs.

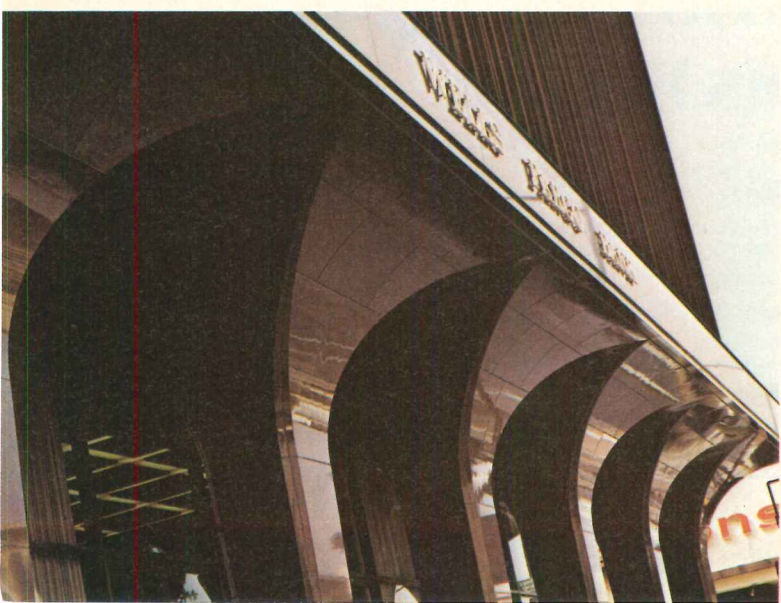
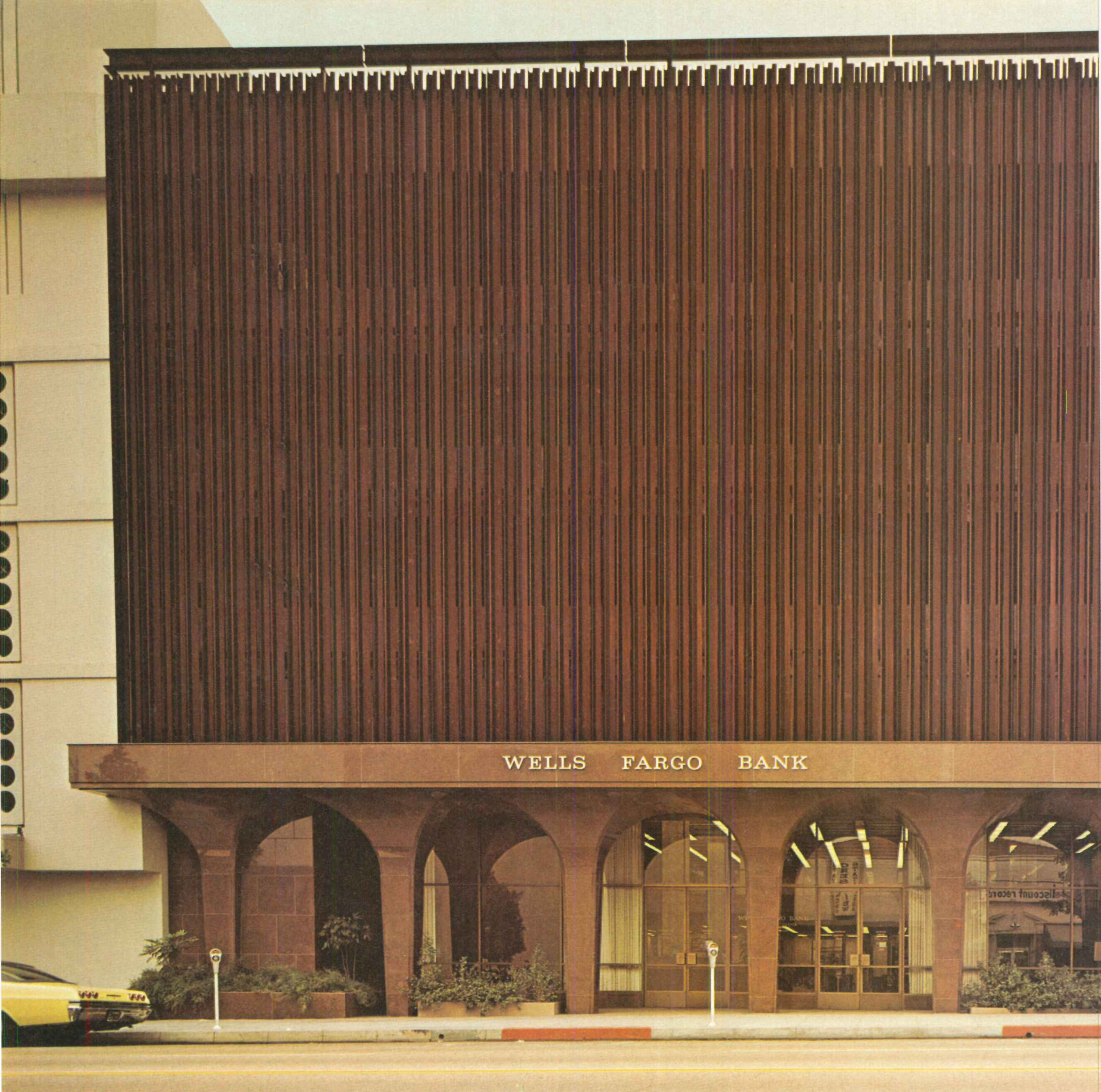
Whether your design calls for the latest in interior building products and components, or total interior systems, look to the specialists in inner space. Call in the Interiors People from Keene.

**KEENE**  
CORPORATION

345 Park Avenue, New York, N.Y. 10022

**We've just begun to grow.**

*For more data, circle 11 on inquiry card*



# If granite is just for 40 story buildings, why didn't someone tell Wells Fargo?

Some people get the impression — they're never sure where — that granite is just for big jobs. But the architect and the management of this new branch of Wells Fargo Bank in Beverly Hills don't deal in impressions. They insist on facts. And when they got the facts about granite, they insisted on using it on their building.

Granite's being used on a lot of smaller jobs these days — including one- and two-story buildings. Because of facts like these: the natural beauty of polished granite resists weather, stains

and all types of traffic as no other building material can. It won't fade or deteriorate, and it requires virtually no maintenance. Comes in a wide spectrum of colors, too.

How expensive is granite? Talk to our Customer Service Department about that. Tell them what you want to do and they'll tell you how it can be done. Step by Step. And likely as not you'll find that granite fits your plans well on a cost-in-place basis. Refer to

Sweets Catalog No. 4.1/Co.

Or call us.

(612) 685-3621.

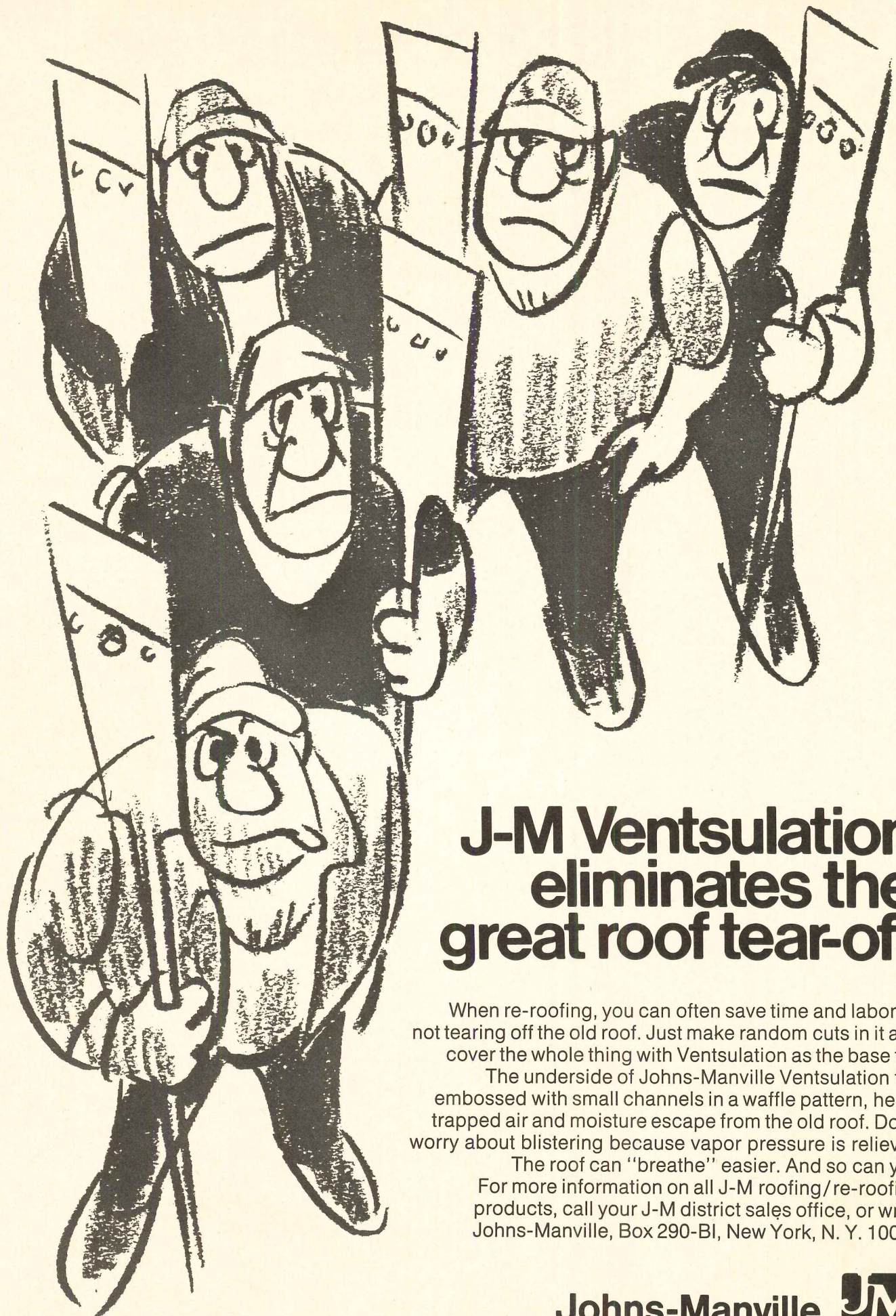


Granite  
can color  
your thinking.

Wells Fargo Bank  
Beverly Hills, California  
Architect:  
Allison Ribble Robinson & Ziegler  
Contractor:  
C. L. Peck  
Granite:  
Polished Cold Spring Red

**Cold Spring  
Granite Company**  
Cold Spring, Minnesota

For more data, circle 12 on inquiry card



## J-M Ventsulation<sup>®</sup> eliminates the great roof tear-off.

When re-roofing, you can often save time and labor by not tearing off the old roof. Just make random cuts in it and cover the whole thing with Ventsulation as the base felt.

The underside of Johns-Manville Ventsulation felt, embossed with small channels in a waffle pattern, helps trapped air and moisture escape from the old roof. Don't worry about blistering because vapor pressure is relieved.

The roof can "breathe" easier. And so can you.

For more information on all J-M roofing/re-roofing products, call your J-M district sales office, or write: Johns-Manville, Box 290-B1, New York, N. Y. 10016.

Johns-Manville 

*For more data, circle 13 on inquiry card*



# We've got something for everyone. From utter luxury to basic economy.



For your most demanding customers we have the Luxor® toilet... for the total look of luxury. Shown here in Bone, this truly low silhouette toilet is of one-piece design with a beautifully contoured seat and cover. Behind that smart looking flushing actuator is the built-in convenience of a Vent-Away® toilet ventilator. (Vent-Away ends unpleasant odors to make bathrooms company fresh... always.)

Our famous Elongated Cadet™ here in Venetian



Pink, is one of America's best selling toilets. It's modestly priced for the new home market as well as modernization. The elongated style is much

© American-Standard 1971

wanted by today's homemakers for its easier cleaning and better bathroom sanitation.

Modern one-piece styling with elongated bowl are the highlights of the Carlyle™ shown with the Margate™ Bidet in matching Manchu Yellow. Carlyle also includes special contoured



seat and cover.

The compact design of this Fawn Beige toilet led to its name, the Compact®. It comes complete with Vent-Away toilet ventilator and the preferred elongated bowl. Glenwall® is the first off-the-floor toilet at a truly low price.

A proven seller for new homes.

Available with round or elongated bowl. Vent-Away is optional.

Color featured is Regency Blue.

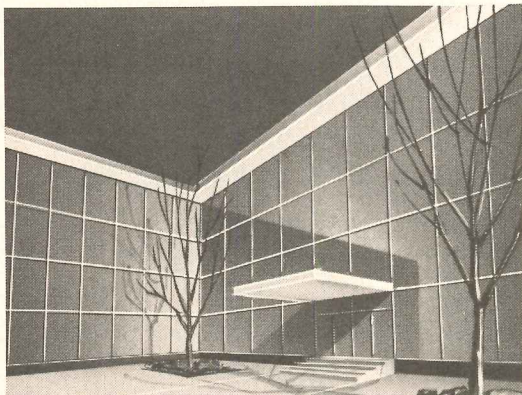
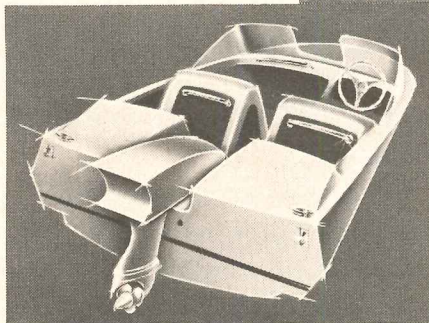
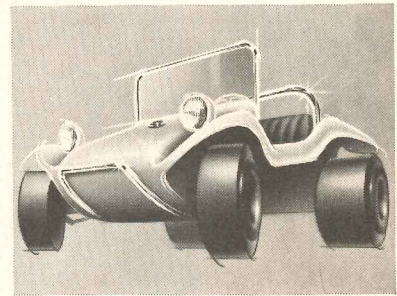
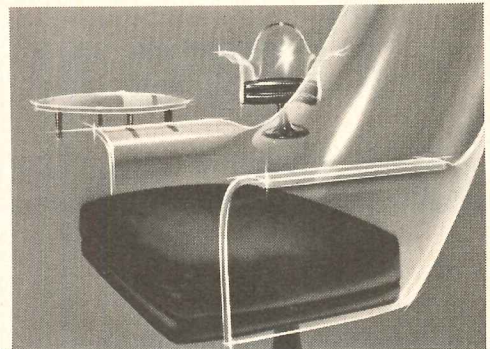
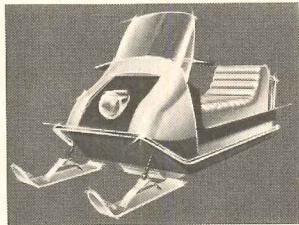
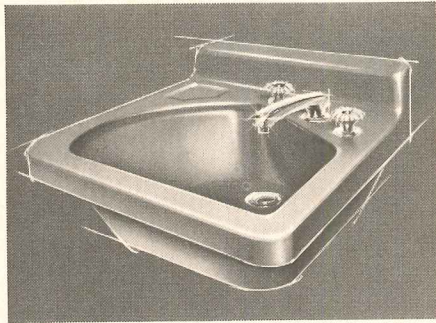
Toilets are also available in a smart green called Bayberry and classic White.

For more details call your

American-Standard distributor. Or write to American-Standard, P.O. Box 2003, New Brunswick, N.J. 08903

 **AMERICAN  
STANDARD**  
PLUMBING / HEATING

# Swedcast. Let your imagination run wild.



Swedcast. The continuous cast acrylic.

It's available in nearly unlimited sheet lengths. Even rolls—which permit greater design freedom because weak and unsightly seams are eliminated.

Swedcast in rolls saves manufacturing costs, too. Because there's less waste. And rolls are easier to handle.

Swedcast resists the ultraviolet deterioration that occurs in other plastics. So designers can use it for outdoor applications as well as indoor.

The unique Swedlow continuous casting process gives Swedcast greater formability than ordinary acrylics. So that objects formed with Swedcast have sharper definition. They'll form with tighter radii and compound curves.

Architects all over the world are using Swedcast for all kinds of architectural applications such as skylights, lighting panels, sinks, modular bathrooms and glazing. Designers are finding Swedcast ideal for signs, chairs and tables, appliance components—even boats and recreational vehicles.

Swedlow's continuous casting process has made them all possible.

Swedcast. Turn your imagination loose on it.

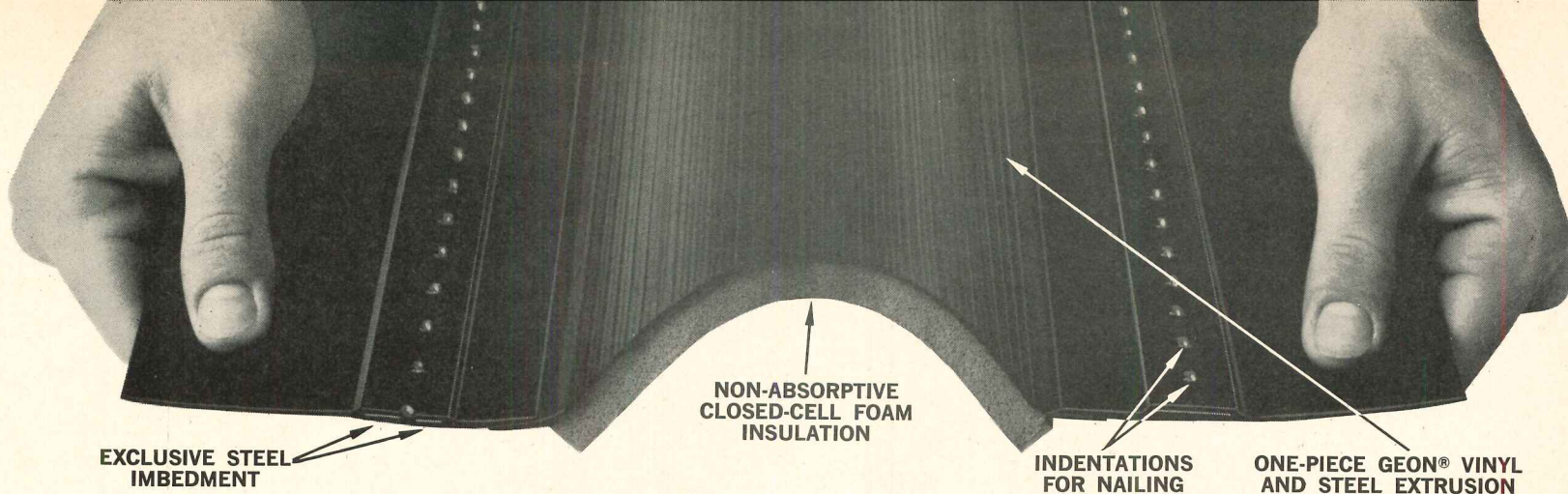


*New dimensions in acrylic technology.*

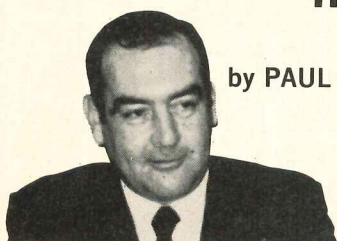
**SWEDLOW SWEDCAST**

Swedlow, Inc., 7350 Empire Drive, Florence, Kentucky 41042

*For more data, circle 15 on inquiry card*



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



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



A subsidiary of  
General Refractories Company

**YOU:** What is Metalastic Mark II?

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

**YOU:** How is Metalastic Mark II made?

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

**YOU:** What is meant by metal imbedment?

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

**YOU:** Why is this strip perforated?

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

**YOU:** Do these perforations have other advantages?

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

**YOU:** What about the "dissimilar metals" problem?

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

**YOU:** How is Metalastic Mark II packaged?

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

**YOU:** Is there an advantage to roll material?

**PAUL:** Sure, it eliminates most of the splicing.

**YOU:** What is the splicing procedure?

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

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

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

**YOU:** Why furnish nails?

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

**YOU:** Has Metalastic Mark II been thoroughly tested?

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

**YOU:** What are architects' reactions?

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

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

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

**YOU:** Is the name set?

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

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

**PAUL:** I thought you'd never ask. Write GREFCO, Inc./ Building Products Division, Dept. AR-2, 333 N. Michigan Ave., Chicago, Illinois 60601.

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

**GO AHEAD... SPECIFY METALASTIC MARK II**

For more data, circle 20 on inquiry card



Clark Art Center Theatre, Rockford College, Rockford, Illinois. Architects: The Perkins & Will Partnership. General Contractor: Güst. G. Larson & Sons, Inc. Dover Stage Lift installed by Lamps Elevator Sales and Service, Inc. Hedrich Blessing photograph.

## Dover Stage Lift helps create a theatre for all seasons.

A college theatre should be able to handle many styles of theatrical presentations. Which is why so many new college theatres include a Dover Stage Lift in their plans.

For example, take a look at what the Dover Stage Lift does at the Clark Arts Center Theatre at Rockford College. This double-decked, 56'x18' lift changes the stage from a regular proscenium set-up to a musical theatre with orchestra pit, or to a classical or thrust stage.

Dover has been making hydraulic stage lifts for over 25 years. We manu-

facture more of them than anybody else in the business. Dover Lifts are in the Metropolitan Opera House, New York; the Julliard School, New York; Harvard's Loeb Drama Center; the Santa Fe Opera House; and the Stardust Hotel, Las Vegas.

We custom-design every Dover Stage Lift to meet specific requirements, of course. Dover engineers have solved stage lift problems for buildings ranging from high school auditoriums to mammoth convention halls. They'll be glad to help you with design or engineering assistance.

For more information, see our catalog in Sweet's Files. Or write Dover Corporation, Elevator Division, Dept. A-6, P. O. Box 2177, Memphis, Tenn. 38102. In Canada: Dover-Turnbull.



For more data, circle 21 on inquiry card

## News in brief

**The American Institute of Architects will meet June 20 to 25 in Detroit** to discuss "The Hard Choices" and vote on new resolutions and officers. Speakers and panelists will include Canadian housing minister Robert K. Andras; Edward J. Logue, president of the New York Urban Development Corporation; Kenneth A. Gibson, Mayor of Newark, New Jersey; Common Cause chairman John W. Gardner; sociologist Kenneth Clark; urban planner and educator Paul N. Ylvisaker; and Russell E. Train, chairman of the Council on Environmental Quality. A "**convention within a convention,**" the **Building Team Conference**, will be co-sponsored by the A.I.A. and the Producers' Council, pointing up the expansion of the "design and specification team" of professional architects and engineers into such areas as programming, construction management and interior design. Roger M. Blough, former chairman of the board, U.S. Steel, will keynote the program. **The third National Exposition of Contract Interior Furnishings (Neocon)** will be held in Chicago concurrently with the A.I.A. Detroit Convention. The Chicago chapter of the A.I.A. will sponsor major sessions at Neocon 3, having invited many representatives of what might be called the "interior design team." (See also editorial page 9.)

**Architect-designed construction gained slightly in March**, reaching 138 on the Dodge Index (1967 equals 100). Business and institutional construction increased, while apartment construction was down.

**A bill to create a new National Institute of Building Sciences** has been introduced in Congress jointly by Rep. William Moorehead (D-Pa.), and Sen. Jacob Javits (R-N.Y.). N.I.B.S. would be a nongovernmental agency which would test new materials, review and approve innovative construction techniques, and set national standards. It would make its findings available to all of industry, public and private, and at the same time provide a method for encouraging Federal, state, and local acceptance and use of these findings. The American Institute of Architects and the Producers' Council, among others, have endorsed the bill. Two similar bills died in committee last year, but chances for passage are stronger this year.

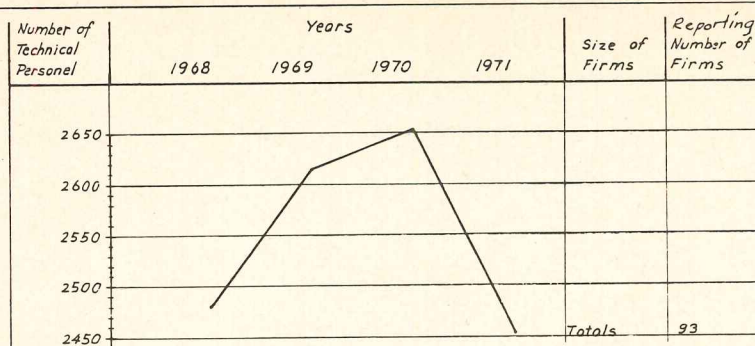
**The Administration's revenue sharing plan for urban community development is now before Congress.** Legislation would create a new department involving the third HUD reorganization in two years. Under the plan, HUD would lose only college housing (to the new Human Resources Department) and pick up many new activities, including highways, from the Department of Transportation. Congress is expected to stall on action.

**Danish architect Arne Jacobsen, 69, died in Copenhagen this April.** Among his best-known buildings were the Soholm "chain houses" (1952-55) and the Aalborg factory for Carl Christiansen (1957), both of which exemplify his combination of severe economy and sculptural form. His furniture and cutlery designs were equally well-known. **Theater architect Ben Schlanger died in New York City May 3** at the age of 66. He had argued for the small theater, producing many innovative small theater designs, also working on the United Nations General Assembly design, New York City's Lincoln Center, the Montreal Place des Arts, the John F. Kennedy Center in Washington, and the Sidney Opera House.

**An international conference on cities**, focusing on mass transit systems, will be held in Tokyo September 6-10. Speakers are expected to include transportation and city planners from around the world, also Buckminster Fuller and Kenzo Tange. (Tokyo itself is working on transit innovations—see next page.) Contact Urban Research Corporation, U.S.A., 5424 South Shore Drive, Chicago, Ill. 60615 for more information. **The 8th Annual Design Automation Workshop** will be held June 28-30 in Atlantic City.

**The RECORD has received an Environment Monthly Honor Award** for its offer of a free page to any manufacturer of equipment specifically designed to reduce outdoor air pollution. The first advertisement—for E-Z Pack Compactor—ran in May, and we'll be running two more in July. Environmental Protection Agency's William Ruckelshaus has also written his praise. The offer still stands.

**An exhibition, "Architecture for the Arts: The State University of New York College at Purchase,"** will run through June 22 at New York City's Museum of Modern Art. Architect Edward Larrabee Barnes designed the campus with six other leading firms. **"The Rise of an American Architecture, 1815-1915"** (June, 1970, page 36) will be at the Art Institute of Chicago through August 29. **A major retrospective of Walter Gropius' works** will be on exhibit in Zurich's Kunstgewerbemuseum June 26 to August 22 and will later travel in this country.



**Survey shows downswing in N.Y.C. architectural personnel**

The recession may be going away, but things aren't yet improving for architectural employees—not if New York City is any barometer. The New York Chapter of the

A.I.A., alarmed by the increasing rate of unemployment among architectural personnel, has begun an on-going survey of activity levels in New York City offices. The unreassuring results of a preliminary survey running through March 31 appear above.

**Tokyo plans radical transportation solutions**

Tokyo is said to have the world's worst air pollution problem (although some give the prize to New York), and the winner of Tokyo's recent municipal elections, Ryokichi Minobe, campaigned with the slogan, "Give Tokyo back its blue sky."

The city successfully closed several streets last year, and it now plans to ban cars from 268 more streets, with an eventual ban on all private automobiles. Cost and scarcity of land would have precluded the construction of new highways even if air quality had not been an issue.

To replace the automobiles, Japanese industry and government are developing several sub-systems which will be integrated with existing mass transit lines to form a new transportation network. One such sub-system, developed by the Ministry of International Trade and In-

dustry and Tokyo University, uses computer controlled vehicles on elevated and underground roadways. They would supplant trucks as well as automobiles, and the computer would route them to low- and high-speed guideways so that the cars would arrive in the shortest possible time. No one would have to walk more than 50 yards to catch a car.

Another sub-system being developed uses trains of 30-passenger coaches with rubber wheels on steel tracks to minimize noise.

Both systems would be completely automated; the passenger would just press a button for his destination. Futuristic as they sound, the new systems are considerably cheaper than conventional subways. But for that matter, the Japanese are working on new and cheaper ways of tunneling. In a city where the average rush-hour speed of a bus is two miles per hour, no solution is too far-fetched.

**Ceremony honors Sullivan**

A graveside ceremony was held in Chicago April 14 to honor Louis Sullivan on the 47th anniversary of his death. Veterans of the unsuccessful fight ten years ago to save his Garrick Theater from demolition placed a wreath bearing three roses (his favorite flower), representing the three major Sullivan buildings still standing in Chicago.

According to Richard Miller, president of the Landmarks Preservation Council (April, page 41), three-fourths of Louis Sullivan's work in Chicago has been demolished. His Stock Exchange recently got a temporary reprieve.



**JAN NAIRN**



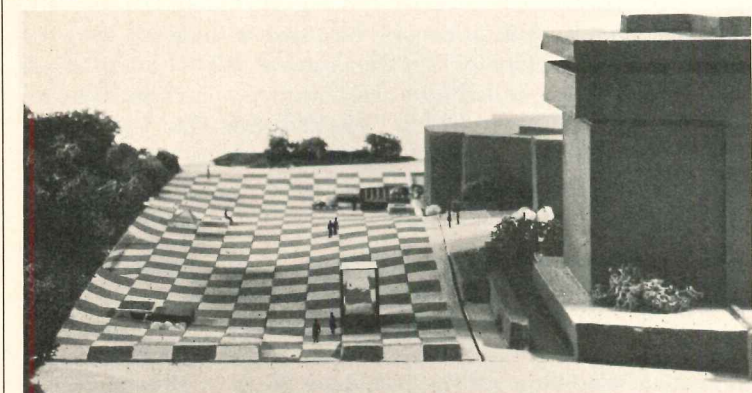
**Fountain turned on, some San Franciscans turned off**

San Francisco's Embarcadero Fountain (December, 1970, page 108) was dedicated a few weeks ago, but its completion hasn't finished off the controversy surrounding its design. The design, by Canadian sculptor Armand Vaillancourt, was chosen after a limited international competition four years ago, to be part of a \$4 million plaza planned by landscape architect Lawrence Halprin with architects John S.

Bolles and Mario J. Ciampi. Mr. Halprin promised to slit his throat if the fountain didn't turn out to be a "great work of civic art." But architect Nathaniel Owings compared the completed work to the "pile of junk" that would be created if the nearby Embarcadero Freeway were destroyed, adding, "the pool in which the debris rests would be much more beautiful if the debris were removed."

Pedestrians can walk among the cascades and jets of water (photo was made before fountain was turned on). "Not everybody will understand my work," says Mr. Vaillancourt, "but nobody will walk through my fountain and come out indifferent. They will be shaken."

Among those apparently shaken were members of the influential Civic Design Committee of the City Art Commission, who recently rejected another fountain designed by Mr. Halprin, with John Carl Warnecke and Mario Ciampi.

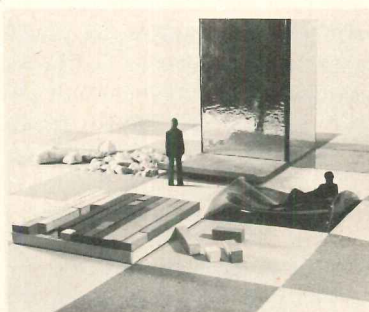


**Sculptural group goes architectural**

A group of New York City sculptors is breaking down old assumptions about the relation of sculpture to buildings, and, in the process, turning architecture into sculpture. The group of five, who call their organization S.I.T.E., for "Sculpture in the Environment," was founded by James Wines. Other members are Nancy Goldring, Dan Draper, Cyn-

thia Eardley and Marc Mannheimer.

Current work includes an undulating chessboard plaza for the Education Building at the University of Northern Iowa at Cedar Rapids (above) and the sculptural transformation of a drab store in Richmond, Va. (right). The store scheme shown, developed with engineer Mario Salvadori, would have added a brick strip above the roofline (it turned out to be unfeasible),



completely changing the building's visual meaning. A brick peel-out is now being considered. The Iowa plaza, inspired from an air-view of Iowa fields, will contain a variety of fixed and variable modules (above, right) using lighting, water, steam, and sound.



**James Hornbeck, former RECORD senior editor, is dead at 63**

James S. Hornbeck, architect, teacher and former senior editor of the RECORD died May 23 after a long illness. He had retired in 1968 for reasons of health, having joined the staff in 1952. Before coming to the RECORD, his practice experience had included several years with Harrison & Abramovitz and Skidmore, Owings & Merrill in New York. After getting his B.S. degree in Architecture at Penn State University in 1931, Mr. Hornbeck taught for five years at Penn State before doing graduate work in architecture at Harvard. After joining the RECORD staff he taught design theory for several years in the evening program at Columbia. He had been an active member of the New York Chapter, A.I.A. and of the Architectural League of New York.

# Montgomery moves you to the top of Tishman Westwood

Ten Montgomery high speed passenger elevators move people at Los Angeles' Tishman Westwood Building. Five of the Montgomery elevators are 800 f.p.m. high rise units servicing floors 14 through 24. Five

others are 500 f.p.m. to the 14th floor. All are directed by Montgomery ESP Measured Demand Group Supervisory Control. Montgomery PM Preventive Maintenance will keep the new Tishman elevators operating at peak performance.

Montgomery manufactures a complete range of elevators and escalators. Montgomery installation and maintenance specialists are located in more than 140 offices throughout North America. Call a nearby Montgomery Elevator Company office for complete information on Montgomery products and service, or write: Montgomery Elevator Company, 30 Twentieth St., Moline, Illinois 61265.

## montgomery®

**ELEVATORS/ESCALATORS  
POWER WALKS & RAMPS**

Montgomery Elevator Company, Moline, Illinois 61265  
Montgomery Elevator Co. Limited, Toronto, Ontario  
Offices in Principal cities of North America

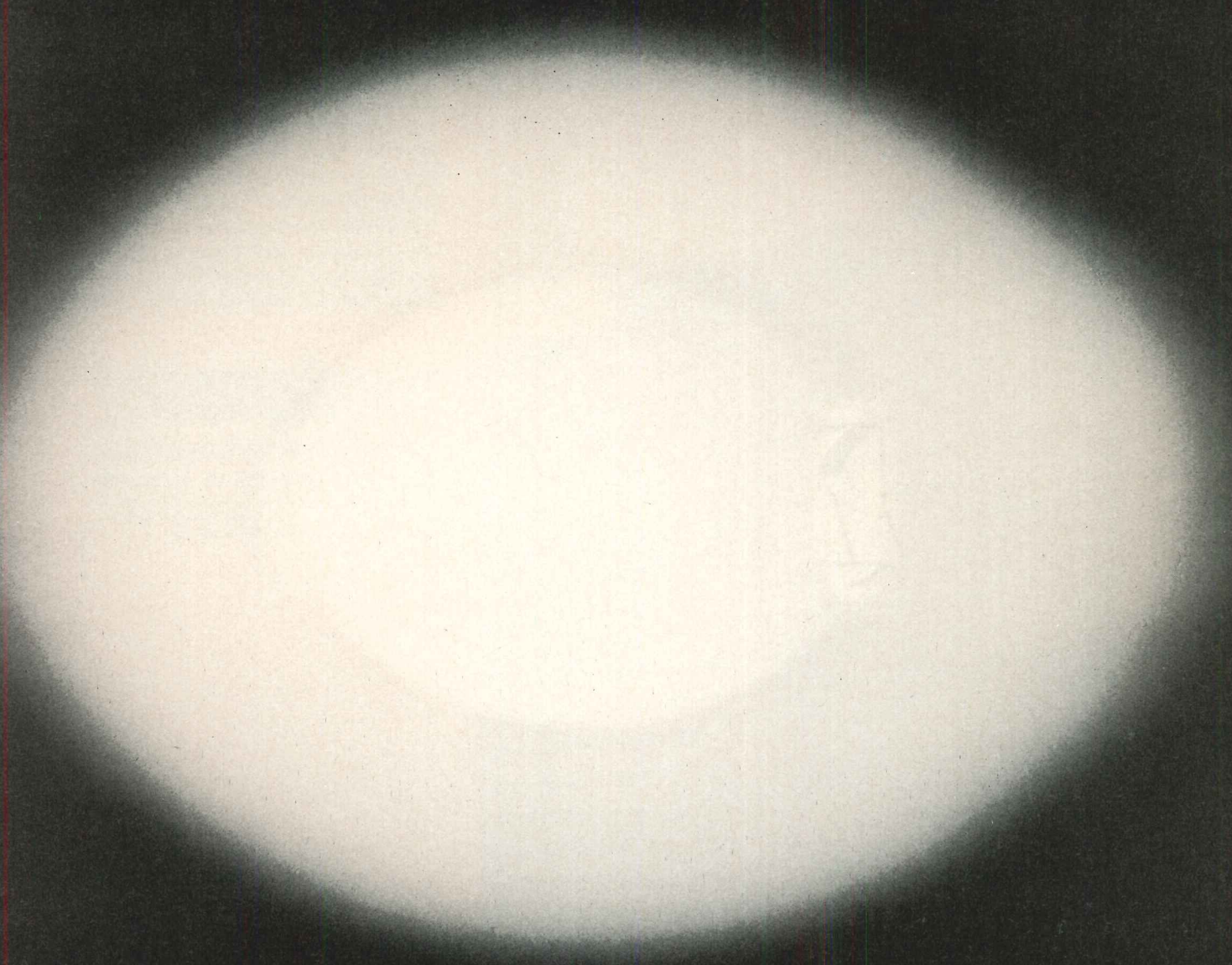


Owner: Tishman Westwood Corp

Architect: Welton Becket and Associates

For more data, circle 22 on inquiry card

**The H.I.D. lamp  
was one of the brightest, hottest,  
wildest lamps around.**





# Until our Merculume 2000 tamed it.



BANKING LOBBY, SECURITY PACIFIC NATIONAL BANK, LOS ANGELES, CALIF.  
DESIGNER: PAUL STRAHL

Think of high intensity discharge lamps and you probably think of outdoor lighting. Or of the intense lighting found in an industrial environment.

Now you can bring the advantages of H.I.D. mercury and metal halide lamps into the more sophisti-

cated environments of commercial applications.

You still get the output that H.I.D. lamps are known for. Only now the light is softer, more subdued, more comfortable. Merculume 2000 gives a natural 3-dimensional effect that makes people and things look the

way they're supposed to look.

Merculume 2000 looks the way a commercial luminaire is supposed to look, too. It will harmonize with the most tastefully designed interior.

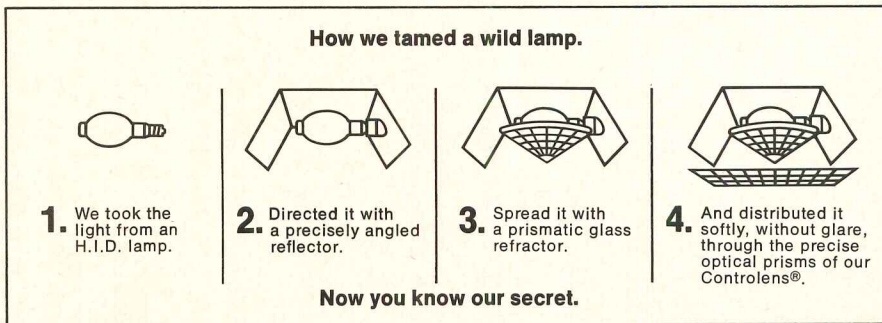
And because of the high output, you'll need fewer luminaires. One 2' x 2' Merculume unit replaces 20 square feet of fluorescent fixtures.

Merculume also accommodates a variety of built-in air handling systems — for supply, return or both. That means still less ceiling clutter.

Merculume's snap-in mounting makes for fast, easy installation.

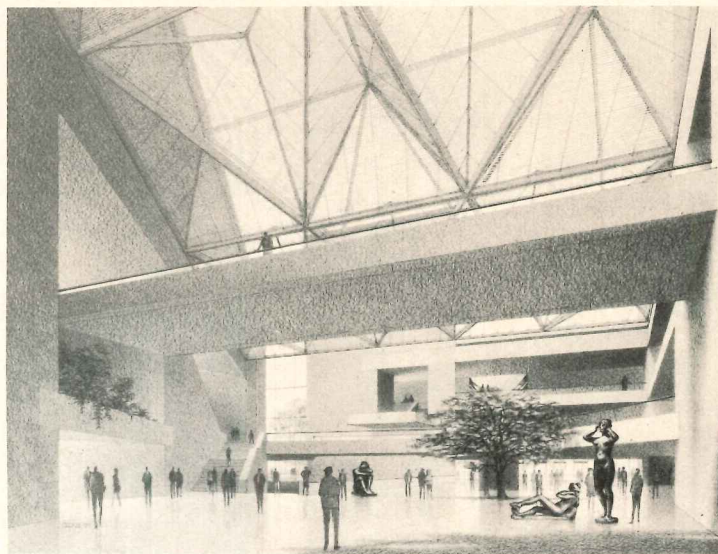
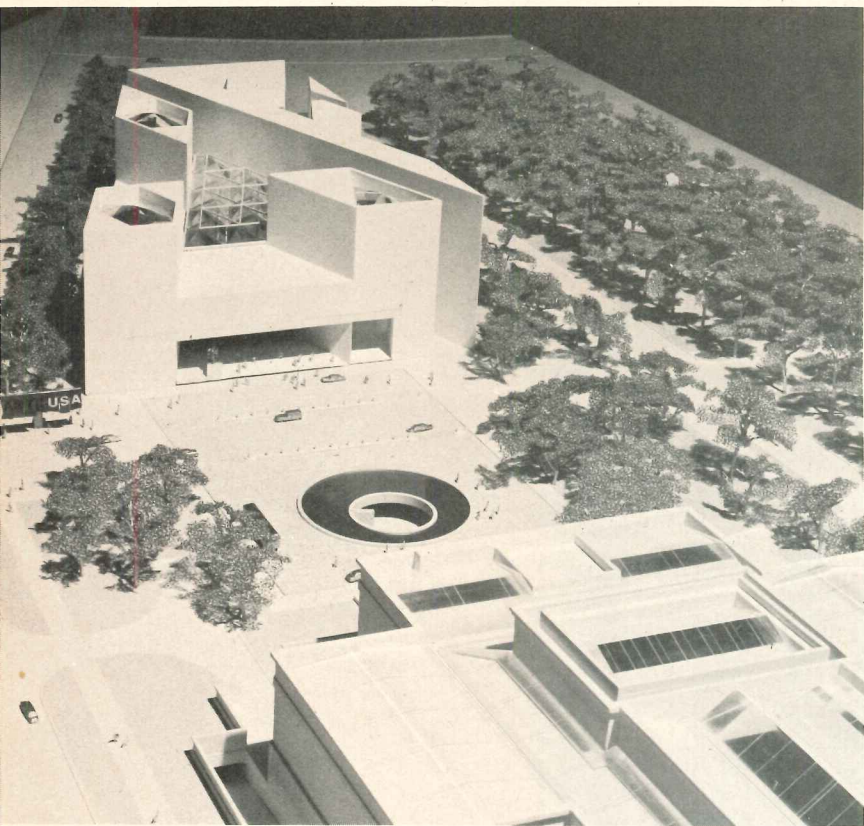
And the long life of H.I.D. lamps makes for low maintenance.

For more information, please write us. Dept. AR-6, Holophane Company, Inc., 1120 Ave. of the Americas, New York, N. Y. 10036



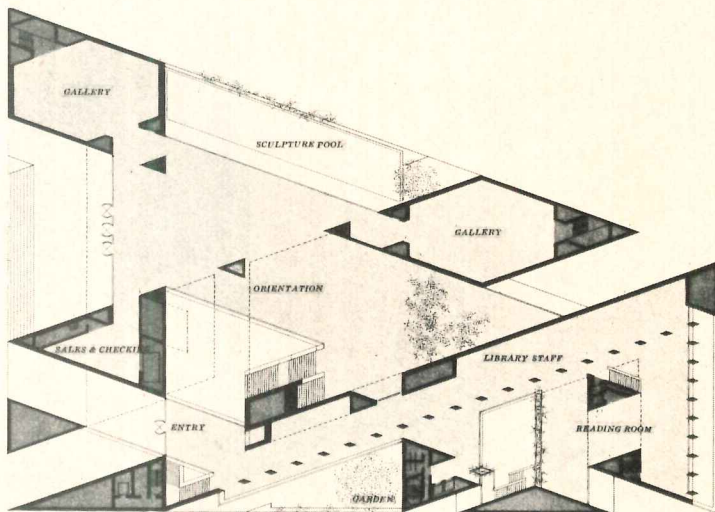
# Holophane

For more data, circle 23 on inquiry card

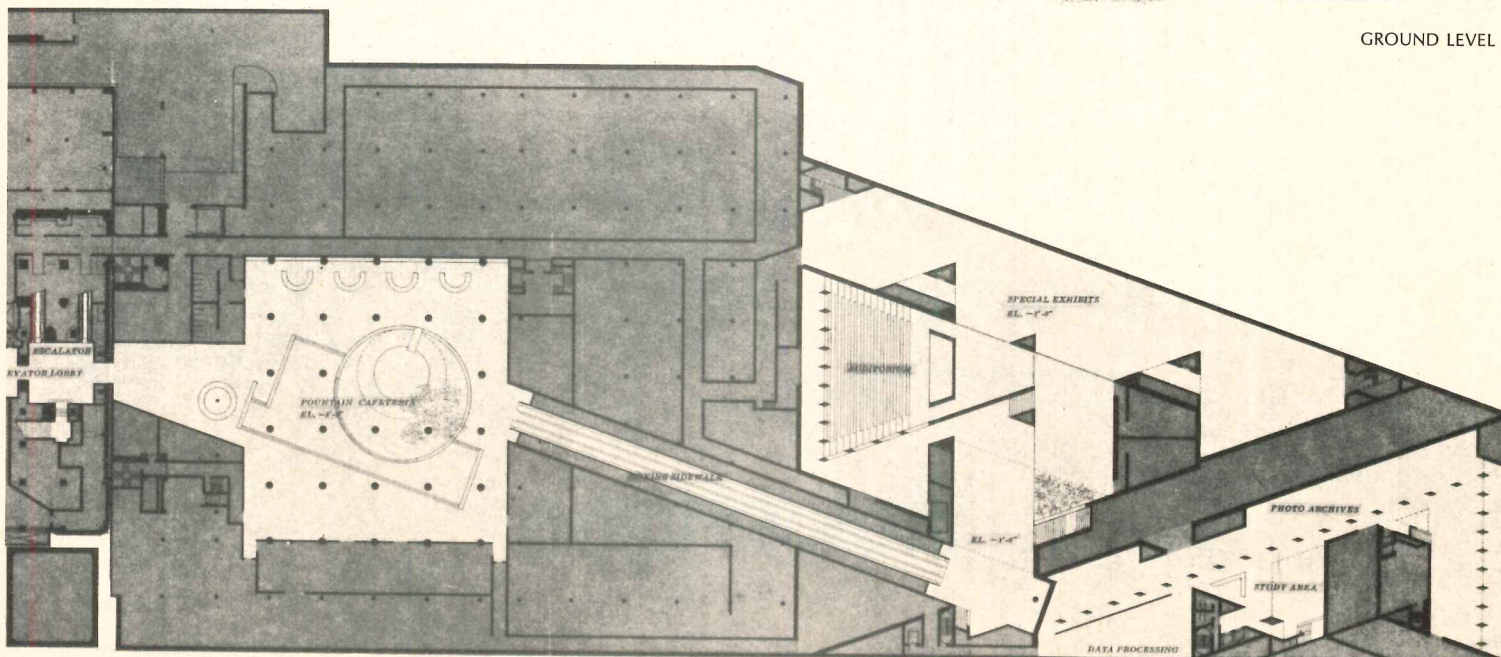


**East Building, National Gallery of Art,** Washington, D.C., I.M. Pei and Partners, architects, will occupy one of the capital's most prominent sites. A glass-enclosed skylit sculpture area (right) will be the heart of the project. Three four-level gallery groups will border this area, interconnected by bridges. The

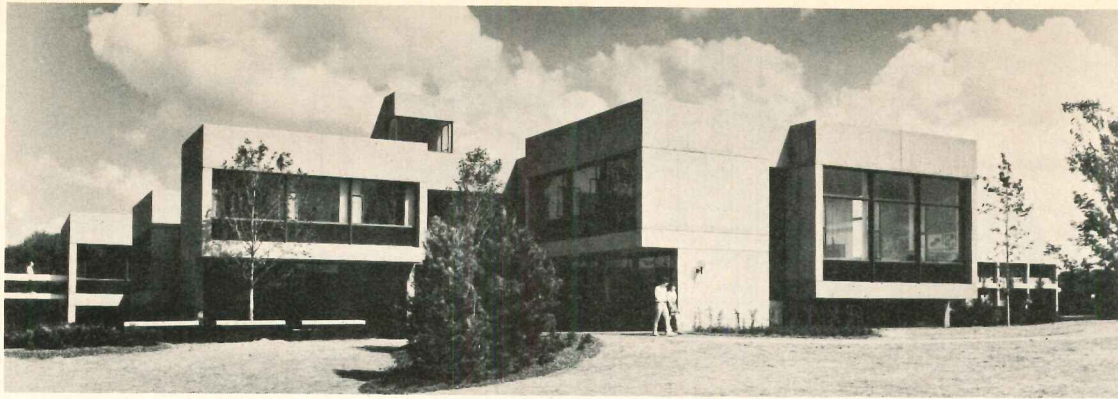
building will also contain the new Center for Advanced Study in the Visual Arts, which will include a six-story library and offices. An auditorium and an underground link to the existing building containing a moving sidewalk and a cafeteria will also be part of the project (plan below).



GROUND LEVEL 1



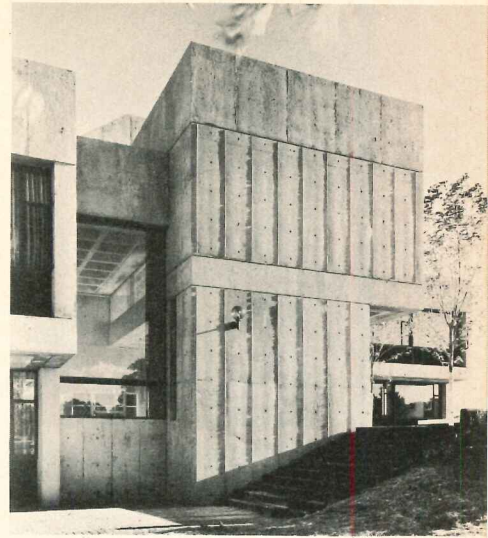
CONCOURSE LEVEL



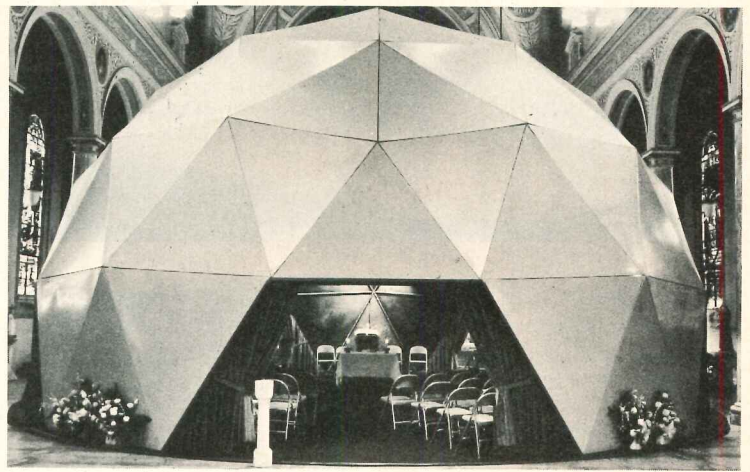
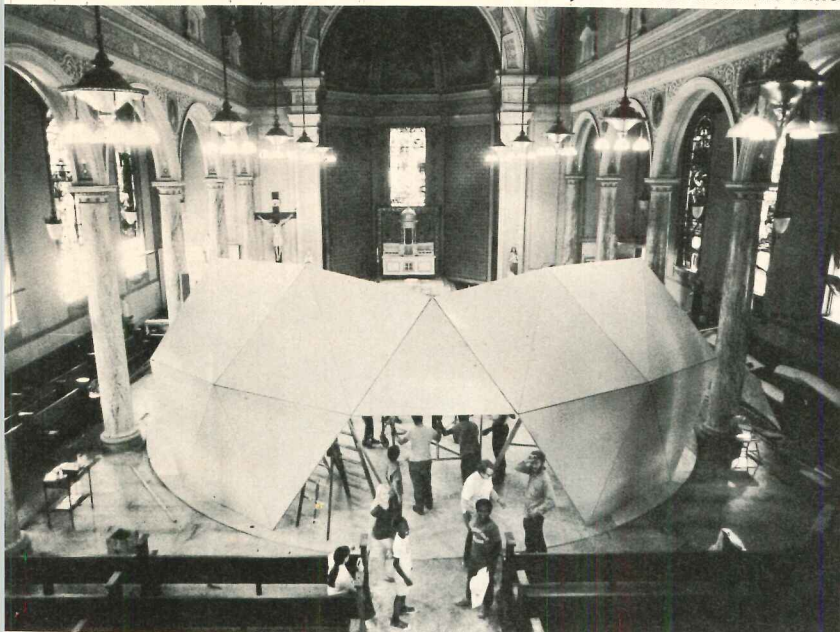
**List Music and Art Building, Kirkland State College, Clinton, New York,** Benjamin Thompson and Associates Inc., architects, is designed to relate closely to its student com-

munity. Ground-level galleries act as a gateway to the dining hall-student union and the dance studio and vocal rehearsal rooms are highly visible from outside. Practice

rooms are floated on two-inch foam insulation. Exposed reinforced concrete is used throughout in combination with glass and horizontal wood siding partitions.

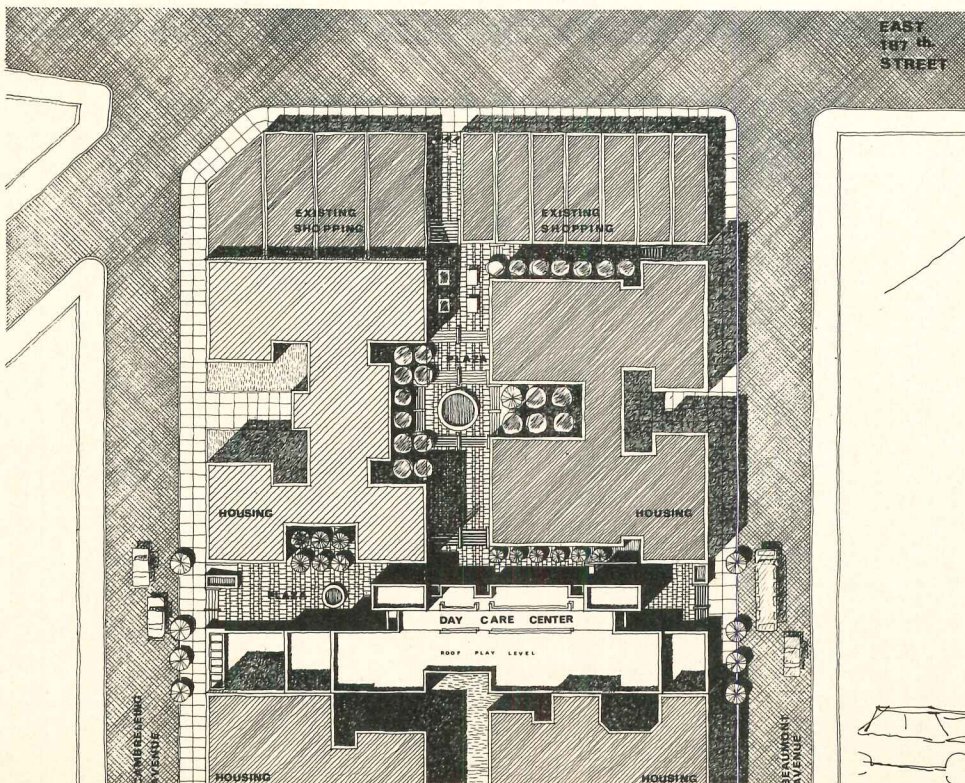


**Courier-Journal and Louisville Times**

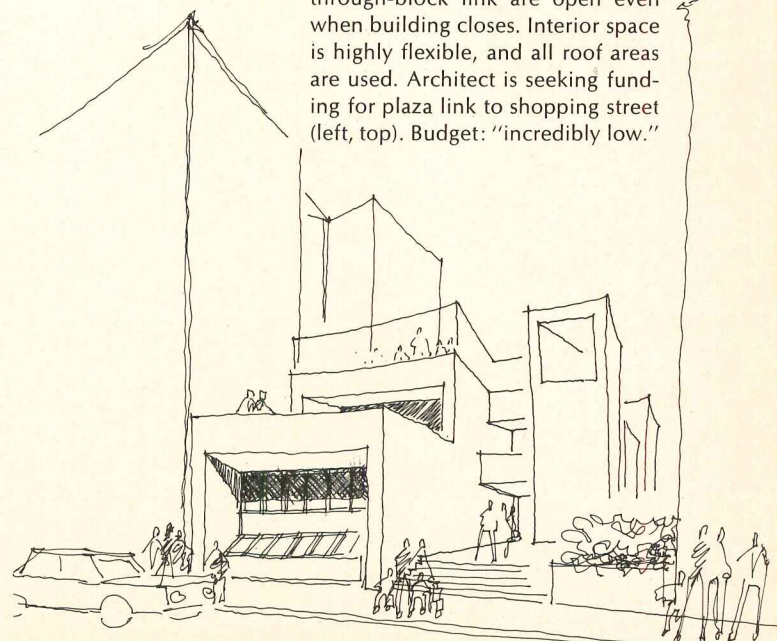


**St. Charles Borromeo Catholic Church renovation, Louisville, Ky.,** Jasper Ward, architect, was designed to meet the needs of a reduced congregation in a large ghetto church. A geodesic dome,

which the parishioners built, encloses the altar where about 125 attend Sunday mass in a sanctuary built to seat 1,000. The remaining space will be remodeled into meeting rooms and a community center.



**Day care center, Bronx, New York,** for New York City Department of Social Services, Frank Williams, architect, is designed to be inviting to its community. Plaza and through-block link are open even when building closes. Interior space is highly flexible, and all roof areas are used. Architect is seeking funding for plaza link to shopping street (left, top). Budget: "incredibly low."



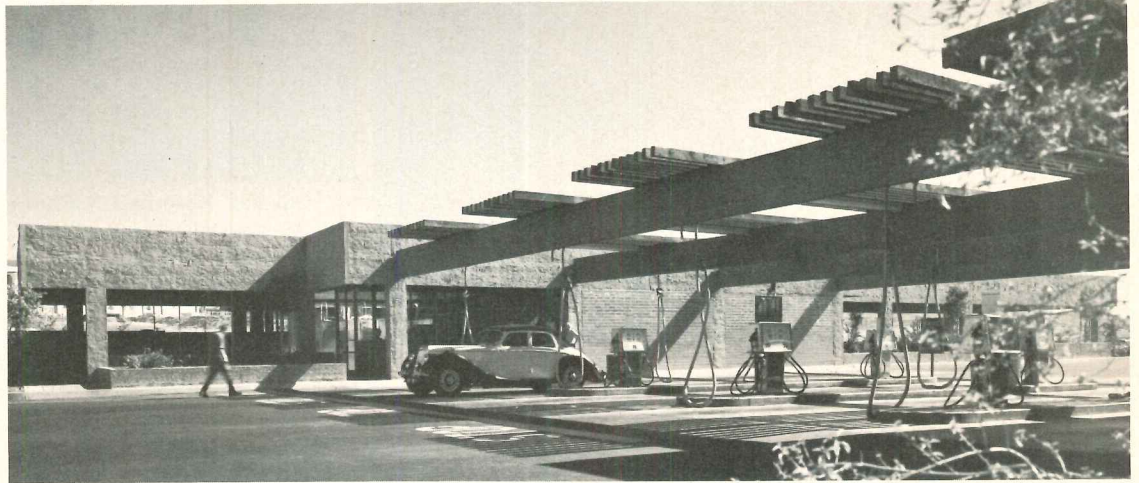


**Norfolk Scope** convention and cultural center, Norfolk, Va., The Williams and Tazewell Partnership, architects, Pier Luigi Nervi, consultant, will contain a domed convention arena for 12,000, a theater for 2,500 and an exhibition hall

below the podium. Mr. Nervi designed the arena dome of light pre-cast elements covered by a structural slab. Building exteriors are rough board form concrete, podium paving is brick. All parts can work together or separately.

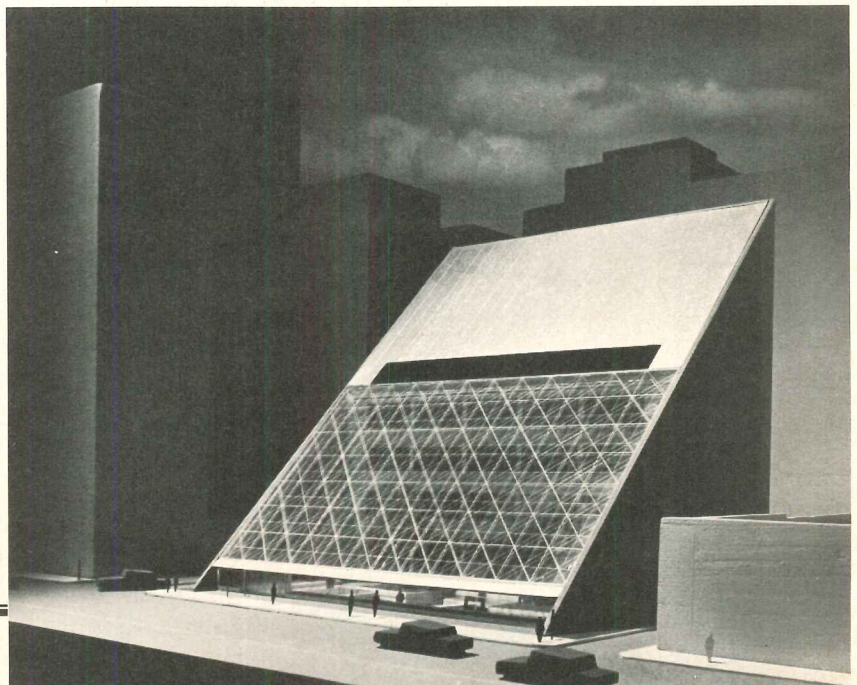
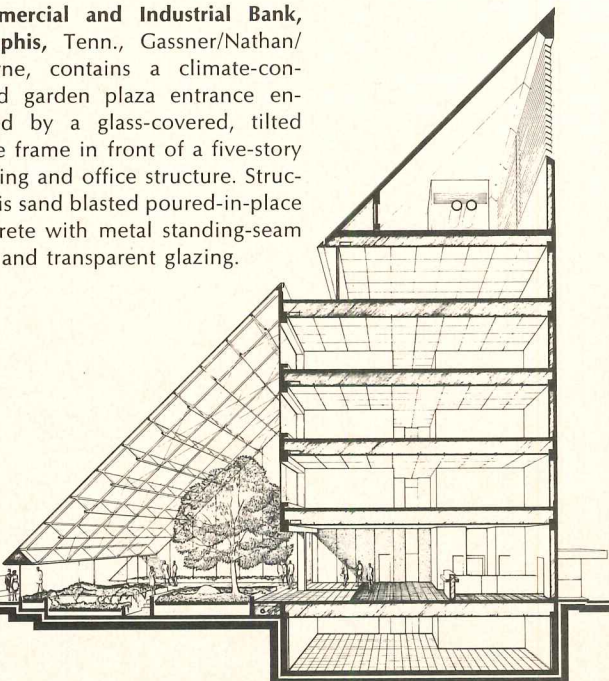
Fred Habit photos

**Newport Center Car Wash**, Newport Beach, California, Riley/Bissell/Associates, architects, was designed to be "the world's most beautiful car wash" because of its location in a growing central business area. It's designed to look good from neighboring high-rises as well as from the ground. Structure is pre-cast concrete with brick in-fill walls and heavy timber roof framing. Concrete was precast on the site, using the crushed-rock drive-way base for a textured casting slab.



Julius Shulman

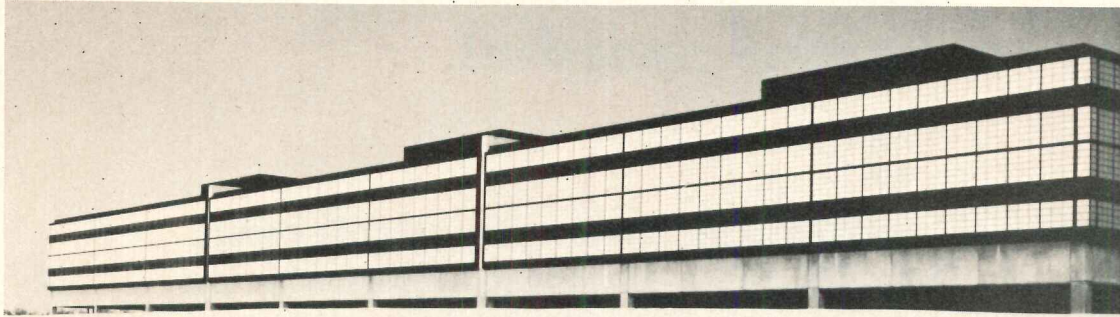
**Commercial and Industrial Bank, Memphis, Tenn.**, Gassner/Nathan/Browne, contains a climate-controlled garden plaza entrance enclosed by a glass-covered, tilted space frame in front of a five-story banking and office structure. Structure is sand blasted poured-in-place concrete with metal standing-seam roof and transparent glazing.



## A.I.A announces winners of 1971 Honor Awards

Ten buildings, chosen from 550 entries, received the nation's highest architectural awards this year. Those not shown are: Christensen Hall, University of New Hampshire, Ulrich Franzen, architect (November, 1970, page 101); Florence Hollis Hand Chapel, Mount Vernon College, Washington, D.C., Hartman-Cox, architects (February, 1971, page 43); Children's Hospital Medical Center, Boston, The Architects Collaborative, architects (October,

1970, page 124); Westbeth Artists Housing, New York City, Richard Meier, architect (March, 1970, page 103); U.S. Pavilion, Osaka, Japan (June, 1970, page 126) and Estee Lauder Laboratories, Melville, N.Y., Davis, Brody and associates, architects for both; Design Research Building, Cambridge, Mass., Benjamin Thompson, architect (May, 1970, page 105). The jury noted a dearth of good housing designs, blaming red tape and codes.



Phokion Karas photos

**Avco Everett Research Laboratory**, Everett, Mass., Peirce & Pierce, architects, is planned to encourage an interdisciplinary mix among researchers. Taking advantage of pile foundations, structure is raised off the ground, providing parking be-

low. Trussed long spans above parking provide continuous service space below laboratories. Peripheral corridors provide limited view of industrial surroundings; window walls face a landscaped interior court.

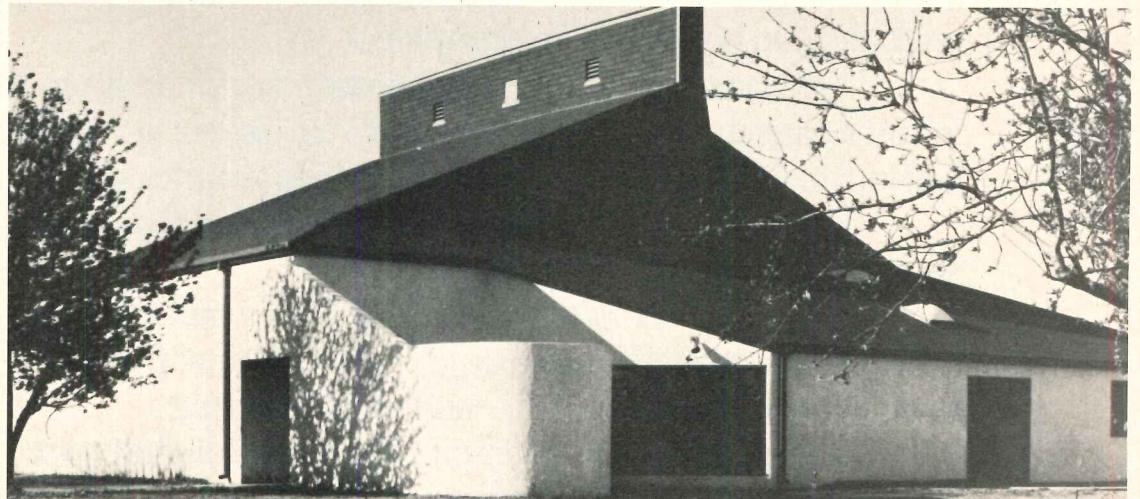


**Church of Our Divine Saviour**, Chico, California, Quinn and Oda, architects, is highly flexible and was built on an extremely low budget. Materials and shapes blend with surrounding architecture. Main

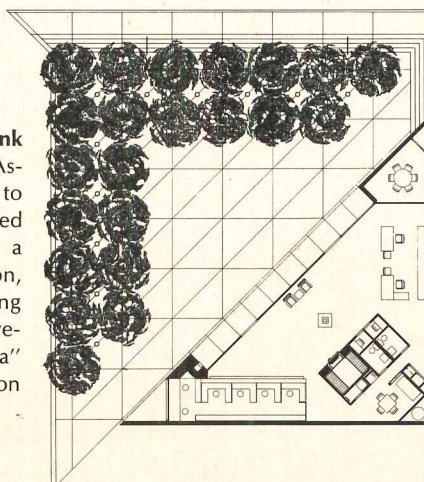
spaces are divided by heavy blue curtains, side spaces are separated from the main by sliding barn doors. A central core "people space" is the main focus rather than the sanctuary.



Randall Fleming photos



**North Carolina National Bank Branch**, Charlotte, N. C., Wolf Associates, architects, is designed to visually strengthen its impoverished black neighborhood, providing a definite form amidst gas station, drive-in environment, recognizing existing diagonal pedestrian movement, and adding a "mini-plaza" protected from the street, all on a very low budget.



# The Carrier Volumaster®

A revolutionary apartment air-distribution system  
harnesses the Coanda effect.

The Volumaster starts with all the proven advantages of a central climate control system. Then adds some unique improvements of its own.

First, a Carrier exclusive: a special variable-speed fan-coil unit. Only one unit is needed for each apartment. Its motor is specifically designed to follow the heating/cooling load. This offers the owner up to 20% lower operating costs. And the unit's reliability greatly lowers maintenance costs, too.

Then, there's the new Volumaster outlet. This Carrier exclusive provides even air distribution regardless of the load.

How does it work? Instead of pouring air into a room, the damper blade automatically adjusts to the air flow. The aerodynamic design of the outlet enables the discharge air to cling to the ceiling.

The air hugs the ceiling even under low flow conditions. There are no drafts. No hot spots. No dumping of air.


That's not all that's exclusive with the Volumaster. It also features patented solid-state controls. Controls that are totally dependable, last longer, and require no field maintenance.

In addition, the factory's prepackaging reduces installation costs and provides more effective quality control.

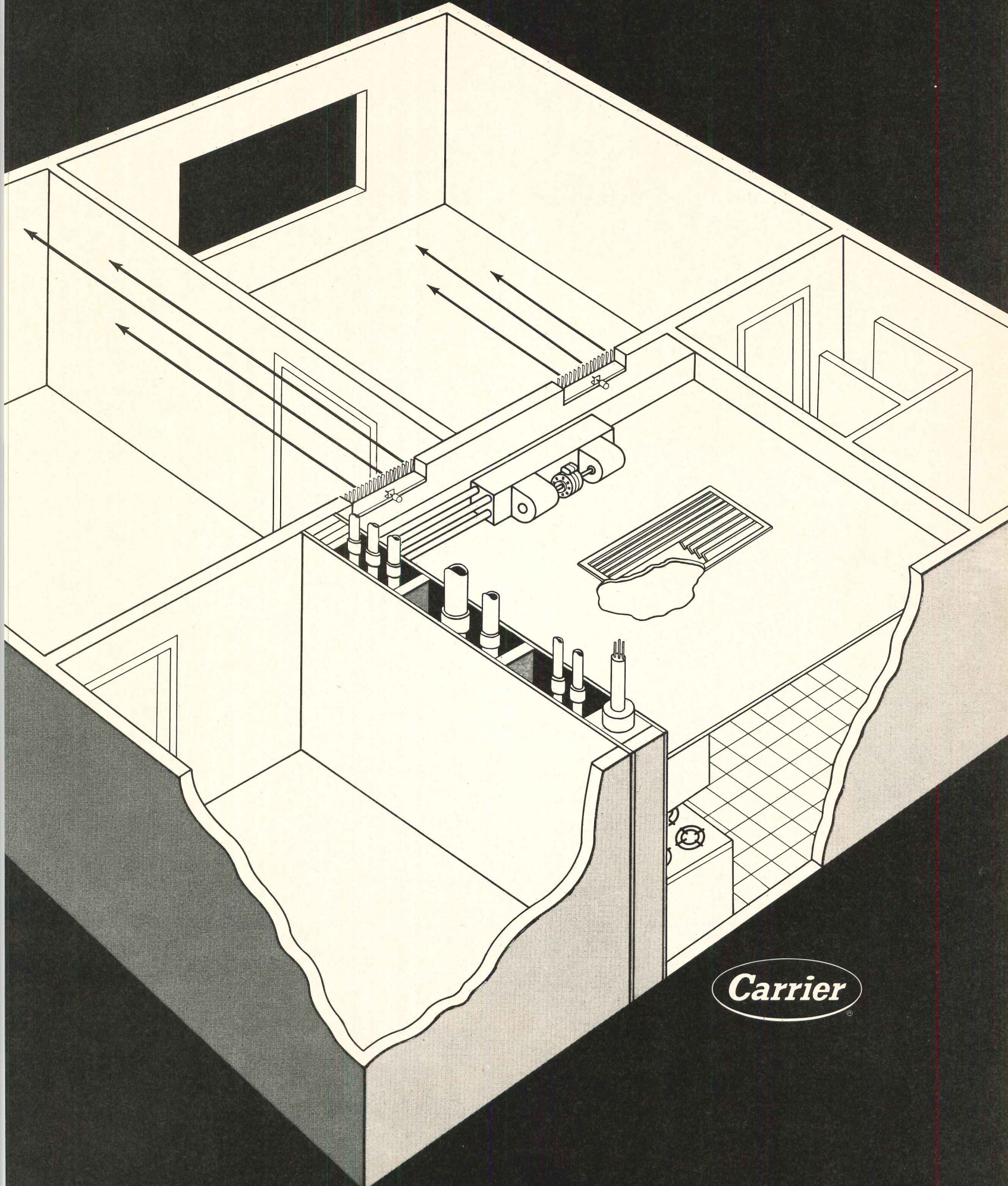
All this gives owners and developers a much higher profit on their investment. And at the same time, it gives tenants the most comfortable, most efficient and quietest air conditioning around.

Ask Carrier how a Volumaster air distribution system can improve your new building with central air conditioning and save money.

And when you do, ask them about their big advance in gas absorption cooling machines: the 16JB.

 AMERICAN GAS ASSOCIATION, INC.

**Natural Gas. It's pure energy.**



**Carrier**

# AMERICAN THE BULL

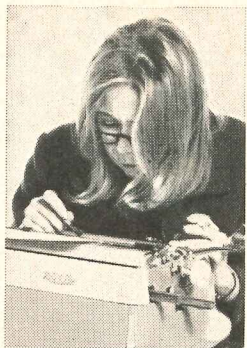
**Wake up, America.  
What you don't see hurts you. Like millions of dollars  
of mistakes caused by bad office lighting.**





# ADD

## The high cost of an eraser.



She needs 100 or more footcandles of light \* What are you giving her?

If you have a heart of gold and aren't disturbed by your typists' typos—then consider that the cost of a dictated business letter just went up to \$3.05. And every time it's retyped, it's an extra \$2.05.

Now let's go into your accounting department.

How much do you figure you lose every year with all those typos that never get retyped? A little scary, isn't it?

Every year, millions of dollars are lost in mistakes which are simply blamed on human error. But the reason behind the error might be found in your ceiling. Ever thought of that?

## What price a new lamp?

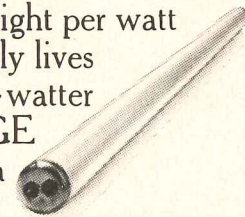
The facts are that increased lighting levels alone can increase productivity from 4 to 8%. Care to figure that out in hard, cold cash?

Office workers respond to modern, bright surroundings. They work more efficiently and more accurately. It makes a happier and cheerier working atmosphere.

## How to be a smart light buyer.

First, buy a lamp for its light—but don't forget all the other things that are from two to 20 times more expensive than the lamp itself. Consider its running cost. And the cost of maintaining it. Then see us.

General Electric has just the lamp a smart light buyer like you wants. For example, we have a 40-watt fluorescent that not only gives more light per watt than all others, but actually lives longer. And no other 40-watter costs less to run. It's our GE Mainlighter.\*\* And it's a bargain.



The GE Mainlighter. More light for less dollars.



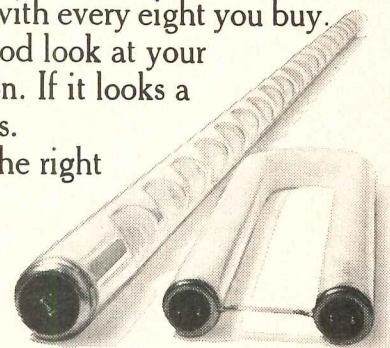
This office can see what it's doing. There's less fatigue. Fewer mistakes.

We even have a fluorescent called the Mod-U-Line† that's doubled over so you can fit two or three of them neatly into those modern two-by-two-foot module fixtures.

And if you're interested in eight-foot fluorescents—we have the world's brightest. The GE Power Groove.® It actually gives you the equivalent of nine feet of light from an eight-foot tube. It's like getting an extra fluorescent free with every eight you buy.

Have a good look at your office ceiling soon. If it looks a little sad—see us.

We have the right light for it.



The GE Power Groove. Brightest eight-footer ever. And the GE Mod-U-Line. Gets into places others can't.

# General Electric—so America can see.

## GENERAL ELECTRIC

For more data, circle 25 on inquiry card

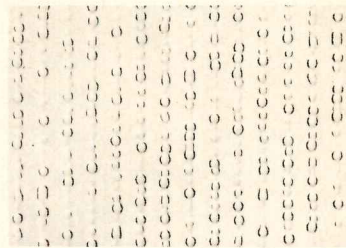
\*ILLUMINATING ENGINEERING SOCIETY.  
 \*\*TRADEMARK OF THE GENERAL ELECTRIC COMPANY.  
 †TRADEMARK OF THE GENERAL ELECTRIC CO. MADE IN WEST GERMANY.

# It takes all kinds.

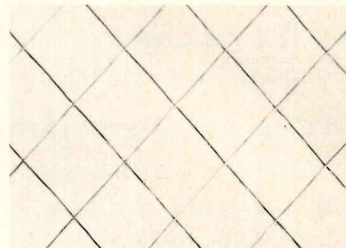
and all kinds of patterned and wired glass are made by ASG  
over 40 varieties, all from a single source.



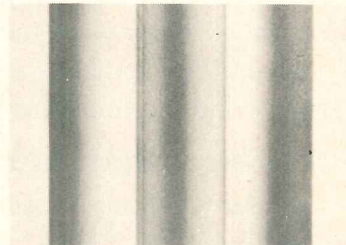
**For businessmen:** Here's a place to swing free with elegant walls of shimmering Beadex® and its raindrop surface, or Randex® with its random linear pattern. Both obviously creative material.



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



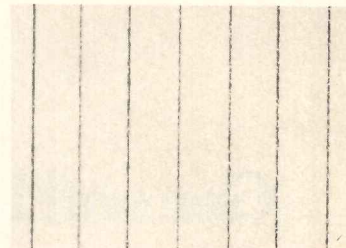
**For homes:** Bring new light and freedom to any architectural style, and do it safely. Use tempered Flutex as entrance side lights. Or select finely textured Muralex® to provide both light and privacy. ASG patterned glasses are ideal for privacy panels, room dividers, or clerestories.



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



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



**ASG Industries Inc.**

P.O. Box 929, Kingsport, Tennessee 37662

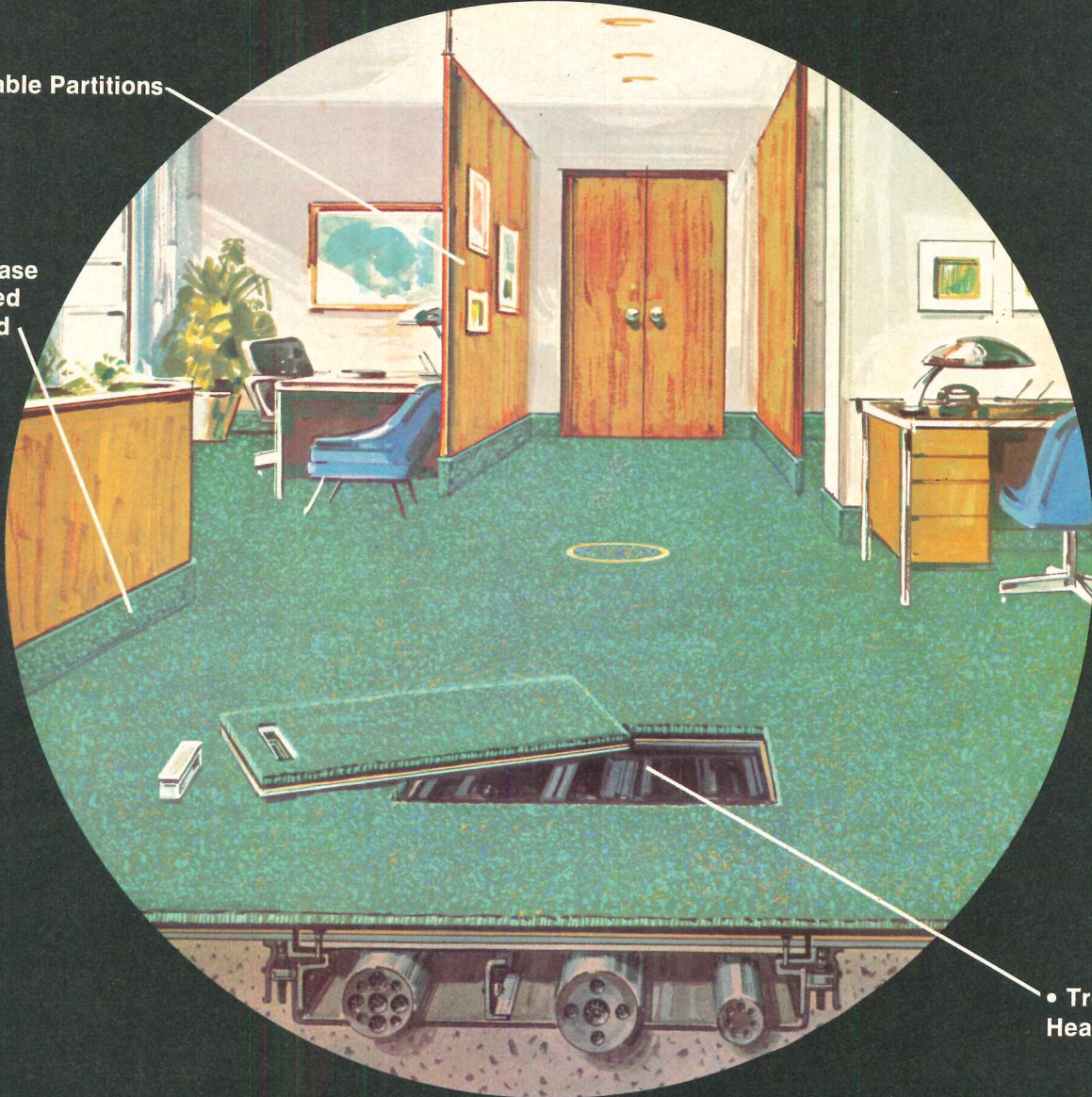
For more data, circle 26 on inquiry card

# All systems are go

## Carpet Systems from CCC with Acrylic 73... engineered to integrate with all architectural systems.

• Movable Partitions

• Modu-Base carpeted baseboard



• Trench Headerducts

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

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

The result of this planning: a carpet system that lets you move partitions, gives you easy access to sub-floor systems and includes built-in static control to end the annoyance of shock.

Acrylic 73 is a total performance carpet. CCC's exclusive blend of 70% long-staple Creslan® acrylic and 30% long-staple commercial nylon combines unequalled stamina with design versatility and appearance retention.

CCC is the world's largest manufacturer of commer-

cial and institutional carpet systems. We would like to tell you more about what we can do for you. Why not send in the coupon today.



Creslan is a product of American Cyanamid Company, Wayne, N.J.



Commercial Carpet Corporation  
Dept. AR-6/71  
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 \_\_\_\_\_

For more data, circle 27 on inquiry card

When modern buildings go up, qualified electrical contractors go in . . . with the ready capability, latest equipment, specialized experience to install electrical systems correctly. Systems for heating. Cooling. Lighting. Communications. Systems adding up to the building's modern Electro-environment. It's an environment of comfort, convenience, efficiency and esthetic appeal for the people who will live or work inside for years to come . . . thanks to the qualified electrical contractor.

He'll safely satisfy a new building's power distribution needs, and keep pace with needs as they change. Many factors contribute to the ready

capability he can put to work for your benefit. Among them, he has the best-trained manpower, the work-force flexibilities and the awareness of local codes to keep electrical problems from developing. To keep all electrical systems functioning efficiently. Economically. Reliably.

And remember: when he installs electrical systems, he *guarantees* electrical systems . . . for one full year. A qualified electrical contractor takes a lot of pride in his work. And you can count on it.

National Electrical  
Contractors Association  
Washington, D.C. 20036



**The electrical  
promise of  
tomorrow needs  
the  
electrical  
contractor  
of today.**

New construction. The building won't be complete until a qualified electrical contractor provides for its modern Electro-environment.



*...Versatile, unusual seating that brightens interior design concepts from every angle.*



*No. 106—Designed by Giancarlo Piretti.  
Produced by Castelli of Italy.*



*Assembled and solely distributed by*

**KRUEGER**

METAL PRODUCTS, INC. • GREEN BAY, WISCONSIN • 54306

*Showrooms: NEW YORK 20 E. 46th Street • CHICAGO 1184 Merchandise Mart • LOS ANGELES 8899 Beverly Blvd. • Boston • Indianapolis • Dallas • Houston*

## We wrote the book on imaginative commercial buildings.

### Send for it.

The Bazaar at the Village Green at Heritage Village in Southbury, Connecticut is an outstanding example of the way Western Wood adds character to a commercial project.

Our new commercial buildings booklet is filled with imaginative design solutions. Solutions that are making dollars and sense for developers as well. The scope ranges from an award winning medical clinic to a suburban equestrian center. Each design has its own distinct personality created with Western Wood.

Let us show you how Western Wood can help add personality to your next commercial design project. Mail the coupon today.

*For more data, circle 29 on inquiry card*

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_



**Western Wood does it  
like nothing else can.**

Western Wood Products Association  
Dept. AR-671, Yeon Building  
Portland, Oregon 97204

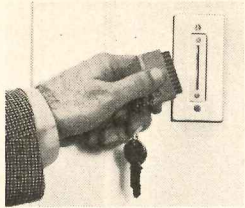
WWPA's 1970 Grading Rules, approved by the Board of Review of the American Lumber Standards Committee, incorporate provisions of the new American Lumber Standard PS 20-70, which establishes new lumber sizes, grades and identification requirements. They are now available from WWPA at \$1 per copy.

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



The IDENTI-LOGIC® Access Control System is a breakthrough in electronic security. It is used to protect sensitive areas like computer centers...whole buildings, offices...even safes and desks.

When an IDENTI-LOGIC controller is inserted into a special electronic keyway either the lock controlled by that keyway opens immediately or an alarm output may be triggered. An electronic logic device has identified and either accepted or rejected the controller that was inserted into the keyway. There is no way the IDENTI-LOGIC control board can be fooled—and it has no friends.



A central unit, the IDENTI-LOGIC printer, records the date, time, controller ID number and door number of each entry. If an alarm is triggered the date, time and location is also recorded. You have a permanent record of every entry—and of every attempted entry that triggered an alarm.

If an IDENTI-LOGIC controller is lost or stolen it takes only seconds to program the central unit to refuse it entry—and trigger an alarm if it is used.

The patented controller is available in over 1 million code combinations and in a version that cannot be duplicated without destroying the controller itself. The central unit can be programmed to accept or refuse any controller—and the program can be changed from hour to hour, shift to shift, day to day.

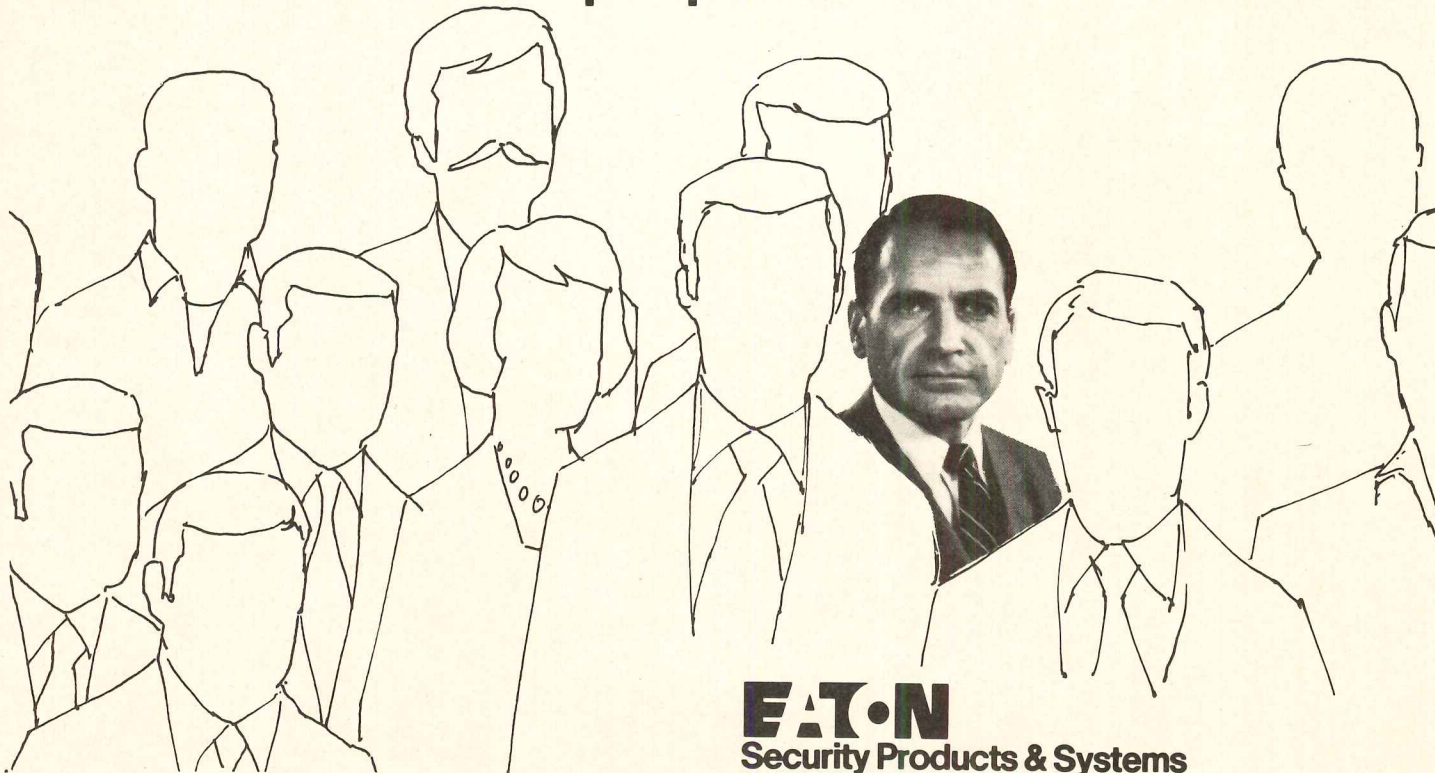
You can have the security of an IDENTI-LOGIC Access Control System at a surprisingly low cost. A Model 1001 Single Door Entry Control costs under \$200 and can be installed in a morning. A complete access control system for your facility, including printer, is available at reasonable cost and can be installed in a few days.

For more information on IDENTI-LOGIC Access Control System write or call John F. Regan, Manager of Marketing, Eaton Corporation, Electronic Security Division, Box AR, 3074 Miraloma Avenue, Anaheim, CA 92806. The telephone number is (714) 630-1350.

	DAY	TIME	DOOR NO.	KEY NO.
2	1 4	11 :0	1 6 5 1	3 7
2	1 4	11 :0	8 4 3 0	2 6
2	1 4	11 :0	9 6 5 0	7 4

ON THE 214th DAY (August 2nd) AT 11:09 A.M., DOOR NO. 65 WAS OPENED WITH IDENTI-LOGIC CONTROLLER NO. 074 (issued to J. Doe). NO ALARM WAS TRIGGERED SINCE LOCK NO. 65 HAD BEEN PROGRAMMED TO ALLOW J. DOE ACCESS AT THAT TIME ON THAT DAY.

The IDENTI-LOGIC access control system keeps out some of the people all of the time and all of the people some of the time—or all of the people all of the time.



**EATON**  
Security Products & Systems

For more data, circle 30 on inquiry card



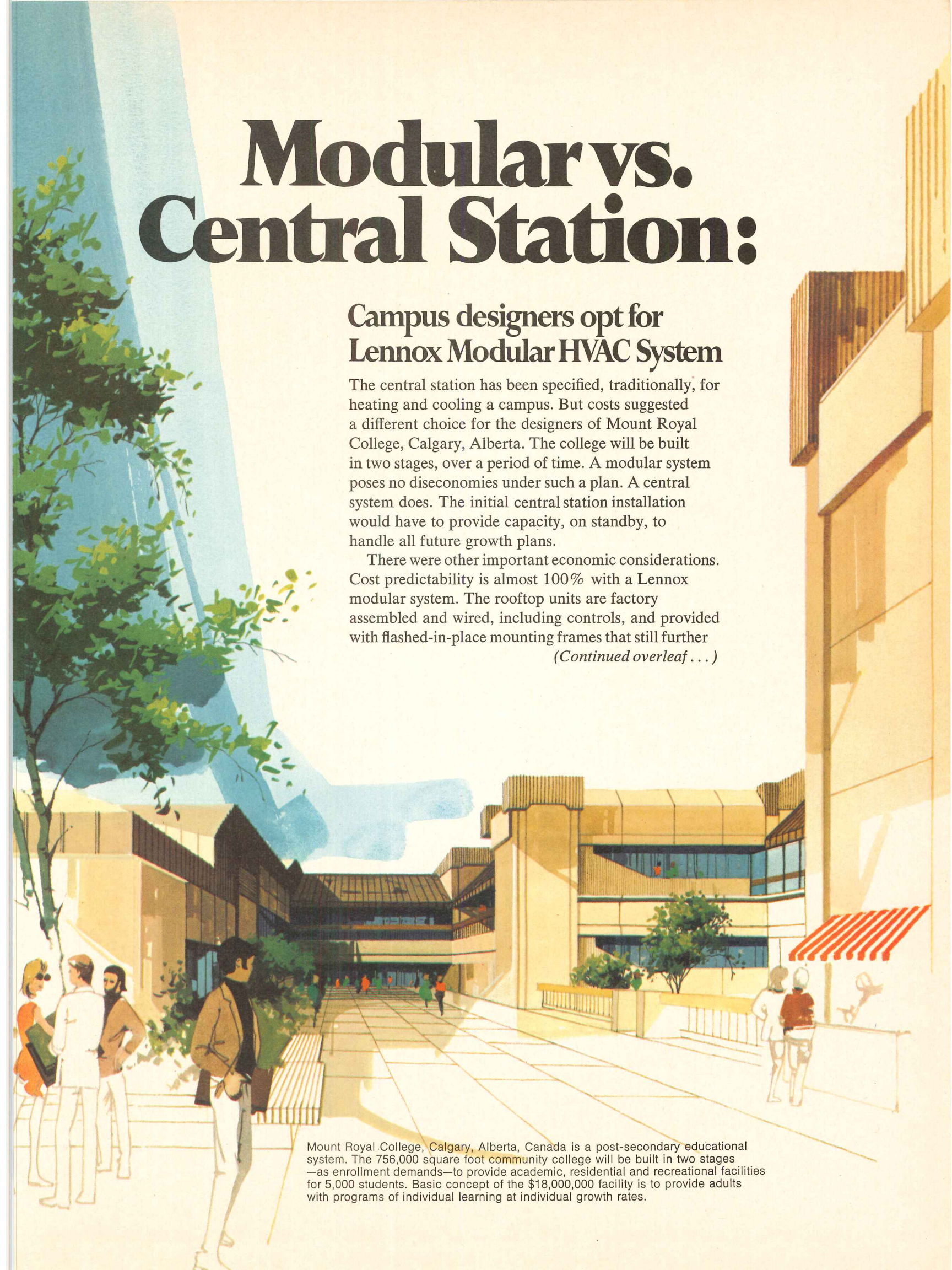
# Modular vs. Central Station:

## Campus designers opt for Lennox Modular HVAC System

The central station has been specified, traditionally, for heating and cooling a campus. But costs suggested a different choice for the designers of Mount Royal College, Calgary, Alberta. The college will be built in two stages, over a period of time. A modular system poses no diseconomies under such a plan. A central system does. The initial central station installation would have to provide capacity, on standby, to handle all future growth plans.

There were other important economic considerations. Cost predictability is almost 100% with a Lennox modular system. The rooftop units are factory assembled and wired, including controls, and provided with flashed-in-place mounting frames that still further

*(Continued overleaf...)*

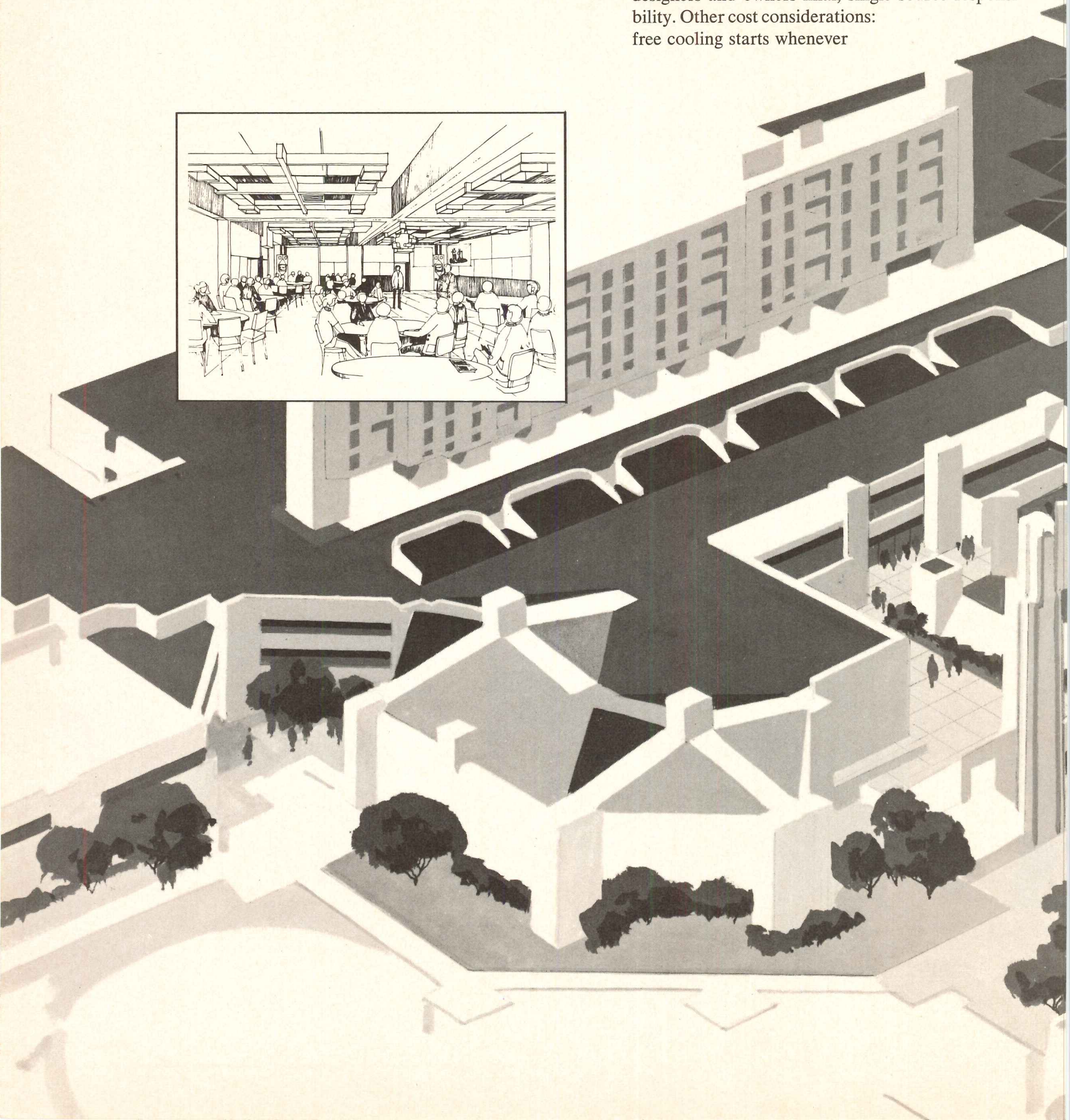
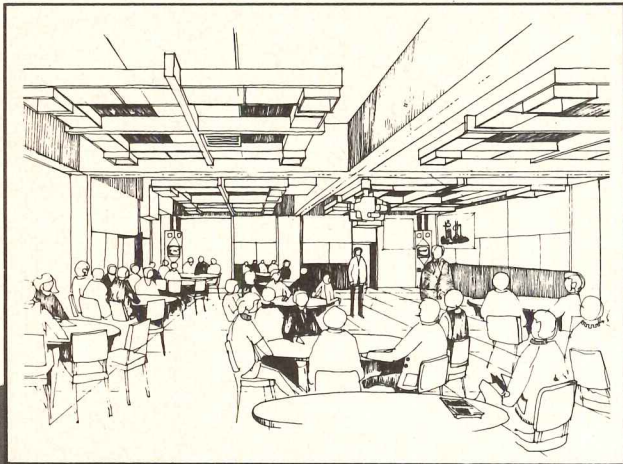


Mount Royal College, Calgary, Alberta, Canada is a post-secondary educational system. The 756,000 square foot community college will be built in two stages—as enrollment demands—to provide academic, residential and recreational facilities for 5,000 students. Basic concept of the \$18,000,000 facility is to provide adults with programs of individual learning at individual growth rates.

continued . . .

**modular vs. central station** reduce on-site labor. Mount Royal budgeted \$2.30 per square foot for HVAC. The Lennox bid was just under \$2.00 installed.

The cost of owning the Lennox system is also predictable. Service contracts are available. Thus, total cost comparisons can be made between the modular and the central station systems. And Lennox, in addition to the service contracts, offers designers and owners final, single source responsibility. Other cost considerations: free cooling starts whenever



outside temperatures fall below 70°F. And the ability to reduce fuel and energy consumption in unoccupied areas. Since this is a community college, inviting many uses, occupancy will be uneven. A central system does not offer this flexibility.

A final important consideration, of course, is the quality of comfort provided to individual spaces. Sound levels are lower. More sophisticated cleaning and humidification systems are available than are commonly incorporated in a central station design.

And because ducts and outlets can be moved, the system permits spaces within the college to be changed without faulting the system's performance.

Write Lennox Industries Inc., 977 South 12th Avenue, Marshalltown, Iowa 50158.

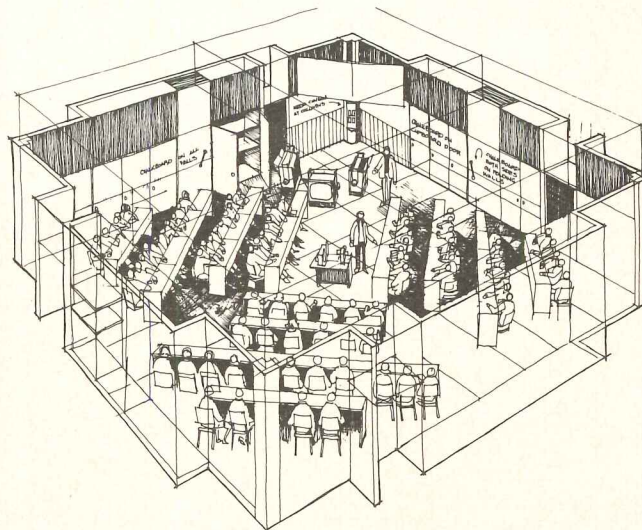
**LENNOX**  
AIR CONDITIONING • HEATING

*For details, see Sweet's 29A/Le—or write  
Lennox Industries Inc., 977 S. 12th Avenue,  
Marshalltown, Iowa 50158.*

*For more data, circle 31 on inquiry card*

Model of campus plan for Mount Royal College. The two-stage building program, beginning with a 634,000 square foot unit, gave a strong advantage to the Lennox modular heat-cool-vent system. 1,287 tons of cooling will be provided. A wide variety of equipment will comprise the total system, including both multizone and single zone.

Educational Consultants: Stanton Leggett & Associates, Chicago.  
Architects: Stevenson, Raines, Barrett, Hutton, Seton & Partners, Calgary. General contractor: Hashman Construction, Ltd., Calgary. Heating and A/C contractor: Reggin Industries, Ltd., Calgary.



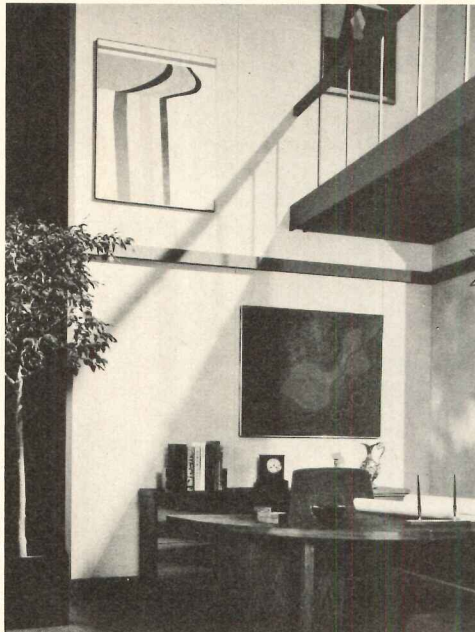
Mount Royal will employ a sophisticated system of multi-media learning programs, with retrieval systems linking individual carrels and classrooms to program sources. Access to the system—communications, audio, video and power—will be from electronic cabinets in each column in the classroom and the open library. Central-source programs will be supplemented by portable equipment from twelve resource islands.



# What do you want? Rich texture? Noise control? A three-dimensional ceiling?

Get all three with Tónico Cumulus Acoustical Panels. The rich texture of this Travacoustic product is obvious. The distinctive recessed joint detail adds a third dimension to ceilings. Gives extra emphasis to the rich texture of the pattern. And, if you like, grids can be painted to give a new dimension in decor. Sound control becomes more beautiful because Gold Bond® Tónico Cumulus Panels have a noise reduction coefficient of .65-.75 and a sound transmission class in the 35-39 range. Tónico Cumulus is noncombustible. For details, write National Gypsum Company, Dept. AR-61G, Buffalo, New York 14225.

**OTHER BUILDING IDEAS FROM  
NATIONAL GYPSUM, THE ANSWER PEOPLE.**



**Durasan Vinyl-Surfaced Gypsum Wallboard Panels** are one answer to low-cost maintenance. They're rugged, abrasion resistant and washable. Durasan is available in a wide range of textures, colors and woodgrains.



**Tectum Full-Span Corridor Panels** provide the maximum resistance to hard usage and they go up fast too. Easily worked on the job to accommodate recesses and light fixtures. So versatile and practical you'll want to specify them for corridors in schools, offices and public buildings.



**Contempo-Wall** lets you divide space at will. Complete tenant flexibility! All components are demountable and reusable. Partitions come in four heights: ceiling, cornice, bank rail and low rail — all with Durasan vinyl-surfaced gypsum wallboard.



**Gold Bond Metaledge Corewall®** is the answer to the fast, lightweight, low-cost enclosure of elevator shafts and stairwells. Two-inch thick, two-feet wide, long-length panels of gypsum have metal edges for attachment, rigidity and increased fire resistance.

The old-fashioned character comes from wood—the warm, stable, natural beauty of wood. The new-fangled part is a sheath of vinyl—tough, durable, low-maintenance vinyl.

Wood brings warmth and beauty to inside frames and trim surfaces. Wood means charm and character in design. Wood's stability and insulating properties, and Andersen craftsmanship, make these windows especially weathertight—important when caring for the elderly.

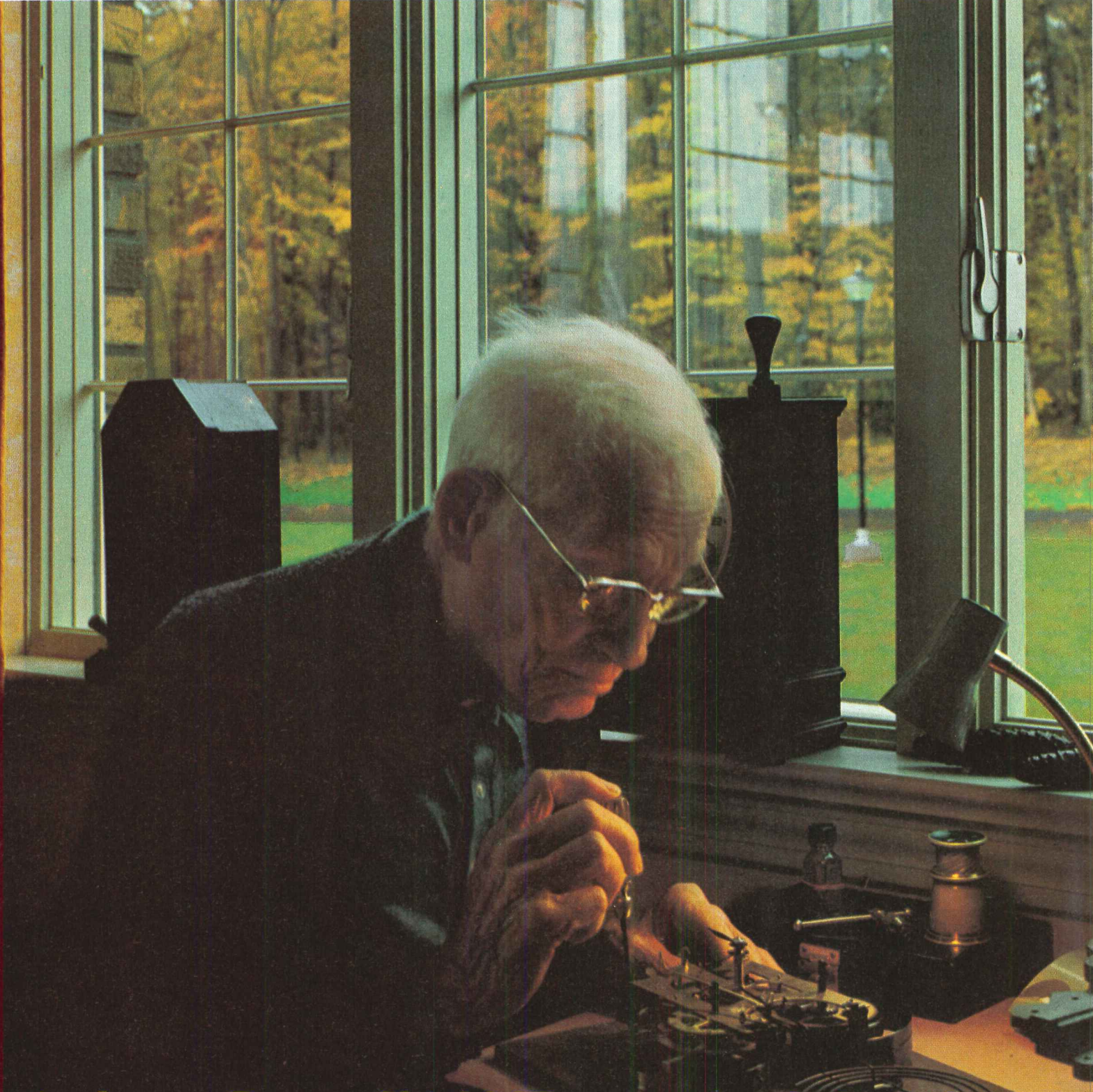
All the exposed portions of Andersen Perma-Shield® Casement Windows are enclosed in a sheath of tough, durable vinyl. It does not deteriorate, does not need painting, does not rust or pit or corrode.

Furthermore, these Perma-Shield Windows have welded insulating glass which eliminates storm windows. And all the glass surfaces can be easily cleaned from inside. The rigid vinyl grilles are removable—another aid to easy cleaning.

The architect of Kimberly Hall Nursing Home in Windsor, Conn., wanted to avoid the institutional character seen in so many nursing homes, and design a building where the residents would feel comfortably at home—while meeting the low-maintenance requirements of the owner. Andersen Perma-Shield Windows met these needs exactly. What's more, the old folks love them.

With five styles and hundreds of sizes, and combinations, Andersen

Building: Kimberly Hall Nursing Home, Windsor, Connecticut. Architects: Walter J. Douglas Associates, West Hartford, Connecticut.



**Andersen Perma-Shield. The new-fangled windows with old-fashioned character.**

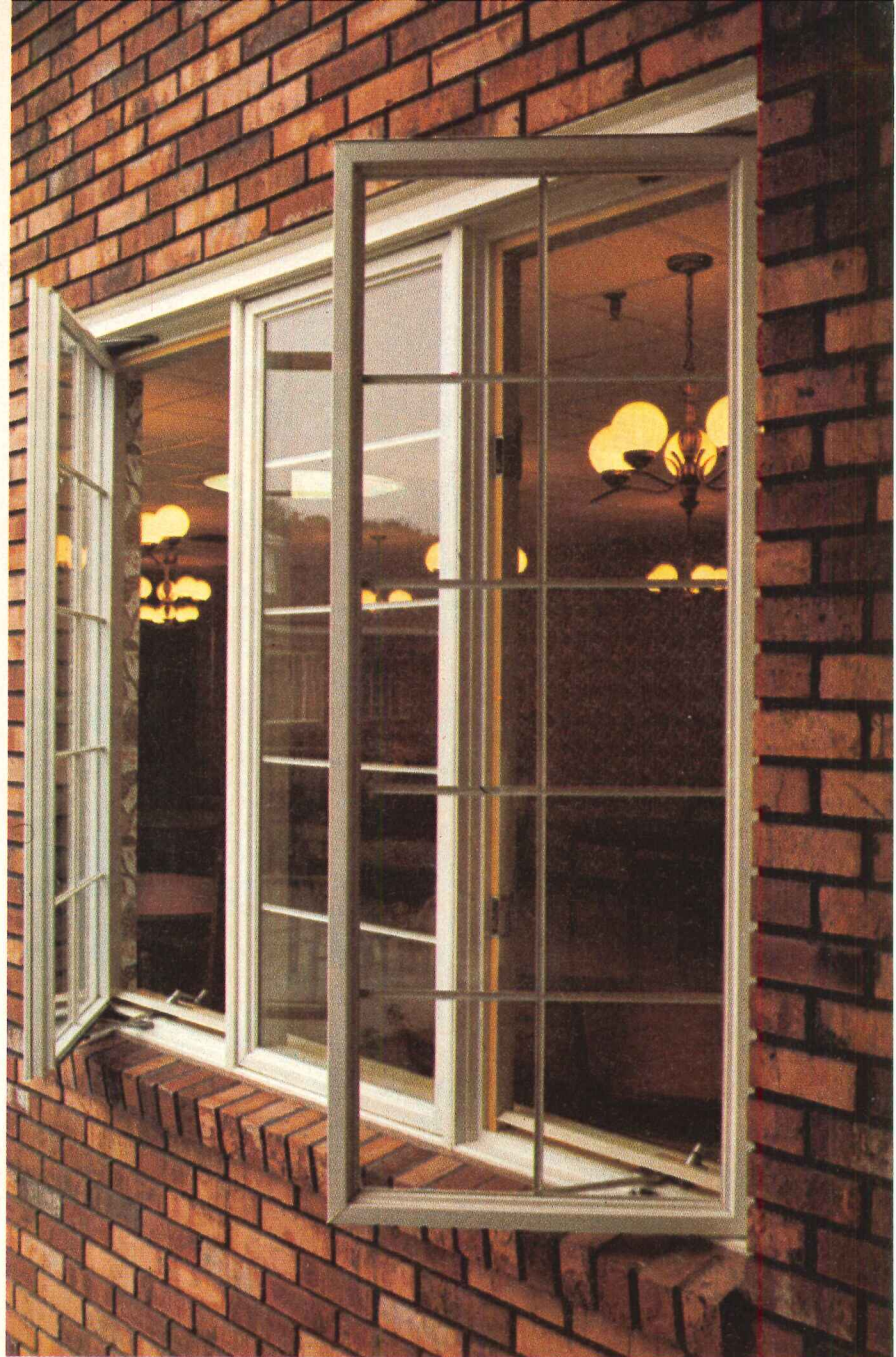
Perma-Shield will fit any design—traditional, modern or contemporary—and still give you low maintenance with traditional character. Compare total installed costs, and you'll see that Andersen's price is right, too.

For more information, check your Sweets File (Section 8.16/An. and 8.4/An.). Or see your nearest Andersen distributor or dealer.

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



*For more data, circle 33 on inquiry card*





Another  
top achievement for  
**AllianceWall<sup>®</sup>**  
porcelain-on-steel panels

**PROBLEM:** How to attract maximum attention for the new Apex Department Store against the relatively low skyline of Pawtucket, R.I. with an economical roof that requires no maintenance and never appears to age?

**SOLUTION:** Designers at Raymond Loewy & William Snaith Inc., of New York, decided upon a spectacular Pagoda-style supplementary roof constructed with AllianceWall porcelain-on-steel, self-cleaning panels. Using a #118 Matte White the roof was designed so it could be illuminated both from the interior and exterior to achieve dramatic effects and visibility. Also, to the surprise of management the price of AllianceWall panels was in line with competitive products considered for the project.

The self-cleaning AllianceWall porcelain-on-steel panels never require painting or other maintenance. Their smooth, non-porous surface will not retain dirt, grease or stains and will not be affected by the heavy smog of this industrial area. Panels are available in 107 colors.

Planners and Designers: Raymond Loewy/William Snaith, Inc. New York, N.Y.  
Engineers: Strobel & Rongved, New York, N.Y.

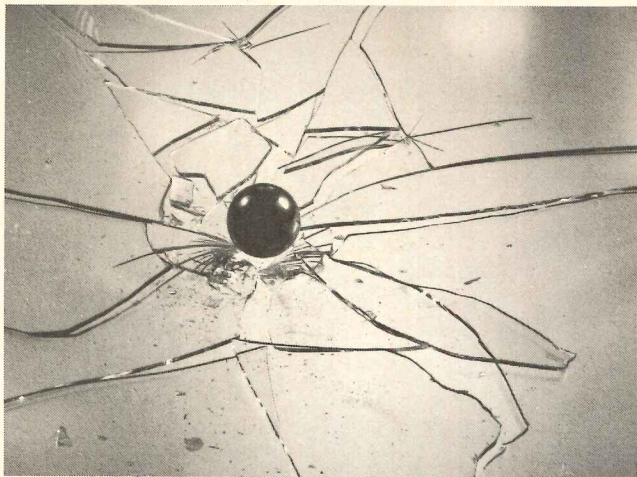
For complete information  
including specifications check  
Sweet's File or write to:

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

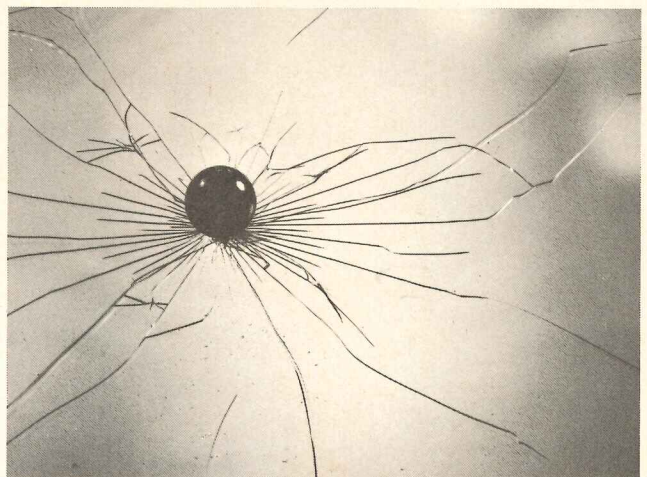
*For more data, circle 34 on inquiry card*



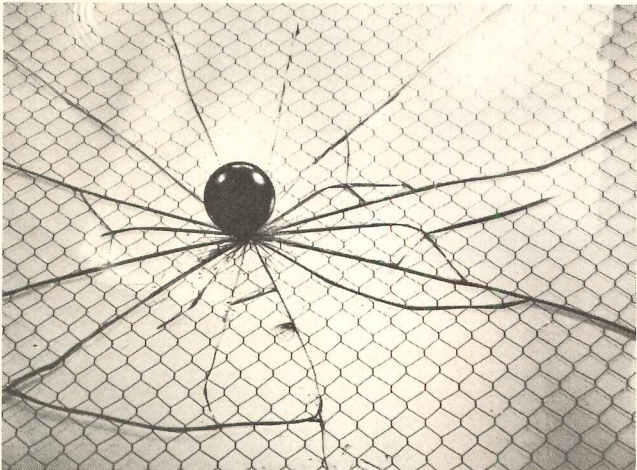
# The more you know about glass the better it is for Merlon®



An explosion of jagged, dagger-like fragments occurs when ordinary window glass is shattered by a 16-oz. steel ball dropped 28".



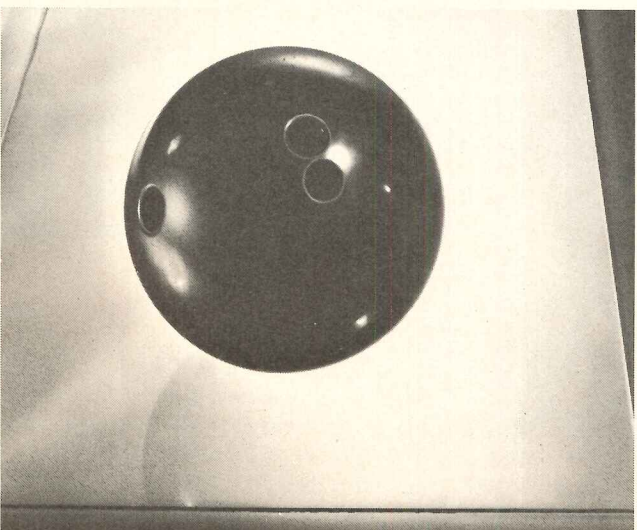
Sharp fragments are held together when laminated safety glass is struck, but expense of replacement is higher than for ordinary glass.



Imbedded wire mesh also serves to keep shattered fragments from flying — but transparency and aesthetic appearance are reduced.



Tempered glass is stronger, more costly than common glass but disintegrates into tiny fragments when struck; still must be replaced.

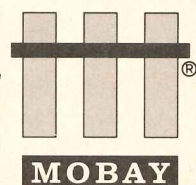


In contrast to 16-oz. drop ball test, a regulation 16-lb. bowling ball was dropped 10 ft. onto a sheet of clear MERLON without damage.

High-impact, transparent sheet fabricated of MERLON polycarbonate can withstand brick-bats and sledge-hammer blows, vibration, shocks, pressure stresses, temperatures from  $-50^{\circ}$  to  $270^{\circ}\text{F}$ . ■ Distortion-free clarity, light transmittance factor 89% vs. 92% for clear glass. ■ Strong as metal but cuts like plywood. ■ If you have a glass breakage problem, don't drop the ball. Write us.

**Mobay Chemical Company**

Code AR-61,  
Pittsburgh, Pa. 15205



For more data, circle 35 on inquiry card

Wheat Chex<sup>†</sup> checked in on Bigelow<sup>®</sup> Carpet of Herculon<sup>®</sup>

WHEAT  
Chex

Bite-size to... wheat



### ...and checked out.

One thing that Bigelow's rugged "Meadowpoint" carpet of HERCULON\* olefin fiber didn't need was a big breakfast. Even one as good as Wheat Chex. But that's what it got . . . drenched with milk and fruit. It all cleaned up, though, quickly and easily.

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

fruit didn't stick with Bigelow's "Meadowpoint" carpet. But your clients will. Because the pile is Bigelow's approved 3-ply yarn of HERCULON.

For information contact Fibers Merchandising, Dept. 112, Hercules Incorporated, Wilmington, Delaware 19899.

Specify carpet of Herculon<sup>®</sup> by Bigelow<sup>®</sup>

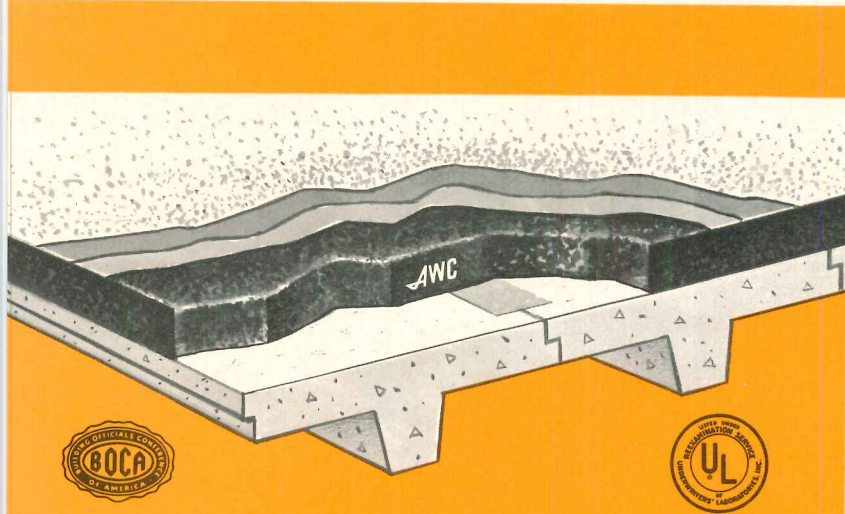
<sup>†</sup>Registered trademark Ralston Purina Company.



\*Hercules registered trademark

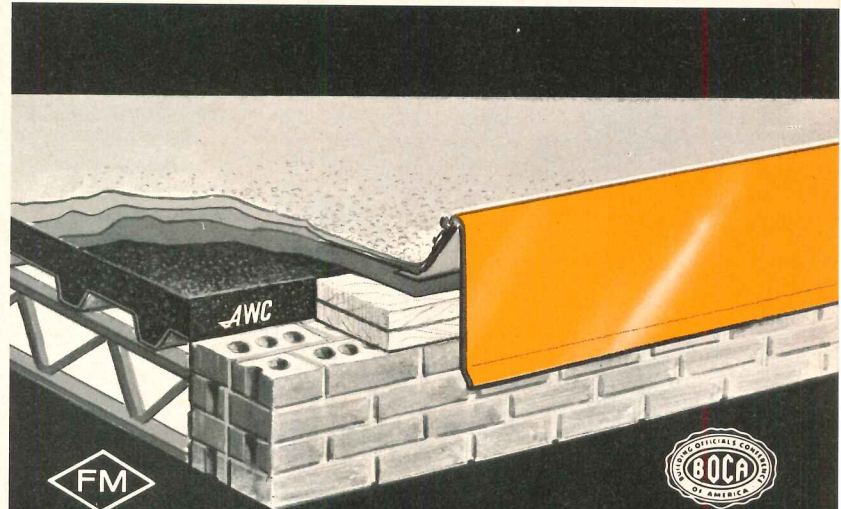
For more data, circle 36 on inquiry card

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



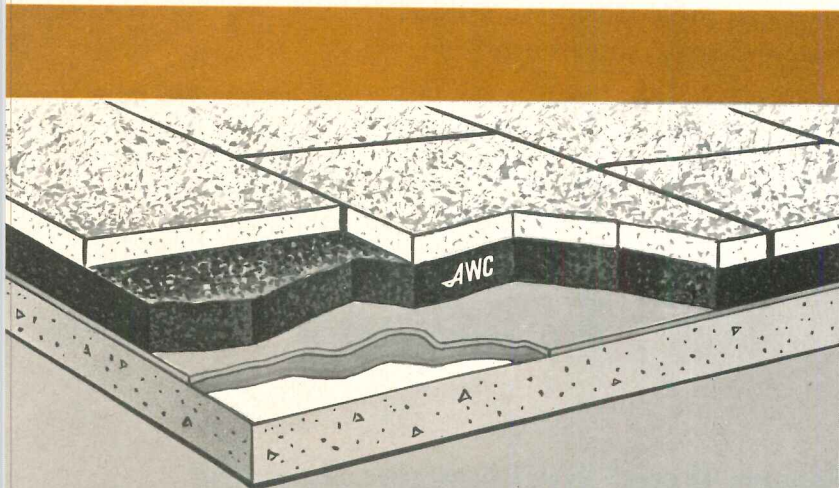
## 2 HOUR FIRE RATED ROOF DECK

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



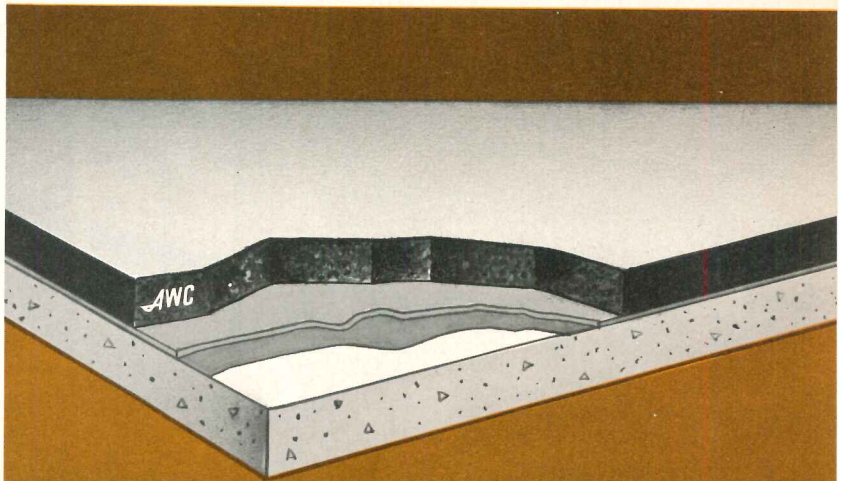
## CLASS 1 METAL DECK CONSTRUCTION

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



## PLAZA DECK

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




## ROOF DECK OF THE FUTURE

Over a decade of designing, testing and practical application have produced this new Silbrico system. All-weather Crete is placed over the water proofing membrane protecting it from severe thermal change and climatic elements which are the major causes of roof failure. All-weather Crete insulation has the properties of being unaffected by these severe conditions. Consult Silbrico Corporation regarding this new concept.

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



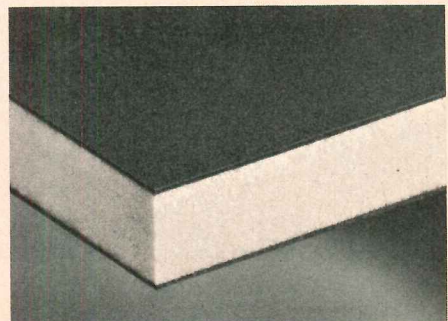
For more data, circle 37 on inquiry card



free to design  
as you like

## Apache Stabilized Urethane Foam Roof Insulation Panels

You're free to explore completely new concepts in building design. Because your roof insulation is 3 to 6 times lighter. Because you can provide everlasting and equivalent insulation values at one-half to one-third the thickness of other materials. Because wind uplift won't de-laminate the panels (no need to weight down the insulation). And because these unique advantages combine to reduce your roof's dead-load factor to a marked degree. So you can use smaller columns. Or fewer of them. Open up interiors. Design structures in wholly new ways. And ultimately you can design a better, more interesting building within the budget available. What's more, dimensional stability and other physical characteristics make Apache Panels an ideal partner in the Bonded Roofing System. For complete information and the name of our regional representative, please write.



**apache** 

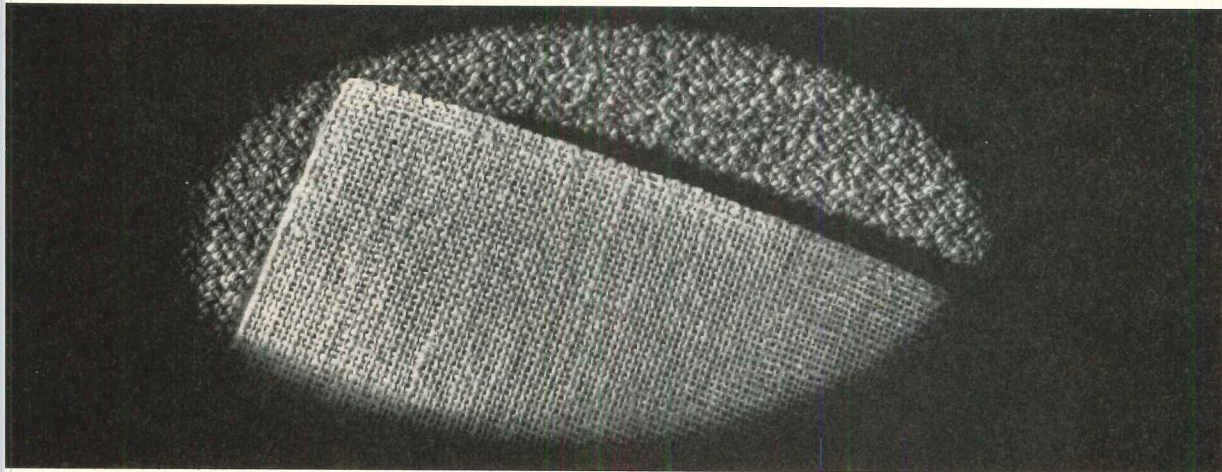
Apache Foam Products 2025 East Linden Avenue, Linden, N.J. 07036  
A Division of Millmaster Onyx Corporation

For more data, circle 38 on inquiry card

# Key to successful glue-down carpet installations...

# JUTE

## double carpet backing



### The benefits of this system with double jute-backed carpets are well known:

- Easy wheel and caster mobility (no pads needed under secretarial chairs.)
- Lower cost than same carpet plus separate underlayment, or cushion-backed carpet with equal pile specifications.
- Protection against seams opening, with no lateral stress under traffic.
- Sound absorption, low-cost maintenance, aesthetics, insulation, comfort underfoot, improved morale.

### But why only jute backing? For many reasons, including:

- Jute's interstices and fibrous qualities assure secure bond with minimum adhesive, fully absorbing compound on the surface.

- Adheres to any sub-floor, or over previously installed hard-surface flooring.
- Unmatched dimensional stability, vital with cut-outs for outlets and junction boxes.
- Jute's thickness, over double that of other non-cushion backings, provides extra area for beading with adhesive at seams.
- When pulled up, carpet is generally intact for re-installation.
- Helps meet fire safety codes, if carpet otherwise qualifies.
- When installed over padding in selected areas, jute hooks over tackless strip gripper pins without loosening up and buckling later.

Write for Architectural Guide Specification  
by William E. Lunt, C.S.I.

### JUTE CARPET BACKING COUNCIL, INC.

25 Broadway • New York, N. Y. 10004

American Industries, Inc. • BMT Commodity Corp. • C. G. Trading Corp. • Delca International Corp. • Dennard & Pritchard Co., Ltd. • A. de Swaan, Inc. • Robert F. Fitzpatrick & Co. • Gillespie & Co. of N. Y., Inc. • Hanson & Orth, Inc. • O. G. Innes Corp. • Jute Industries, Ltd. • Lou Meltzer Co. • Pak-Am Inc. • William E. Peck & Co. of N. Y., Inc. • R. L. Pritchard & Co. • Revonah Spinning Mills • Stein, Hall & Co., Inc. • White Lamb Finlay Inc. • Willcox Enterprises, Inc.

### Editorial reports on double jute-backed carpet glue-down



### Jute installations proven successes

"The only case studies documented to date have been of no-pad installations with double jute-backed carpeting — with success reported in each instance."

—from BUILDINGS, February, 1971



### Hospital's experience a guide for any site

"Does direct jute glue-down really work? To get the answers . . . an earlier installation was revisited that has received grueling treatment . . . It is a large and exceptionally active general hospital — St. Luke's in Duluth, Minn. St. Luke's added a sizeable new wing and carpeted throughout all patient rooms, nursing stations, corridors, lounges and reception areas with the direct jute glue-down system.

"Richard K. Fox, administrator of the hospital reported: 'Our experience has been a satisfactory one. So much so that we are using exactly the same carpet and direct glue-down installation method in an older wing now being completely renovated. The carpet . . . has jute primary and secondary backings.

"I have been asked many questions about cleaning problems with carpet, especially with normal hospital spillage situations. We have had no difficulties that could not be resolved with ordinary effort.

"The direct jute glue-down system gives us practically as much wheel and caster mobility as we enjoy in our areas with hard-surface flooring. The difference is hardly noticeable . . ."

—from BUILDING OPERATING  
MANAGEMENT, November, 1970

# PROMISED

*"the most complete line of acid waste pipe and fittings in the business"*



# DELIVERED

*"everything we promised plus laboratory sinks"\**



1163

## POLYPROPYLENE FLAME RETARDANT PRODUCTS

The complete line – the GSR® Fuseal® line includes everything needed for superior polypropylene acid waste systems.

\*And now it's more complete than ever! We've even included the laboratory sink. Lightweight, highly resistant GSR polypropylene sinks come in standard sizes from 10" x 12" x 8" deep to 24" x 16" x 12" deep.

Flame retardant Fuseal pipe and fittings meet fire prevention requirements. This exclusive formulation is self extinguishing. Fuseal pipe and fittings are available in standard sizes from 1½" to 6". Fittings include standard DWV configurations plus many specials to solve any layout problem. The exclusive Fuseal electrical fusion process simplifies assembly. An electrical resistance coil slips over the end of the pipe before joining – applies timed, controlled heat automatically.

Call your GSR Fuseal representative or write for complete information on the best, most complete acid waste system.

**R & G SLOANE MANUFACTURING COMPANY, INC.**  
A SUBSIDIARY OF THE SUSQUEHANNA CORP.  
7606 N. Clybourn Ave., Sun Valley, Calif. 91352



## ACID WASTE SYSTEMS

PLANT, WAREHOUSE AND SALES OFFICE: 6100 Hillcrest Dr., Cleveland, Ohio 44125 • (216) 524-8600  
WAREHOUSE AND SALES OFFICES: 3126 Brinkerhoff Rd., Kansas City, Kan. 66115 • (913) 371-0412  
1669 Litton Dr., Stone Mountain, Ga. 30083 • (404) 939-6644  
8041 S. 198th St., Kent, Washington 98031 • (206) 854-2324

The GSR FUSEAL bonding process is covered by U.S. Patents No. 3,094,452 and 3,506,519 and Canadian Patents No. 668,419 and 837,562; Fuseal Power Unit, U.S. Patent No. 3,465,126 and Canadian Patent No. 846,954; Fuseal Coil, U.S. Patent No. 3,378,672 and Canadian Patent No. 811,837.

For more data, circle 40 on inquiry card

# Professional construction management and project administration

*The following plea for common sense and integrity in sorting out the braided lines of professional agency, as construction management and project administration take on the dimensions of new professions, is from the introduction of a book now in work for joint publication by ARCHITECTURAL RECORD and The American Institute of Architects.*

Professionalism is an essential and inherent quality of every human process that combines both specially trained knowledge and dedicated action on behalf of a client. This is so because professionalism in both skill and integrity provides the only bulwark against failure or corruption of the process—be it judicial, medical or architectural. Further, the processes that must be served by the professions are the basic ones by which the human condition is uplifted and sustained.

When a creative art is one of the components of professional action—as it is in architecture—the whole process becomes servant to that art; and the requirement for professionalism extends all the way from the pre-design conditions fostering conception through the technical complexities of development and delivery of the finished building.

All of these ideas have had a long history of demonstration in classic client-architect-builder relationships. And in that portion of today's work that can be commissioned as to both scope and cost by one-man clients who can speak with a single responsible voice, the same ideas of professionalism are still clearly identified. But such clients are increasingly rare, even for projects of moderate scope. Instead, three compelling and confusing conditions have developed over the post-war decades until they have now reached near-crisis proportions in their combined power to obscure the enduring values of professionalism in our time.

First, the ever-larger works of man are now commissioned by the public client, the corporate client, the hospital board, the school board, the development consortium—a hydra-headed host of groups spending the money of other groups to whom they must report and be responsive. The consequences in make-shift checks and balances and in safe-action compromise have accumulated over the years like the waste products of evolution—to a point where only the muscle of professional management seems capable of cleaning the stables. There are, of course, the positive effects of united action, where again the sinews of management can pull the great projects of today's practice together.

But the elevation of "management" to the realms of magic has many dangers in it. Architectural abdication is paramount among those dangers. Let no architect believe that he is less than the constant and essential professional presence from start to finish of any project. Even the multi-client is entitled to that singular and able presence, that agency, unique in its guardianship of every aspect of their project's values. Then let no "manager" believe that he is more than instrumental to the practical support of that guardianship. Some of the modes of today's business may invite management to usurp the architect's agency where cost and speed are paramount. Individual architects themselves may shrink from the terrors of sheer technical complexity or the wounds of liability. But there is no escape from the classic one-to-one relationship of client and architect; and management is the means of its survival.

The second post-war condition that obscures professional identities is, again, one of proliferation in that the marshalling of professional and other skills for execution of large commissions entails the directed input of many individuals. That does not at all mean that only large architectural and engineering firms with an array of in-house specialists can enter into this complex arena. The multi-client and the multi-disciplined commission do indeed imply obvious burdens of clerical and communications tasks that, by themselves, would be beyond the scope of any one-man office. But the small-to-medium-sized office today is no stranger to consultation and joint venture. These are but two of the many modes of marshalling expertise. Two not-so-new ideas or images need constant and confident redefinition in this context: the image of the architect as team leader in design and construction phases of the process; and the image of professional management as an instrument of team accomplishment.

The third compelling condition that pervades all aspects of building design and construction today is inflation—under which the fixed budget (concomitant of the multi-client) wastes away in its purchasing power with every passing day. Management, again, is refining methods of contracting the time lapse from project start to completion. Phased or overlapped design and construction—for many years a familiar procedure in the pressured fields of industrial and urban commercial construction—is gaining more attention (and some new buzz words, like "fast track") among other building types. Management methods for extending the scope and effectiveness of condensed schedules are being tested. The hazards and penalties of haste

for its own sake are many and manifest; so, again, professionalism on the part of all team members—including managers—is the guardian of quality.

## Sorting out professional lines

Management itself is the skilled discipline of method and is not of and by itself professional within the context of our opening paragraphs. Neither, truth to tell, is architecture—or engineering—or medicine—or law—when its practitioners become entrapped in business without free and responsible agency toward their clients. That criterion of agency we now apply to the roles of management as they shift in emphasis from one phase of a project to another. The phases are not sequential like phases of the moon, but are concurrent, with interweaving surges of attention, like colored strands within a braid of common purpose.

Return now to ideas suggested at the beginning, wherein the processes are postulated servant to the art, and professions are set forth as ennobling to the state of man. Extend and adjust those notions to accommodate the natural limitations of individual practitioners. Consider the differences between comprehensive services and universal genius.

Then the architect of any of today's larger, multi-client works has the image of one man only in the singleness of his commitment and responsibility and in the consistent vocabulary of the building design. In actual performance of the work, the architect is a firm of organized and directed skills.

Similarly, the manager of one phase or another is a collation of skills and special knowledge; a firm of experts—not a super-being to be appointed as absolute dictator. He may, in fact, be an architect, or a consultant, or a contractor.

So, the conventional images evoked by the terms *architect*, *engineer*, *owner*, *contractor* and *manager* remain singular within the concept of fundamentally unchanging professional relationships; while in practice, each is many men and women who work for the common goal of services to clients—and to mankind, if you please.

When all these lines of image and endeavor are sorted out, we can discern three different management roles that bear upon the fundamentally unchanged genesis and sequential logic of any architectural commission. One has identity with client decisions in matters of project need, feasibility, program, real estate and finance. We call him (or his firm) *project manager* or *project administrator*. The other two, under the generic label of *construction management*,

have to do with the *pratique* of design and delivery of the project itself within the client's budget. Both require detailed and current construction cost and method expertise, hence they are performed in any practical situation by a single firm acting as *construction manager*. It is important to keep in mind, however, that in the early phases of budget and design development, the input of construction management has to do with defining the cost-quality relationships of the architectural and engineering design options. As such, it could be more precisely labeled *construction consultation*. The second phase of construction management (which usually overlaps the first in time but not in function) is a control method for schedule and contract management—in short, *construction management* in its simplest connotations.

There are two good reasons for the triple separation described. The first is that each relates to a clear and separate focus in the role of professional agency toward the client. The second is that they all relate to the logic of the three-spoked wheel of Decision, Design and Delivery reproduced here from the article, "Proposal: a new and comprehensive system for design and delivery of buildings," by Robert F. Hastings in the November, 1968, issue of ARCHITECTURAL RECORD.

#### New labels for sustained ideas

The three segments of the 3-D wheel define the classic phases of attention that have always pertained to the generation of buildings: the decisions to build and to what purpose, scope and size; the design of the building; and the delivery of the building. Today, more than ever, those phases overlap, and the skills of delivery are germane—especially in large projects—to both the decision and design phases for reasons already outlined.

It is this condition of inter-permeation that brings us to grips now with the vital role of agency. The production skills of good contractors have long been—and continue to be—a reservoir of knowledge about technique and cost without which buildings simply cannot be built. Further, the costs to which each contractor commits himself have been—and continue to be—the real and final costs of each contractual component. Therefore, the successful contractor, as responsible entrepreneur, has conventionally had the ultimate responsibility for delivery of the building at a quoted price. For that he has been rightfully well-paid.

But two things have happened. First, the successful and responsible general contractor has withdrawn for good reason from both the competitive bidding of large work and the maintenance of diverse trade skills in his own work force. Second, the very skills and knowledge that have been his stock in trade are now needed to an increasing degree in the decision and design

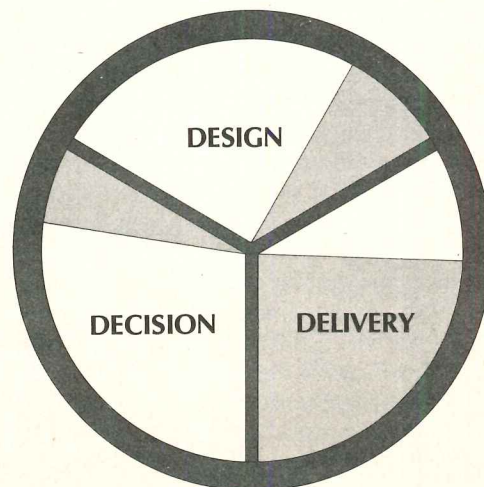
phases of building generation. But to purvey those skills in those phases, he must assume a role of professional agency toward the client just as the other professions do in those phases. He no longer works for a contractor's profit. He works for a professional fee.

Many contractors have found this transition difficult, but many have succeeded in it. In any case, the contractor's body of knowledge is neither mystic nor unique, and the capability for honest professional service in this field cannot be regarded as his exclusive domain. It is the professionalism of the service that is paramount, and staffing for its performance is key to its success.

So, may we not leave off anxiety and bickering and return to some admittedly arbitrary definitions of these professional services. Then, at least, we can all argue in one language.

#### Some arbitrary definitions

What is a *project manager* or (some prefer) *project administrator*? He is the client's voice, agent and purse string. He rings the starting bell when a project exists as serious intent. He makes or expedites the owner's decisions at key points as the project develops. He may be one man or a department on staff of a sophisticated client. He may be a consultant firm or a developer. He may be, in fact, a special kind of architect. He is the rim and the spokes of our project wheel. He may or may not have detailed, technical construction expertise among his own resources. If he has, he should ideally use that knowledge only for communication with and critique of the building design and delivery processes. If he is tempted to use it for direct input or control of those processes,



he should recognize that a fundamental shift in his role is implicated and that there is a possible conflict of interest in that change. For example, as project administrator, he may be called upon for an ownership decision regarding a change that he himself has proposed while acting in the role of construction manager. The conflict is admittedly more philosophical than dangerous in most cases, but should be recognized.

What is a *construction manager*? "He" is a *firm* that applies knowledge of construction techniques, conditions and costs to the three phases of decision, design and delivery of a project. First, as *construction consultant* he clarifies the time and cost consequences of decision and design options as they occur. Second, as *construction manager* he enters, still as a professional, into construction scheduling, pre-purchasing of critical materials, advising on the method of obtaining contractors and awarding contracts, and coordination and direction of all construction activities, including those of the producers of systems and subsystems.

Some will recognize the last few phrases as echoing a definition developed during a December 1970 workshop of DHEW/FECA in which representatives of every sector of construction, public and private, participated. Further details of definition will be derived from similar researches of GSA.

This concern of public agencies with thoughtful analysis of current crises in construction will undoubtedly determine ultimate language usages in this field—at least insofar as *project management* and *construction management* are concerned. It is not only their giant purchasing power that prevails in this matter. It is also their clear acknowledgement of the primary role of professional agency in the management of public works and publicly supported construction that is being stated in terms of common usage—however limited in inherent clarity—that will ultimately gain general connotation for these terms.

Now it is time to call another spade a spade. The reason for this proper searching of the soul in public method is the virtual breakdown in effectiveness of the status quo. The laudable intent of legislation requiring acceptance of the low bid out of a public invitation simply has not been realized. Nor has the similar intent of legislation calling for multiple sub-section contracts. All of this is subject for more discussion, but the simple fact is: *someone* has to be responsible for *quality*, and the low-bid, multi-contract method simply has not worked as a guardian of quality—nor even of cost, when all changes are counted. So we now call for *professional management* to do two things: First, to enlist competent skills that have been by-passed under the non-qualified, low-bidder system; second, to apply those skills early enough to sustain quality and value within the budget during design development—rather than to accept those post-bid cuts that never seem to return the contractor's original profit mark-up to the budget pot.

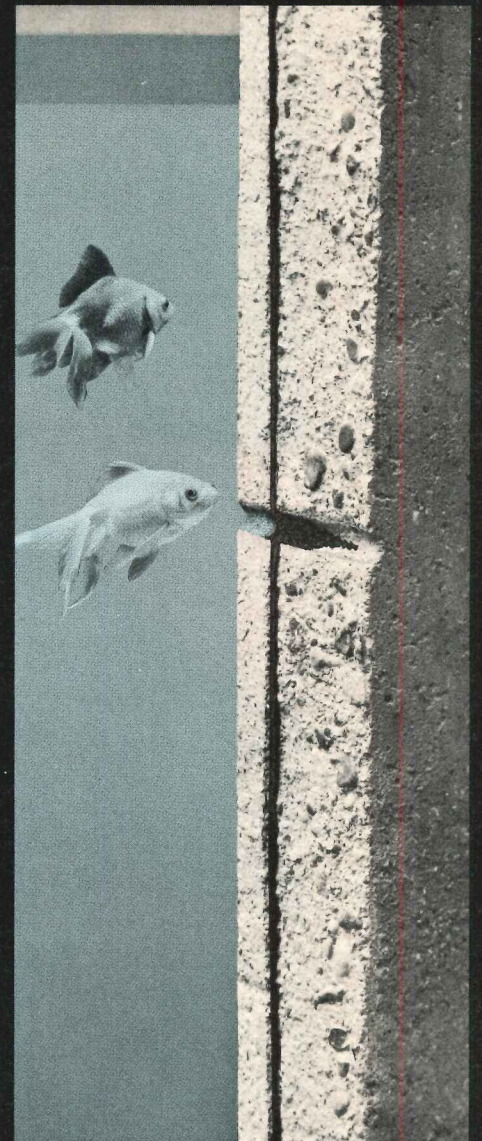
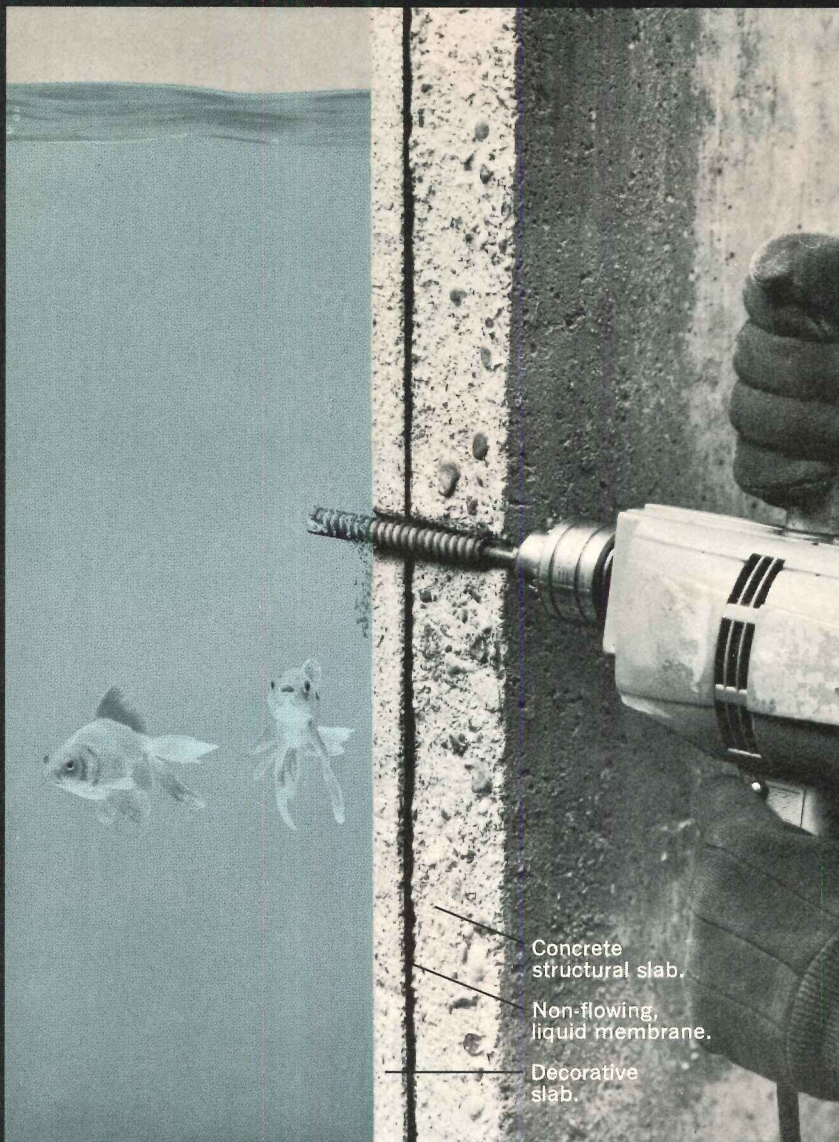
The visible and historic professional is the architect. But he is many people, nowadays, and he must garner all the skills of many people to his purpose. If that be a team—let's make the most of it.

—William B. Foxhall



You can drill through  
our liquid membrane.

But you can't put  
a hole through it.



Concrete fish tanks probably aren't in your line of design, but it shows exactly how positively waterproof our liquid membrane is.

The Uniroyal liquid membrane is a hot-applied, rubberized asphalt compound that bonds securely and continuously to any sound, horizontal or vertical surface. Water can't get through or under it.

The waterproof membrane remains flexible indefinitely and self-heals if mechanically damaged. It bridges moving cracks up to 1/16 inch without reinforcement. Yet *it's non-flowing* once applied, making it the ideal waterproofing for vertical applications.

Expansion joints are effectively sealed with liquid membrane and rubber

reinforcing sheets.

Uniroyal liquid membrane is quickly applied in temperatures down to 0°F. It spreads and flows freely to conform to all surface irregularities.

As for actual applications, the sky's the limit. Uniroyal liquid membrane has been used to waterproof everything from underground garages to high-rise buildings.

If you've got a job coming up that requires reliable between slab waterproofing, we'll help you make your design watertight. Just fill in and mail the coupon.

Uniroyal, Inc.  
Engineered Systems Dept.  
312 North Hill Street  
Mishawaka, Indiana 46544

Name \_\_\_\_\_

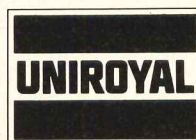
Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State  
ASP NO. 1430

Zip  
AR-61



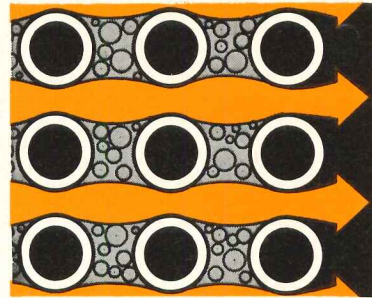
For more data, circle 41 on inquiry card



# McQUAY® HI-F® 5: HIGH CAPACITY ARI CERTIFIED COILS



McQuay's staggered tube design eliminates dead spots behind tubes



In-line tube design actually helps dead spots to form

McQuay's unique performance comes from a combination of two innovative design features — rippled corrugated fins and staggered tube placement. The HI-F® rippled fin creates an instant initial turbulence. The corrugations across the fin surface maintain that turbulence and prevent boundary layer air insulation. The staggered tube placement sets up an intimate and prolonged contact between the moving air and the tube surface, providing maximum heat transfer. Dead spots that normally develop in coils with in-line tube design are eliminated. These advantages are the reason McQuay HI-F® 5 coils have earned the highest capacity rating per square foot of surface of any known coil certified by the ARI.

And McQuay has a complete coil line, offering the greatest variety of standard coils in the industry. Specials are also available. With McQuay you can always accurately match the coil to the exact job requirement. That means lower fan motor and pump power requirements, less strain on controls and longer life for the system.



McQuay's High Performance Rippled Corrugated Fins

To be sure of highest coil capacities, specify McQuay ARI certified coils. Ask your McQuay representative for Coil Catalogs 408 and 409.

McQuay's combination of HI-F® rippled corrugated fins and staggered tube placement provides the highest capacity per square foot of surface of any known ARI certified coils.



Look to the systems leader . . . **McQuay®**

For more data, circle 42 on inquiry card



**New Facad is so sculptured,  
it's almost sculpture.**

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

This sculptured facing of easy-to-install, thin, molded, reinforced cement panels can be used as a total wall element; as spandrel panels, fascias, balcony panels or soffits.

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

Facad is also very durable. And because it is all mineral, it is completely incombustible.

Facad comes in a series of standard panel surfaces, one of which is shown above. It can also be custom-molded to afford architectural designers a broad choice of texture, color and pattern.

For complete information, call the Architects Service Representative at your nearest U.S. Plywood office or write:



**U.S. Plywood**

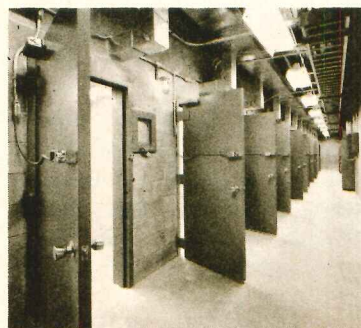
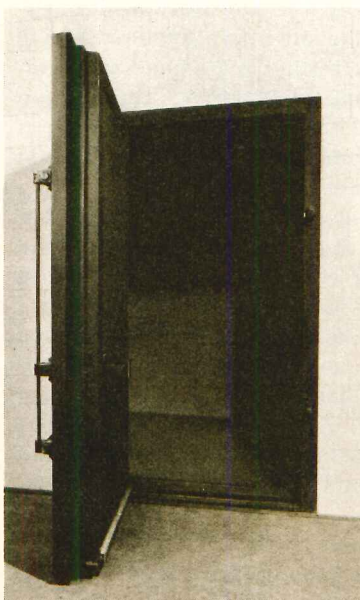
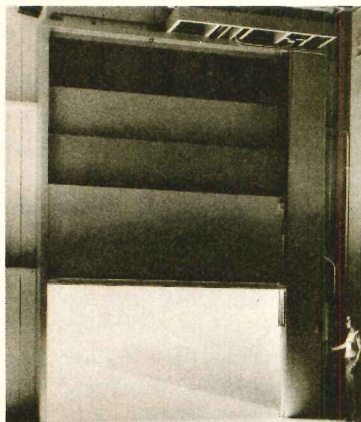
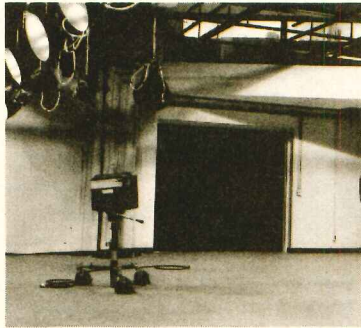
A Division of U.S. Plywood-Champion Papers Inc.  
777 Third Avenue, New York, N.Y. 10017



## *Anything can happen*

In Australia, on March 23, 1968, Dennis Blechynden carried a 7 lb. 12 oz. wire-cut, semi-pressed brick 21.0 miles in a downward position without gloves. He set a new record in the annual Narrogin (Western Australia) Brick Carrying Contest.

From the GUINNESS BOOK OF WORLD RECORDS  
© 1971 by Sterling Publishing Co., Inc., New York



## *And anything can happen at Overly*

Like doors that hush a jet engine's roar.

At Overly, we make acoustical doors with sound reduction qualities for every possible application. We can furnish you with doors which have sound transmission loss ratings up to 62 decibels. One of our doors, at a nationally recognized acoustical testing laboratory, cuts noise levels equal to jet engines from 140 DB to 80 DB. Although it is eight inches thick, it has a calibrated weight of only 45 lbs. per square foot.

Overly doors are available in a wide range of thicknesses and types: hollow metal sliding, vertical lift and bifold. They are furnished as a complete unit, including frame, track, hangers, power operator, seals and controls. Some are U/L fire tested up to three hours, and blast- and projectile-resistant models are available.

Anywhere noise is a problem, there's an Overly acoustical door to solve it. At Overly, anything can happen . . . and it happens for the good. Overly has plants in Greensburg, Pa. and Los Angeles, Calif. For more information, contact Overly Manufacturing Co., Architectural Metal Division, Department 19, West Otterman St., Greensburg, Pa. 15601.

**Overly** MANUFACTURING COMPANY

For more data, circle 44 on inquiry card

## Construction labor in the sixties: the phenomenon of scarcity

Last month's article in this department examined the results of a Commerce Department study which measured the time-to-completion of some 13,000 nonresidential building projects. It was found that, on the average, it took longer to build a project of given dollar value in the late sixties than it did in the beginning of the decade. Shortages of skilled construction labor in this latter period were singled out as the major cause of these longer completion times. This month, the labor scarcity issue will be examined in greater detail, with some thought given to what the future is expected to bring.

Given the construction industry's institutional framework (i.e., the unions as they are, the builders, contractors, architects, and engineers as they are, government as it is; and the way all of these function in the business of getting things built) it would be difficult to construct an objective standard of what an optimum labor supply in the construction industry should be. Should there be enough manpower available to cut the current time-to-completion schedules by one-half? By one-third? By 15 per cent? Enough manpower available so that no one union would have the leverage to achieve a wage increase in excess of six per cent? Three per cent? Enough manpower available to achieve our housing goals in five years? Three years? Clearly, any definition would have to hinge on all the goals and objectives of society.

But, we don't really need an ideal standard to realize that—whether we look at lengthening time-to-completion schedules, or spiraling costs in the industry—available construction labor was less plentiful toward the end of the sixties than it was at the beginning. Similarly, we don't need an ideal standard to explain some of the reasons for this.

The first and most obvious reason for the recent labor scarcity is the increase in the general level of demand, as represented by gains in the value of construction put in place. The annual value of construction put in place in real terms (1970 dollars) was on the average 10 per cent larger in the 1966-1970 period than it was in the period from 1961 to 1965. More work in the aggregate means that more workers are needed

to do it. But, we've had growth like that before (the real rate of increase between the 1956-1960 period and 1961-1965, for instance, was greater than 10 per cent) without experiencing such severe symptoms of scarcity. Clearly, there must have been other factors operating.

Construction in the last half of the sixties was characterized by what can be called the *mix* problem. Residential building, on the average, requires considerably less on-site man-hours per \$1,000 of construction value (roughly 10 per cent less than other types of construction, estimates show). It also requires less costly labor, because in general it is less unionized and requires a somewhat lower average level of skill. This "labor-saving" construction category accounted for 40 per cent of the constant dollar value of construction put in place in the 1961-1965 period. In the 1966-1970 period it accounted for scarcely more than one-third of the total. In effect, the construction industry not only needed more workers for each given volume of output in the last five years, but *more costly* workers as well.

The industry in recent years also had what can be called the *capacity-utilization* problem. Growth in construction throughout most of the latter part of the sixties was unbalanced growth. On the one hand, nonresidential and nonbuilding construction were turning out record performances. If we can draw the analogy between this segment of the construction industry and a manufacturing plant, it's pretty clear that during most of this period it showed all the symptoms of capacity-plus operation. Just as there are costs in terms of efficiency when a manufacturing plant operates at greater than optimum capacity, so the efficiency of nonresidential and nonbuilding construction was impaired by these above optimum rates of output. Managing and scheduling problems creep in, and bottlenecks develop.

The sharp break in nonresidential building last year, though, threw it suddenly into the housing boat; and that was really no place to be either. Housing had efficiency problems for most of this period due to just the opposite factor—underutilization of capacity. In a period of slow-

down, builders are reluctant to dismantle their productive machinery because of the problems of assembling it again. They hang on to their work force for as long as possible, hoping for an upswing.

Due largely to these factors, productivity in the aggregate sense, value put in place per production worker, actually declined throughout most of the period. And, naturally, because there was low productivity, more workers were needed. Net growth of production workers in construction averaged 250,000 a year in the period from 1966 to 1970. This was in response to real growth in construction put in place of ten per cent. A slightly higher real construction growth rate was attained in the 1961-1965 period, with a net gain in production workers that averaged only 30,000 a year. But, also, because more workers were needed, there was low productivity.

### Look for a shift in both labor skills and mix

In a tight labor market not only did it cost more to obtain it—the old supply-demand equation—but, as the marginal workers were drawn into the field, the contractors got less skilled, less efficient labor for their money. Because of this they needed more labor than they normally would have to do the given job.

Is this scenario apt to be repeated during the next five years?

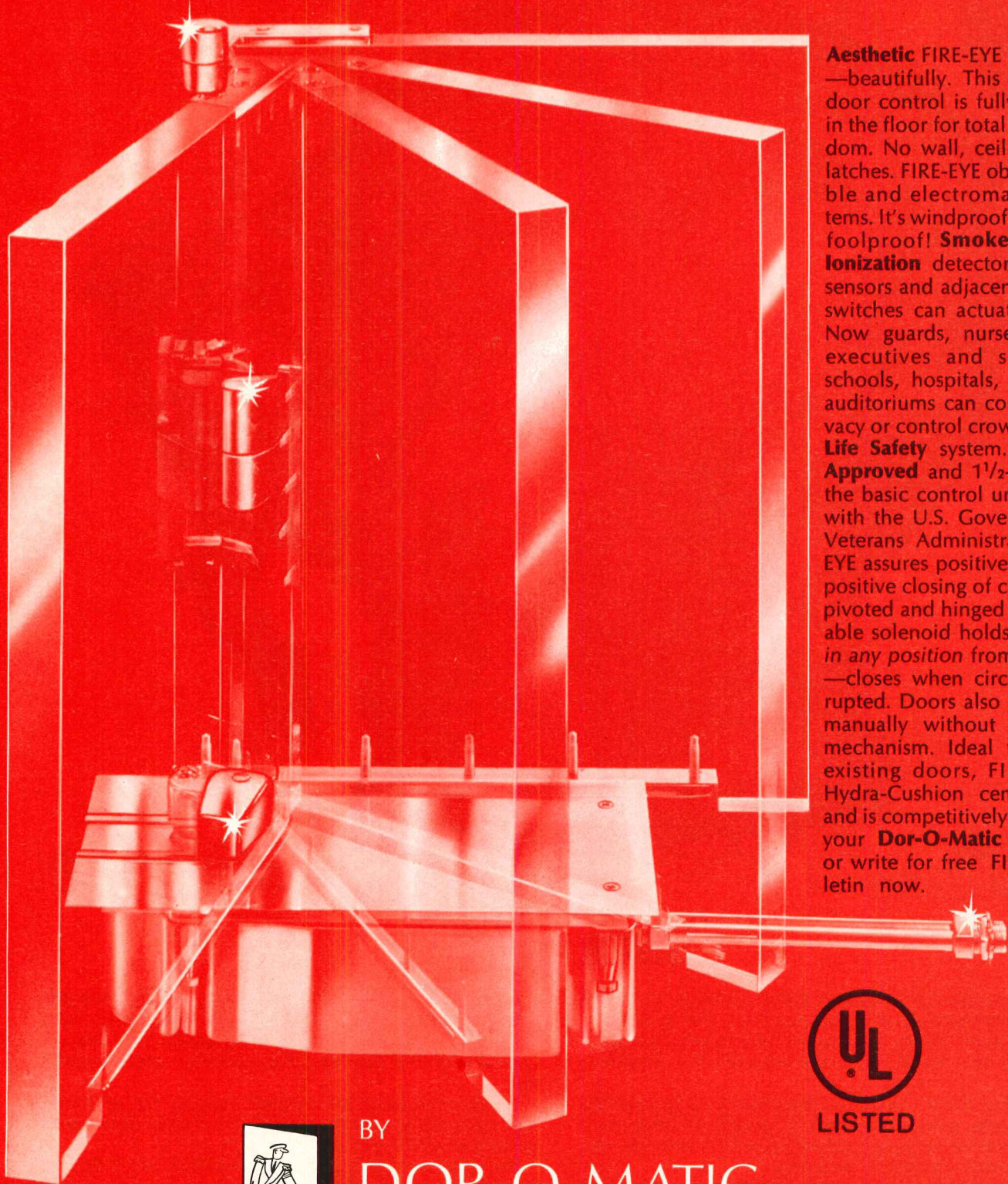
Probably not.

In the first place, by 1975 residential value put in place will be back around 40 per cent of the construction total. Just as the shift away from housing in the 1966-70 period meant problems in the way of construction manpower and costs, the shift back toward relatively more housing, since it means both *less* on-site labor per unit of output, and *less costly* labor per unit of output will act to relieve these pressures somewhat. Secondly, growth in the 1971-75 period should be more balanced. The capacity-plus operation in the nonresidential area, and the under-capacity operation in the housing area that we've experienced in the last half of the sixties shouldn't be a problem in the early seventies. Primarily because most of the economic causes of these problems in the late sixties—the distortive effects of an overheated war-oriented economy—shouldn't be around in the years ahead.

Judging from the prospective size and complexion of 1971-1975's construction volume, the country will be needing between 150,000 and 170,000 new production workers a year over the next five years.

# FAILSAFE... FIRE EYE<sup>®</sup>

ELECTRIC HOLD OPEN AND AUTOMATIC RELEASE DOOR CONTROL



**Aesthetic FIRE-EYE** protects life—beautifully. This new smoke door control is fully concealed in the floor for total design freedom. No wall, ceiling or floor latches. FIRE-EYE obsoletes fusible and electromagnetic systems. It's windproof, childproof, foolproof! **Smoke, Heat and Ionization** detectors, presence sensors and adjacent or remote switches can actuate FIRE-EYE. Now guards, nurses, patients, executives and speakers in schools, hospitals, offices and auditoriums can command privacy or control crowds with this **Life Safety** system. **Fire-Door-Approved** and 1½-hour rated, the basic control unit is on file with the U.S. Government and Veterans Administration. FIRE-EYE assures positive hold-open, positive closing of center, offset pivoted and hinged doors. Reliable solenoid holds door open *in any position* from 0° to 105°—closes when circuit is interrupted. Doors also can be shut manually without damage to mechanism. Ideal for new or existing doors, FIRE-EYE fits Hydra-Cushion cement cases, and is competitively priced. Call your **Dor-O-Matic** distributor, or write for free FIRE-EYE Bulletin now.



BY

## DOR-O-MATIC

Division of Republic Industries, Inc.

7360 West Wilson Avenue, Chicago, Illinois 60656 (312) 867-7400

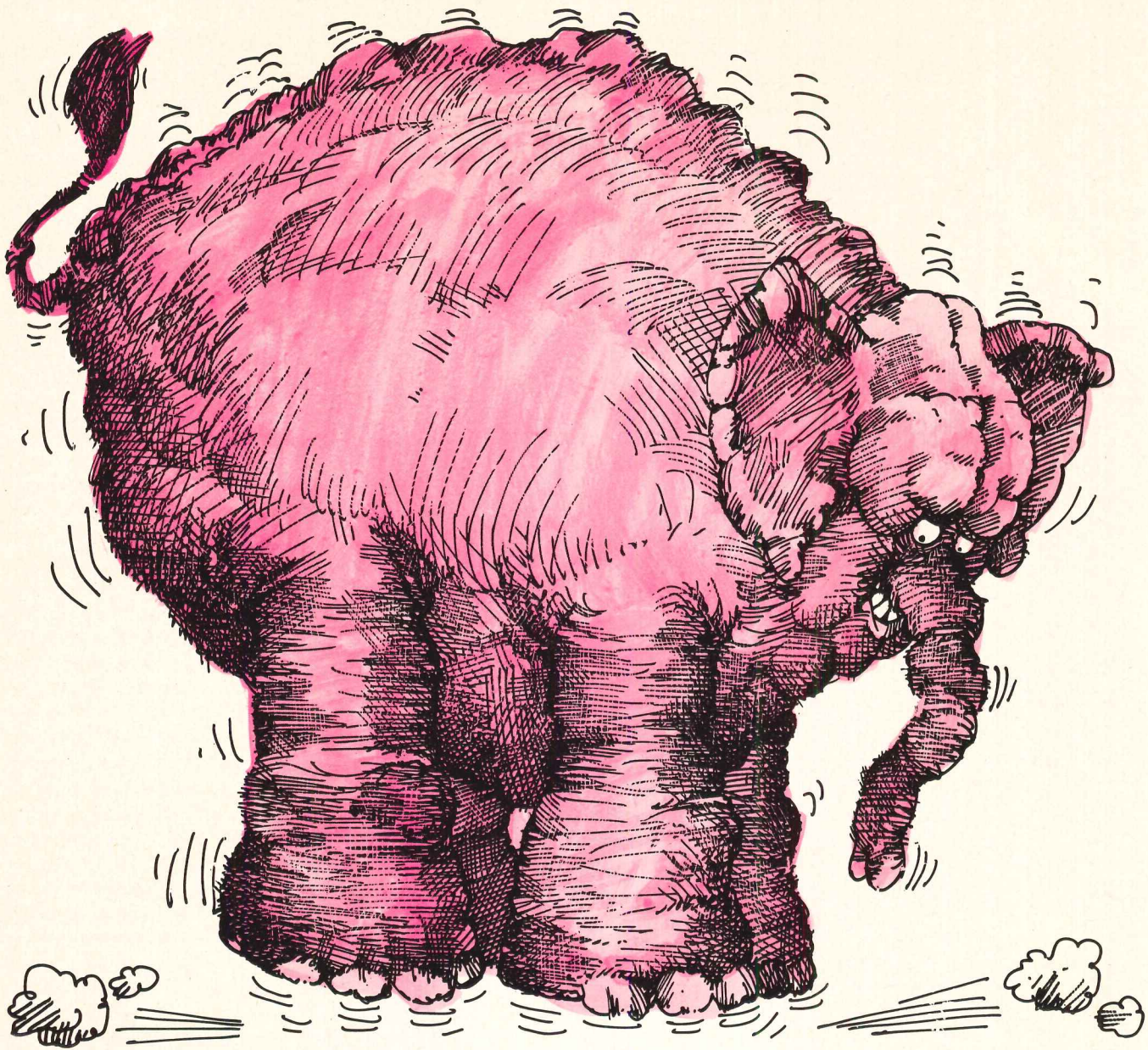
England: Dor-O-Matic G.B. Ltd., Ramsey Rd., Sydenham Industrial Estate, Leamington Spa.  
Canada: Dor-O-Matic of Canada, Toronto.

Patent applied for.

5605

For more data, circle 45 on inquiry card

# Looking for a waterproof deck coating system that's really tough?



## 3M's got it!

New "Scotch-Clad" Brand Deck Coating is tough enough to frustrate a rogue elephant. Yet it remains flexible even when exposed to the severe weather because it's more than waterproof—it's weather-proof!

"Scotch-Clad" Deck Coating bonds aggressively to concrete, asphalt and wood as well as other surfaces and has unique properties which provide excellent joint and crack bridging.

Application is simple too! There's no mixing of materials, no multiple coats, no heavy, cumbersome equipment. With the "Scotch-Clad" system, only two coats are needed. The base coat is applied with a squeegee; the top coat is sprayed on.

Since that's all the work required, your labor costs are substantially reduced. The laid down cost ratio of  $\frac{2}{3}$  material— $\frac{1}{3}$  labor is what saves you money. Decorative and non-skid top coatings are available too.

If you're looking for a better coating for vehicular and pedestrian decks, roofs and membranes, look no further. 3M's got it!

For the complete story, write direct to: J. Blackwell, Building 224-5E.

**Adhesives, Coatings and Sealers Division** **3M**  
COMPANY  
3M CENTER • ST. PAUL, MINNESOTA 55101

*For more data, circle 46 on inquiry card*





Who said all contemporary office furniture looks alike? All-Steel design versatility and depth of line individualizes small, private work stations and dignifies an executive wing. All-Steel Equipment Inc., Aurora, Illinois 60507. Showrooms: New York, Chicago, Los Angeles, Aurora. In Canada: B. K. Johl, Inc., Montreal, Toronto, Vancouver. One of the C.I.T. Companies.

*For more data, circle 47 on inquiry card*

**All-Steel**<sup>®</sup>

### LOOK BEHIND THE NUMBERS

If estimators and budgeteers are confused by apparent discrepancies in cost quotations and indexes from different sources for different cities, it is no wonder. Among more than two dozen sources, public and private, for example, one source may report a six per cent increase in building costs in the East, while another reports eight per cent for the same period. More than probably, the lower figure was an average of costs in more cities or for different materials. Users should check the index bases.

### Building cost indexes

The information presented in the tables indicates trends of building construction costs in 33 leading cities and their suburban areas (within a 25-mile radius). The table to the right presents correct cost indexes for non-residential construction, residential construction, masonry construction and steel construction. Differences in costs between two cities can be compared by dividing the cost differential figure of one city by that of a second city.

The table below presents historical building cost indexes for non-residential construction; future costs can be projected after examining past trends.

All the indexes are based on wage rates for nine skilled trades, together with common labor, and prices of five basic building materials are included in the index for each listed city.

1941 average for each city = 100.00

### JUNE 1971

Metropolitan area	Cost differential	Current Indexes				% change year ago res. & non-res.
		non-res.	residential	masonry	steel	
U.S. Average	8.3	349.6	328.2	342.9	334.7	+ 8.27
Atlanta	7.9	450.9	425.1	439.6	431.2	+ 11.00
Baltimore	7.9	367.0	345.0	359.2	350.7	+ 11.09
Birmingham	7.4	319.0	296.7	310.8	305.0	+ 3.38
Boston	8.7	343.6	324.7	339.8	330.8	+ 12.42
Buffalo	9.0	382.8	359.5	377.2	366.3	+ 7.22
Chicago	8.3	396.9	377.3	384.5	378.9	+ 7.65
Cincinnati	8.8	377.5	355.2	370.2	361.0	+ 11.57
Cleveland	9.5	397.0	373.5	388.9	380.0	+ 8.43
Columbus, Ohio	8.4	377.3	354.2	367.8	361.2	+ 9.29
Dallas	7.6	344.8	333.9	338.2	330.7	+ 9.67
Denver	8.3	381.6	359.0	379.0	366.3	+ 9.53
Detroit	9.4	389.2	370.7	388.7	375.2	+ 7.97
Houston	7.7	341.2	320.4	332.9	326.8	+ 8.03
Indianapolis	8.0	330.7	310.5	323.0	316.4	+ 7.85
Kansas City, Mo.	8.2	334.1	315.7	326.2	318.7	+ 8.89
Los Angeles	8.0	382.8	349.9	371.0	365.2	+ 7.75
Louisville, Ky.	7.6	345.2	324.1	337.2	330.4	+ 8.24
Memphis	7.7	335.1	314.6	326.2	320.7	+ 8.48
Miami	8.1	371.6	354.0	363.3	354.9	+ 8.17
Milwaukee	8.6	404.3	379.6	400.3	387.5	+ 6.04
Minneapolis	8.7	370.4	348.4	363.9	354.2	+ 6.86
Newark	8.9	350.2	328.7	345.6	337.0	+ 10.08
New Orleans	7.3	332.5	313.8	328.3	320.4	+ 7.05
New York	10.0	388.0	360.7	376.0	368.0	+ 7.61
Philadelphia	8.4	360.7	343.6	355.0	346.6	+ 8.07
Phoenix	7.7	195.2	183.3	188.6	185.7	+ 8.64
Pittsburgh	8.7	342.2	321.9	337.2	328.0	+ 6.39
St. Louis	8.7	365.0	344.5	360.1	349.6	+ 7.11
San Antonio	8.0	142.5	133.8	139.5	135.9	+ 9.09
San Diego	8.1	139.7	131.1	136.7	134.1	+ 6.58
San Francisco	8.9	491.8	449.5	486.9	472.7	+ 5.32
Seattle	8.8	356.5	319.0	354.1	339.9	+ 6.37
Washington, D.C.	7.8	329.4	309.2	319.8	314.3	+ 11.05

Cost differentials compare current local costs, not indexes.

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

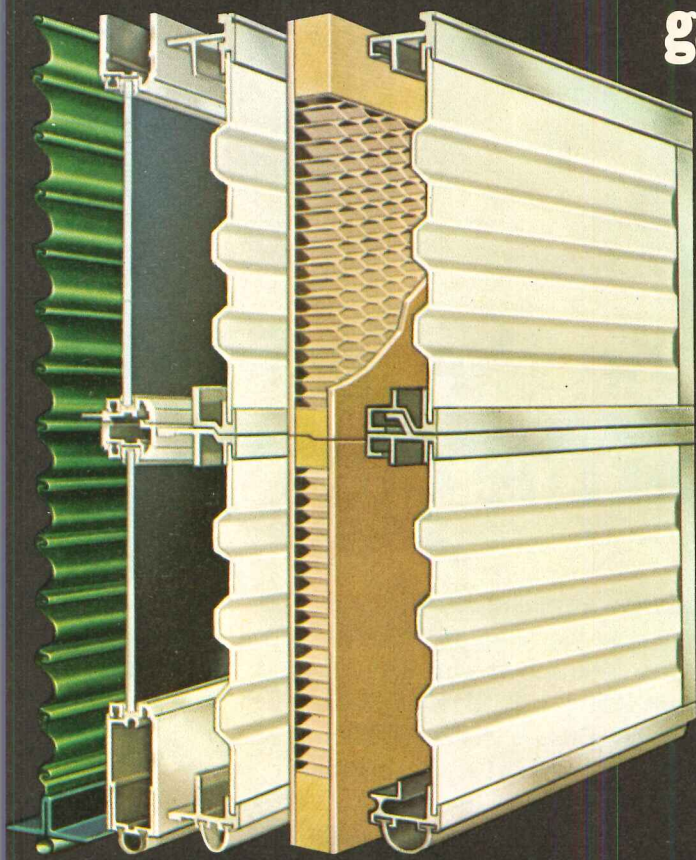
1941 average for each city = 100.00

Metropolitan area	1962	1963	1964	1965	1966	1967	1968	1969	1970 (Quarterly)				1971 (Quarterly)			
									1st	2nd	3rd	4th	1st	2nd	3rd	4th
Atlanta	298.2	305.7	313.7	321.5	329.8	335.7	353.1	384.0	399.9	406.2	408.1	422.4	424.0	445.1		
Baltimore	271.8	275.5	280.6	285.7	290.9	295.8	308.7	322.8	323.7	330.3	332.2	348.8	350.3	360.5		
Birmingham	250.0	256.3	260.9	265.6	270.7	274.7	284.3	303.4	303.5	308.6	310.2	309.3	310.6	314.6		
Boston	239.8	244.1	252.1	257.8	262.0	265.7	277.1	295.0	300.5	305.6	307.3	328.6	330.0	338.9		
Chicago	292.0	301.0	306.6	311.7	320.4	328.4	339.5	356.1	362.2	368.6	370.6	386.1	387.7	391.0		
Cincinnati	258.8	263.9	269.5	274.0	278.3	288.2	302.6	325.8	332.8	338.4	340.1	348.5	350.0	372.3		
Cleveland	268.5	275.8	283.0	292.3	300.7	303.7	331.5	358.3	359.7	366.1	368.1	380.1	381.6	391.1		
Dallas	246.9	253.0	256.4	260.8	266.9	270.4	281.7	308.6	310.4	314.4	316.1	327.1	328.6	341.4		
Denver	274.9	282.5	287.3	294.0	297.5	305.1	312.5	339.0	343.4	348.4	350.3	368.1	369.7	377.1		
Detroit	265.9	272.2	277.7	284.7	296.9	301.2	316.4	352.9	355.2	360.5	360.6	377.4	379.0	384.6		
Kansas City	240.1	247.8	250.5	256.4	261.0	264.3	278.0	295.5	301.8	306.8	308.8	315.3	316.6	329.5		
Los Angeles	276.3	282.5	288.2	297.1	302.7	310.1	320.1	344.1	346.4	355.3	357.3	361.9	363.4	374.2		
Miami	260.3	269.3	274.4	277.5	284.0	286.1	305.3	392.3	338.2	343.5	345.5	353.2	354.7	366.8		
Minneapolis	269.0	275.3	282.4	285.0	289.4	300.2	309.4	331.2	341.6	346.6	348.5	361.1	362.7	366.0		
New Orleans	245.1	284.3	249.9	256.3	259.8	267.6	274.2	297.5	305.4	310.6	312.2	318.9	320.4	327.9		
New York	276.0	282.3	289.4	297.1	304.0	313.6	321.4	344.5	351.1	360.5	361.7	366.0	367.7	378.9		
Philadelphia	265.2	271.2	275.2	280.8	286.6	293.7	301.7	321.0	328.9	337.7	335.7	346.5	348.0	356.4		
Pittsburgh	251.8	258.2	263.8	267.0	271.1	275.0	293.8	311.0	316.9	321.6	323.3	327.2	328.7	338.1		
St. Louis	255.4	263.4	272.1	280.9	288.3	293.2	304.4	324.7	335.2	340.8	342.7	344.4	345.9	360.0		
San Francisco	343.3	352.4	365.4	368.6	386.0	390.8	402.9	441.1	455.4	466.9	468.6	465.1	466.8	480.7		
Seattle	252.5	260.6	266.6	268.9	275.0	283.5	292.2	317.8	325.4	335.1	336.9	341.8	343.3	347.1		

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in

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

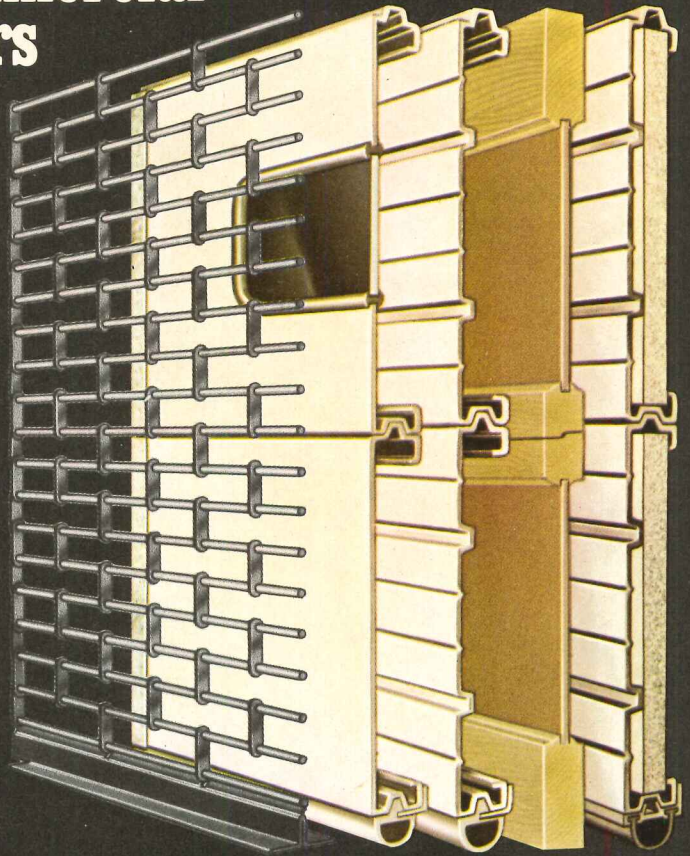
# Raynor...a multiple choice in industrial/commercial garage doors



Ribbed steel. Flush steel. Insulated steel. Rolling steel or aluminum. Fiberglass. Combination steel/fiberglass. Panelled wood. Hollow-core flush wood. Aluminum. Fire curtain doors. Aircraft hangar doors. Rolling grilles. Each incorporates the latest engineering advances. Heavy-duty hardware. Extra-heavy tracks. Custom-wound springs. Automatic operators. And the finest guarantees in the industry. From every point of view and every specification, Raynor gives you a multiple choice. Send for literature. Raynor Manufacturing Company, Dixon, Ill. 61021.



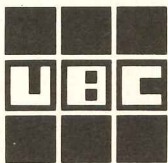
**RAYNOR**<sup>®</sup>  
The Brand You Can Depend On



For more data, circle 48 on inquiry card

## Freedom of choice and the phone.

Because of a 1968 Federal Communications Commission (FCC) ruling, today your business has a new freedom of choice in selecting its telephone system. Our nationwide network of sales and service offices provides everything from standard PBX's for small and medium-size businesses, to



**United Business Communications, Inc.**

A subsidiary of United Utilities, Incorporated

For more data, circle 49 on inquiry card

custom systems that accommodate thousands of lines. You can own your system outright or lease it. The choice is yours. For details, write: General Sales Manager, United Business Communications, Inc., Dept. AR-4-6, 6405 Metcalf Ave., Shawnee Mission, Kansas 66202.



## Have you heard about what we lost?

Of course, it's your gain. With the design improvements of Houghton Escalators we lost virtually all of the sound you expect escalators to make. Quietest operation that you ever didn't hear!

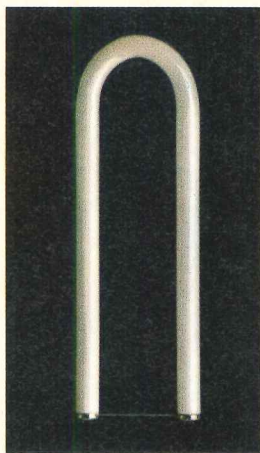
So, the loudest sound you'll hear from us is the soft voice of our representative, explaining why extremely durable Houghton Escalators can deliver day-in-day-out high capacity service *so quietly*.

He's ready and listed in the Yellow Pages—or write us. Don't worry, we'll keep it quiet.

**RELIANCE**   
ELECTRIC COMPANY  
**HAUGHTON ESCALATORS**  
P.O. BOX 780, TOLEDO, OHIO 43601

For more data, circle 50 on inquiry card

# They're laughing on the inside when it's crying on the outside.



Gloomy days can make gloomy employees.

That's one of the reasons why Georgia-Pacific Corp. used our warm-white Curvalume fluorescents in their brand new headquarters office building in Portland, Oregon.

In fact, they use 35,000 U-Shaped Curvalume lamps in the 30-story building to create a cheerful atmosphere inside, no matter what it's doing outside.

But atmosphere was not the only reason for picking our Curvalume. There are a lot of practical and economic reasons as well.

Two six-inch-wide Curvalume lamps fit neatly into 2 by 2-foot lighting fixtures that are an integral part of the building's distinctive modular ceiling design. Each Curvalume puts out 3025 initial lumens to give minimum lighting levels of 90 foot-candles throughout the building.

On the economic side, two Curvalume lamps save money over four standard linear lamps in a 24-inch-square fixture. First of all, for Georgia-Pacific, that means 35,000 fewer lamps to maintain. Secondly, with only two lamps per fixture, there's less hardware involved. And less hardware means less cost.

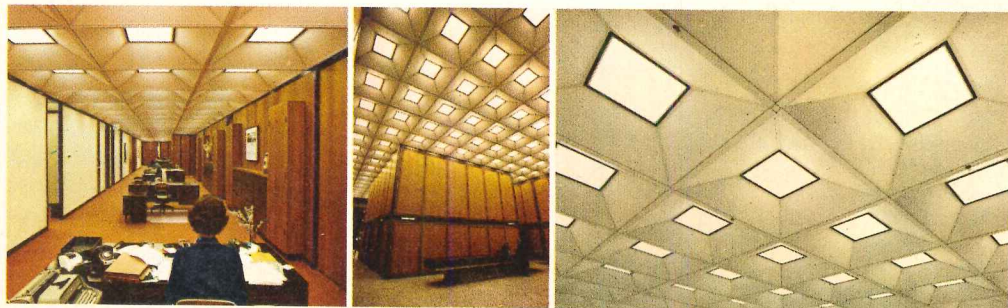
Finally, Curvalume delivers 23% more light output per fixture at no increase in power consumption.

Curvalume helps make Georgia-Pacific happy, and its warm-white light helps keep their employees happy.

Even on a rainy day in Portland.

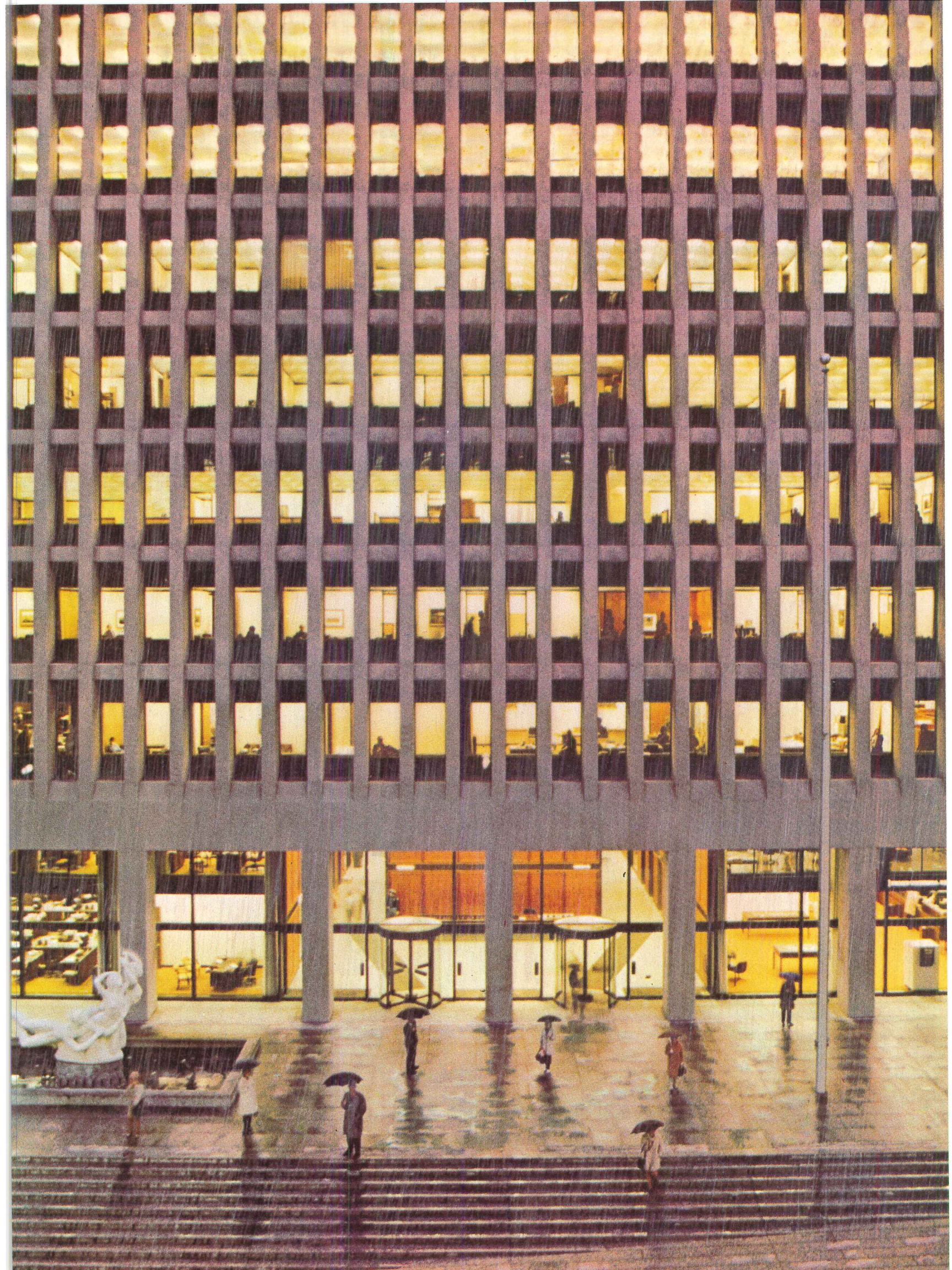
*Sylvania Lighting Center, Danvers, Mass. 01923*

"Laughing On The Outside (Crying On the Inside)," Copyright 1946 by Gower Music, Inc.



**GTE SYLVANIA**

*For more data, circle 51 on inquiry card*







**SHADOWFORM<sup>®</sup> By KAWNEER** **AMA**

The Shell Canada Limited Oakville Research Center, winner of the Massey Medal for outstanding achievement in architecture, features the Kawneer Aluminum Hardcolor Finished Facing—SHADOWFORM.

Architects & Engineers: Shore & Moffat and Partners

For more data, circle 52 on inquiry card.

# CUSTOM THONET

International House in Philadelphia—a just-completed dormitory, apartment and student activities center.

Specifications: Thonet custom-designed furniture. Solid. Handsome. Flexible. Easy to maintain.

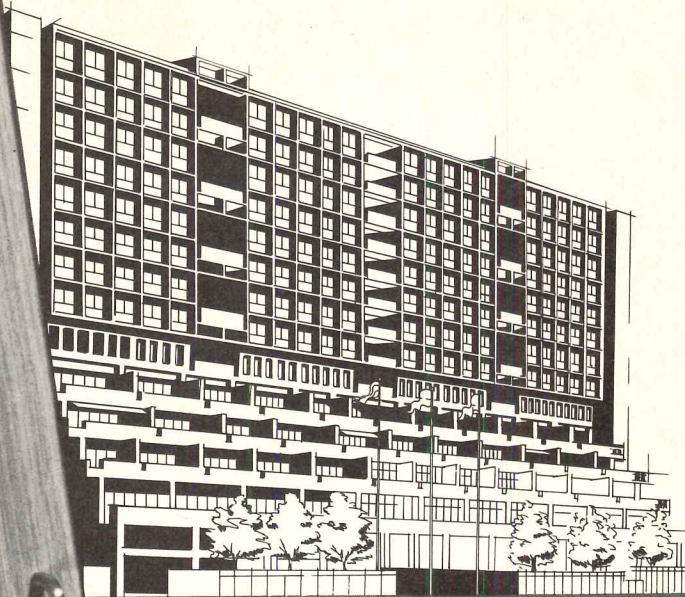
And, like all Thonet furniture since 1836, built to endure. See the Thonet ideas at the Center of Design near you.

Thonet Center of Design. New York. Chicago.

Los Angeles. San Francisco. Dallas. Miami.

Or write Thonet Industries, Inc., One Park Avenue,  
New York, New York 10016.

*For more data, circle 53 on inquiry card*



Bower and Fradley Architects

**THONET**   
CENTER OF DESIGN





UNMISTAKABLE VALUE. A beautiful porcelain vase produced in the Ming dynasty by the imperial factory early in the 17th century. There's a history of value behind every new Jamison door, too . . . in quality construction, performance, and service.

## Architects who value Value specify Jamison every time

You gain extra value in doing business with Jamison because Jamison produces the most complete line of cold storage and freezer doors. This means that you have fewer limitations in designing your projects, for Jamison doors are available in types and sizes and styles to conform to practically any requirement.

Jamison is a leader in introducing new doors, new materials, new designs. One example: the new

Jamison SS Door System with its own support structure. This new door system eliminates the need—and the cost—for heavy door bucks. It also provides built-in protection for the doors from damage by warehouse vehicles.

If you value VALUE, call your nearby Jamison service office—they're in all major cities—for latest product data. Or write for the new Jamison guidebook, "How to Select

and Specify Doors for Cold Storage Warehouses and Food Processing Plants." Write to Jamison Door Company, Box 70, Hagerstown, Md. 21740.

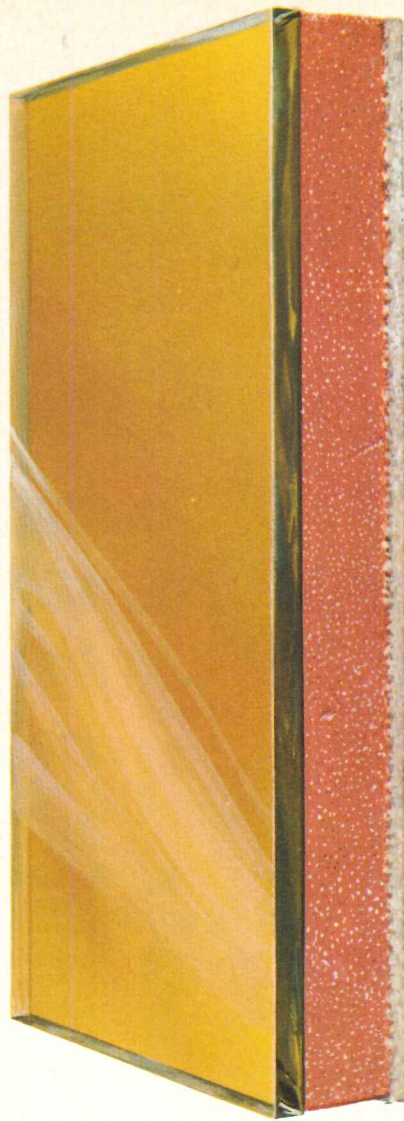
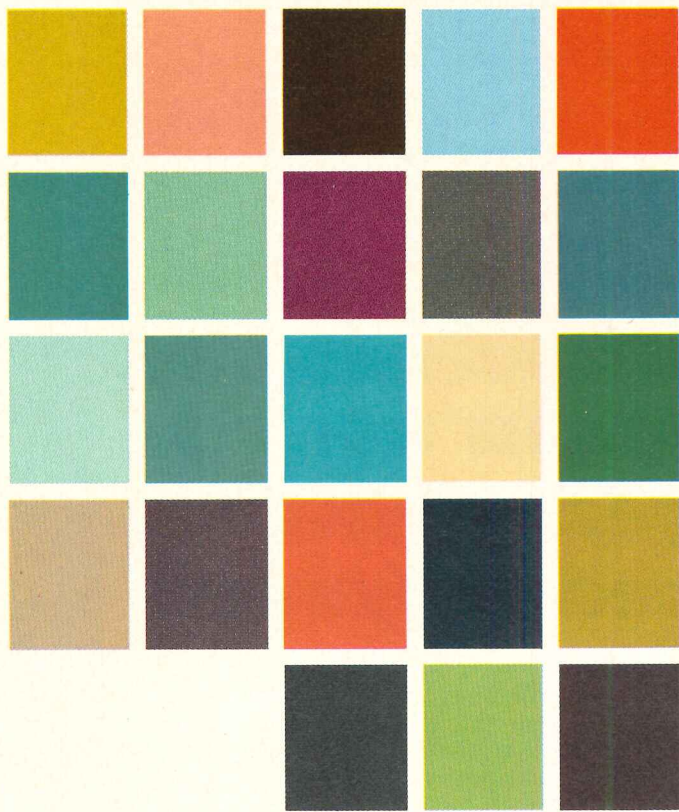
COLD STORAGE DOORS BY  
**JAMISON**  
JAMISON DOOR COMPANY • HAGERSTOWN, MD.

For more data, circle 54 on inquiry card

# Glazing For Environmental Control



Bill Seward



Color richness that defies age and weather

## Arm-r-brite<sup>®</sup> Ceramic Enameled Spandrels

Extend the beauty of glass to the total upsweep of highrise curtain walls. Fully tempered sheets are several times the strength of annealed glass. The ceramic enameled colors are permanently fused into the glass so they defy the loss of their brilliance from weather, age, or chemical detergents.

Available in 23 stock colors, or colors specifically tailored to your specifications, and in various surface textures to blend with other glazing units and structural materials or for contrast in colorful spandrel accents.

Can be obtained with polyurethane foam as a core and back-up panel of steel, cement asbestos board or any material specified. Can also be obtained without back-up panel or polyurethane core.

Write for Arm-R-Brite color selections, dimension requirements, and glazing suggestions. C-E Glass, 825 Hylton Rd., Pennsauken, N.J. 08110.

\*Arm-R-Brite<sup>®</sup> is also available as Ceramalite<sup>®</sup> (heat-treated) Insulated Panels with foam core and back-up panel of steel, cement asbestos board, or any inner-surface material specified by the architect.

**CE GLASS**

A SUBSIDIARY OF COMBUSTION ENGINEERING, INC.

*For more data, circle 55 on inquiry card*



***Evans* world's  
largest producer  
of cedar plywood  
siding**

combines the bold natural beauty of Western Red Cedar with the application ease of plywood in an exciting combination of design effects. Several dramatic patterns in Cedar-Sawn and Cedar-Etched faces produce a distinctive siding for homes and commercial structures. Panels may be applied factory stained or may be allowed to weather naturally to a beautiful silver gray. Cedar Plywood Siding is weather, decay and termite resistant. Available in  $\frac{5}{16}$ " ,  $\frac{3}{8}$ " ,  $\frac{1}{2}$ " ,  $\frac{5}{8}$ " thickness and from 4' x 8' to 4' x 16'. This product is guaranteed for the life of the structure.

In Canada call 604-327-1131.

Evans Cedar Plywood Siding is ideally suited to today's discriminating customer.

For full information please return coupon below.

**EVANS PRODUCTS CO.**  
1121 S.W. Salmon • Portland, Oregon 97208

Please send me full information on  
Evans Cedar Plywood Siding

Name \_\_\_\_\_

Address \_\_\_\_\_

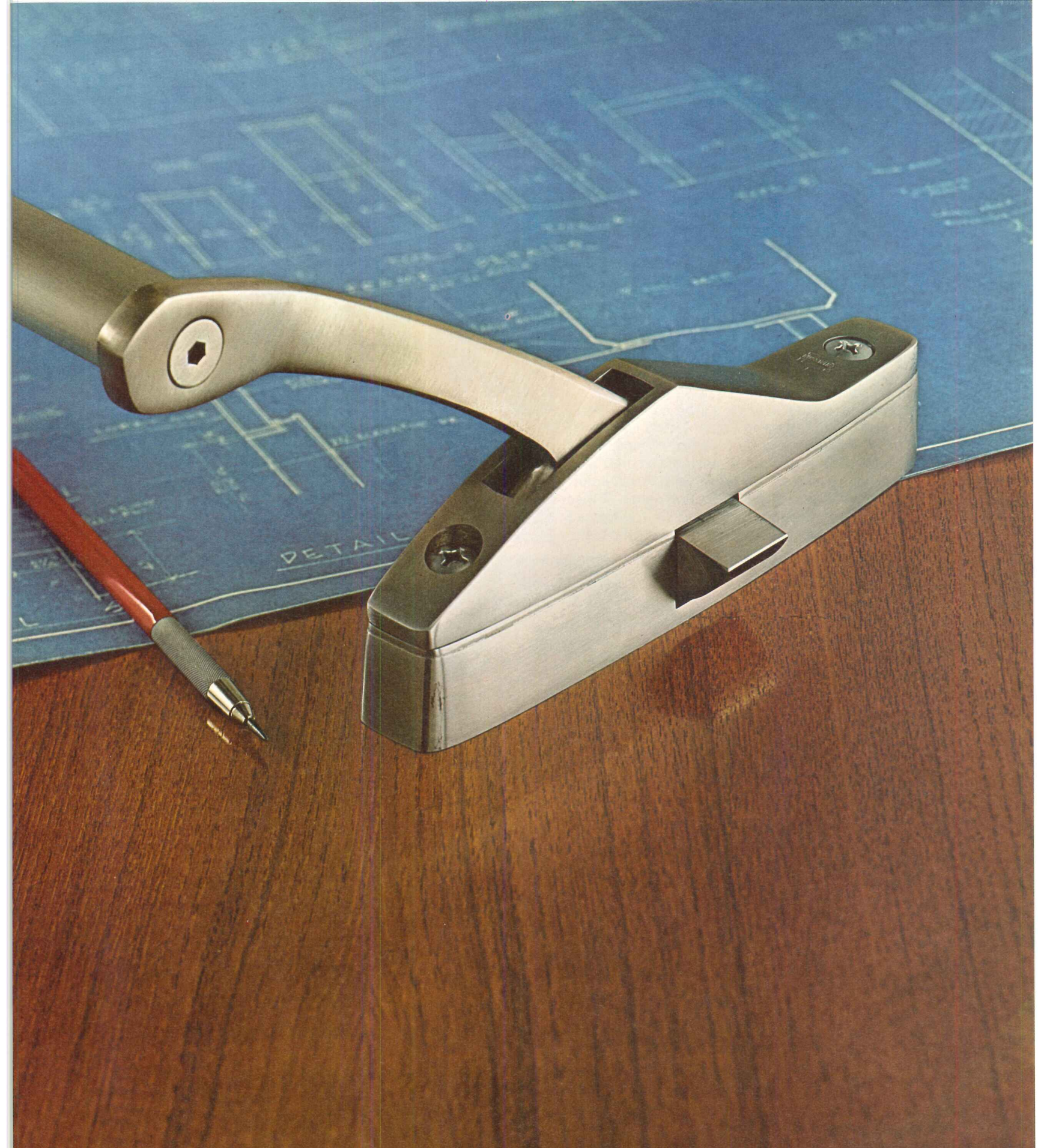
City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

**Evans**  
PRODUCTS COMPANY

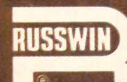
FOREST PRODUCTS GROUP



# Lightning bolt

Split-second response to the slightest touch makes the EXITER II\* fire exit bolt fast and foolproof. Streamlined styling too. Unmistakably Russwin.

Russwin, Division of Emhart, Berlin, Connecticut 06037.  
In Canada — Russwin, Division of International Hardware.

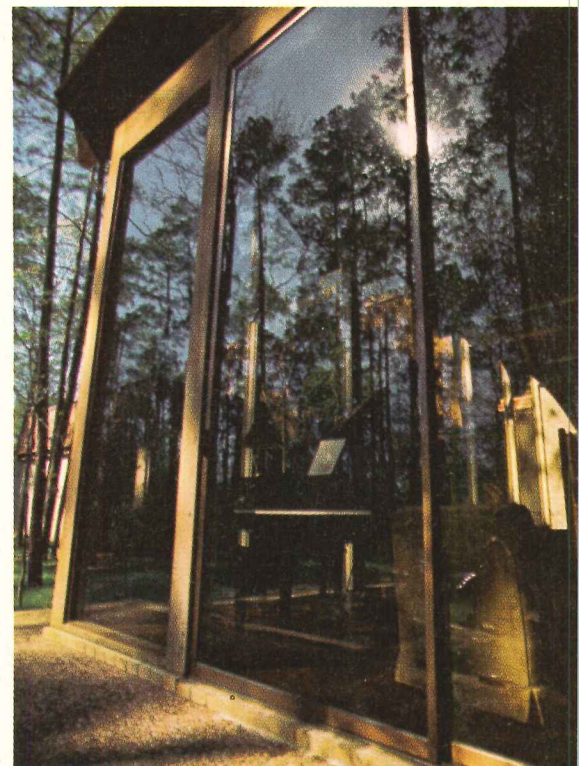
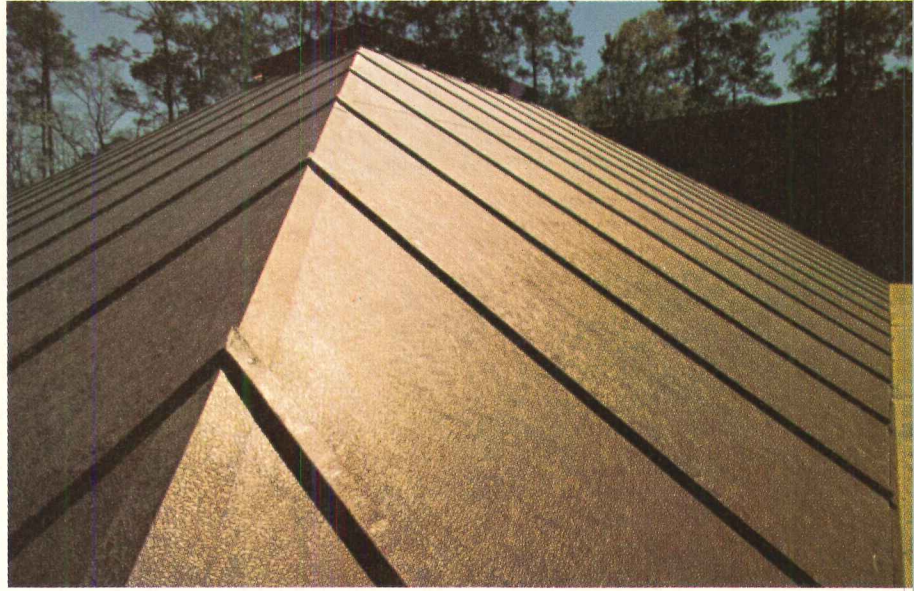


*For more data, circle 57 on inquiry card*

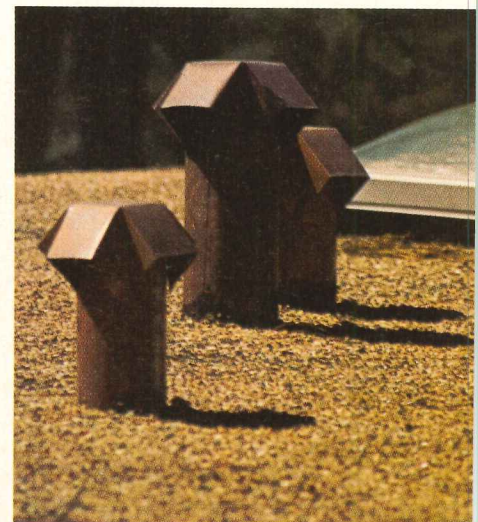
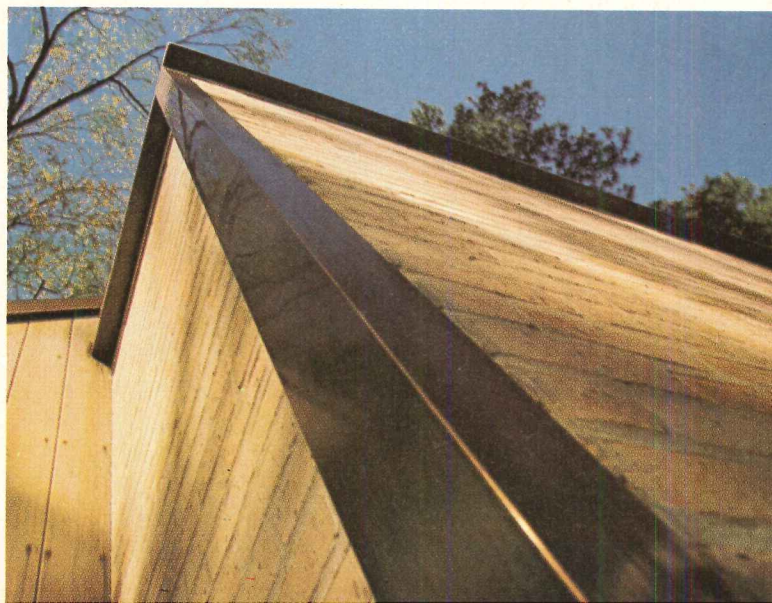
# Copper sheet. Obviously beautiful.

Here are some economical uses for copper that may surprise you. Using standard sheet copper. Available now. Every bank, restaurant, hotel, office building, house of worship and residence can be made more attractive and elegant with the quality features of copper. Feast your eyes.

**New copper/roofing system** (right). Large copper sheets bonded to plywood. Quick, easy to apply. Needs no special tools. **Clear film-finished copper roof** (below). Copper sheet laid over plywood deck in a vaulted design. Secured with hidden clips. Factory coated to preserve natural color. **Bronze sliding glass doors, windows** (below right). Brings the outdoors indoors. Beautifully framed in roll-formed bronze, a rich looking copper alloy. Quiet elegance that lasts.



**Copper leaders** that are an integral part of the design (right). Copper's resistance to corrosion especially valuable here. Painting eliminated. Weathers naturally to a russet brown. **Copper vent hoods** (far right). Long-lasting, good-looking. New high-strength and economical copper strip is perfect.



# Naturally durable. Readily available.



**Bronze floor tiles (left).** Pebble textured bronze on copper sheet applied directly to concrete or plywood. Needs only minimum care. Foot traffic adds varied highlights of muted gold tones.

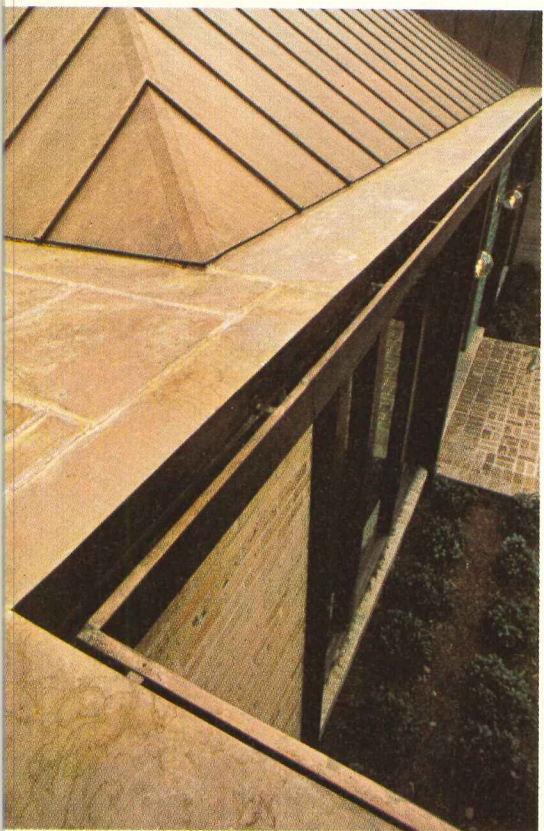


**Copper-accented entrance (above).** Stamped copper rosettes with a patina finish. Easily applied. **Copper-clad ceiling (left).** Chemically etched ultra-thin sheets of copper and brass in a kaleidoscope of tone and color. Every pattern unique. For walls, counters too. For details on these—or any other architectural uses for copper, brass and bronze—just write us.

Copper Development Association Inc.  
405 Lexington Ave., New York, N.Y. 10017

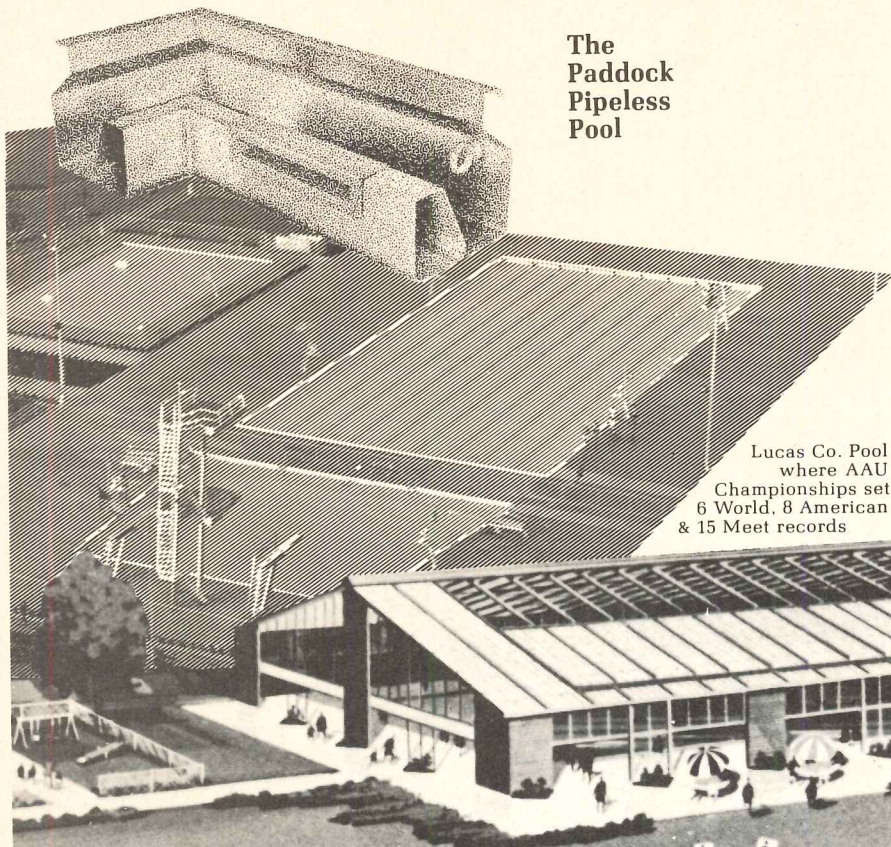
 **COUNT ON COPPER**

*For more data, circle 58 on inquiry card*



**Copper gutters and flat roofing (above).** Corrosion-resistant copper is as functional as it is beautiful. Highlights quality.





The Paddock Pipeless Pool

Lucas Co. Pool where AAU Championships set 6 World, 8 American & 15 Meet records

the complete swimming pool system backed by over 50 years of pool experience

The Paddock System of sound engineering and planning has developed the pool of the 70's. It's indoor/outdoor, pipeless and filtered sparkling clean. And, it's all integrated Paddock equipment which means single responsibility for the pool components and their operation. Complete detailed brochures available.

**Paddock of California Inc.**  
18 Railroad Ave. Extension, Albany, N.Y. 12205

The Paddock Skywall Natatorium

# PADDOCK SWIMMING POOLS

For more data, circle 59 on inquiry card

<p>Heating air with <b>HOT WATER</b></p> <p><b>HOT WATER (Type CH)</b> Bulletin CH-62</p> <p><b>HOT WATER BOOSTER (Type MP)</b> Bulletin MP-61</p>	<p>Cooling air with <b>REFRIGERANT</b></p> <p><b>DIRECT EXPANSION (Type DP)</b> Bulletin DP-66</p> <p><b>AEROFIN has more heat transfer coil answers for routine or those special job specs</b></p>	<p>Chilled water for <b>COOLING/DEHUMIDIFYING</b> Air</p> <p><b>CHILLED WATER (Type C)</b> Bulletin C-58</p> <p><b>REMOVABLE HEADER (Type R)</b> Bulletin R-50 (Removable headers both ends) <b>(Type RC)</b> Bulletin RC-57 (Removable header one end and return bends opposite end)</p>	<p>Heating air with <b>STEAM</b></p> <p><b>FLEXITUBE STEAM (Type B)</b> Bulletin B-58</p> <p><b>UNIVERSAL STEAM</b></p> <p><b>HIGH PRESSURE STEAM</b></p> <p><b>NON-FREEZE STEAM (Type A)</b> Bulletin A-61 (1" tubes) <b>(Type B)</b> Bulletin B-58 (5/8" tubes)</p>
--	---	---	---

As *The Specialist*, Aerofin helps design the unusual coil application for process, heat recovery, marine, energy systems. Over 48 years of experience in helical-fin coil technology means maximum efficiency for every kind of fan-system heat transfer.

Get cost-cutting ideas from our national network of knowledgeable sales engineers, on: single or multiple row configurations — fin-spacing efficiencies — preheat or reheat applications — fluid fouling tendencies — freeze-up hazards — space-saving considerations.

Heat transfer coils is our around-the-clock business! Doesn't that tell you something about our coil dependability — our capacity ratings — our cost/value/ratio record?

**AEROFIN**  
CORPORATION • LYNCHBURG, VIRGINIA 24505  
Aerofin is sold only by manufacturers of fan system apparatus. List on request.

**AEROFIN OFFICES:** Atlanta • Boston • Chicago • Cleveland • Dallas • New York • Philadelphia • San Francisco • Toronto • Montreal  
**AEROFIN CORPORATION (CANADA) LTD.,** Gananoque, Ontario





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

## **If this lighting looks like no lighting you've ever seen before, you're right.**

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

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

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

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

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

**KEENE**  
CORPORATION

**SECHRIST LIGHTING**

*For more data, circle 60 on inquiry card*

**We've just begun to grow.**

**Modern Office Modules** are new—with design innovations and styling that bring infinite freshness to open space planning. Modern puts all your needs together in a totally-coordinated system: Acoustically-controlled, easily-assembled, free-standing panels in different heights; many sizes; many surfaces—Videne® wood grains and colors, or Karpetwall® in colors. Flat and sloping work surfaces. Drawers. Hanging files. Open and closed shelving. Display racks and boards. Chairs. Free-standing tables and work surfaces...

# ad infinitum

Modern Office Modules. Flexibility unlimited! Only the cost is finite, but so economical that your comptroller won't want to consider any other system. And you can lease it, too. See your dealer, or write for details. Modern Partitions, Inc., 503 East 32nd Street, Holland, Mich. 49423



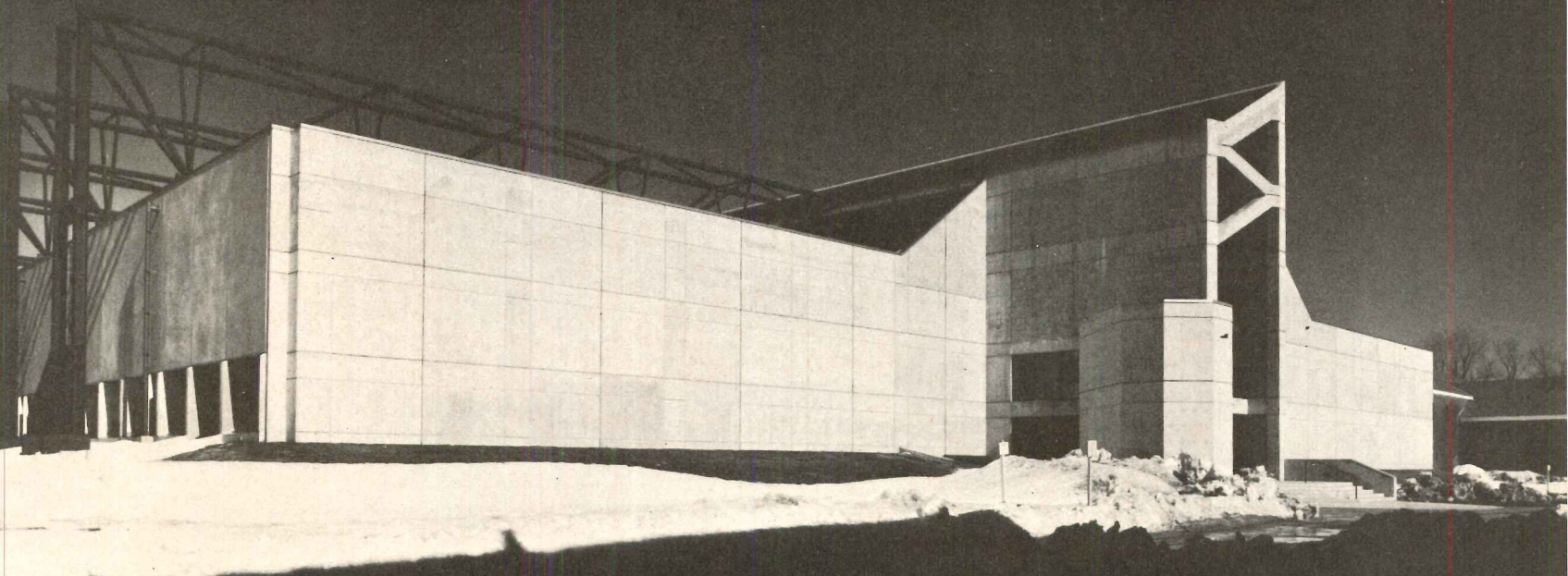
For more data, circle 61 on inquiry card

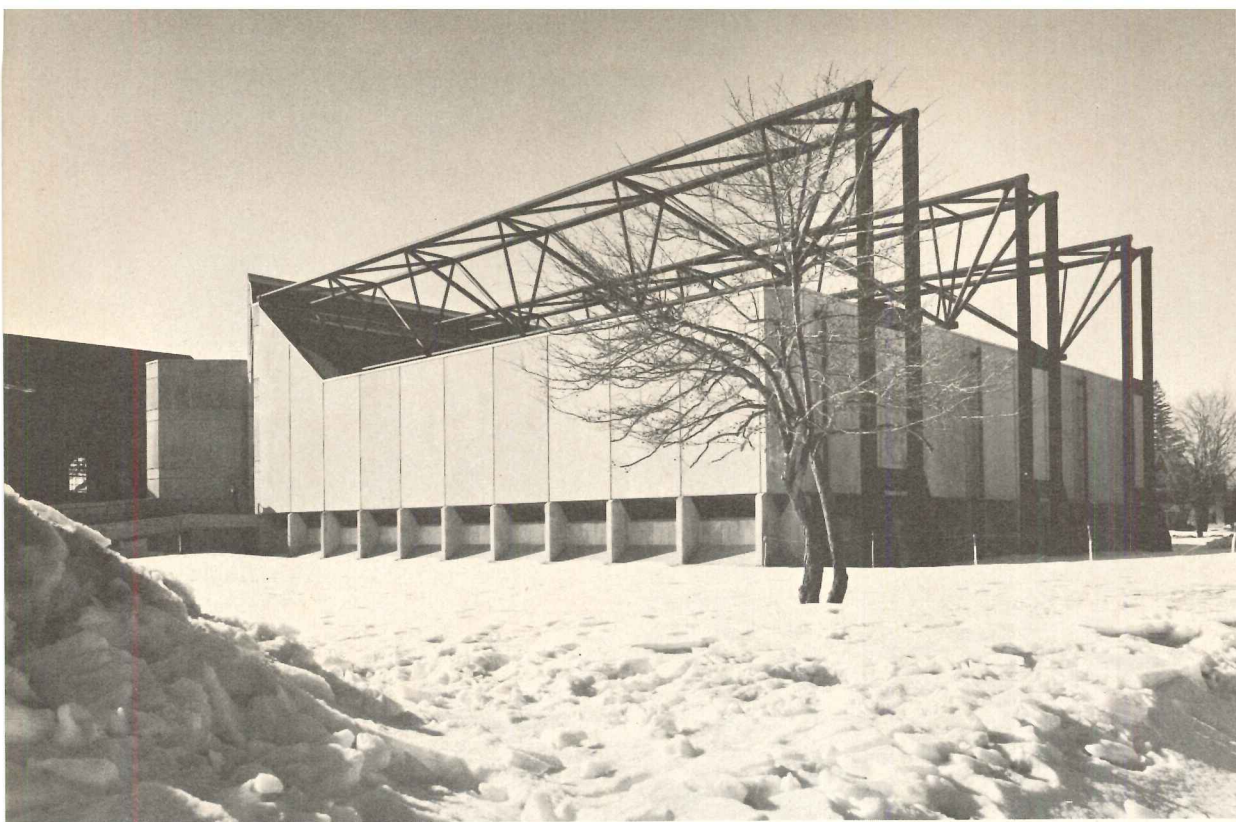
# A PREP SCHOOL ATHLETICS BUILDING— CONTROLLED, CONCENTRATED, BALANCED AND ALIVE WITH DISTILLED ENERGY

The new physical education facilities at Phillips Exeter Academy in Exeter, New Hampshire have been designed by the firm of Kallmann & McKinnell, architects who first gained wide recognition for the design of the Boston City Hall. The latter building, as many perceived, was designed as a celebration of government—its processes made clear and legible in architectural form. The Exeter gym can be called a celebration of sport—a building invested with life—in which swimming, skating, basketball, squash and gymnastics are continually going on and sequentially visible to visitors and athletes as they move through the complex along its multi-level central spine. Most gyms conceal their separate functions behind closed doors along endless undifferentiated passages. At Exeter the activities are revealed, their excitement heightened by unobtrusive design.

The architecture itself is a reversal of the expected—things are turned inside out or upside down. Surfaces which one expects to be agitated turn out to be restful. Three-dimensional trusses are outside on the roof instead of inside at the ceiling. They are wide at the top instead of at the bottom which would be more likely. Weathering steel columns stand at a polite distance from walls, so as not to stain them, and there are flying buttresses inside. The surprises in the building refocus the eye and challenge the mind. The language of architecture has been extended and a new point of departure established.

—Mildred F. Schmertz

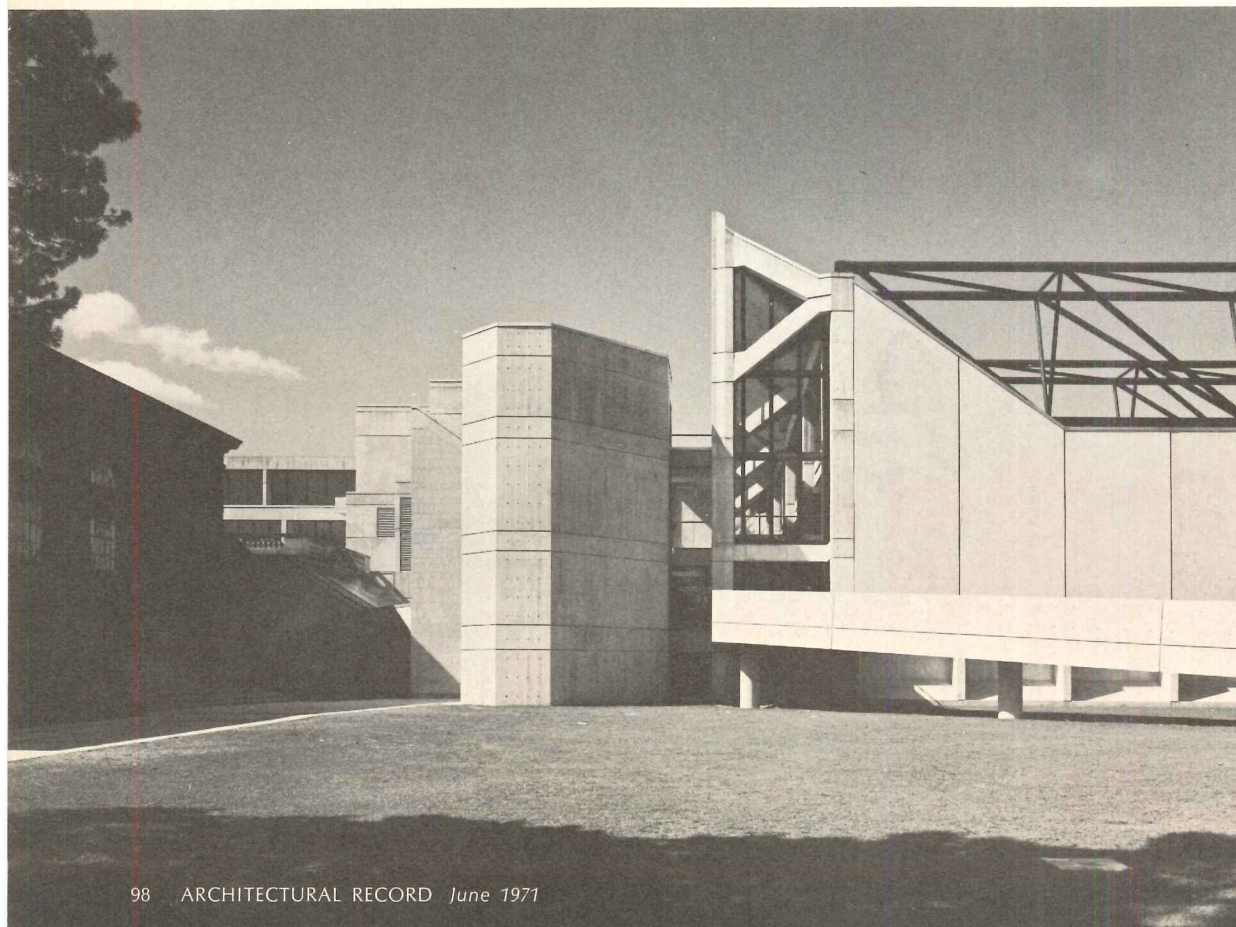
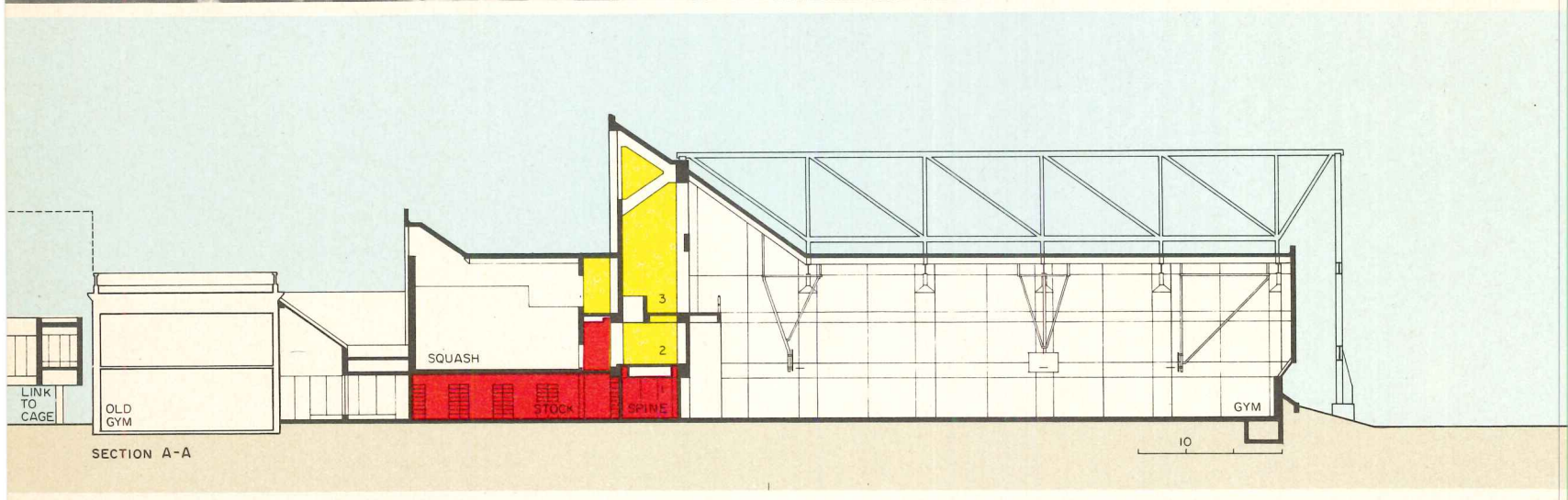




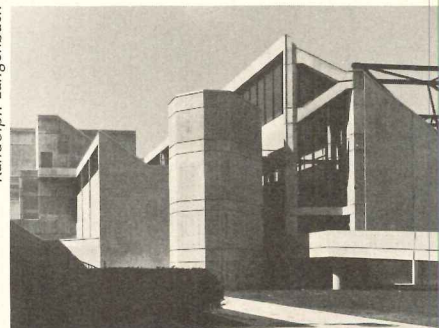
Ezra Stoller © ESTO

This 216,000 square-foot athletic facility is highly legible as a design despite its great size and its multi-scaled elements which fit together with the intricacy of a Chinese puzzle. As the section (below) indicates, the new building is attached to the older gym by a low element containing the mud room and trainer space. The squash court shown above the first (or basement) level is one of twelve—three in the entrance wing shown in the photos (left and below), seven in the long wing through which this section has been taken, and two for exhibition purposes where the two wings intersect at the corner (see plans, page 100).

In section the squash courts are like small chapels—their front walls washed with light from hidden skylights, their rear walls opening upon a teaching gallery. Below the gallery is a narrow corridor which is part of the circula-



Randolph Langenbach



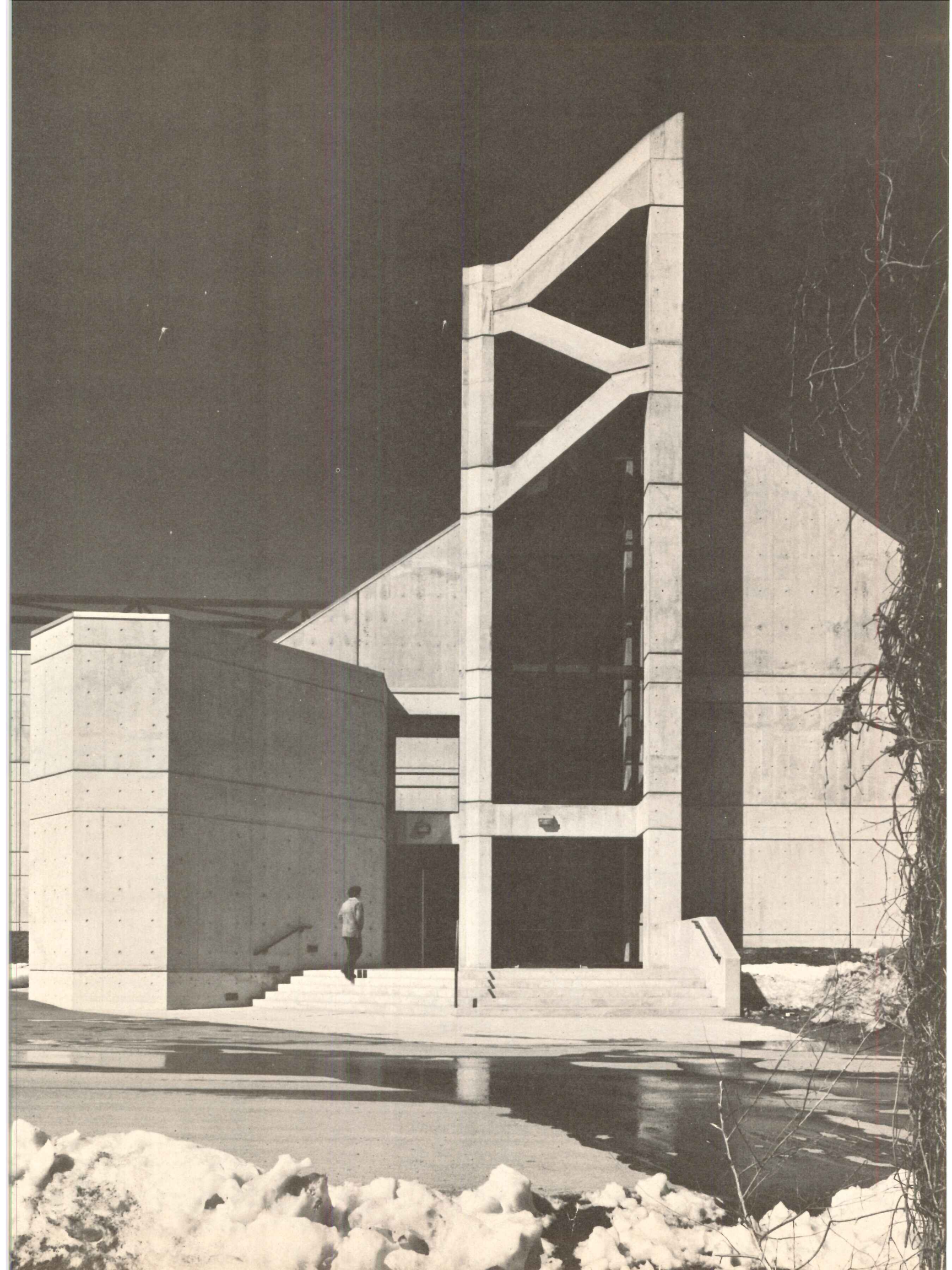
tion network for athletes—one of three principal halls, the top two of which are the main axes of the visitor circulation network. All three, taken together form the building's spine.

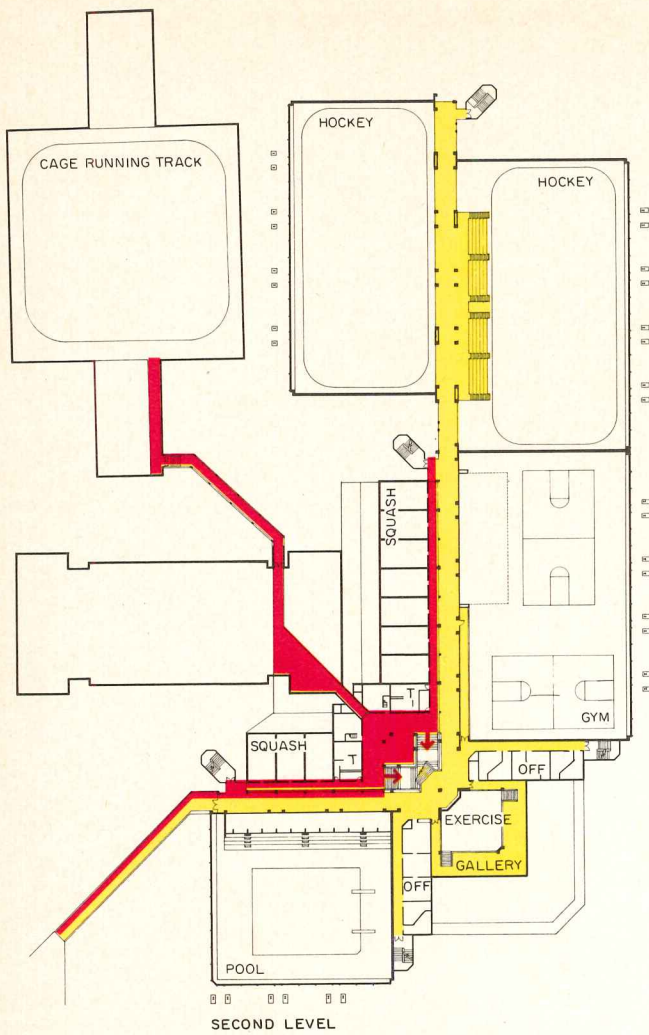
The spine with its continuous skylight dominates the building from within and without. Its roof is dramatically framed with precast concrete struts, formed on the site, which act as counterforces to the steel trusses which support roofs of gym, pool and rinks.

The ramped entrance (left) faces the campus and is used by students and faculty, while the other (opposite page) faces the town and is used by the public.

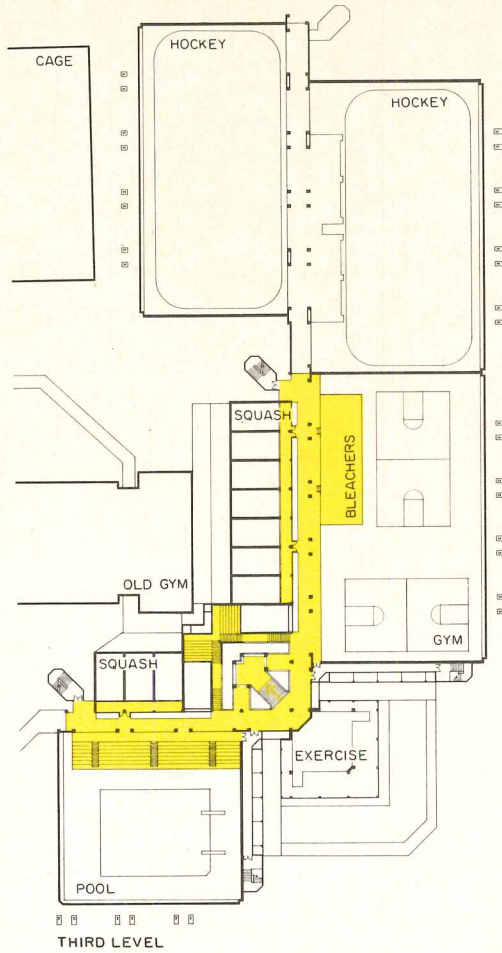
Randolph Langenbach

Ezra Stoller © ESTO

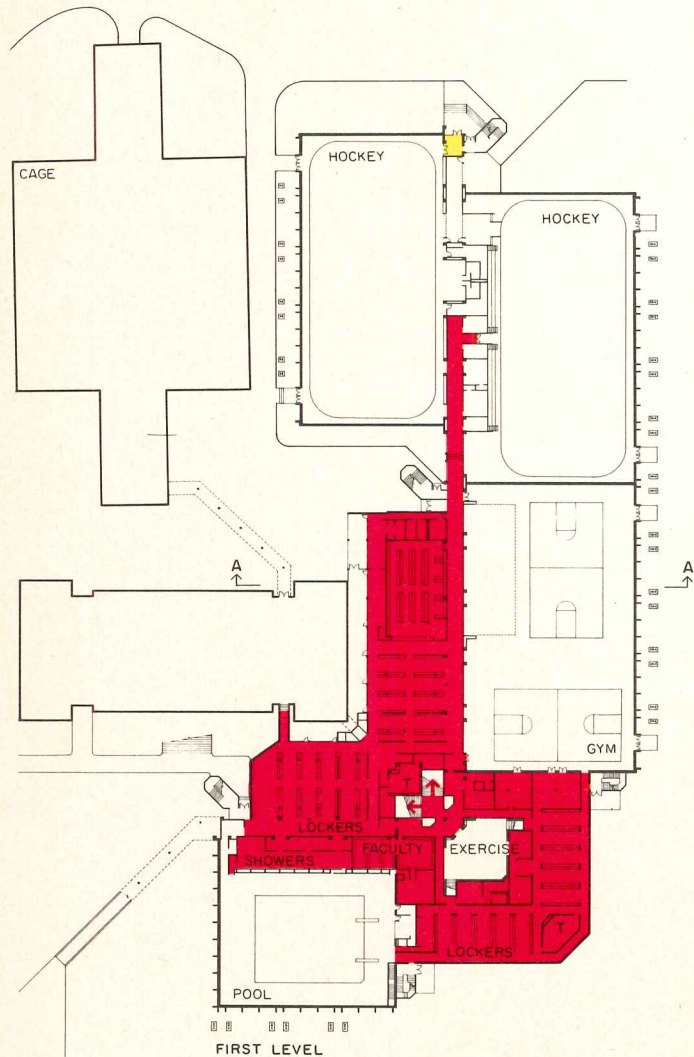




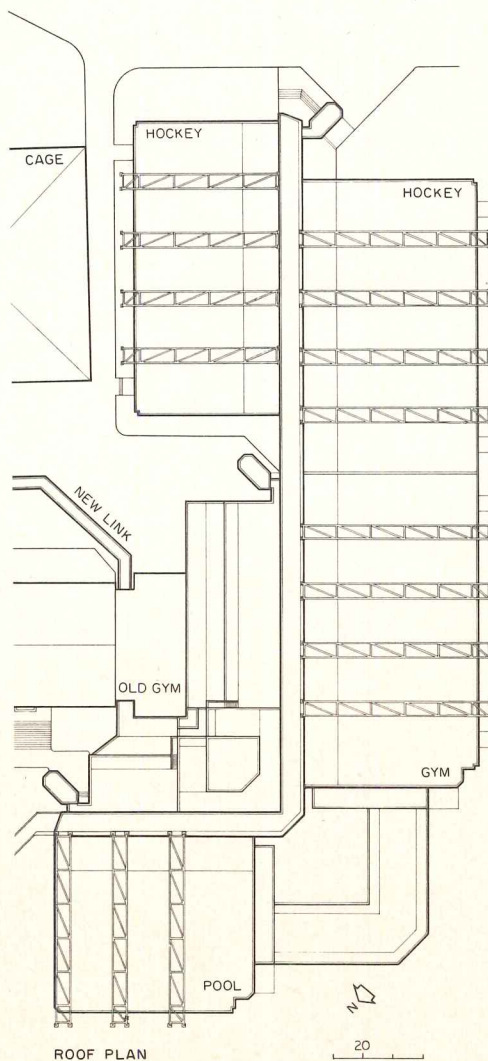
SECOND LEVEL



THIRD LEVEL

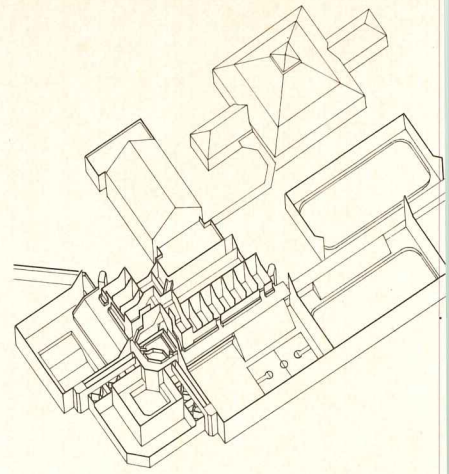


FIRST LEVEL



ROOF PLAN

ATHLETES  
VISITORS



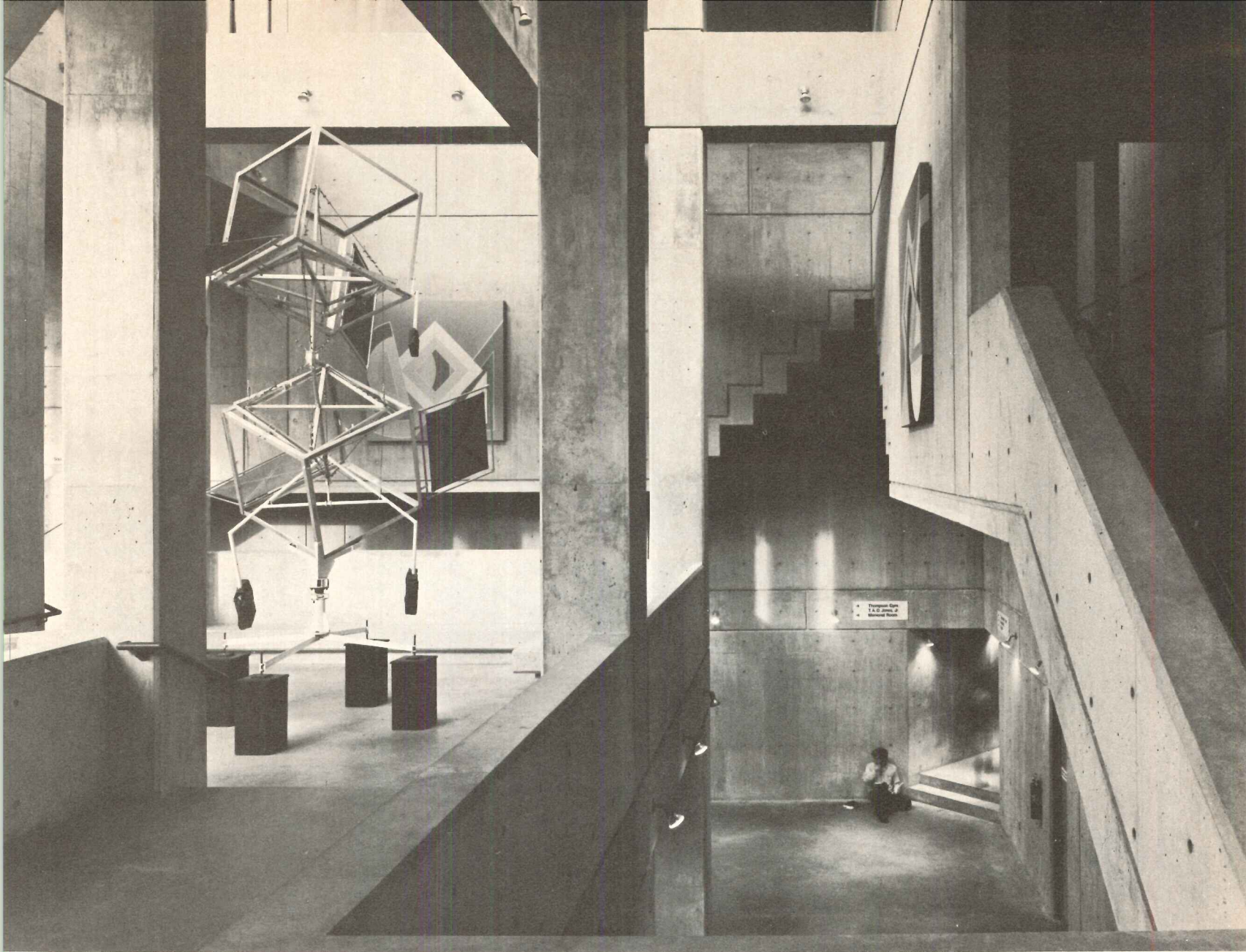
Athletic buildings are almost always expressed as volumes. At Exeter the architects have expressed a structural system and a forceful circulation network, rather than a volume or series of volumes. This approach, which recognized the fact that the building would be huge, has produced a new and highly appropriate urbanistic scale for the new facility, within a system which permits continuous expansion. To express this infinite expansibility, the architects wished a truss to appear at each modular point even where end walls, which are likely to be permanent, could be made bearing. They were also aware that the only trusses to be

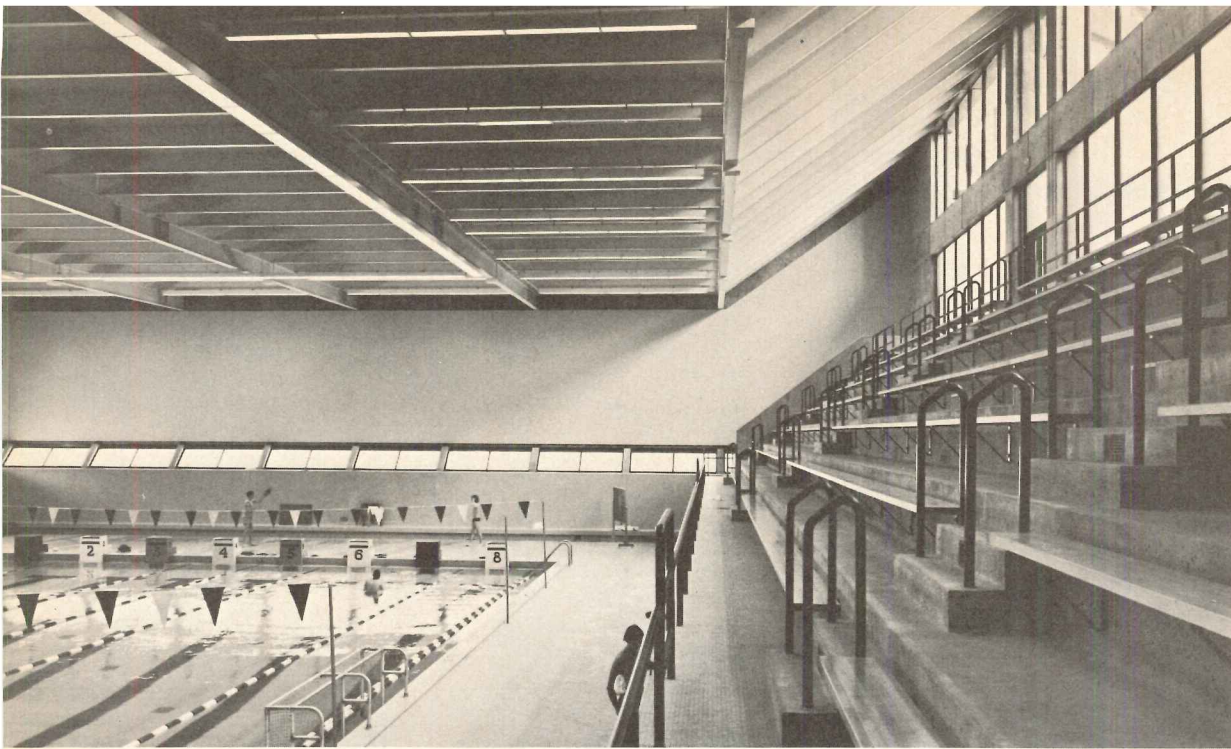


Ezra Stoller © ESTO photos

completely legible to the viewer on the ground would be those located at the end walls of each wing. Since the trusses cost between \$40 and \$50 thousand each, however, legibility and the expression of expansibility lost priority. As the roof plan (left) shows, only one truss appears where a bearing wall would do. It is not certain that the wing will expand in this direction, but the principle of legibility has been upheld, particularly since this truss is adjacent to the main entrance and can be seen by everyone.

The diagram (top) indicates the complexity of circulation patterns required to serve a variety of athletic functions. The photos (right) were made within the portion of the building which turns the corner and acts as the link between the two wings. Visitor space (top right) displays student art and overlooks the exercise room (see plan). The exterior photo (above) was made at the intersection of the two wings at the hub or linking element.





The great spine of the Exeter physical education building, like an attenuated cathedral nave, thrusts its way past the swimming pool, squash courts, and huge gymnasium to come to rest between two hockey rinks (right). Like flying buttresses, the precast concrete struts resist forces generated by the roof trusses coming to rest on concrete girders supported by paired columns on opposite sides of the spine.

The exterior truss system provides a visually clean interior which reduces distraction for everyone following the ball or watching a dive, as the photos (left) indicate.

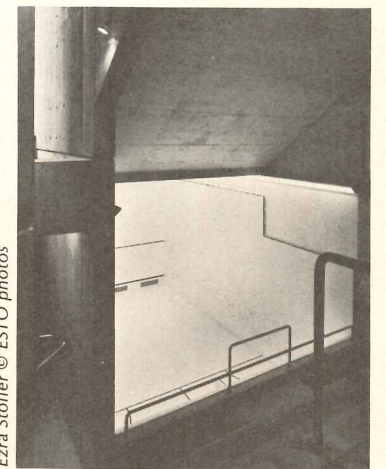
The swimming pool is 60 feet wide by 75 feet long, with eight racing lanes. It has large deck areas for teaching and exercising. Seating for 450 has been provided in permanent bleachers. Moveable bleachers will seat another 200 spectators.

The gymnasium has a total floor dimension of 115 by 200 feet. Its size permits the simultaneous use for basketball of three cross courts (50 feet by 84 feet) separated by two divider curtains. Alternatively it also permits the simultaneous use of one main court, 50 feet by 94 feet, with eighteen rows of folding bleacher seating for a total of 900 spectators; plus one cross court 50 feet by 84 feet separated by a divider curtain from the main court.

The two ice hockey rinks are each 85 feet by 185 feet. The rink in which the public matches are played seats 600.

The building has ten regular squash courts with a teaching gallery running through all courts and two exhibition courts (below) with seating for 100 spectators each.

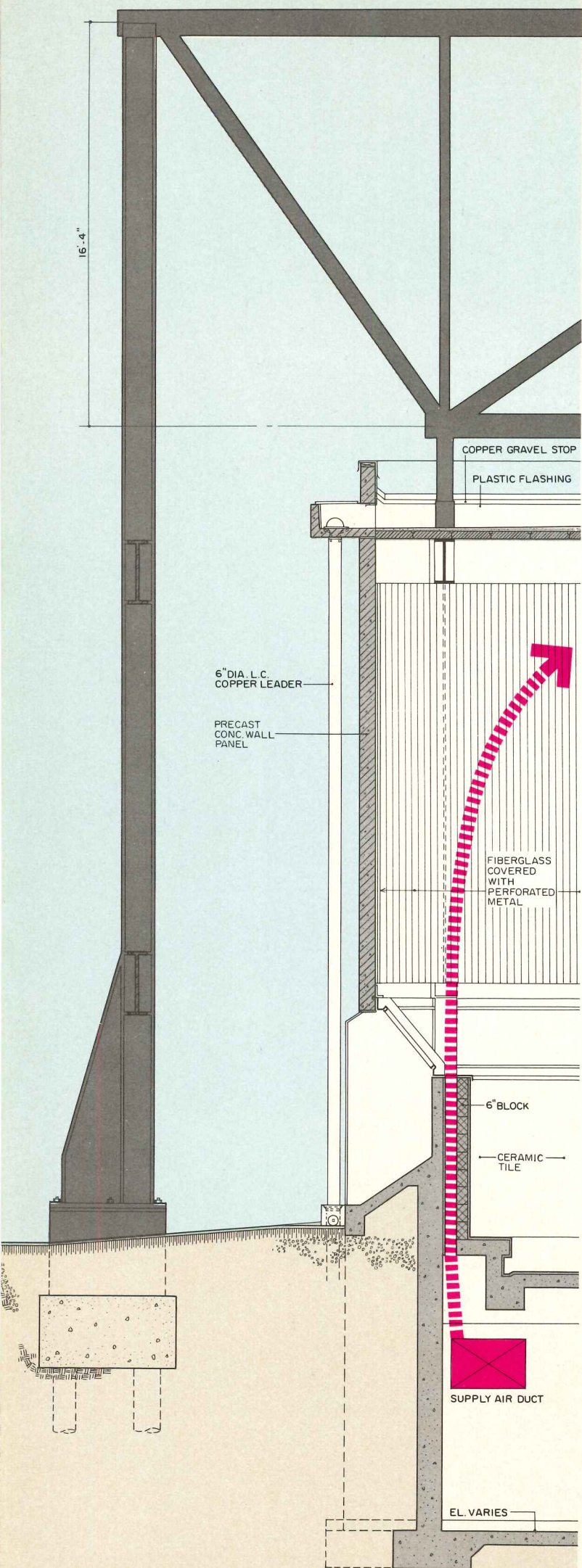
All sports areas have openings arranged to avoid direct sunlight, as can be seen in all the photos on this page. Office spaces are also lit by indirect natural light.



Ezra Stoller © ESTO photos







Early in the design stage of the Exeter gym, structural engineer William LeMessurier began to collaborate with the architects in the development of an appropriate structural system. All were agreed that they did not want a dramatic structural shape to dominate the interior spaces, and that interior trusses, in particular, were distracting to players and spectators alike. The maximum spans of 130 feet were great enough to constitute an interesting design problem, but not so wide as to call for anything so spectacular as an arch.

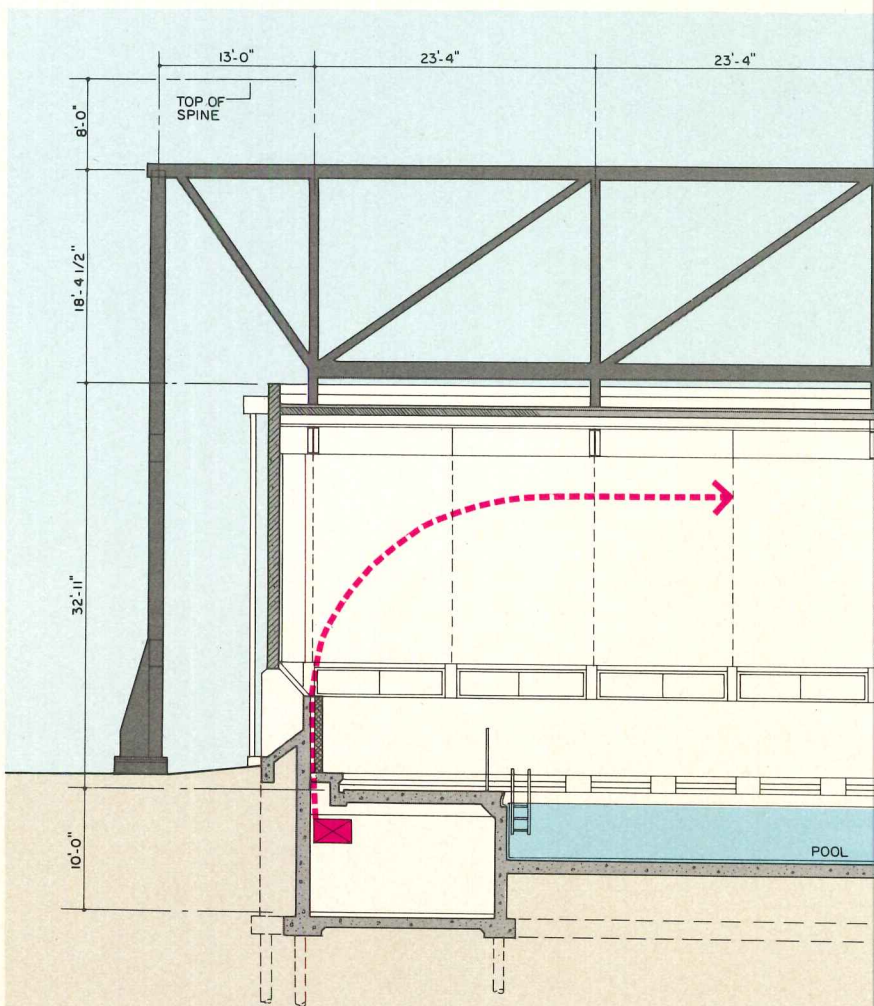
Deep trusses cost less than shallow trusses, but if they are located inside the structure this saving is offset by the cost of the enclosing materials. It was decided, therefore, that the trusses would be located outside the roof.

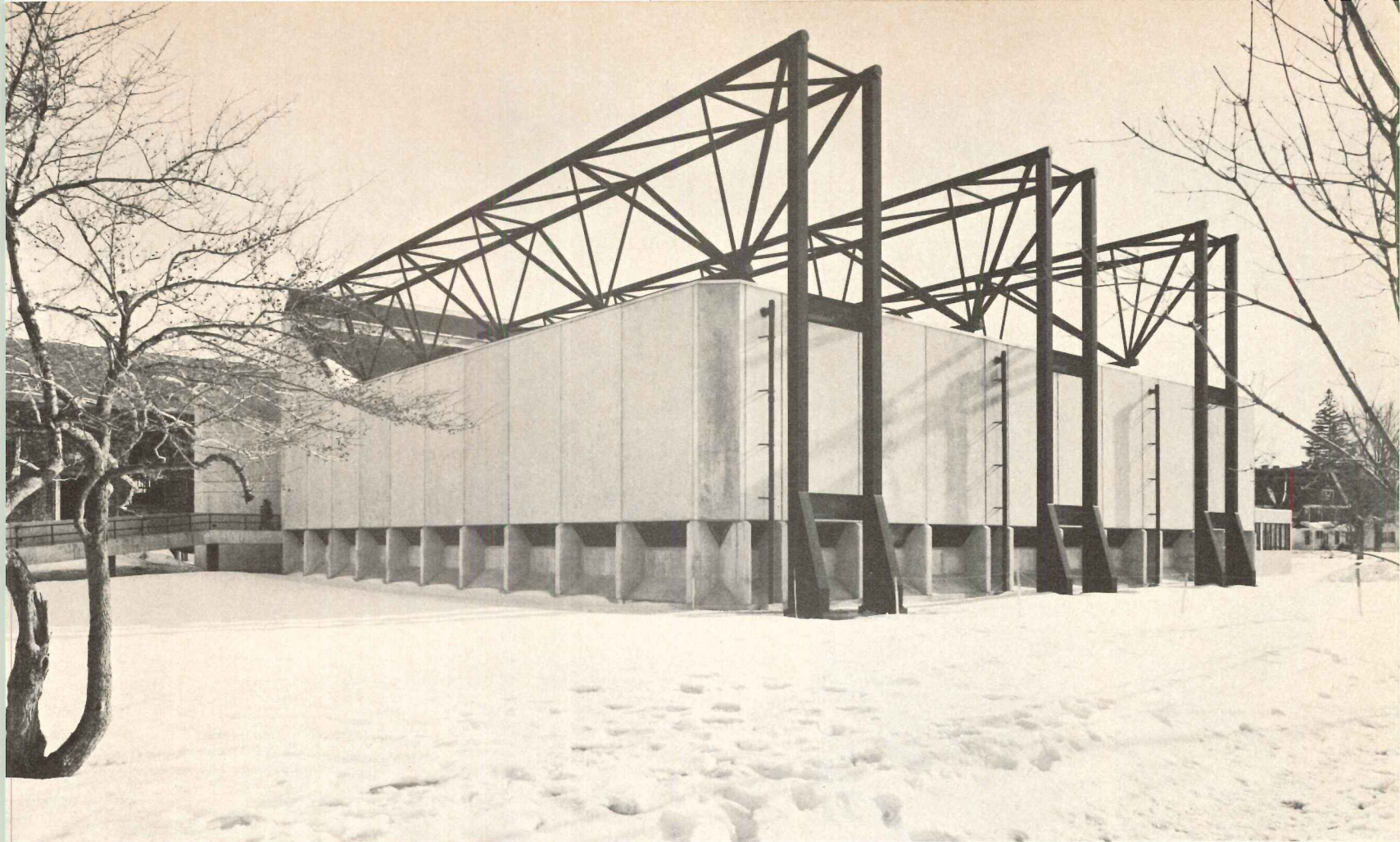
Because conventional single-plane trusses would have needed subsidiary cross bracing, LeMessurier designed a three-dimensional truss which, as such, is self-cross bracing. Because of its own inner rigidity and ability to resist lateral wind loads each truss was shipped whole from a plant in Portland, Maine. Most trusses shipped this way require a flat-bed truck. The LeMessurier truss simply required

wheels at one end and a tractor at the other. Only 10 feet wide by 15 feet deep, the trusses had no difficulty passing under bridges en route.

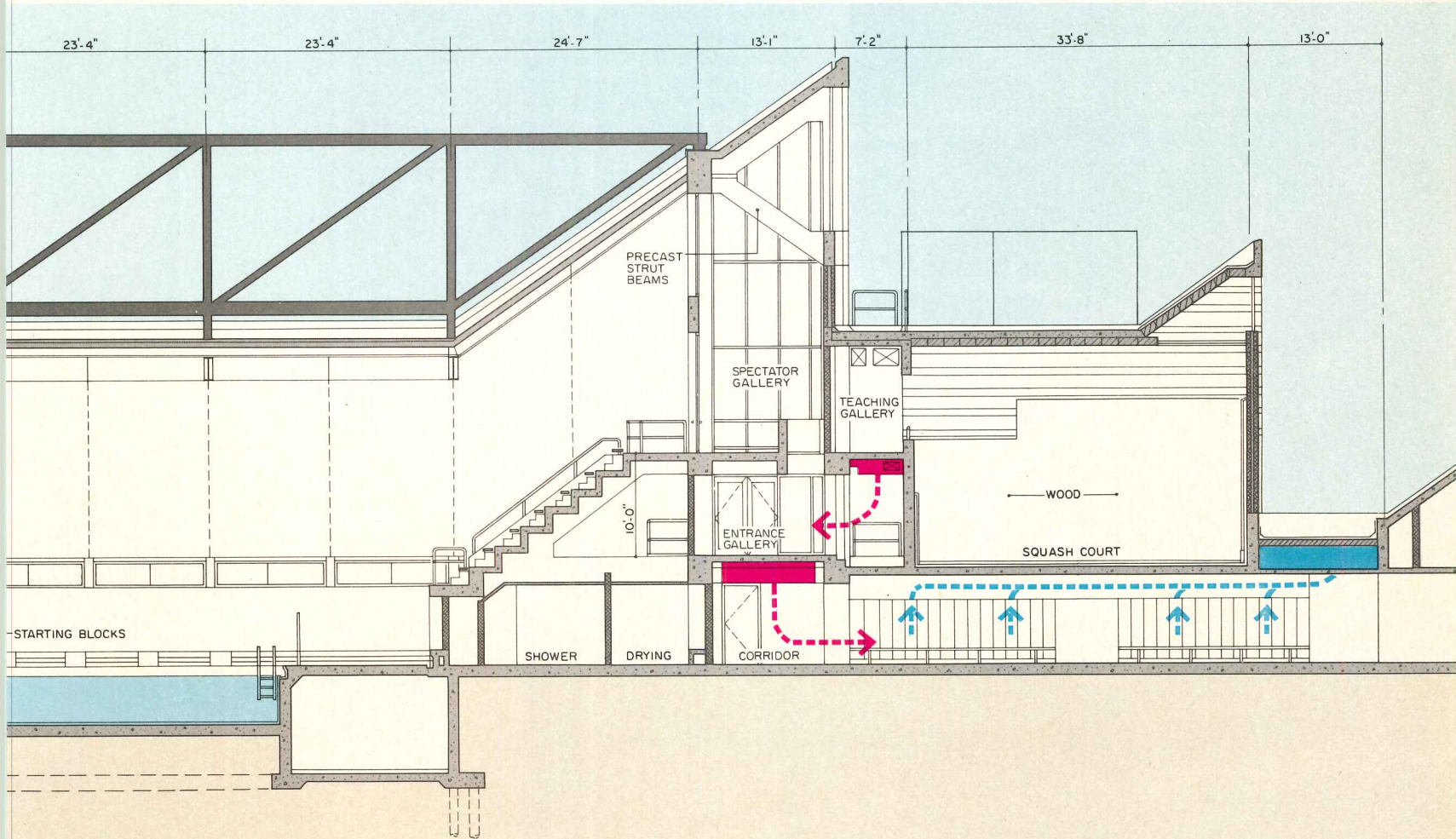
The trusses are designed with two parallel compression members at the top and one member in tension at the bottom. For strict economy, the trusses should have been reversed with two compression members at the bottom and a single tension member at the top. The supporting legs would have been shorter and the interior spans, supported on pairs of points would have been shorter and lighter. There is no question, however, that the appearance of the trusses as finally executed justifies their design.

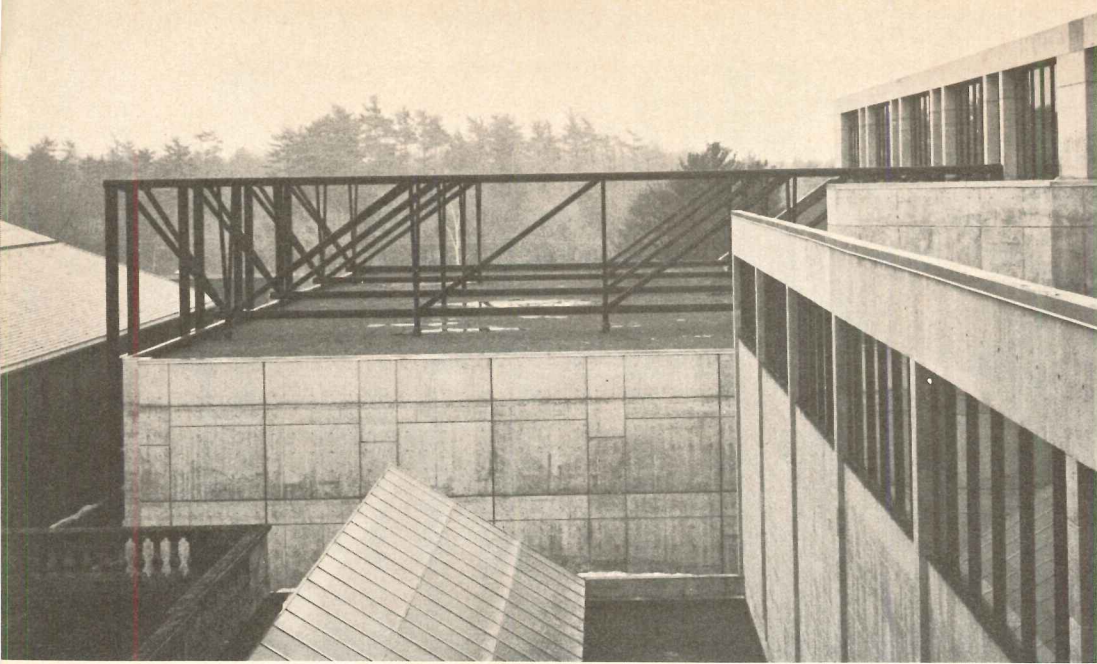
The Exeter gym has the first architect-designed structural frame to be built out of weathering steel pipe. The vertical supports, also made of weathering steel, are set off from the body of the building like insect legs so that drips from the rusting structure will not stain the concrete wall panels. These supports, of course, could have been concealed within the wall more cheaply, but their powerful, almost athletic stance appears to validate the extra cost.





Ezra Stoller © ESTO





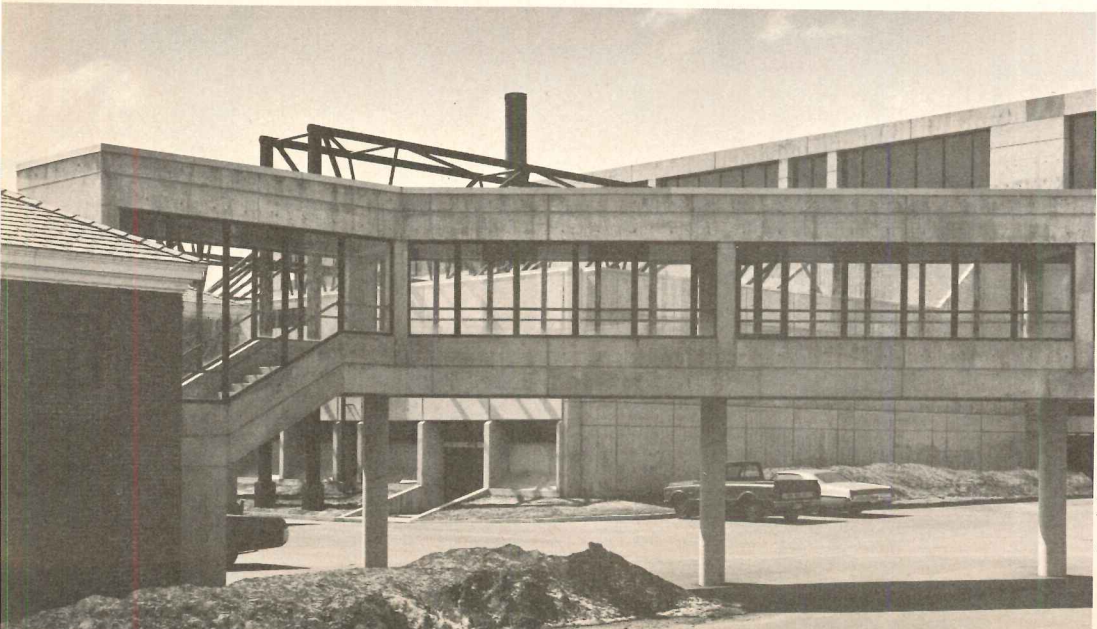
Randolph Langenbach



Ezra Stoller © ESTO

The Exeter gym has a total of 15 weathering steel trusses. Eleven are 130 feet long and weigh 22 tons each. These cover the sports halls with spectator seating. Four trusses are 110 feet long and weigh 18 tons each. They span the hockey rink without spectator seating, and can be seen at their point of contact with the roof in the photo (above). At the points along the central spine in which the large sports halls with their long spans lie opposite the squash courts with their short spans, the precast concrete struts (left), no longer parallel, form a series of V's. The bridge (below) connects the new gym with an existing indoor track. Cost of the new complex was \$5.375 million or \$26.5 per square foot.

NEW ATHLETICS FACILITY, Exeter, New Hampshire. Owner: *The Phillips Exeter Academy*. Architects: *Kallmann & McKinnell*—project manager: *Jeffrey Brown*; job captain: *Donnelley Erdman*; structural engineers: *LeMessurier Associates*—associate-in-charge: *Hans William Hagen*; mechanical engineers: *Francis Associates*; acoustical consultants: *Bolt Beranek & Newman*; cost consultant: *Industrial Estimating Service*; general contractor: *George B. H. Macomber Company*.



Randolph Langenbach

# Clinton Youth and Family Center



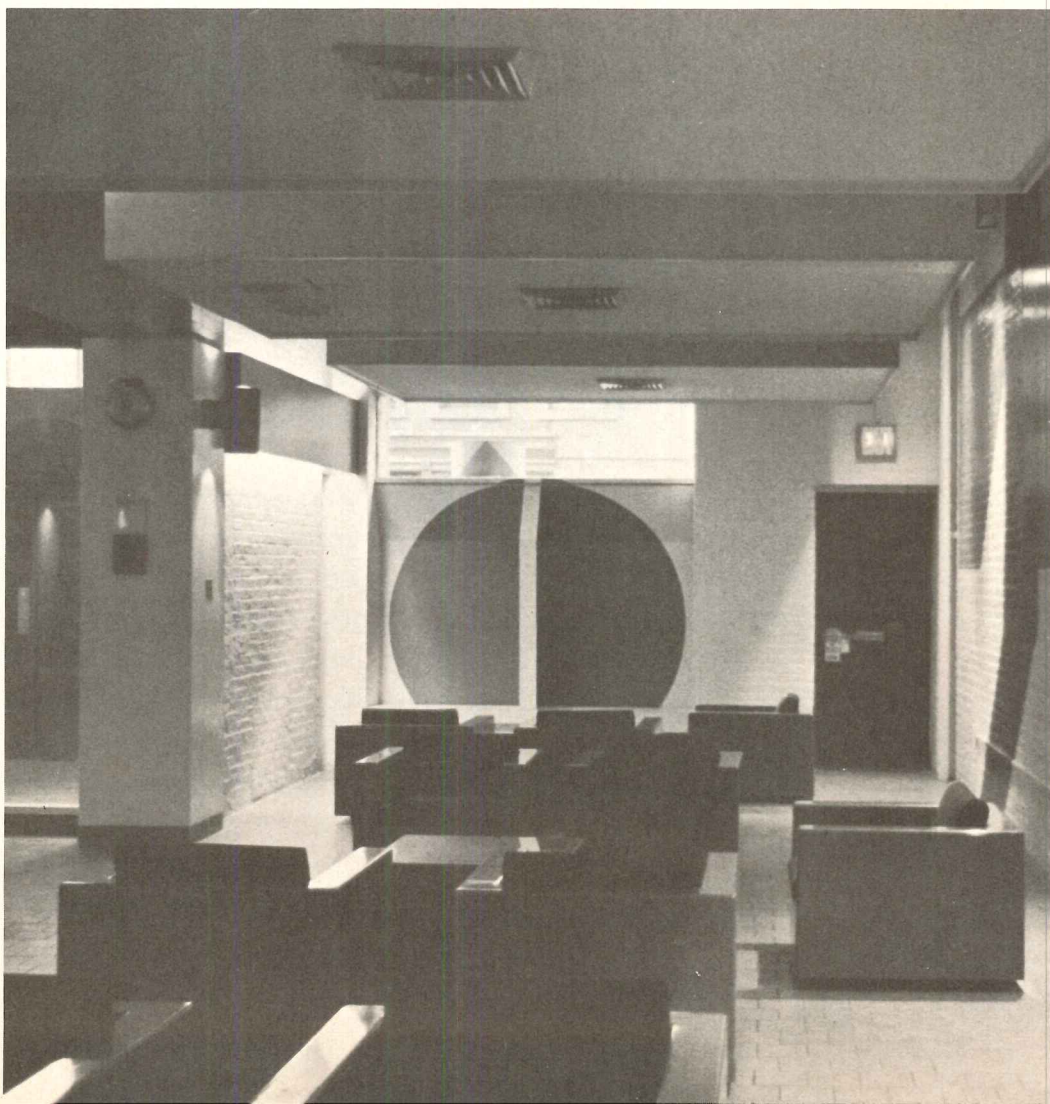
Van Brody photos

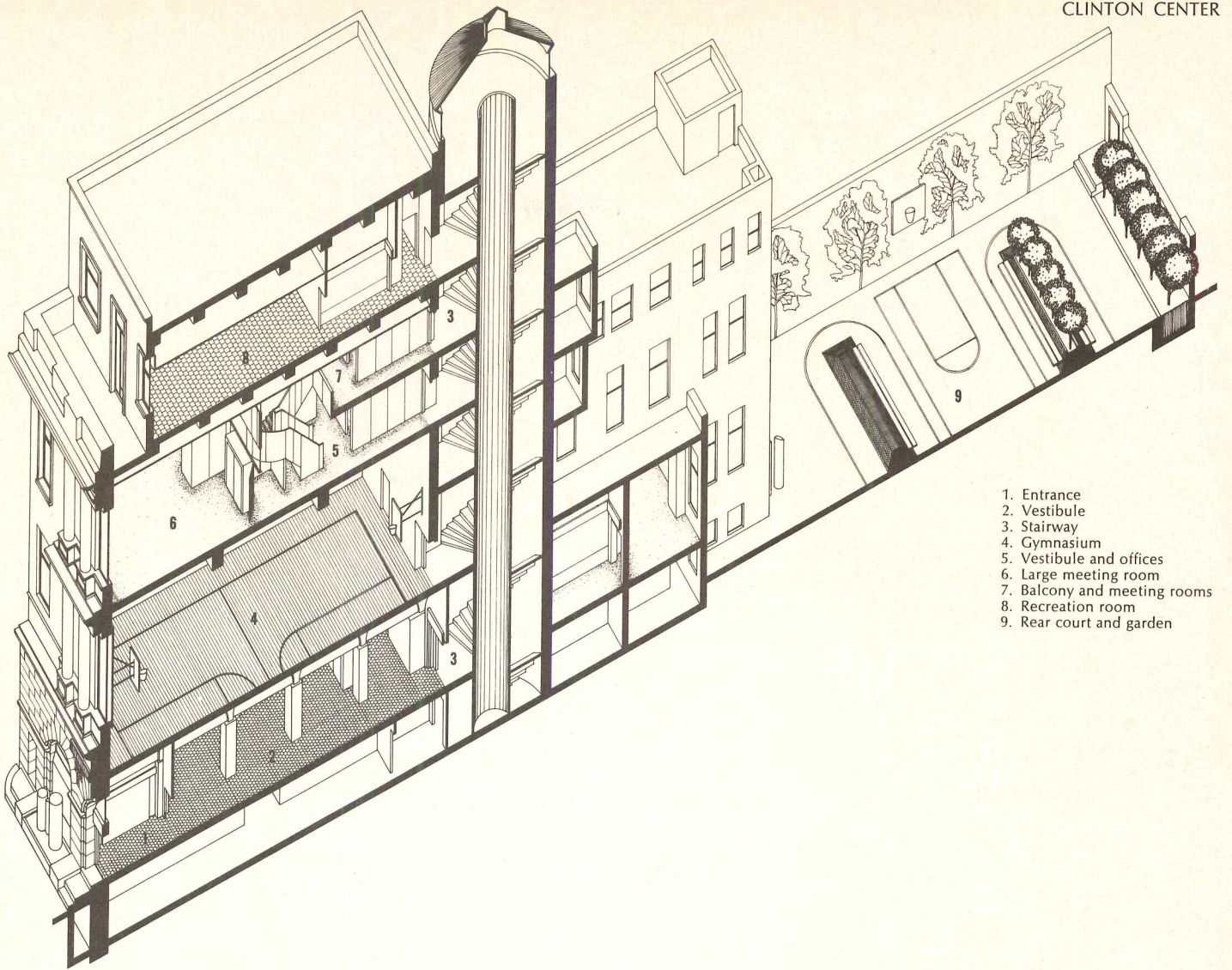
At least one building among the deteriorating tenement facades of West 54th Street in Manhattan is bright and inviting—as city life and its institutions can be. It is the Clinton Youth and Family Center, once the Seventh District Police Court building. The painted metal doors, windows and new intake pipes for air conditioning make vigorous images for the future, and have at the same time been fitted within the orderly stonework of the past; they seem to say that we need not insist on historically accurate restorations to provide a necessary feeling of continuity with our roots, nor do we need to level old architecture to make cities better. The Youth and Family Center is operated by the YMCA of Greater New York and the Rotary Club of New York, and the majority of the renovation costs were paid for by the Astor Foundation, which has funded several other building projects of notable worth in New York's ghetto neighborhoods. James Stewart Polshek, along with Walfredo Toscanini, were the architects. A fine, old building has been “added” to New York, and similar buildings, sound of body but needing a fresh new spirit, could be added in many of our cities. —Robert Jensen

Inside, the old six-story structure built at the beginning of this century has been transformed by brightly painted walls, movable/storable furniture, and plenty of irreverent writing on the walls. The surprisingly appropriate flowing spaces house noisy children and under-financed neighborhood health programs as well as they once housed the solemn, not-too-happy processes of criminal justice. By removing several full-height brick walls erected during previous remodelings, the vaulted solemnity of the old main entrance lobby (top, right) was reclaimed. But elsewhere on the ground floor, in the new lounge and the entrance foyer to the elevators (far right, opposite page), color rather than space has been added. The old wall planes, moldings and right angles have been properly violated by paint in diagonal stripes and overlapping circles, yet the sense of old architecture conserved still remains. This large ground floor space is a kind of "mixing valve" where all of the diverse groups coming in and out of the center each day are brought together.

The center can be understood as having its large-group "mixer" spaces—including the gymnasium—on the lower floors, the park in back, and the progressively smaller and more private-use spaces on the upper floors. The central staircase that connects them all is a finely scaled circular shaft (see isometric, opposite page) filled with open wrought iron lattice work and skylighted at the top. The center of the shaft used to be occupied by an elevator—the only one in the original court—that unfortunately had to be removed. The old main courtroom is now the gymnasium, with a new maple floor and with bouncing balls and the arc of their travel painted boldly on the brick walls. The coffered ceiling of the courtroom provided excellent recesses for new lighting fixtures, and a classical portico that was a feature of the courtroom has been allowed to remain, now framing a basketball backboard. A second, low-ceilinged courtroom occupied what is now the fourth and fifth floors, but there was no need for a second large space. So, it has been divided into seminar rooms and offices (see isometric, right) and most of the new partitions on this floor are surfaced with hardboard and left unpainted. These fourth and fifth floors have wall-to-wall carpeting throughout, and they are—not surprisingly—among the most popular for smaller meetings and games.

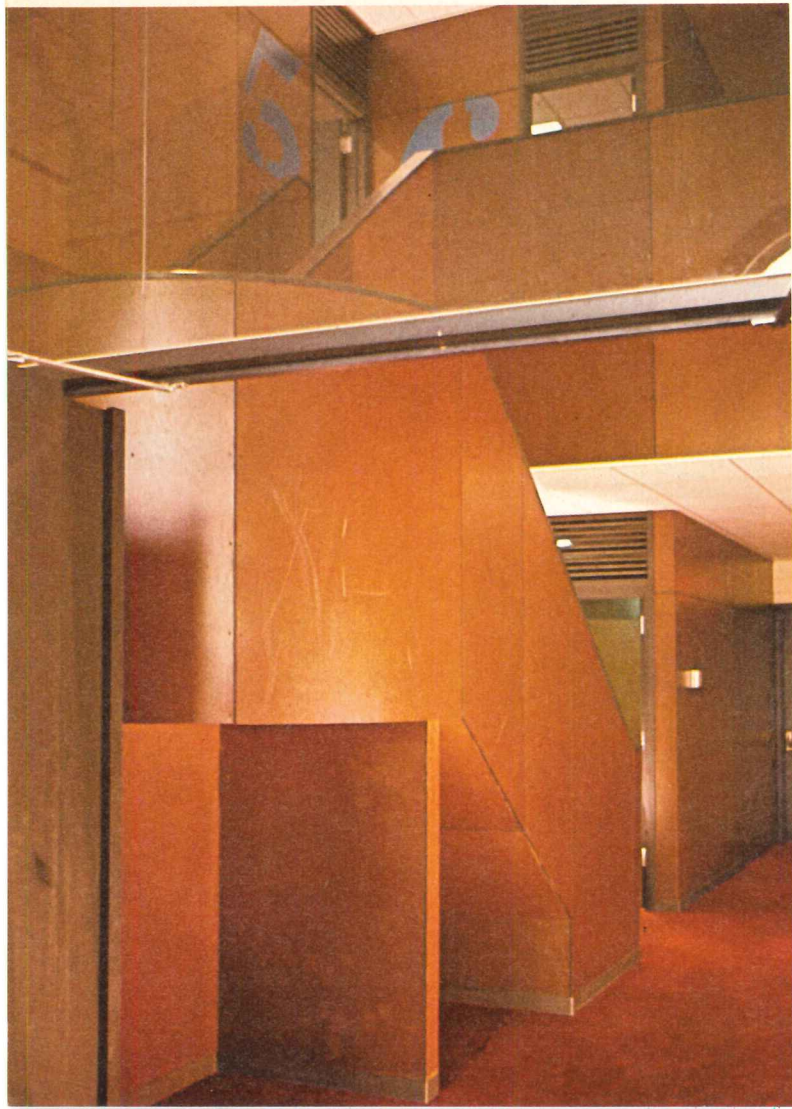
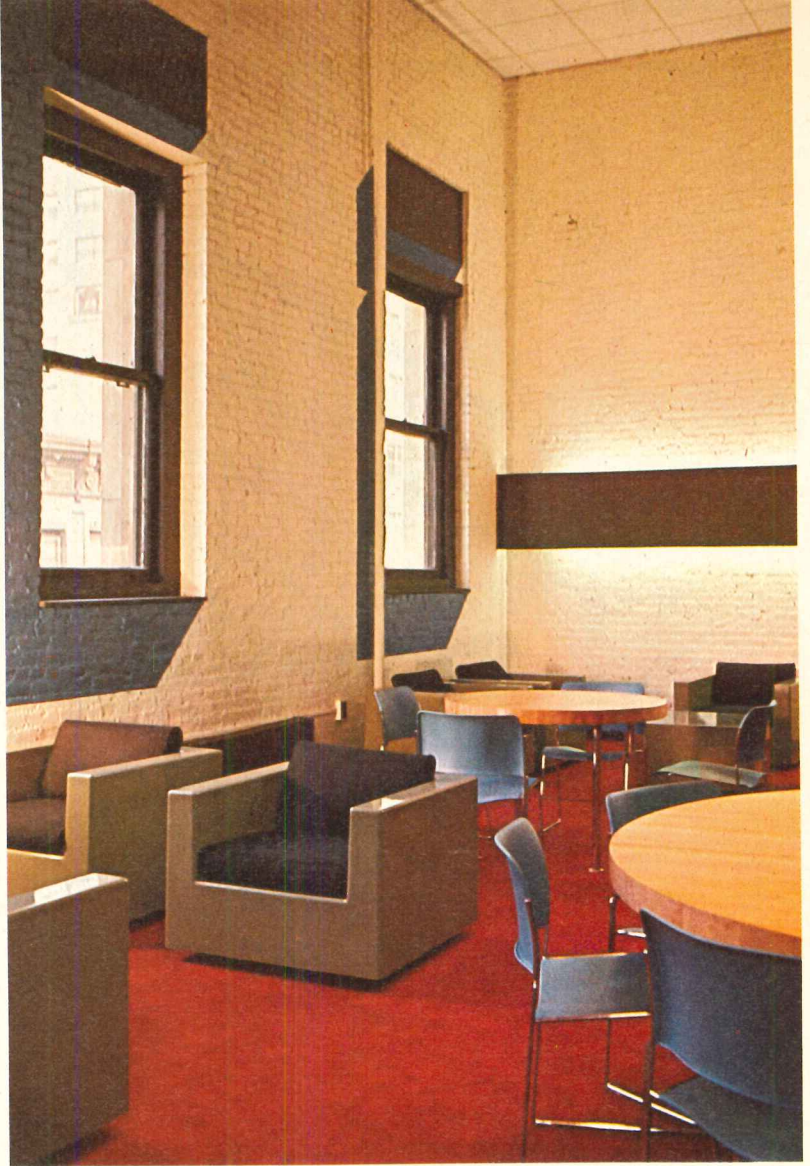
The renovation commission was received by the architects in 1968, and the project was complete in 1970; it took one year to prepare contract documents and about 18 months for construction. The original contract called for about \$400,000 in work, but the cost of the project rose to almost \$1 million through change-order additions during construction, as the fundraising drives became more successful and additional money became available for additional work.





The large meeting room on the fourth floor (right) exhibits the graphic skill and color that makes the center as a whole so successful. The three dimensionality of the windows is painted on, not real, but it is almost better this way. The stair to the fifth floor mezzanine (below) shows how the unpainted hardboard is used in conjunction with the red carpet, to achieve a remarkable feeling of richness with inexpensive, wear-resistant surfaces. The rear garden (below, right) was once the site of one of the most decrepit jails in Manhattan, torn down in the course of this remodeling at a cost of \$90,000. Now the trees are beginning to grow there, to complement the painted trees on the walls.

CLINTON YOUTH AND FAMILY CENTER, New York City. Architects: James Stewart Polshek and Associates, and Walfredo Toscanini—J.S. Polshek, project architect. Graphic design: James Stewart Polshek and Associates—David Bliss, project designer. Mechanical and electrical engineers: Benjamin & Zicherman Associates; general contractor: Dember Construction Corp.



Stan Menscher photo



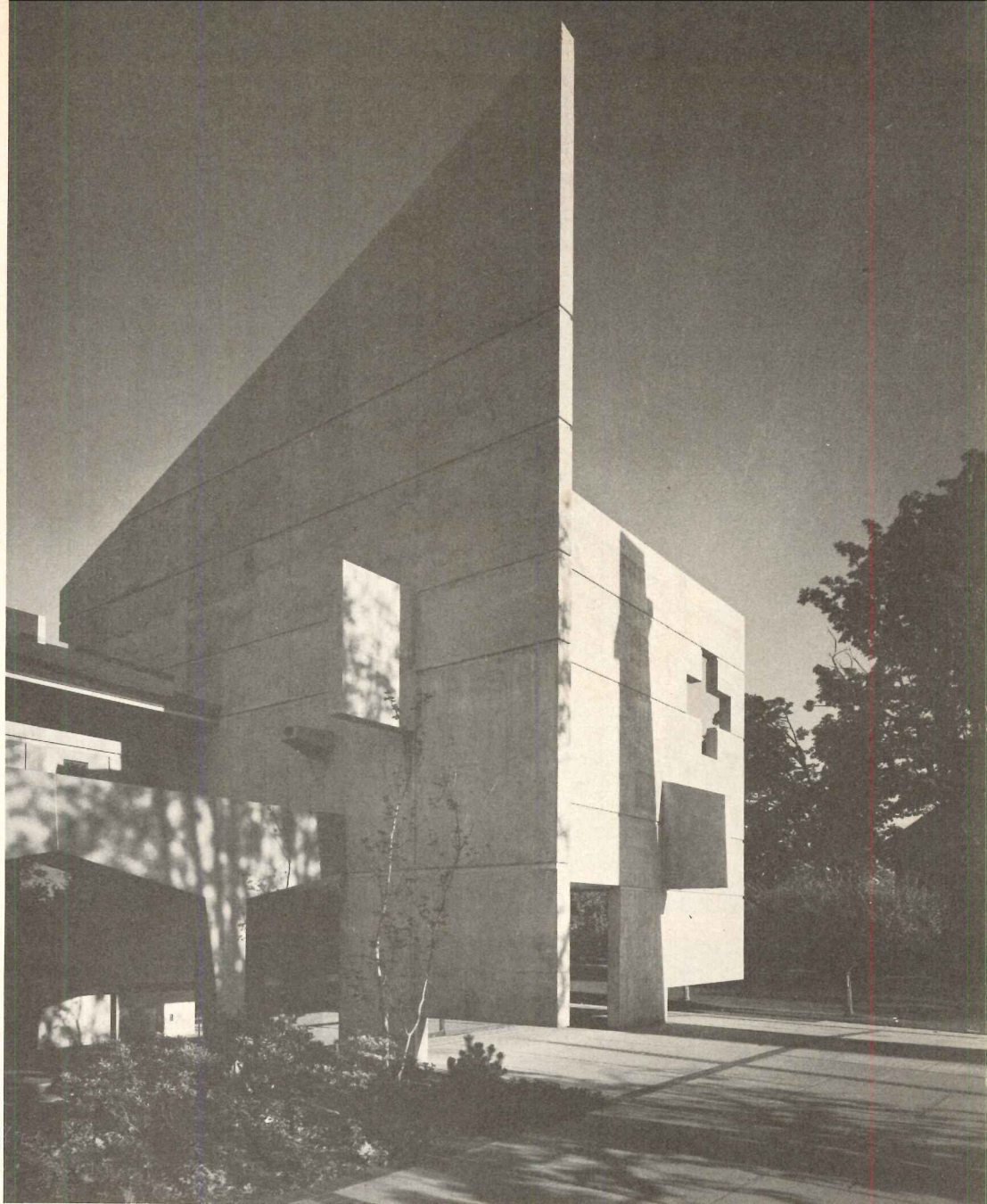
# Three Religious Buildings

*Architectural and ecclesiastical affirmation of continuing determination to meet the challenges of a changing world*

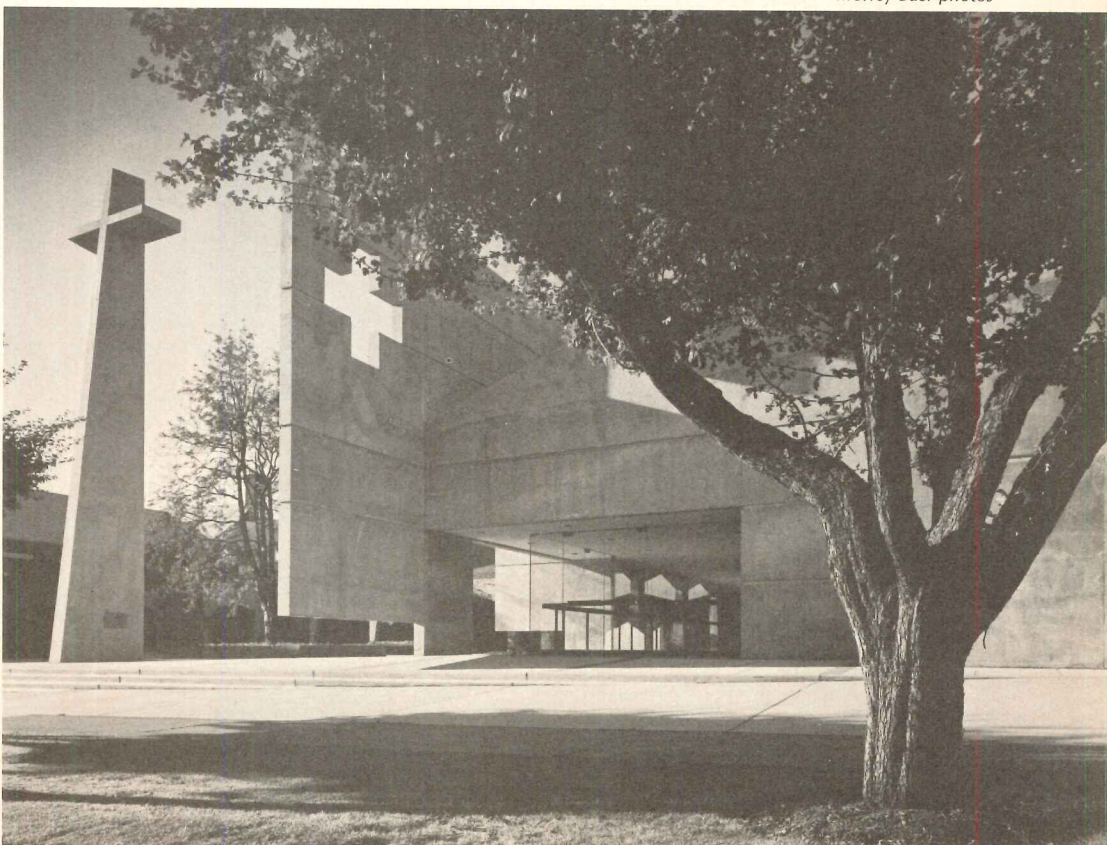
## STRONG STATEMENT INVITES ENTRANCE AND PARTICIPATION

**1** Bold and stark but in surprising harmony with an existing Tudor-style guildhall which it adjoins, Christ Episcopal Church in Tacoma, Washington, uncompromisingly states its contemporaneity in both architectural and ecclesiastical terms. The new building stands on the site of the earlier church, built in 1889, long since outgrown and outmoded, and thus completes an inviting open-sided court, formed by the other parish buildings (the guildhall and a connecting arcade behind), which is used for gatherings and for processions. Entrance to the church, from court or directly from the street, is through the glass-enclosed vestibule which offsets the massive annunciatory panel. The 45-foot cross in the court—like the church itself—is of reinforced concrete. The concrete is left unfinished throughout, its bare surface relieved only by horizontal incisions at well-studied intervals and by the forms which respond, with evident drama, to the functions of the building.

CHRIST EPISCOPAL CHURCH, Tacoma, Washington. Architect: *Paul Thiry*. Engineers: *Peter H. Hostmark and Associates*, structural; *Alexander Hargis/Claude Laws*, electrical/mechanical. Contractors: *MacDonald Building Company*.

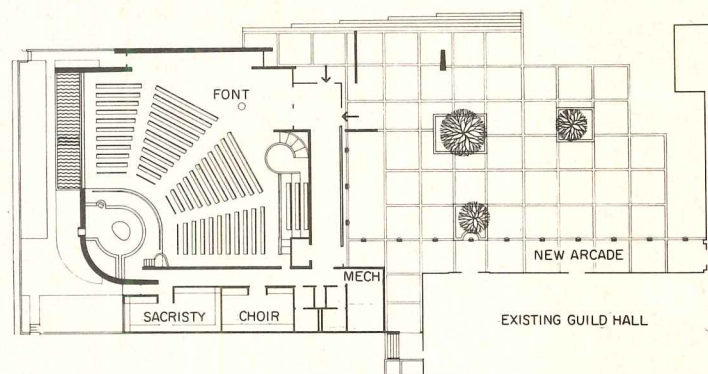
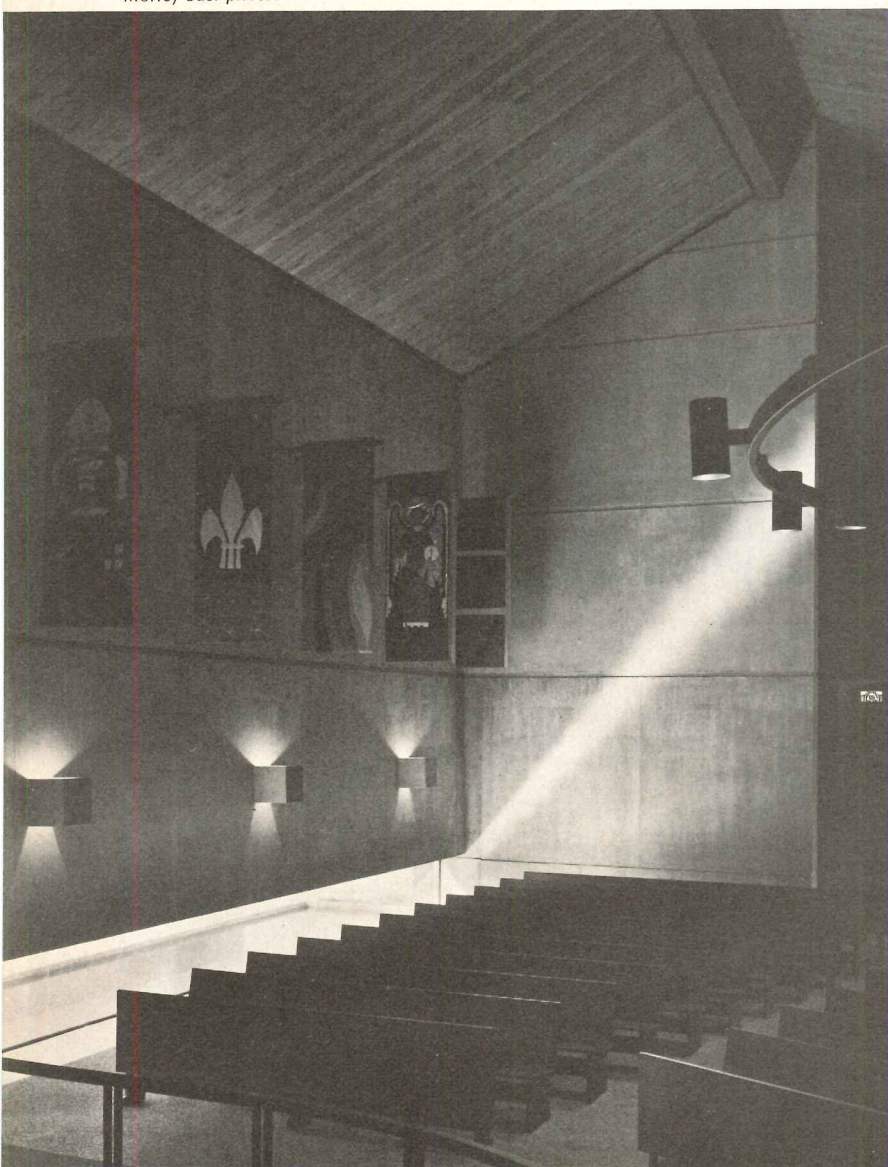


*Morley Baer photos*

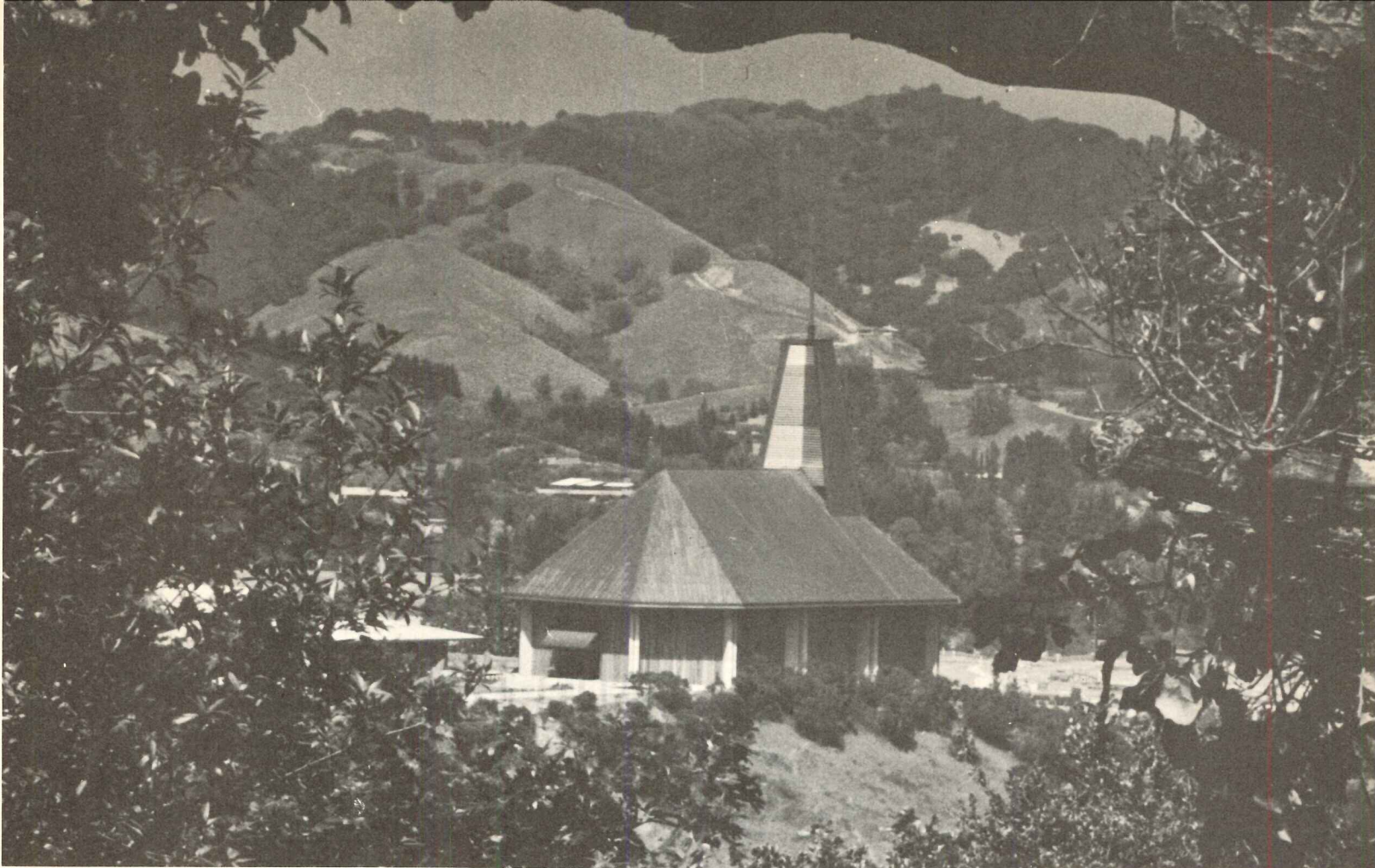




Morley Baer photos



The interior arrangement is based on the most recent ecumenical requirements, with people and priest in close proximity, and the altar standing free of the rear wall. The church seats 450 but its capacity can be expanded to seat almost 100 more. The choir is located at the rear of the church where it cannot distract, but is close to the congregation. Windows are small and filled with stained glass, so artificial illumination is an important element in the interior design. General lighting is incandescent, from spots held on a circular black iron band, and from wall sconces, also of black iron. On the west side, light is reflected from a pool outside and is diffused along the wall; a stained glass dormer window admits additional light.

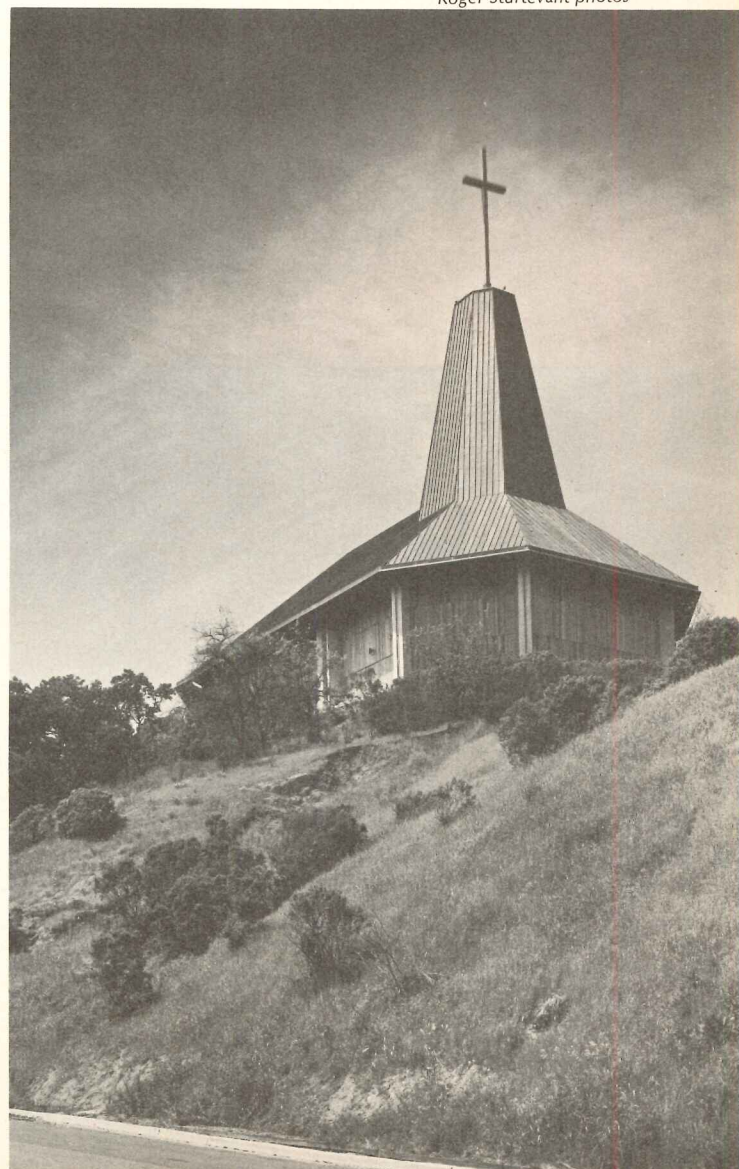
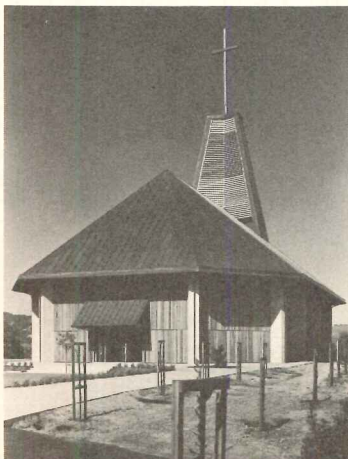
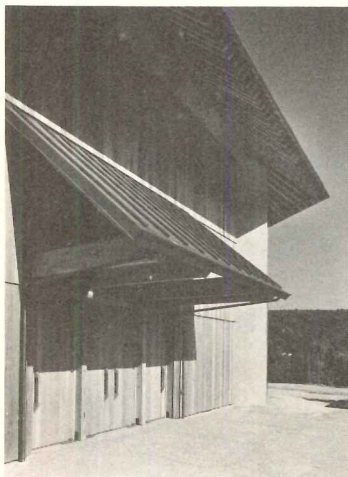


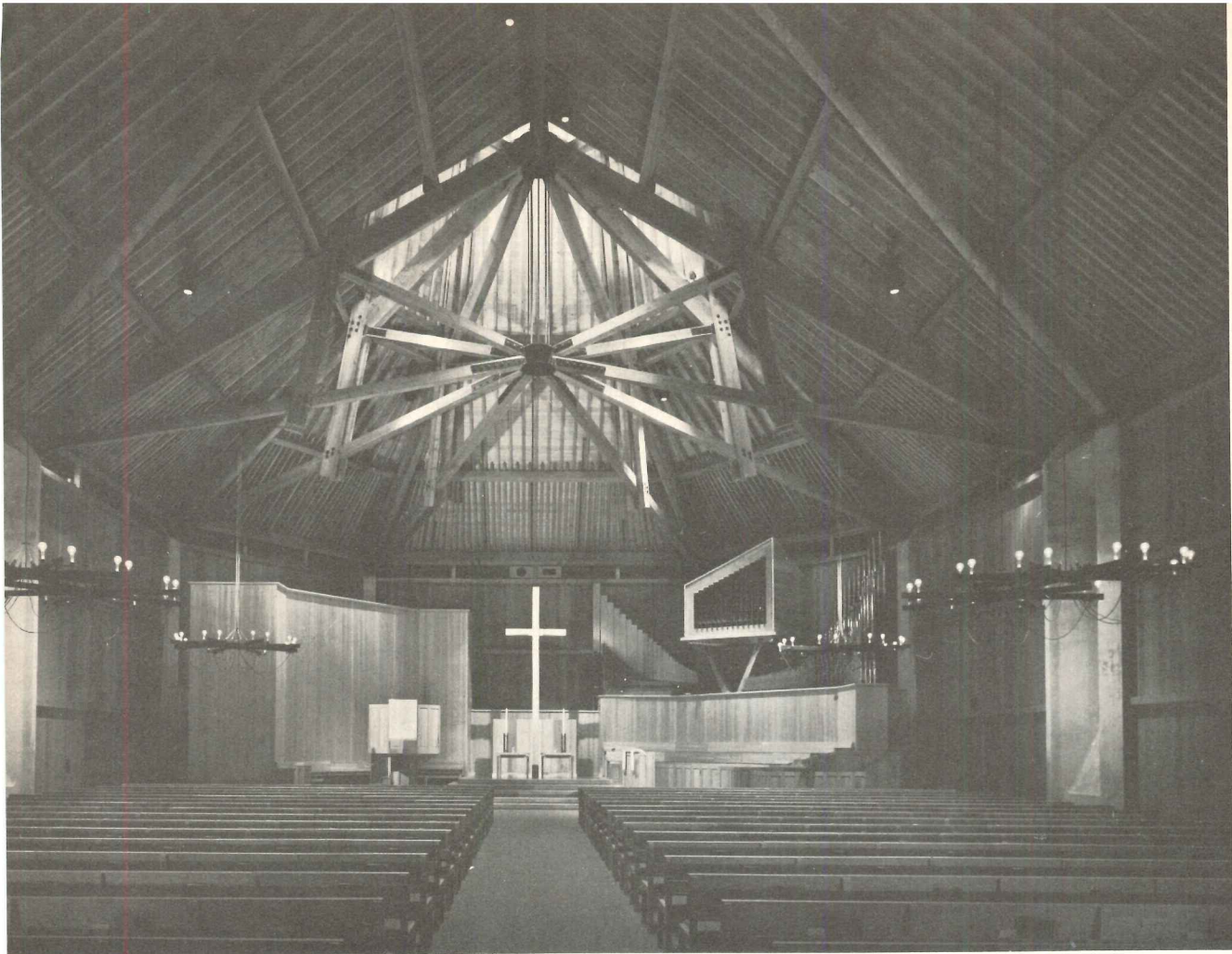
Roger Sturtevant photos

## LARGE VOLUME, CONTROLLED LIGHT FOR CONTINUED EFFECT

**2** The hilltop location called for the strong and simple form of this church, clearly announcing the nature of the building and fitting in agreeably with the beautiful landscape that is its backdrop. In form and scale the building relates to the residential community which surrounds it, but in volume it is large relative to the congregation it serves, a design approach evolved from an observation of the architects: that the impact of a large space is lasting and requires no face-lifting to renew itself. The great timber-framed roof with its many small members, the wood plank walls, and the refinement and precision of details close at hand bring the scale of the great interior space into relation with the individual. The shape functions well acoustically for both musical sound and for the spoken word.

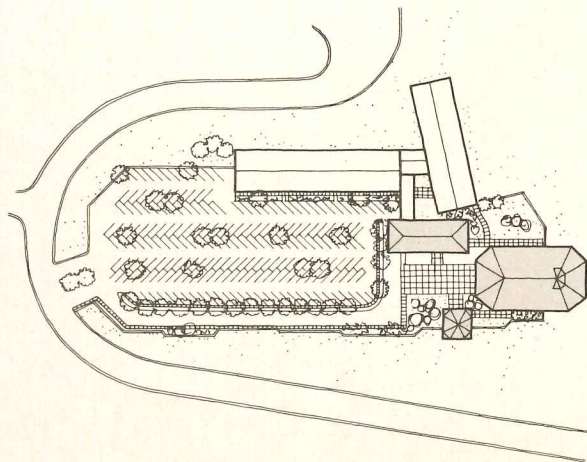
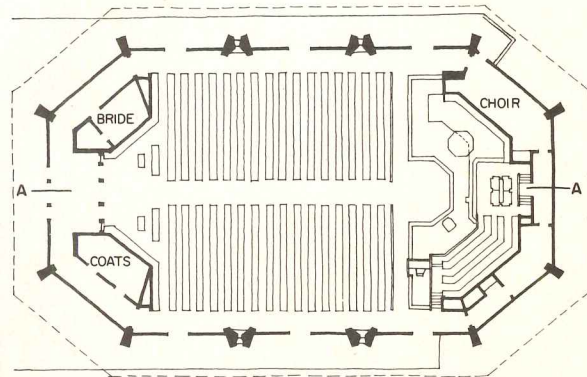
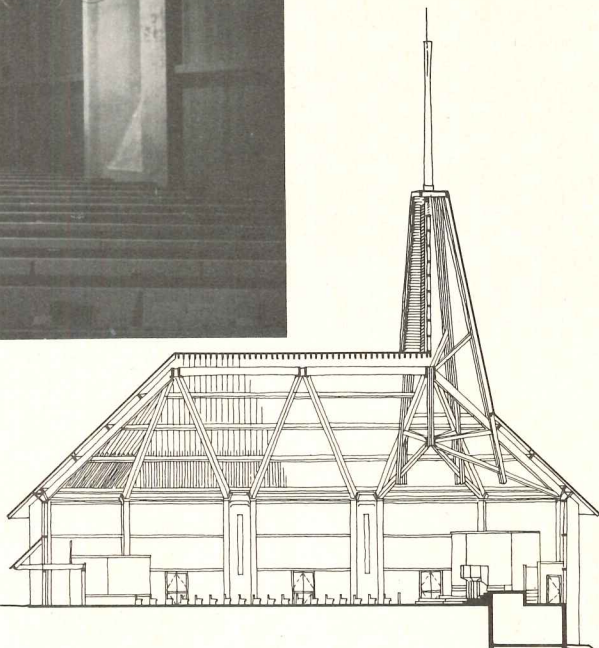
LAFAYETTE-ORINDA UNITED PRESBYTERIAN CHURCH, Lafayette, California. Architects: *Burton L. Rockwell and Richard Banwell*. Engineers: *Nicholas Forell & Associates*, structural; *Smith & Garthorne*, electrical; *Kasin, Guttman & Associates*, mechanical; *Daniel Fitzroy*, acoustical. Landscape architects: *Royston, Hanamoto, Beck & Abey*. Stained glass design: *Mark Adams*. Contractor: *C. Overaa & Co.*

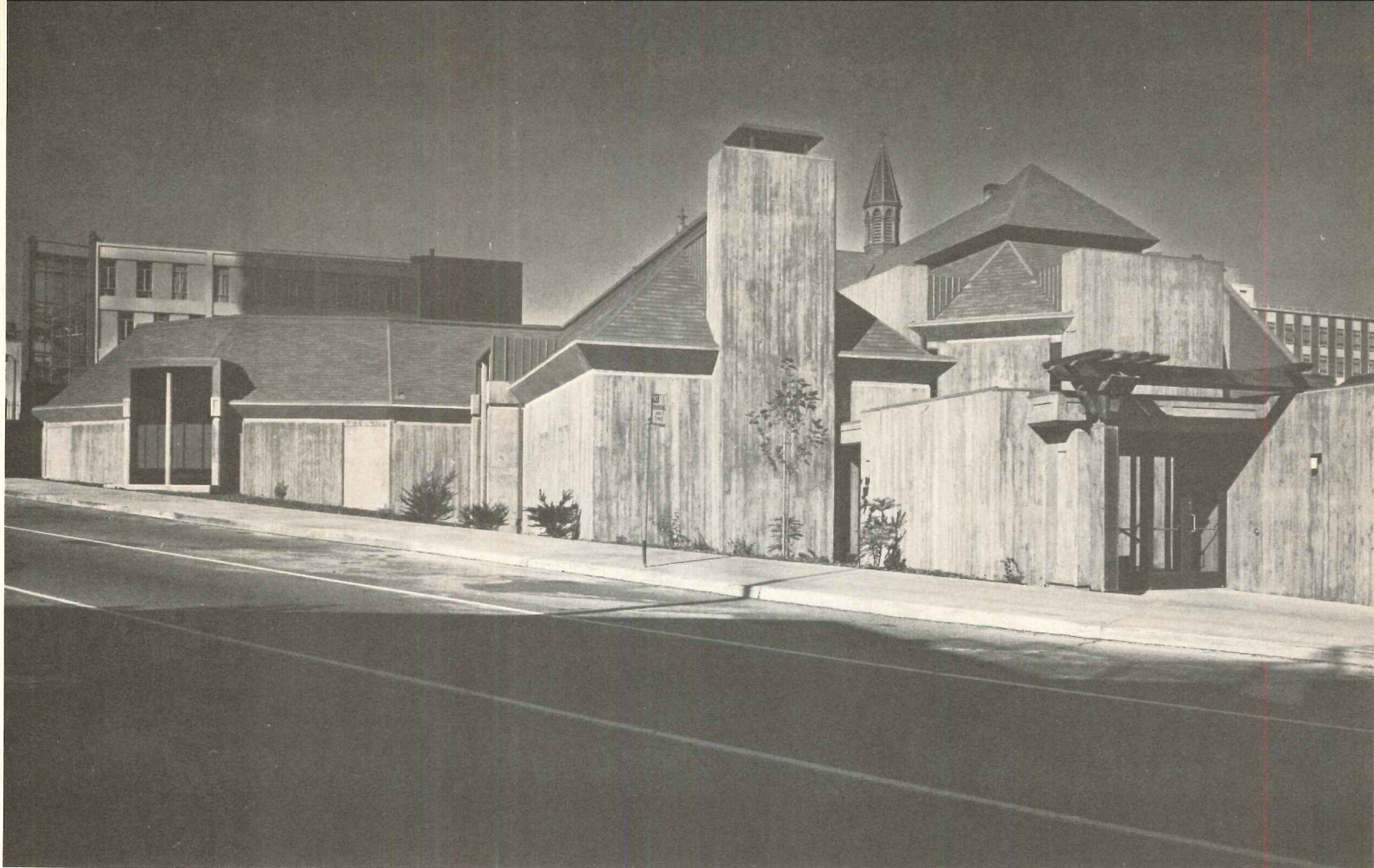




Roger Sturtevant photos

Small openings—low doors and narrow stained glass windows—emphasize the dramatic volume of the interior and the luminous quality of the chancel, where daylight pours in from the louvered window in the 38-foot high steeple. Spotlights produce the same effect at night. Organ box, raised above choir stalls, exposed pipes and chancel furniture are organized as an abstract composition, unified by light, accented by light woods.



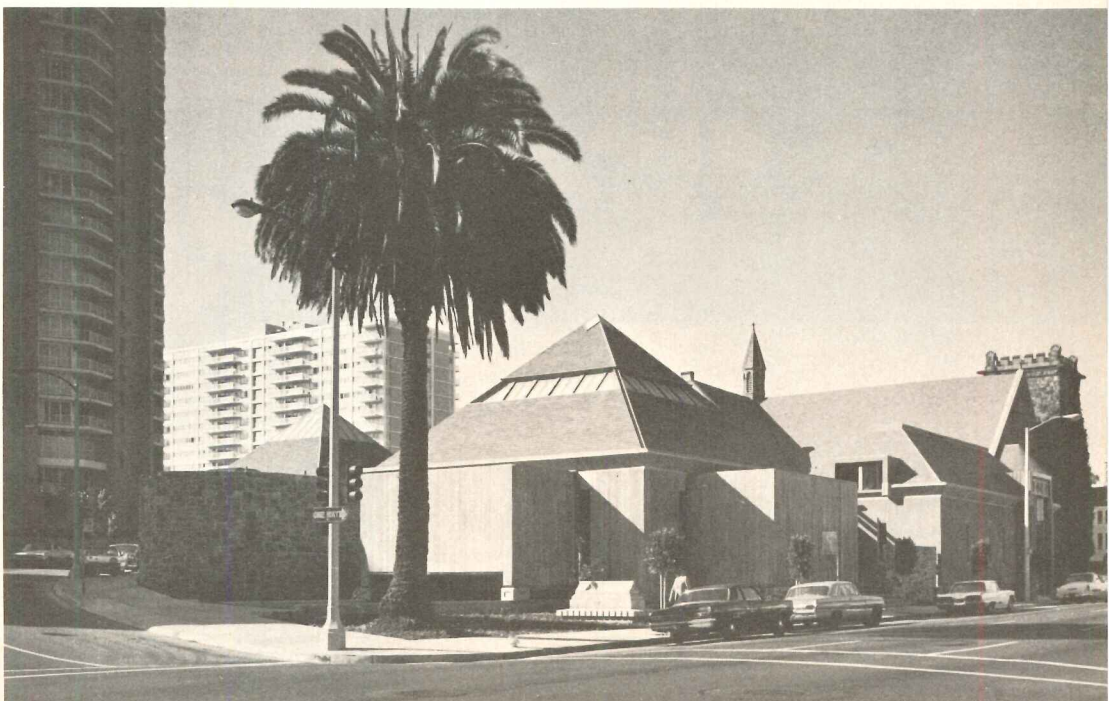
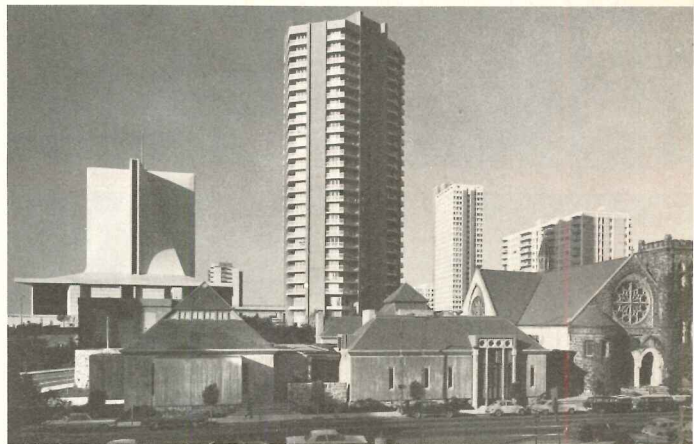


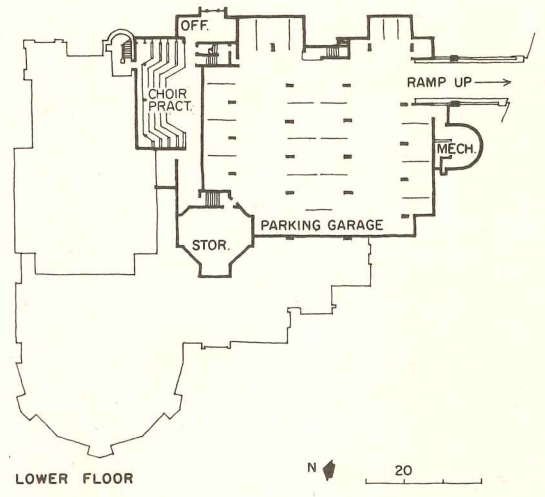
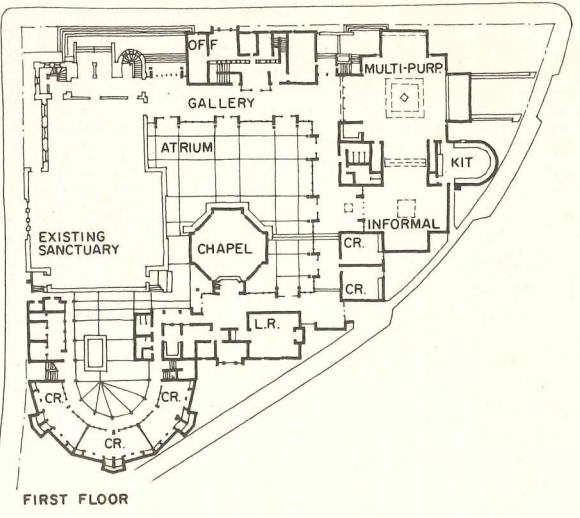
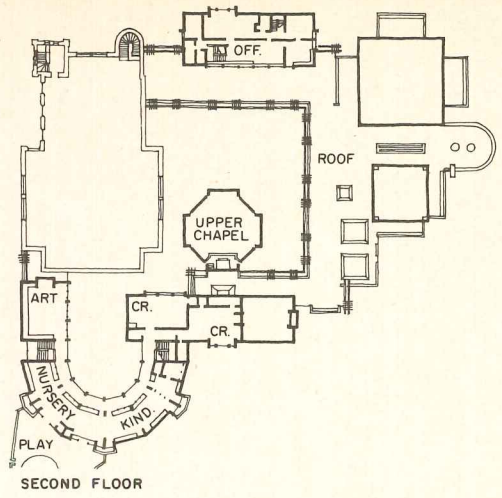
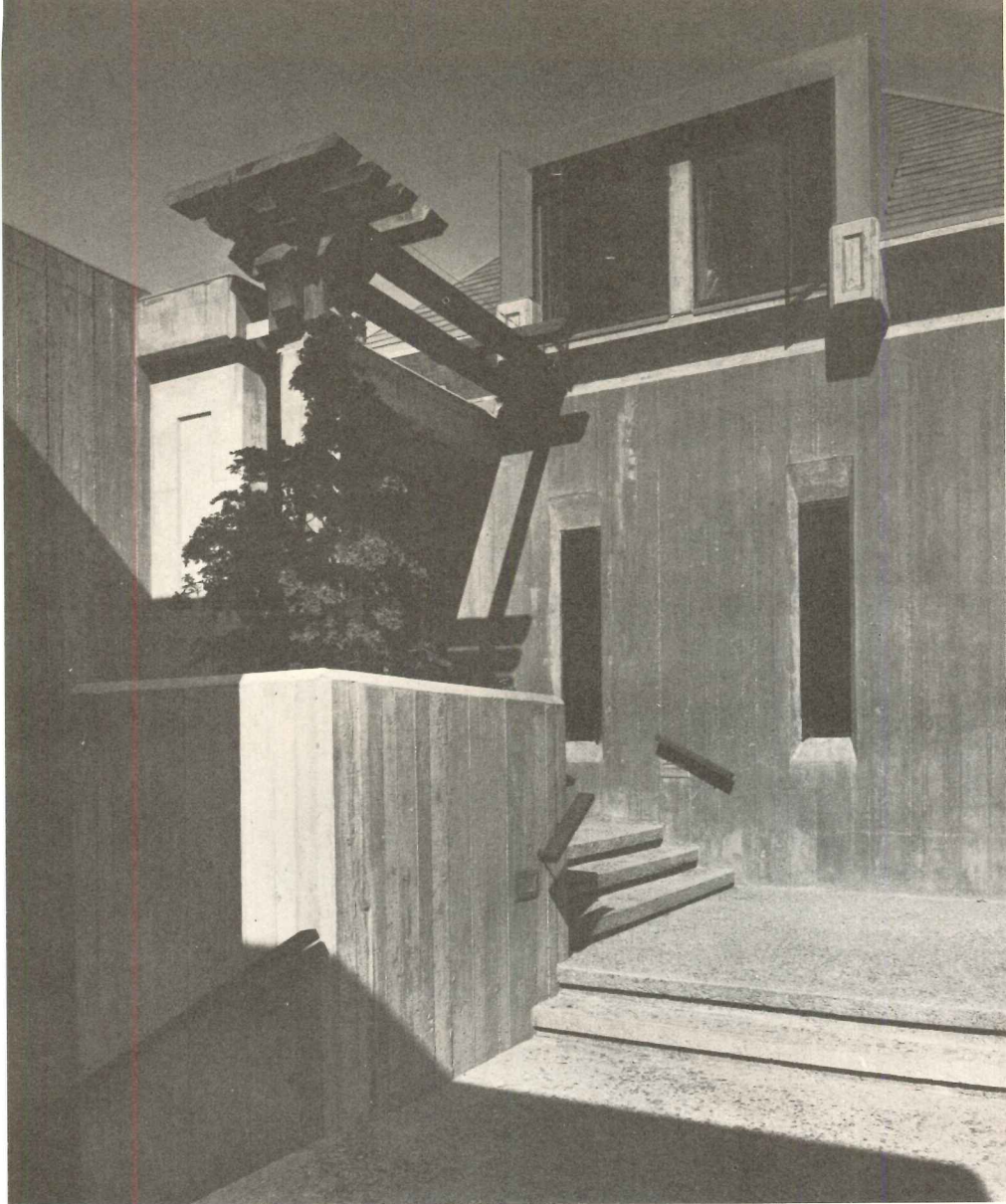
Philip Molten photos

### ADDITIONS DESIGNED TO MEET PARISH AND COMMUNITY NEEDS

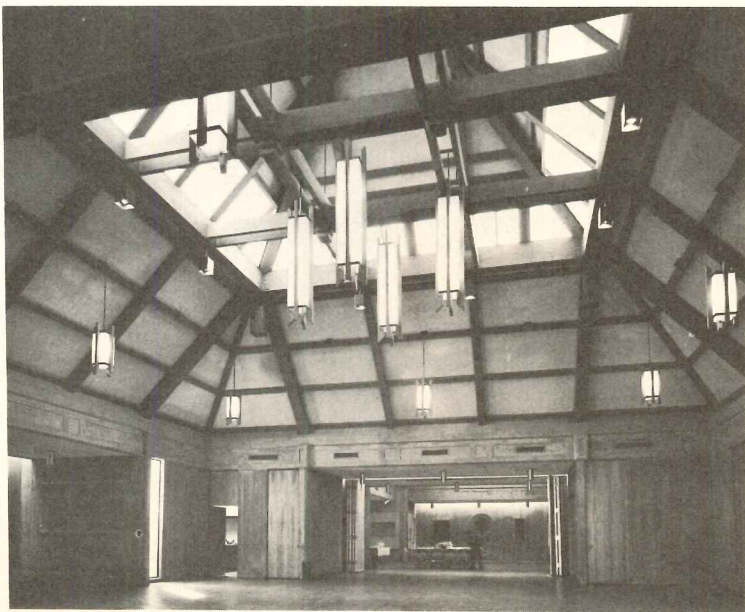
**3** Redevelopment in San Francisco's Western Addition gave the First Unitarian Church the opportunity to expand both its physical property and its program of activities within the community. The new buildings provide facilities where groups of various sizes, from 15 to 400, can meet, and these are made available for use by the community as well as by church members and organizations. There are also new church offices, a church school, an art room, a child care center, and a new chapel. The new structures are placed on the perimeter of the site, leaving a central atrium which is used, in good weather, as a social center. Daylight from the atrium floods a spacious gallery which surrounds it and which is both an exhibition area and the main circulation for the complex. The old church—built in 1889, and a survivor of the 1906 earthquake—and the new buildings achieve a remarkable harmony despite the difference in their styles and the periods they represent.

THE UNITARIAN CENTER, San Francisco, California. Architects: Callister, Payne & Rosse. Engineers: Stefan Medwadowski, structural; O'Kelly & Schoenlank, mechanical & electrical. Landscape architect: John Carmack. Contractor: Pacific Coast Builders.





The handsome rough-form concrete stairs (above) lead to nursery and kindergarten. The chapel connects by the gallery (left) with the meeting rooms and is just a few yards from the old church. The multi-purpose room (below) and adjoining informal room are the main facilities for parish social activities. Under this area is a garage for 36 cars and a choir practice room which doubles as a small arena theater.



Philip Molten photos



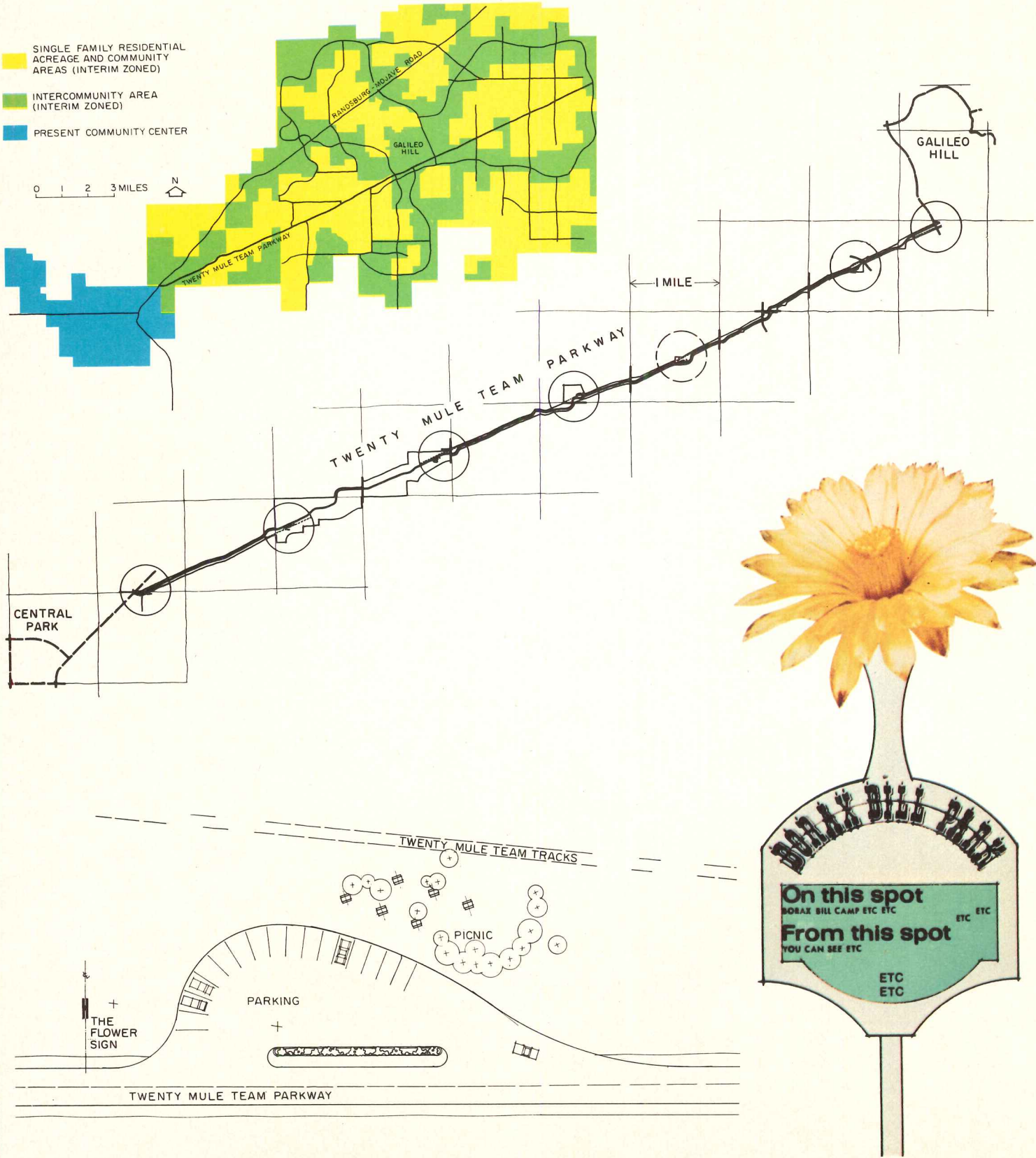
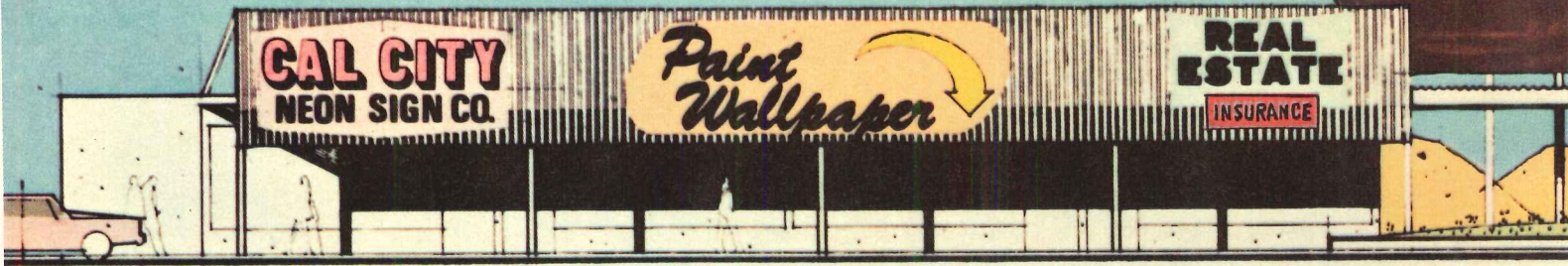
Some of the serious questions regarding modern architecture that have been raised in recent years have been generated by the growing inability of more established assumptions to explain our urban patterns. Highway strip cities are expanding, not diminishing, and architectural attitudes derived from the traditional creation of individual buildings, or from the vision of tower cities in pasture settings, don't seem to be any help either in understanding the needs that commercial strips are fulfilling, or in marshaling a stronger public vision to defeat them. Tract subdivi-

sions account for a large proportion of new housing created in the United States over the last 25 years—but the highest academic and practicing levels of the profession have had little to do with this housing. Established architectural assumptions do not explain the high ranch style house, or the Colonial American or the French Tudor with which most subdivisions are filled. "Styles" and associational details seem to be demanded by people in situations where they have an esthetic choice. Attempts to work with such impulses—to design for them and understand them—are important; this is the value of the work on these pages, by the firm of Venturi and Rauch.

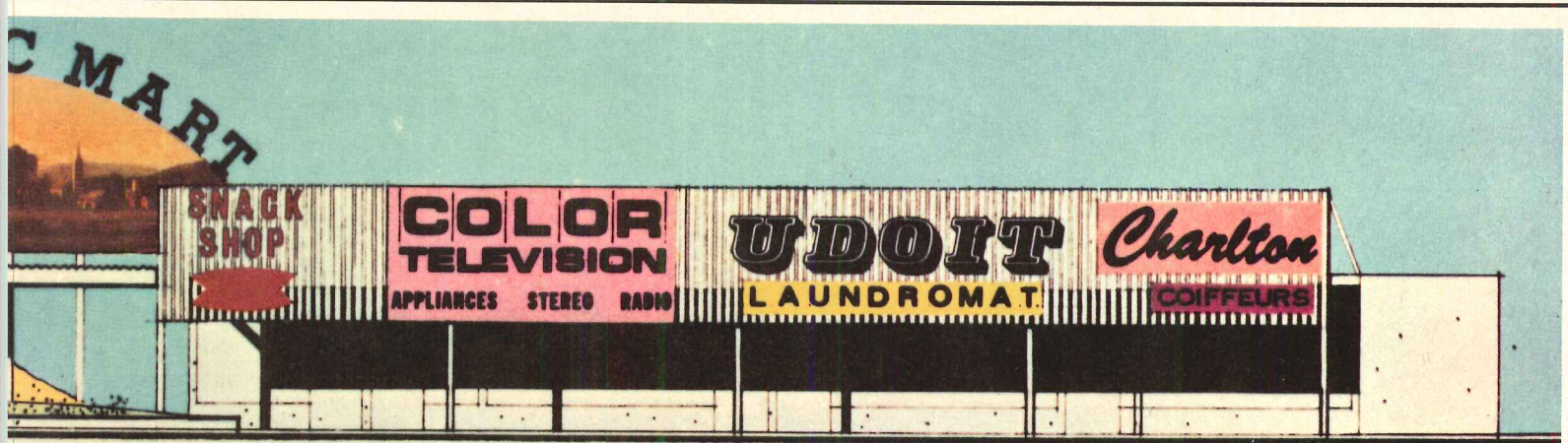
These designs are for California City (see plan, following page) which may be the world's largest subdivision, though it is called a new city and has some of those characteristics too. California City is 100,000 acres of land north and east of Los Angeles. The California architectural firm of Smith and Williams, with associate architect Peter Holdstock, city planner Simon Eisner, and landscape architect Garret Eckbo, were involved in planning the original subdivision patterns—their work began in the late 1950's when California City was conceived, and was largely completed by 1967, the date it was incorporated into the State. Organized into separate "towns" with a mixture of townhouses, detached residential sites, and twenty-acre "ranch" sites, the planned characteristics of California City are sophisticated compared with ordinary low-density housing patterns.

The firm of Venturi and Rauch has been commissioned to design the public sectors of a new city in its earliest stages of development. This work continues their controversial re-evaluation of established architectural theories.

MERBI







Today the road patterns of the plan have been bladed in, according to California law, but only a small percentage of California City has any buildings on it. The eventual capacity of the city is 750,000 people, but the present population is about 2,000, living mostly in mobile homes. There are also a shopping center, two churches, two motels, a fire station, an airport, and two recreation centers. At the same time, the majority of the land (about 65 per cent) has been sold to prospective individual home owners, or to investors who see it

as the next area of large-scale development in southern California. When landowners eventually build, the parent company and original developers of California City will have full powers of architectural review.

The existence of review powers is part of the reason Venturi and Rauch were retained. When the ownership of California City was acquired by Great Western Cities Inc. last year, the firm was brought in to further develop some of the recreational and public sections of the city, and to make future planning recommendations. Venturi and Rauch have worked mostly with the master plan patterns already there; they have recommended decisions

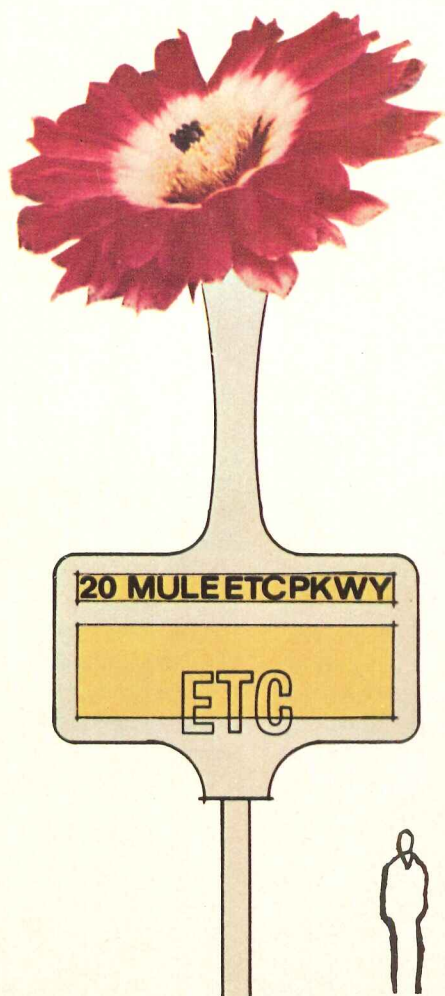
that conform with the existence of a desert ecology, and designed new images for the successful selling and future build-ings of California City.

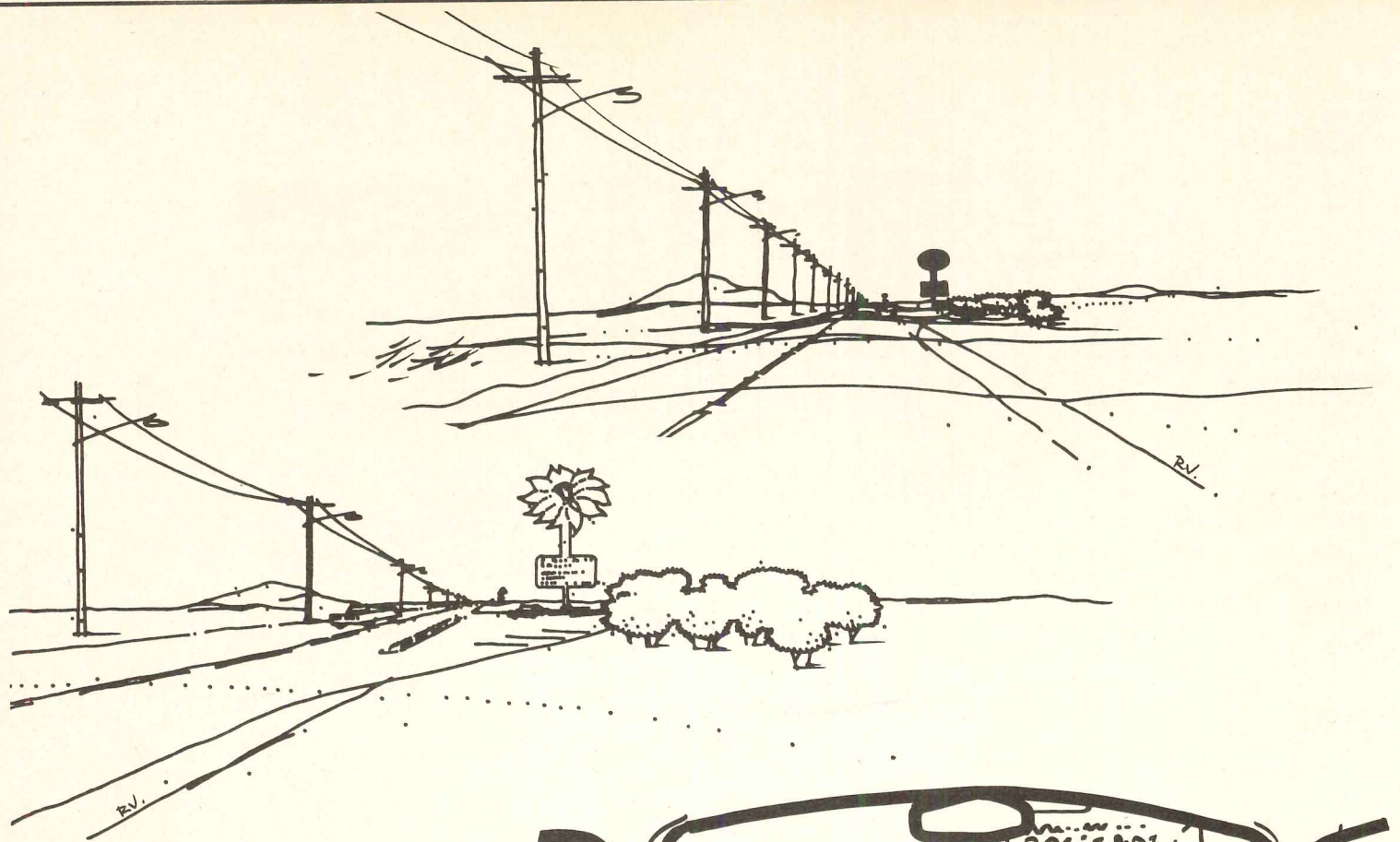
It is those "images" that are shown here; specifically a system of signs for the major road in California City, and preliminary recommendations for creating a small new commercial strip called Merbisc Mart along another major road. There is no question about Venturi and Rauch's enthusiasm for this commission: "Our philosophy has been to try to 'let what wants to happen, happen'—that is, to work with, rather than against, the economic forces, if at all possible. California City's desert location appeals to the pioneer in people and its population, judging from their houses and landscaping, are individualists and not the smart young urbanites who flock to the well-manicured new towns. Planned as it is, California City can afford to keep house prices down."

**The Merbisc Mart:** A possible roadside elevation for the Merbisc Mart is shown above. (Merbisc is an acronym coined by California City developers,

standing for Most Extraordinary Recreation Bargain in Southern California.) This commercial shopping strip will be small at first, with the possibility of its being expanded later, as the community grows. The established convention of parking in front and services behind is the basis for the plan, and the roadside facade is pure sign; the shops are to be conventionally constructed, with a high lattice in front supporting the individual store signs. Variety is to be encouraged in these signs, and what is shown is a prediction rather than a design. Each of the two first wings of the mart are angled toward the center, focusing both on the eventual gateway to a new mall beyond, and on the large billboard sign over the space, to be built immediately. Venturi uses the billboard as an associational, sentimental device. It will be a copy of a rural scene called "New England Summer" recalling the images of trees and lakes that many Americans, no matter where they are from, tend to associate with "hometown."

**Twenty Mule Team Parkway:** The existing principal roadway in California City is Twenty Mule Team Parkway. It runs adjacent to the early path by which borax was hauled out of the desert by mule wagon, and it directly connects the present settled area of town with the vast stretches of subdivided property and bladed roads around Borax Hill, one of the few natural landrises in the city. The system of painted flower signs shown here are meant to be placed along Twenty Mule Team Parkway at the locations circled on the map at left, in conjunction with landscaped turnoffs for cars, a plan of which is shown at the lower left. The signs are needed





to mark stopping points along the Parkway, and will be used by salesmen when they are showing prospective land buyers or home builders the city. They are cue stops for the salesmen and informative to people seeing California City for the first time. Twenty Mule Team Parkway crosses each new state section division of land at right angles to the section line (see roadway map) according to California law, so the diagonal road has a series of curves and directional changes that Venturi and Rauch have used for locating the stops. Of the brightly painted flower signs themselves, Venturi says: "We know that to hold people's attention these signs must look beautiful and therefore must not resemble billboards—since people don't find billboards beautiful. Their shape and content must be 'uncommercial'. We chose desert flowers as our theme, partly because flowers are regarded as beautiful (they are also uncontroversial), and partly to reinforce our own aim to push desert gardening to save the ecology: We felt too that these flowers should be painted realistically and non-abstractly to make them beauti-

ful to the eyes of their beholder". Each sign echoes the standard format of signs on the more familiar Las Vegas Strip, with the "high reader" or flower visible from a long distance, and capable of attracting attention quickly, and a "low reader" for detailed information, capable of being read by a person seated in the back of a car, as the sketches above suggest.

Venturi and Rauch are not manipulating sentimental images indiscriminately without making value judgments about them. They have de-emphasized certain kinds of associative forms with several other recommendations about California City, when those forms seemed at odds with the desert. For example, they have strongly advised against an overabundant use of grass in public spaces, and they hope people can be persuaded *not* to "reproduce" New England in their yards, with the usual grass and

shrubs, since lawns would demand lots of watering and could alter the relative humidity and ecological balance of the land. Rather they are attempting to foster desert gardens of native cactus, and local rock arrangements for landscaping. They did not recommend expanding the two miles of roses that now exist down the median strip of the main road into town, all subsidized by the developers. But in a city that is mostly new graded roads, and sparsely built, they recognize the need for the symbols of "beauty" and social security that such flower beds imply.

The visual content of these flower beds—and similar forms—is mostly symbolic; related to the establishment of moods through associational recall.

Accepting this forces a careful analysis of the complex visual information and devices by which we "read" an existing city or building, as Venturi and Rauch have been doing. It is this non-judgmental evaluation and transmutation of American visual imagery that makes their work important to study.

—Robert Jensen

CALIFORNIA CITY, Kern County, California. Architects and urban designers for Great Western Cities, Inc.: Venturi and Rauch; partner-in-charge of urban planning, Denise Scott-Brown. Owners and developers: Great Western Cities Inc.

# Low-rise Office Buildings

Although the economics of a small office building project is an inescapable determinant of its actualization, the design of the building has increasingly assumed importance, and recently at a more accelerated rate than formerly. Whether speculative or corporate in origin, the small office building must return a dollar value over a period of years, and the developer or owner has come to realize, to a far greater degree than before, that good design is the basic ingredient for this continued economic health.

As a building type, the small office building has always had a special interest for the architect, first because its scope is well within the capabilities of any office, large or small, and second because of the challenge to find the particular expression which will best represent the client, if corporate, or that will best attract tenants if it is a speculative project. Despite the thousands of small office buildings that have been built, the special requirements of each project present opportunities for imaginative handling of known factors and for inclusion of new ideas. How to achieve the flexibility of tenant use in a speculative building, for instance, is a constant challenge; so is the handling of parking. If few truly inventive solutions appear, there are nevertheless dozens of innovative approaches used which prove effective within their context.

That the small business building will be an increasingly frequent building type in the next few years is apparent from statistics gathered in a survey of business plans for new plants and equipment, conducted by McGraw-Hill Publications Company, which shows that business will spend this year four per cent more for its plants and equipment than it did last year, and that over the next three years, its expenditures for new plants and equipment will increase every year. Some of this returning confidence will manifest itself in new small office buildings as well as in industrial and manufacturing plants.

The trends in small office building design, location and facility will become increasingly evident as business reassesses its needs. The cost of the downtown business location may well preclude further construction of the small building in that district, but this will only mean that new kinds of sites, within reach of downtown but outside its expensive real estate, will be found, often spurring the rehabilitation of a whole area. The suburban site, however, with its lower property cost, greater space for parking, for expansion, and for ancillary needs such as training programs, will become more and more important. Furthermore, the size and complexity of office building groups in suburban locations will increase. For specific corporate reasons, the in-town site, outside the central business district, will be a continuing reality, but of less significance than the suburban or industrial park location.

The eight projects which follow cover a variety of business needs. In location they are divided between in-town sites and suburban or industrial park sites. Some are speculative, a number are corporate headquarters with the particular requirement for corporate identification. They vary in size as they vary in materials, in client program, in concept and in architectural expression.

—*Elisabeth K. Thompson*

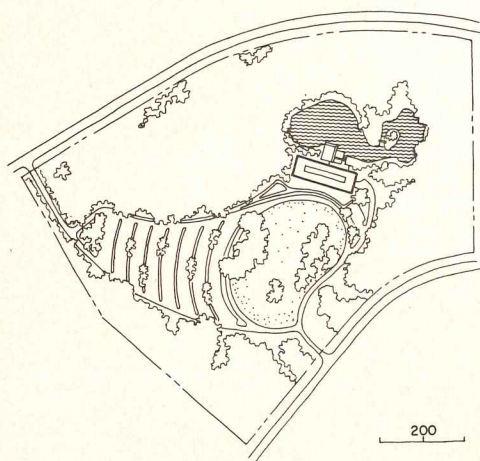


## WOODED SITE FOR HEADQUARTERS OFFICE

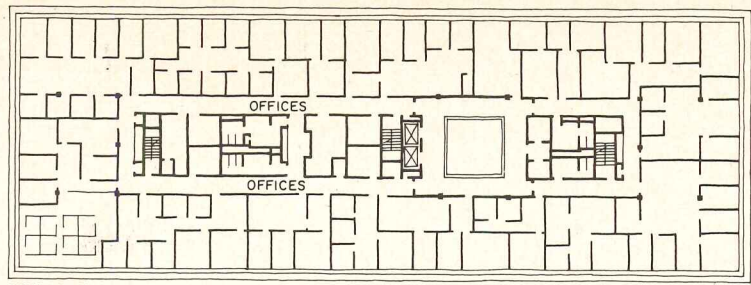
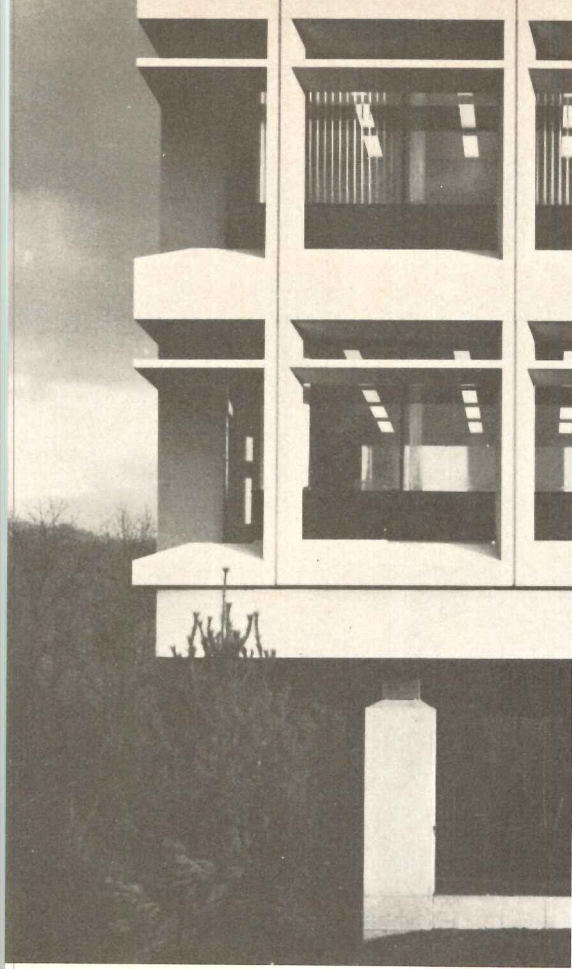
A sensitive use of the site and a strong consideration for employee conditions as well as a distinctive and handsome corporate image are the major features of this administrative headquarters for a paper company.

Located on a 50-acre wooded site with a 2-acre lake, the building takes advantage of pleasant outlooks, both distant and nearby, from the offices on the upper floors and from the cafeteria cantilevered over the lake. The building is basically organized as three areas: general offices, on the upper three floors; offices related to visitors, on the entry level; and support facilities, in a podium which, because of the sloping site, is above grade on one side only. Offices, designed on a 5- by 5-foot module, are on the

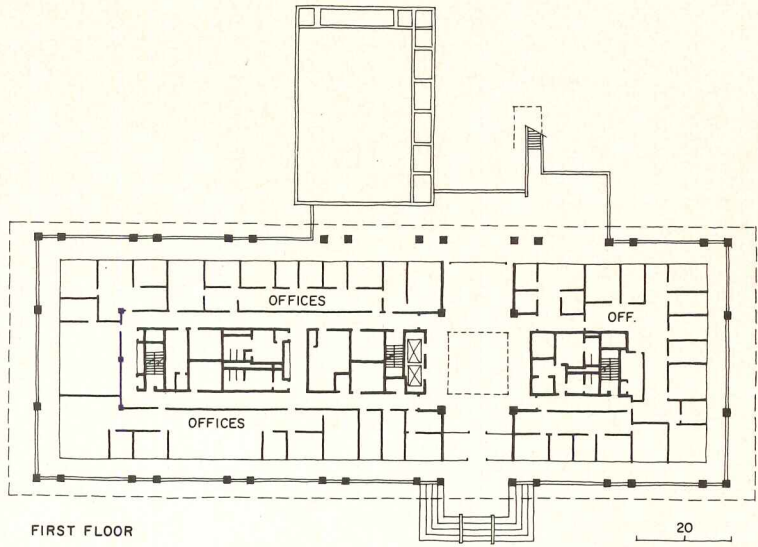
building perimeter, with the central space on each floor used for conference rooms and other general uses. An enclosed well 40 feet square, runs through the upper three floors, visually unifying them and providing a focal point along corridors. The cafeteria is an exceptionally handsome room with its location over the lake, its views to woods and water, and its dramatic broad entrance steps. Separation from the rest of the building gives employees a complete change of environment at lunch-time. Con-



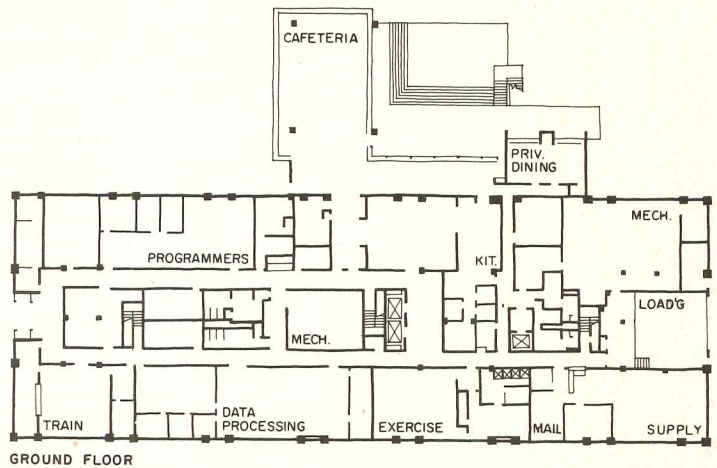
Alexandre Georges photos



SECOND FLOOR



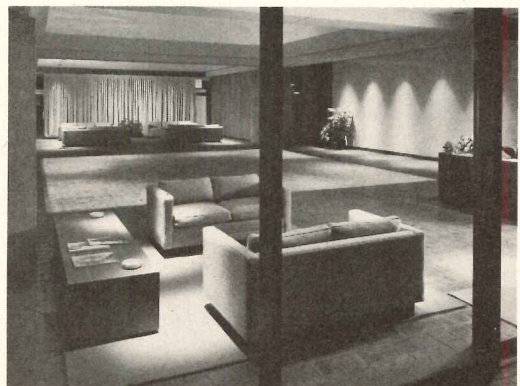
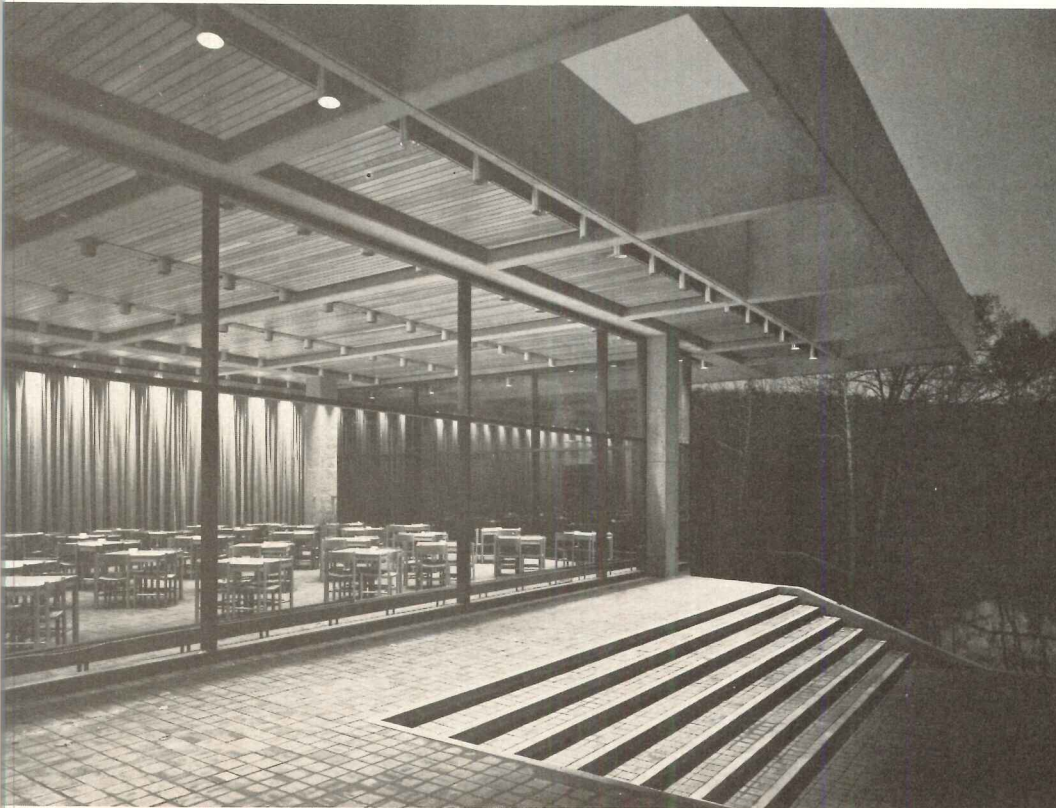
FIRST FLOOR

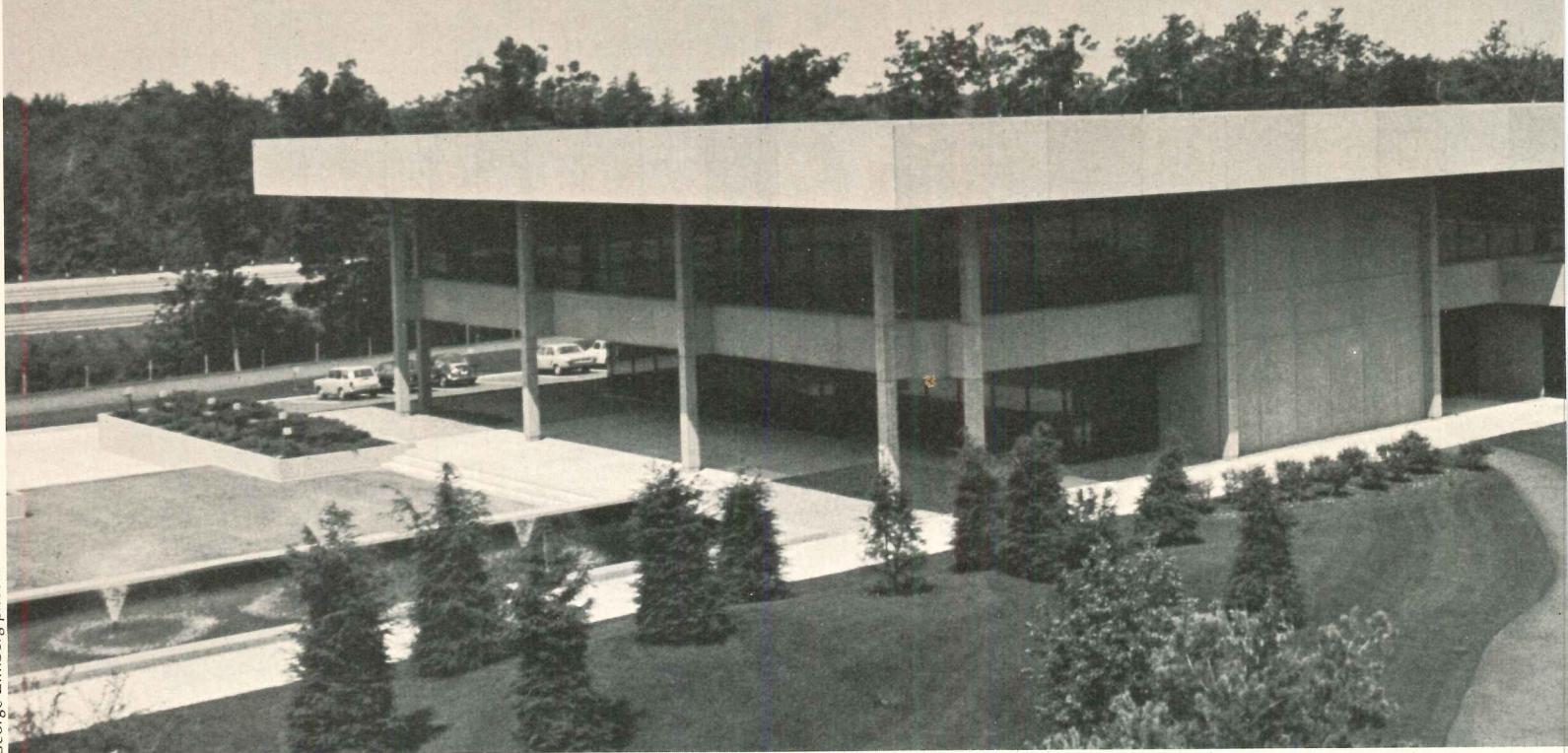


GROUND FLOOR

struction is poured-in-place concrete to the second floor, steel frame with concrete pre-cast sunshades on the upper three floors.

CORPORATE HEADQUARTERS, UNION CAMP CORPORATION, Wayne, New Jersey. Architects: Schofield & Colgan; Robert H. Schofield, partner in charge; Lindley M.F. Hoffman, project architect. Engineers: Zorab Vosganian & Associates, structural; The Frank A. McBride Company, mechanical/electrical; Douglas Baker, lighting consultant. Interiors: Schofield & Colgan. Landscape architects: A.E. Bye Associates. Contractor: Albert P. Schmidt Construction Company.





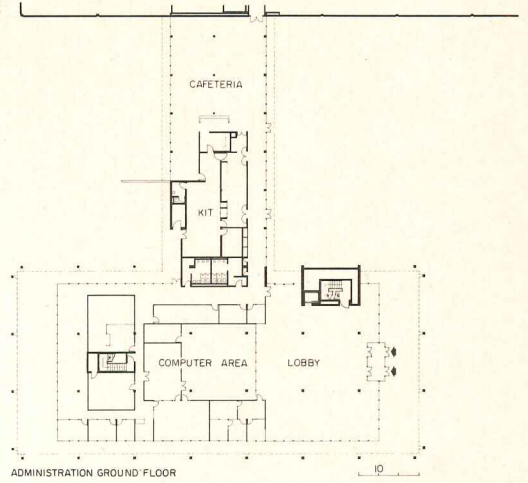
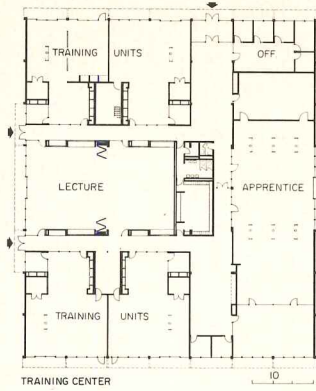
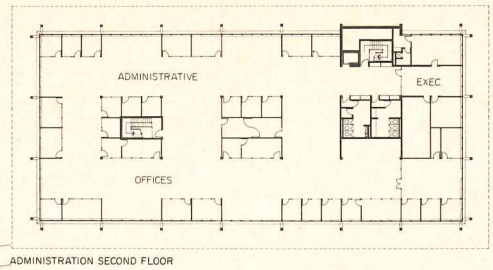
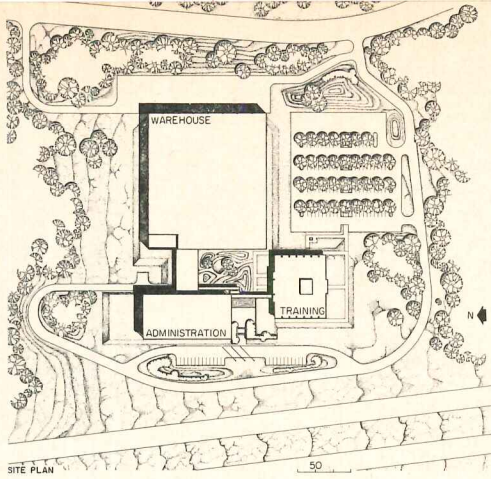
## SUBURBAN OFFICE AND TRAINING CENTER

The multiple needs of this regional distribution agency for foreign cars dictated a location in the suburbs where space for a complex of buildings would be both available and economic. The site chosen—on Interstate 93, north of and just outside Boston—is large enough for the three-building complex needed for this headquarters facility.

The slight variation in grade from front to back allows for interesting siting and landscaping. Three buildings make up the complex: an administration building with offices for executive and staff and a computer center; a training center where both mechanics and executives are trained, with emphasis on a special program for hard core unemployables; and a warehouse from which all northeastern dealers are serviced. Connecting the administration and training buildings is a glass-enclosed cafeteria with outlooks to

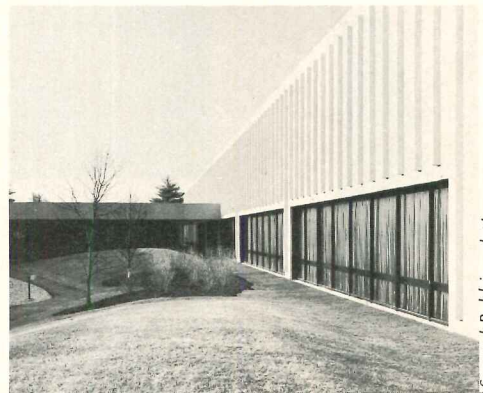
an interior landscaped court and to the wooded hills behind the site. The buildings are steel-framed, for economy, speed of erection and facility of future expansion. Precast concrete exposed aggregate panels, in a dark earth tone, are used for finish walls and spandrels except on the warehouse where precast panels are F-shaped. Cost control was essential: simplicity of form and materials made it possible to complete the buildings economically and to project through them the corporate image of qual-





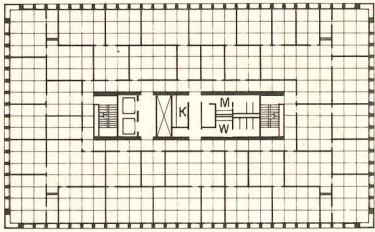
ity and attention to detail. Construction was phased to provide warehouse first, then of- fices, and finally training center.

VOLKSWAGEN NORTHEASTERN DISTRIBUTOR, INC., Wilmington, Massachusetts. Architects: *Drum- mey Rosane Anderson Inc.*—*Richard Rosane, part- ner in charge; Kevin O'Marah, architect in charge; Robert Miller, project manager; Parviz Towfighi, project designer; Leon Safrata, for Volkswagen.* Engineers: *Patti Associates, structural; Goldberg Zoino, foundation; Greenleaf Associates, mech- anical/electrical.* Landscape architect: *Jeffry Gilbert.* Contractor: *Volpe Construction Company.*

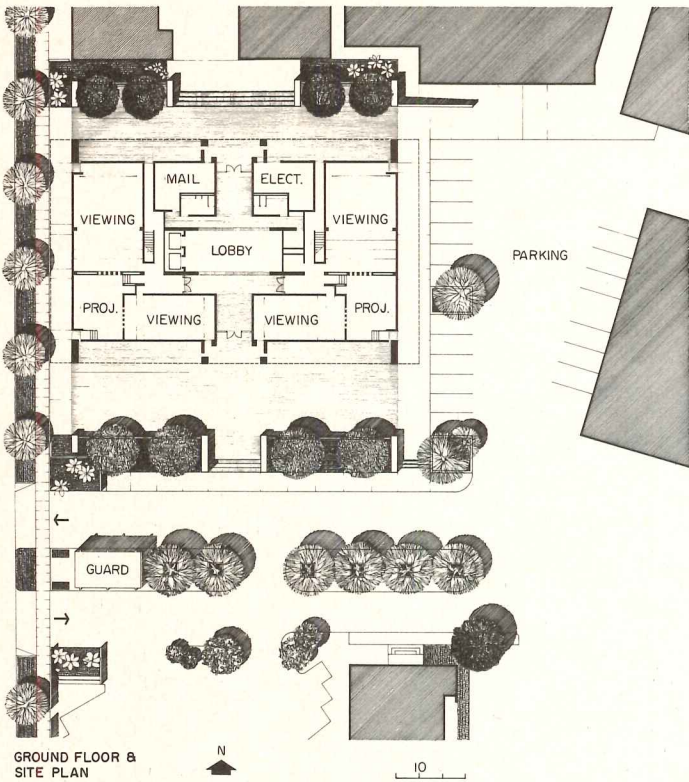


Samuel Robbins photos

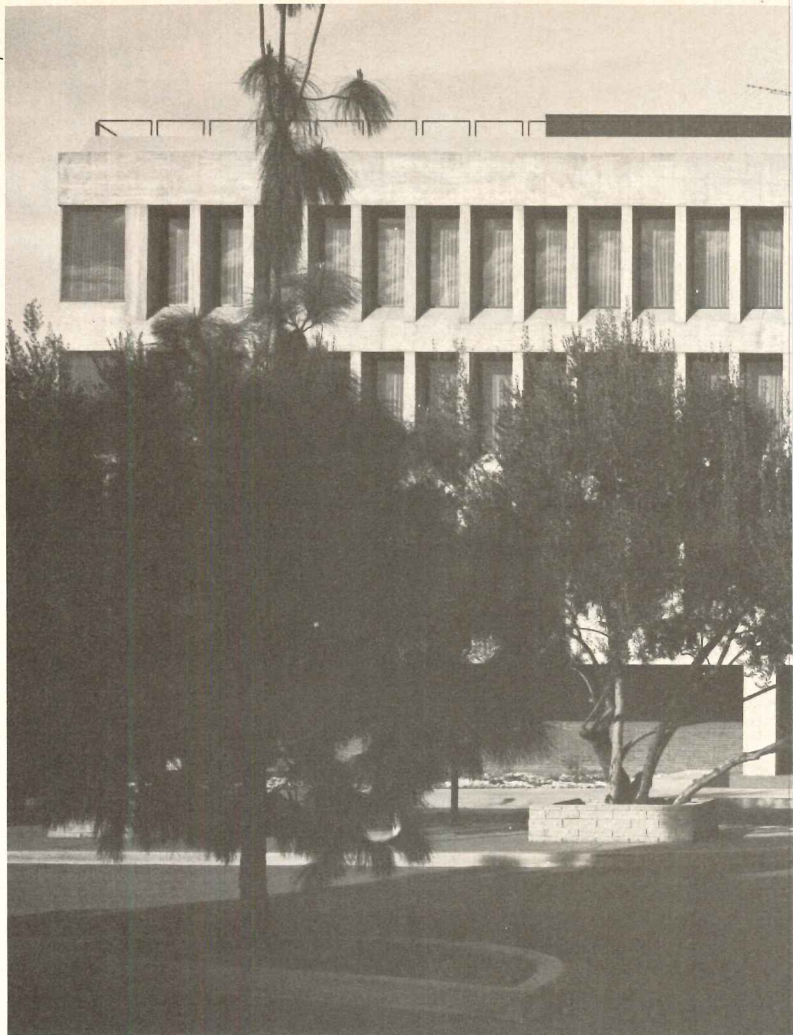




TYPICAL FLOOR

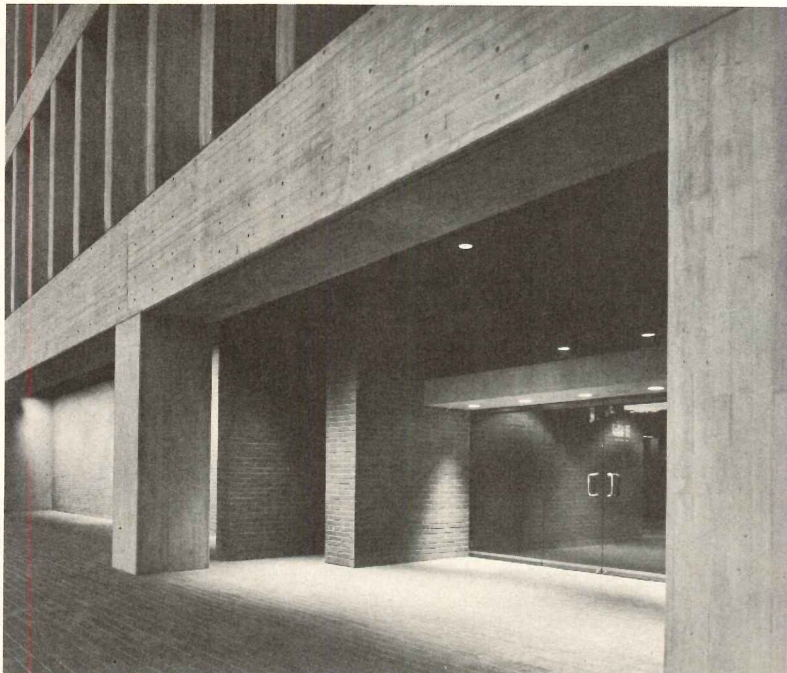


GROUND FLOOR & SITE PLAN

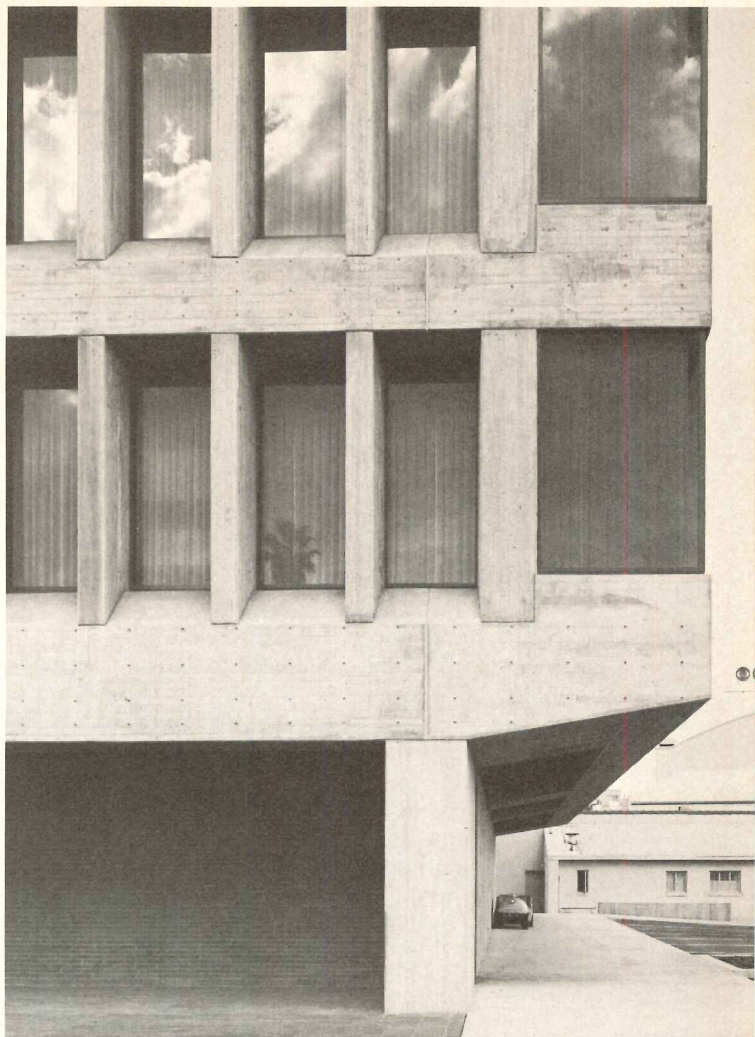


### EXECUTIVE OFFICES FOR STUDIO

The new executive office building for the Columbia Broadcasting System is the company's first step in a program of redeveloping its recently acquired property, the old Republic Studios lot in North Hollywood, now called CBS Studio Center. This is CBS'



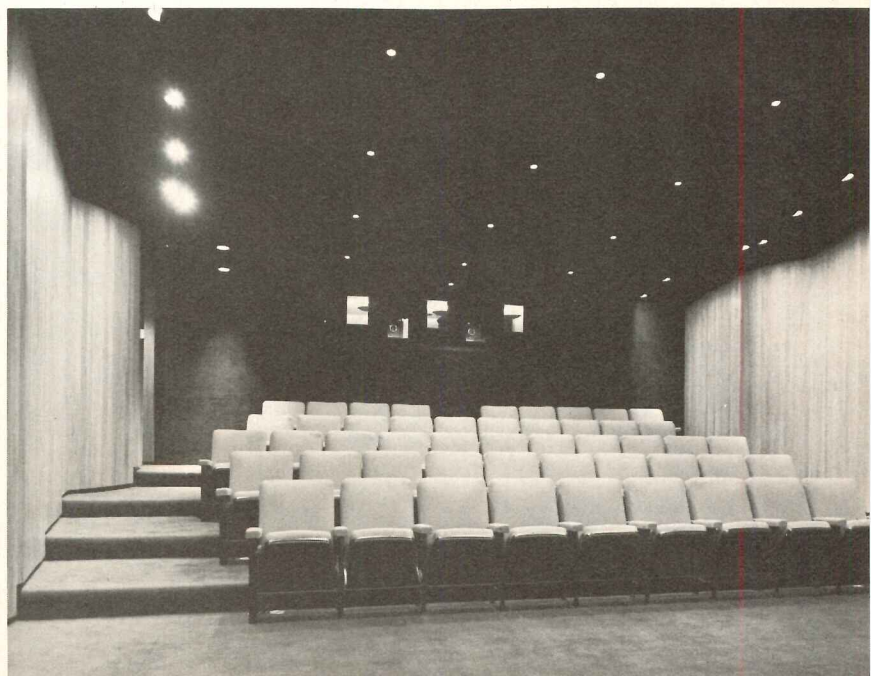


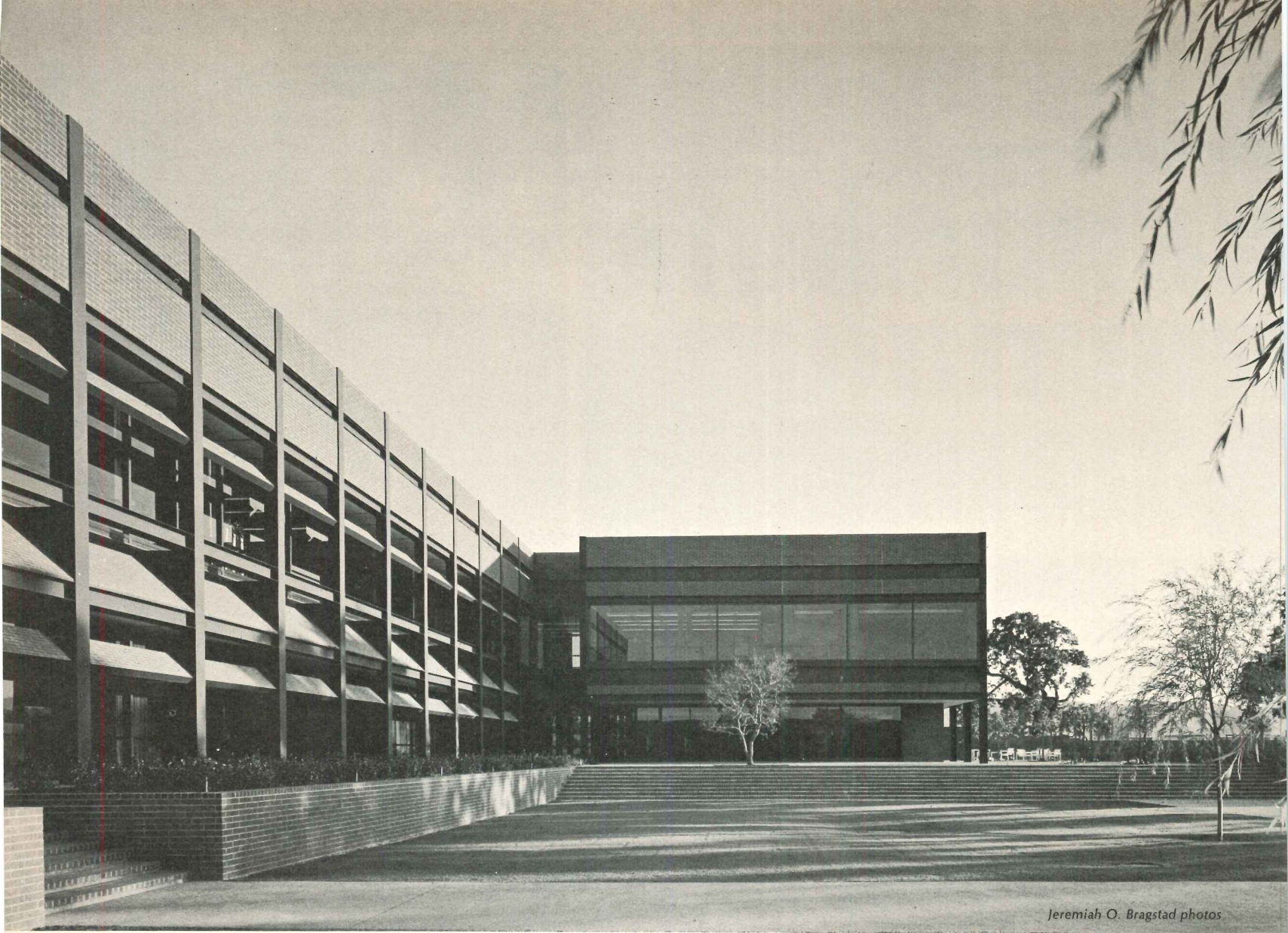


major West Coast production facility for both television programming and motion picture production—hence the two pairs of viewing theaters included in the new building. The building's restraint and precision of detail, and the landscaped plazas around it, set criteria of order and dignity for further development of the site, presently crowded with the randomly placed stucco and frame relics of Hollywood's movie-making heyday. Natural concrete and gray-brown brick, the two exterior mate-

rials, were selected for their pleasant correlation with the Mediterranean style of existing nearby structures. The subtle change at the corners from the recessed window pattern used elsewhere on all facades is refreshing: the glass is brought out almost flush with the building face and the corner is expressed with extreme simplicity. To heighten this variation, the last mullion is widened and the beam is visually thickened. The same brick and concrete are used in the lobby, with rough-sawn redwood ceilings.

EXECUTIVE OFFICE BUILDING, CBS STUDIO CENTER, North Hollywood, California. Architects: *Daniel L. Dworsky & Associates—Daniel L. Dworsky, project designer; Bruce Sellery, project architect.* Engineers: *Erkel, Greenfield & Associates, structural; LeRoy Crandall & Associates, foundation; Meckler and Associates, mechanical; Hellman, Silver & Lober, electrical; Paul S. Veneklasen & Associates, acoustical consultant.* Interiors: *William Brown, staff architect CBS.* Landscape architects: *Cornell, Bridgers & Troller.* Cost consultant: *Halvorsen & Dingman.* Contractor: *Morley Construction Company.*





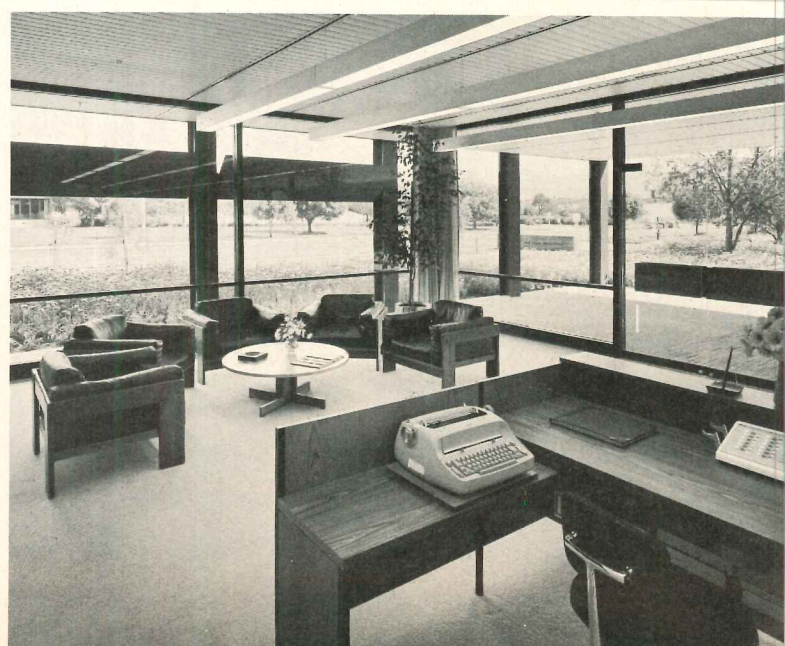
*Jeremiah O. Bragstad photos*

## **BUILT DURING DESIGN FOR EARLY USE**

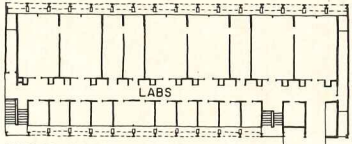
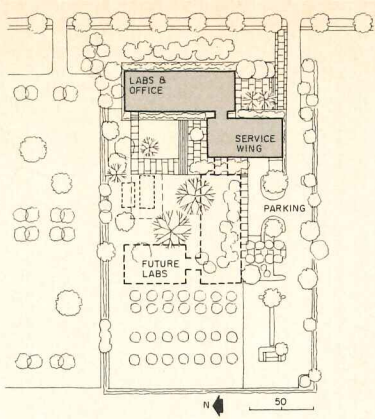
This handsome building is both corporate headquarters for a new pharmaceutical company and laboratory facility for the esoteric research it conducts on methods

for introducing medicines into the human system. Because of an exceedingly tight schedule—the company required offices within 12 months, laboratories within 15 months—design and construction were of necessity overlapping processes. To accomplish this complex operation, costs, time and possibility for flexibility in design completion during construction were meticulously analyzed on a systems basis. A rigid long-span steel frame on a module appropriate for both office and laboratory space

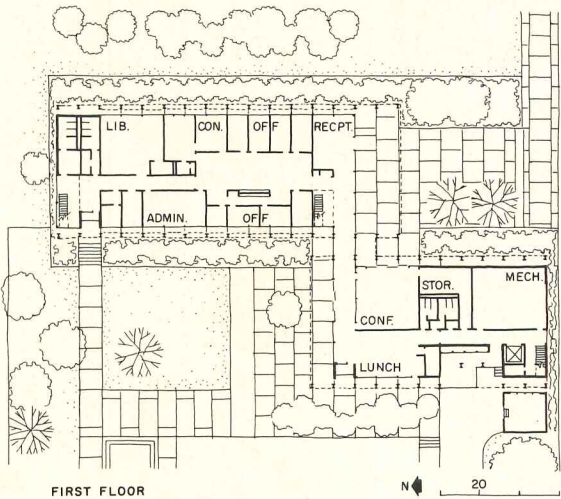
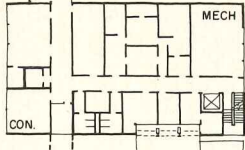
suited the urgent situation (major elements of the frame were erected in six days) and could be designed, bid and contracted first, while foundations and in-fill walls (on which contracts were next awarded) and finish were in design. The steel frame, clearly expressed on the exterior, is offset by the warm color of brick veneer over precast concrete infill panels, and by the unusual sunshades of the same brick veneer which protect large glass areas on the east and west sides of the building. On these



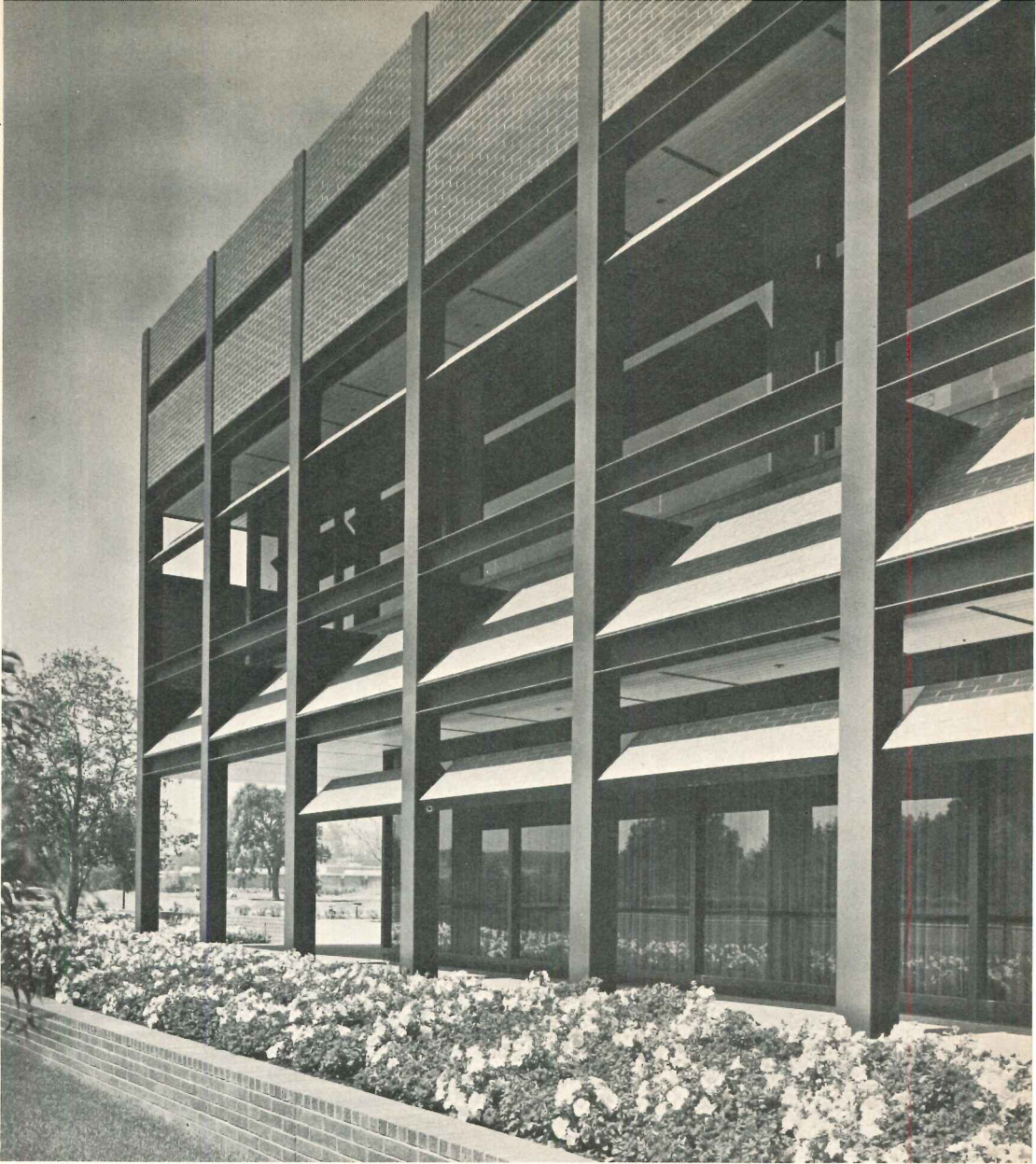
Robert Brandeis photo



SECOND FLOOR

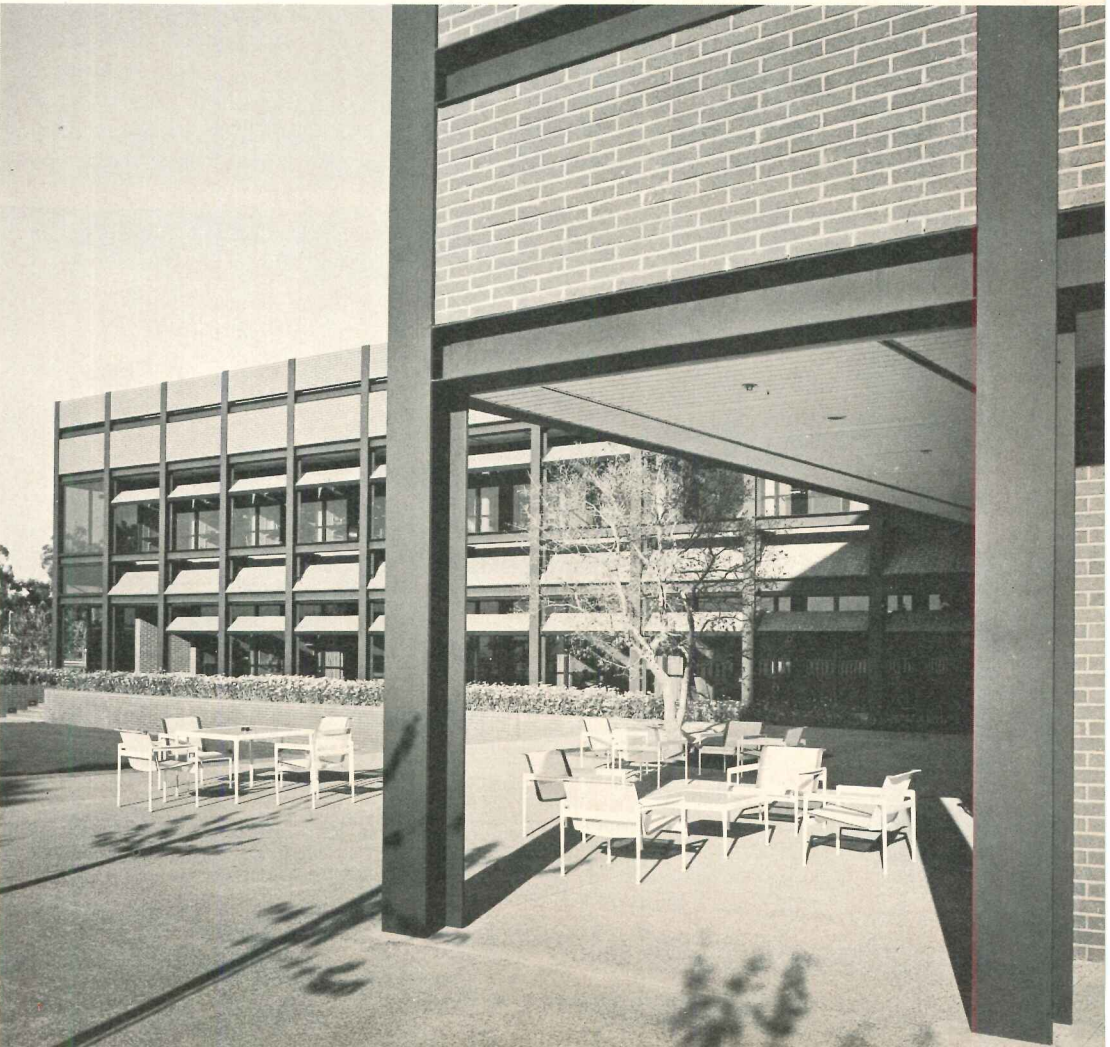
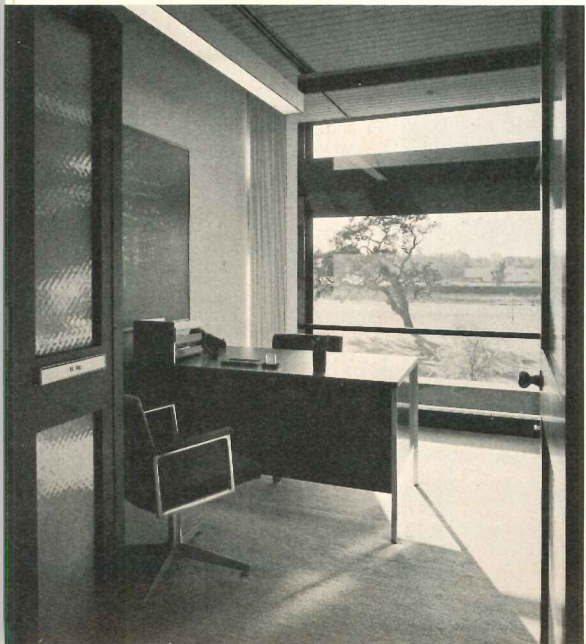


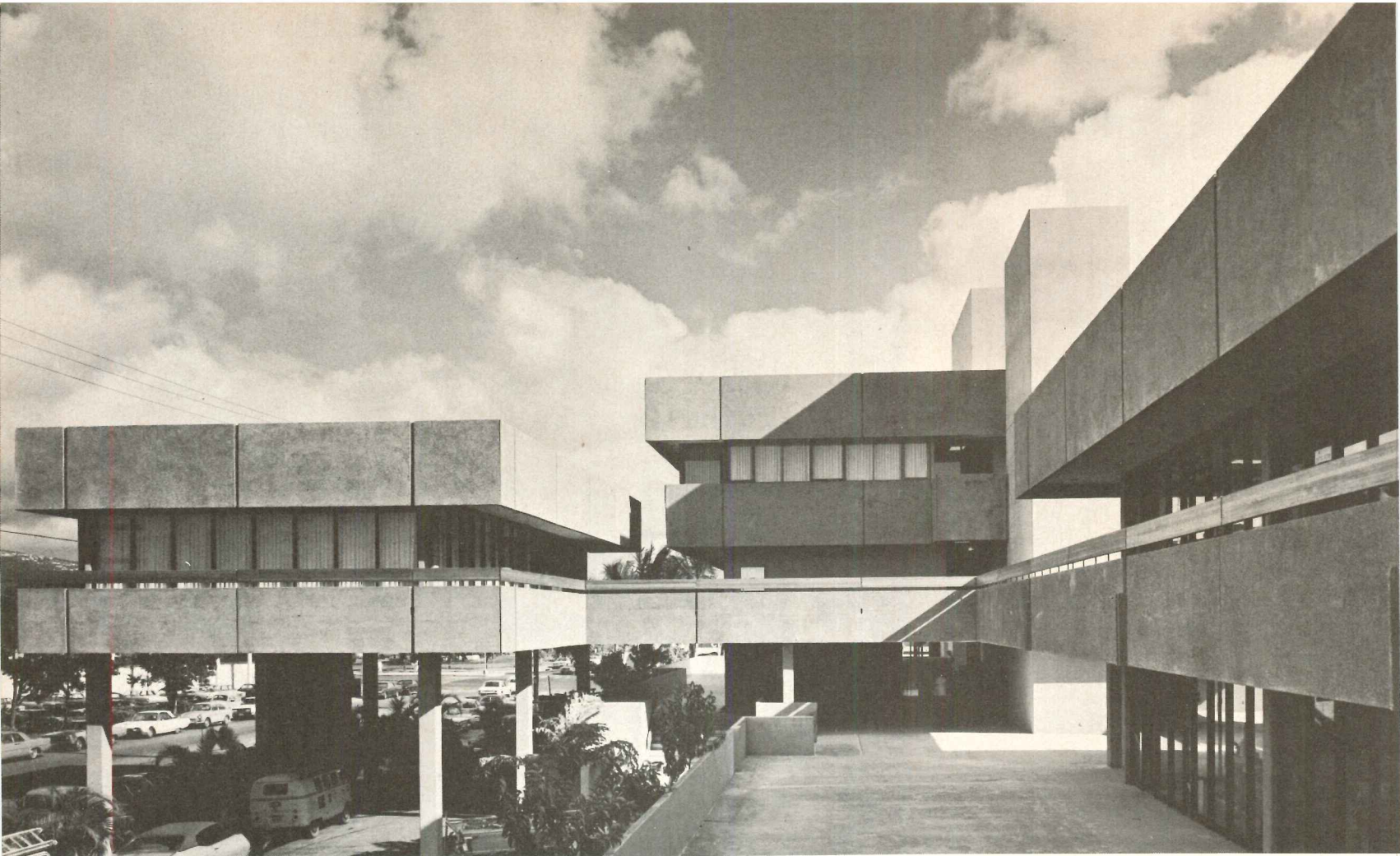
FIRST FLOOR



sides, walls are set back from the building line to increase the effectiveness of these sun controls. An integrated modular ceiling with lighting and air conditioning distribution is used throughout. Cost, with site-work and furnishings, was \$2 million.

ALZA CORPORATION, Palo Alto, California. Architects: *McCue Boone Tomsick—Lawrence Schechter*, project manager. Engineers: *John Blume & Associates*, structural; *Gayner Engineers*, mechanical/electrical. Interiors: *Blair Bowen*. Landscape architects: *Sasaki Walker Associates*. Contractor: *F.P. Lathrop Construction Company*.





## OFFICE COMPLEX ON BUSY CORNER

Ward Plaza is a four-building complex in which the several building elements are connected by decks, bridges, lanais and covered walks which unify the complex visually and functionally and also reflect

the tropical climate and casual environment of Hawaii. Circulation of people and cars was a major determinant in its design—with a bank branch as an anchor tenant, a drive-in teller facility as a major requirement, and on-site parking specified by code, handling of cars was a primary consideration. The site, outside the central business district but in a busy section near the ocean, is on a corner served by two thoroughfares. Vehicle circulation and parking—33 per cent more than required—is

provided on a level slightly below grade, and is designed to circumvent entrance or exit from the busiest of the two thoroughfares while providing ease of access. The first floor deck covers this parking level. For pedestrians, the perimeter walkway system provides pleasant access to offices, each of which has an individual entrance and individual identification. (Signs, and the graphics used in the parking area, are carefully controlled for uniform visual effect.) Proximity to the ocean made mandatory

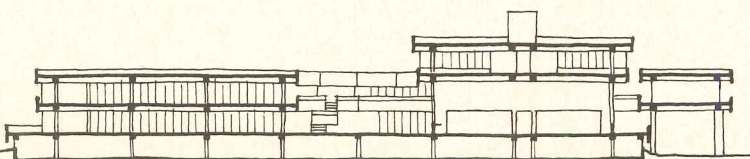
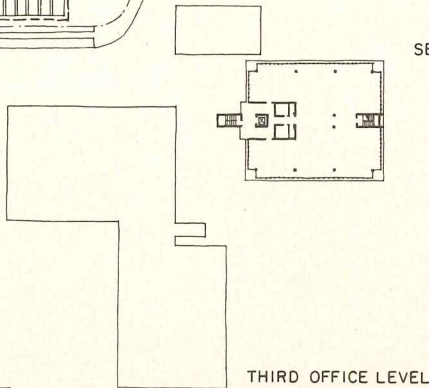
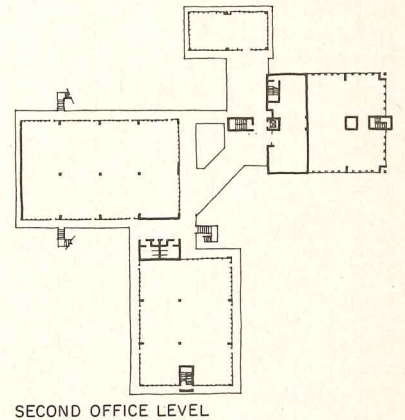
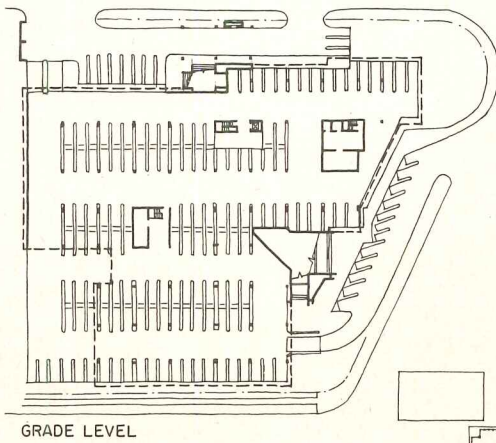
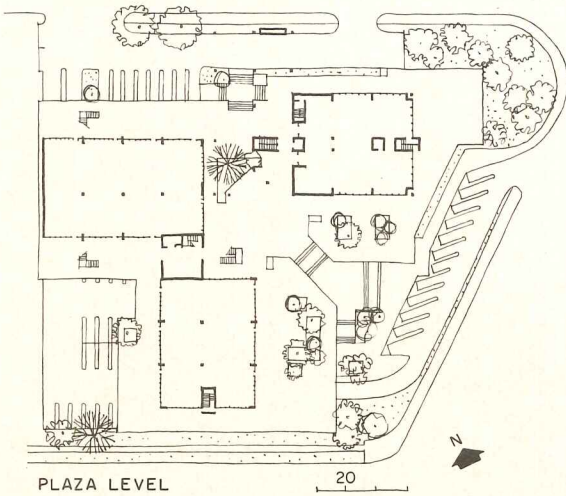


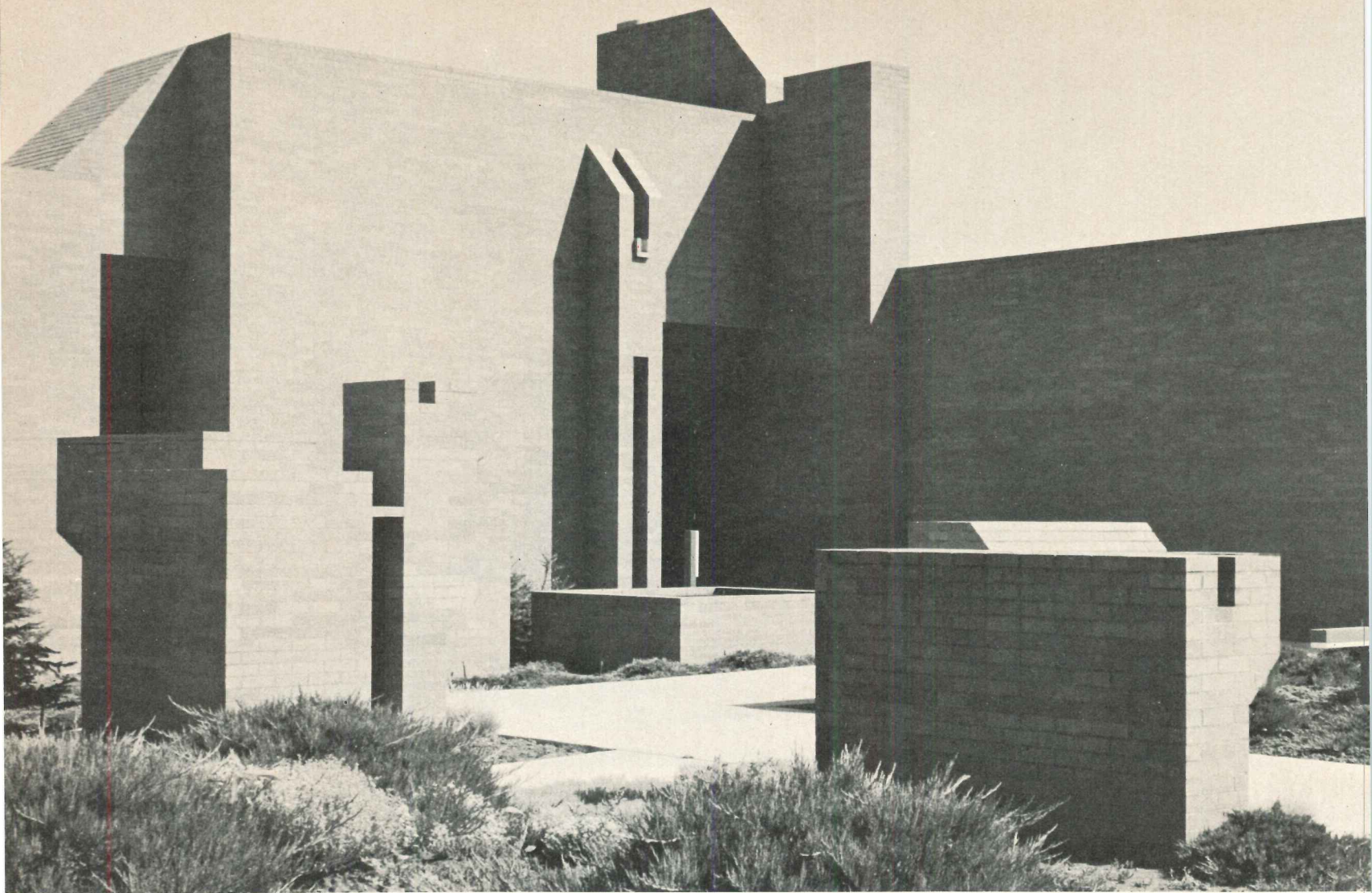
The developers of Ward Plaza, concerned with the effect of their project on the community, decided that the site called for low-, not high-rise, and this group of four separate buildings was the result. The plaza deck is the unifying element in the design, tying together these elements both visually and functionally. Above plaza level the perimeter walkways provide cover for pedestrian ways below. Post-tension concrete is used for slabs and beams, prestressed for joists. Railings and sunshades are of precast exposed aggregate concrete; integral color is used with poured-in-place concrete. The building cost \$1,535,000.



materials that would be corrosion-resistant and maintenance-free: concrete, precast or poured concrete with sprayed on finish, is used throughout.

WARD PLAZA, Honolulu, Hawaii. Architects: *Au, Cutting, Smith & Associates, Ltd.*—Donald W. Cutting, partner in charge. Engineers: *T.Y. Lin—Hawaii, Inc.*, structural; *Soderholm, Sorensen & Associates, Inc.*, mechanical; *Ho & Okita, Inc.*, electrical. Graphics: *Tom Lee Design, Inc.* Landscape architect: *George Walters.* Contractor: *Charles Pankow Associates, Inc.*





## OFFICES IN INDUSTRIAL PARK

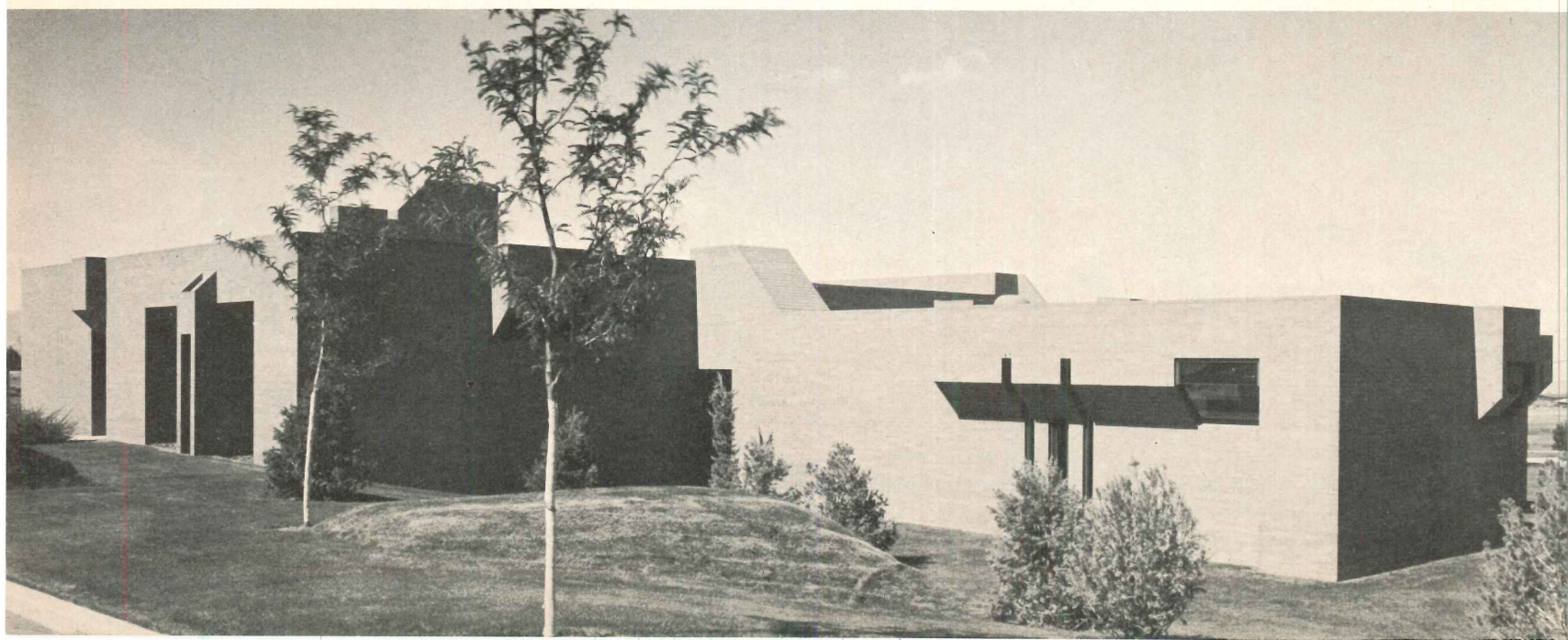
The distinctive character of this headquarters building for an oil company derives from the skillful handling of simple forms and reflects the client's request that the building be a "strong statement of com-

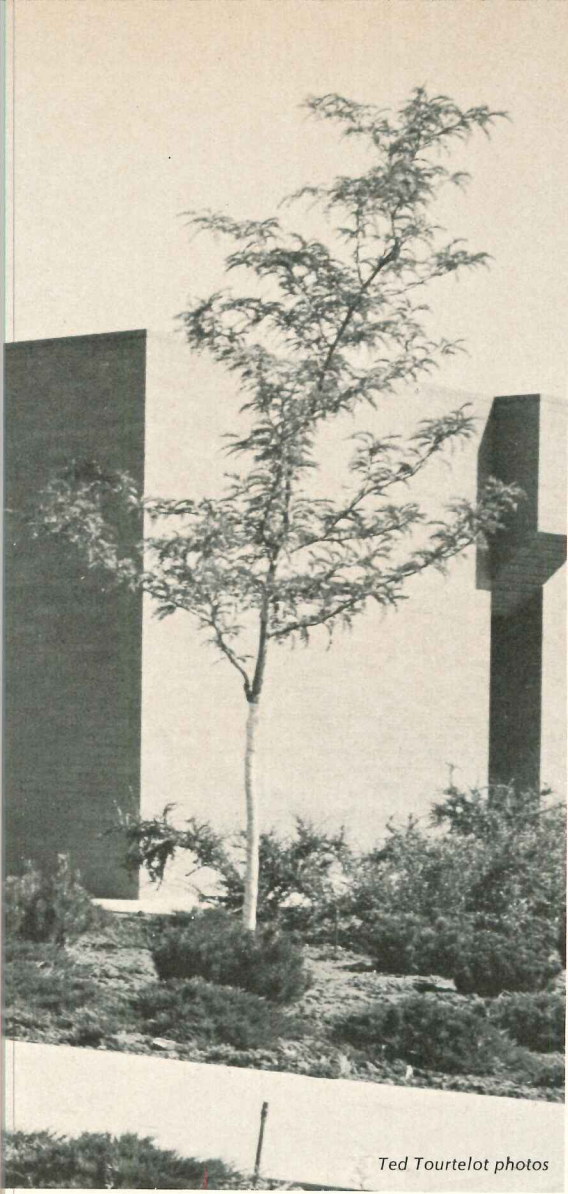
pany image." The same character is carried through to the interior, both in the material used—dark brown brick—and in the handling of forms, producing a working environment of dignity and elegance. The corbelled windows have a functional as well as a visual basis, shielding offices from the strong mountain sun and controlling the panoramic view over Denver and to the front range of the Rocky Mountains. The hilly site, in an industrial park on the outskirts of the city, permits partial screening

of the parking area by natural land forms. Outdoor mechanical elements are enclosed in masonry units of material and sculptural form similar to that of the building.

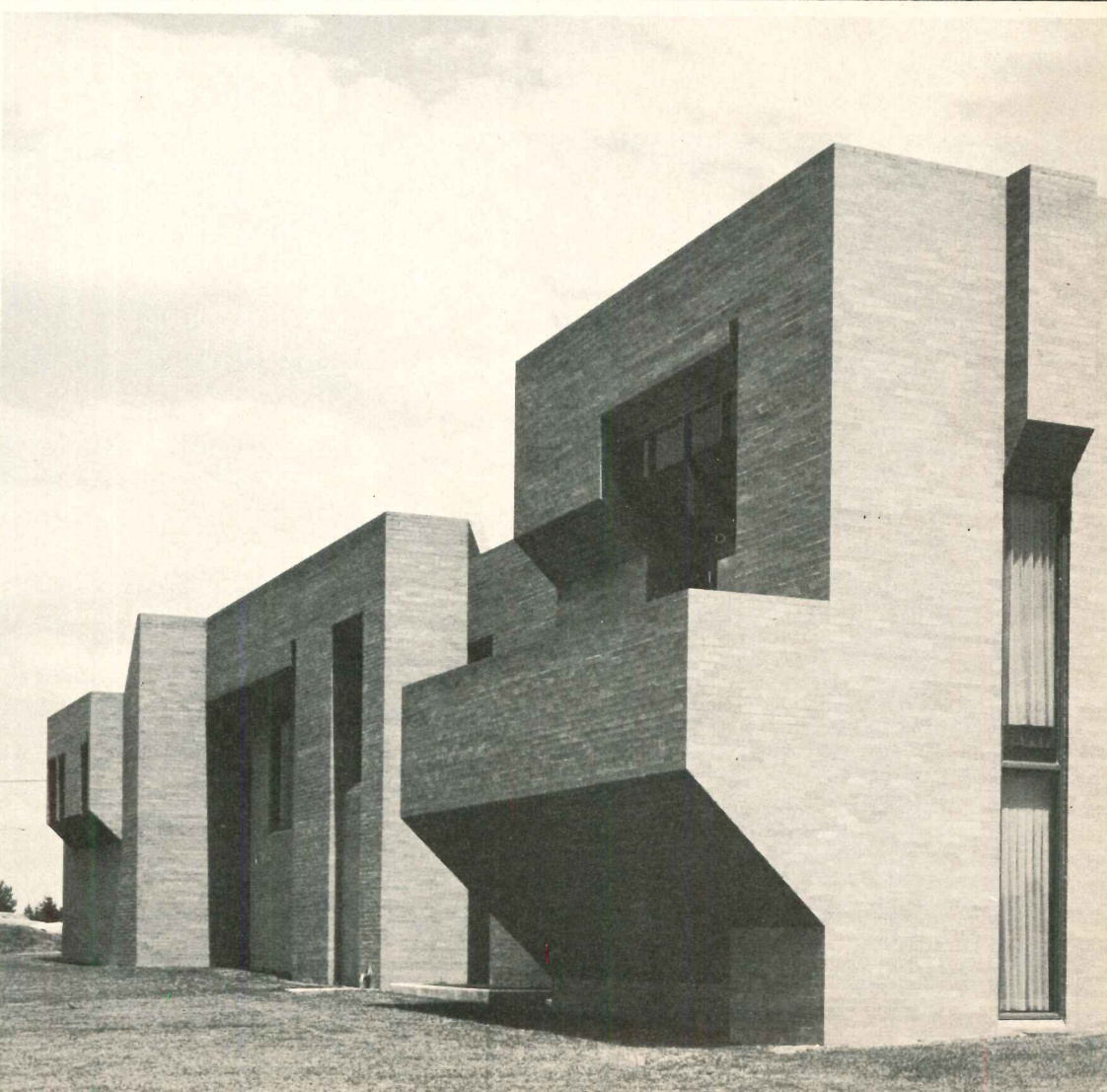
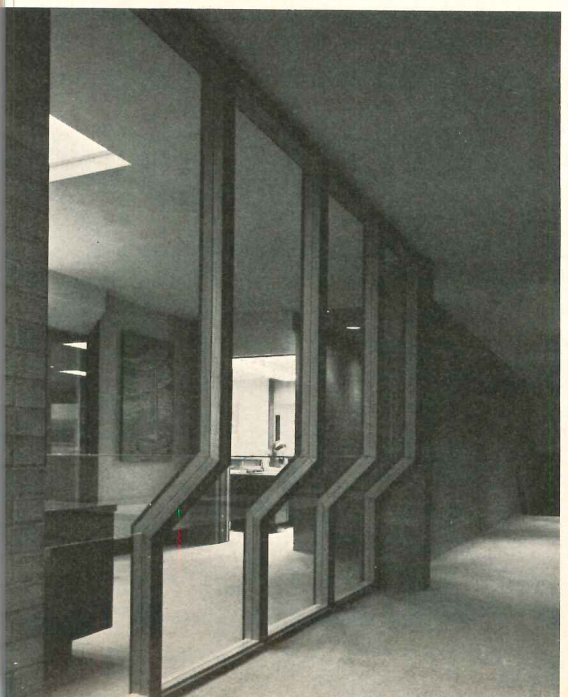
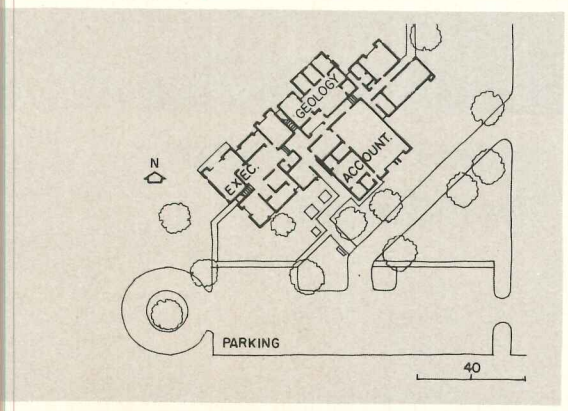
---

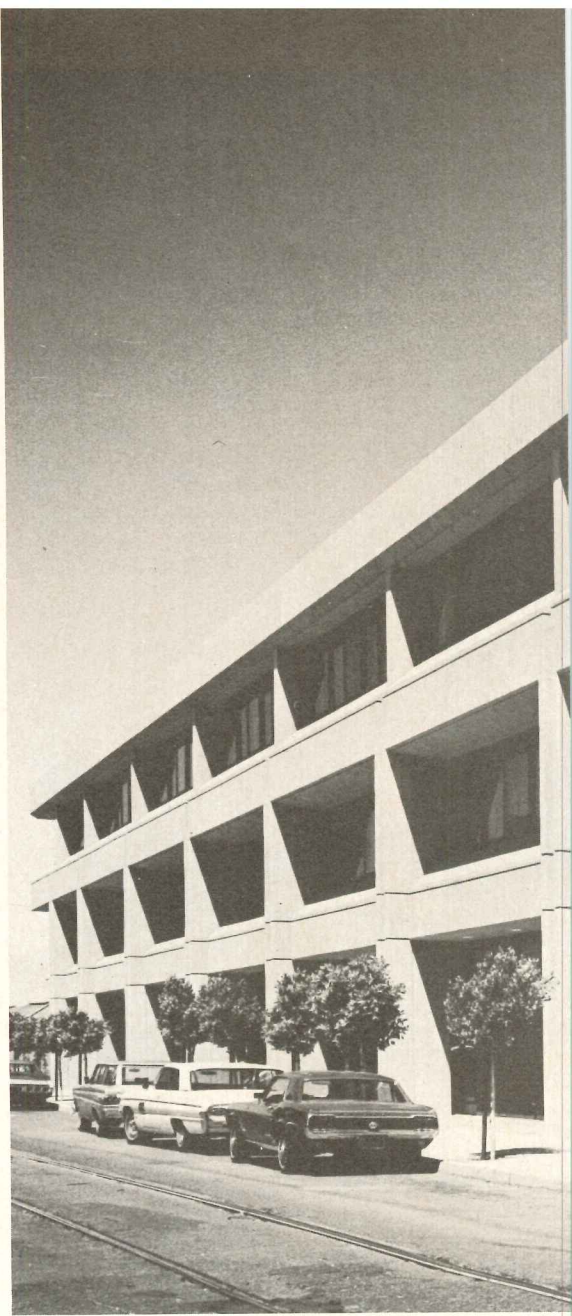
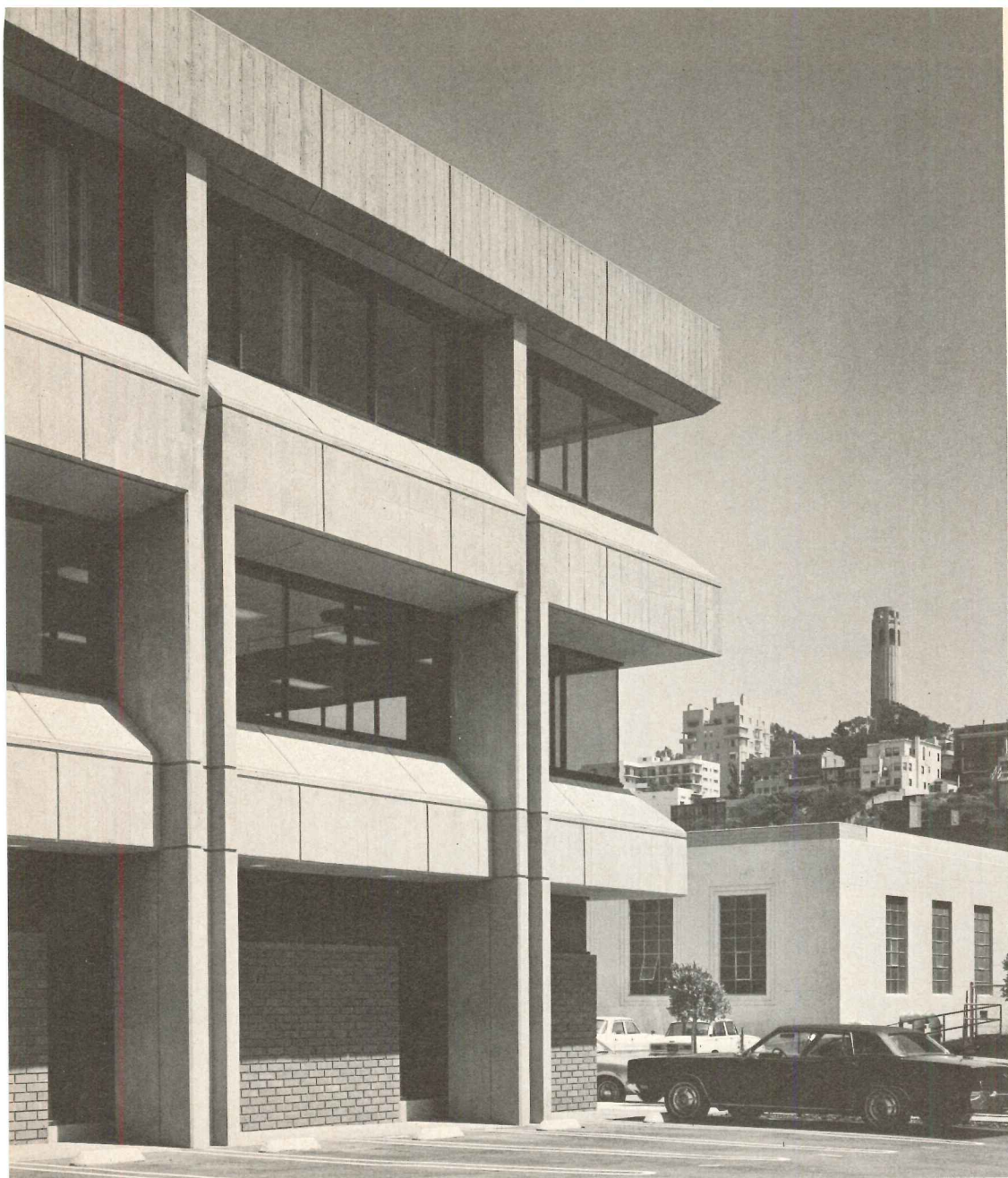
HEADQUARTERS BUILDING, KISSINGER PETROLEUMS LTD., Denver, Colorado. Architects: RNL, Inc.—John B. Rogers, partner in charge; W. Arley Rinehart, project designer; Gary Merideth, interior design. Engineers: E. Thomas Punshon, structural; Kennon B. Stewart, mechanical; Behrent Engineering, electrical. Landscaping: W. Arley Rinehart. Contractor: Hayward Construction Company.





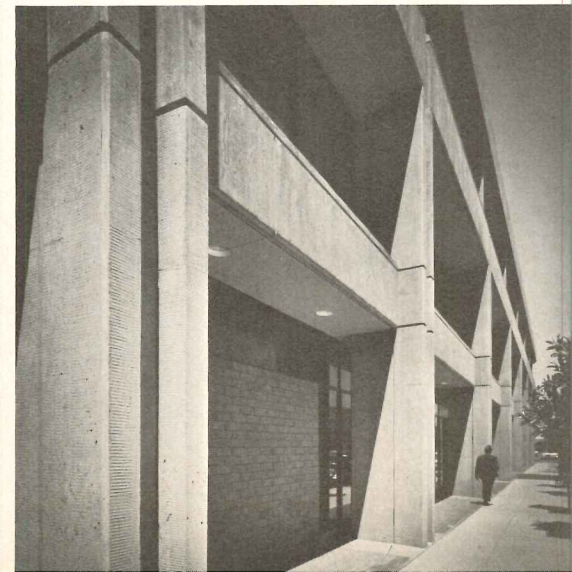
Ted Tourtelot photos





## DESIGNED FOR VARIED TENANT NEEDS

Speculative office buildings, to be successful, must have designed-in adjustability to a variety of tenant needs and types. This building, although leased during construc-





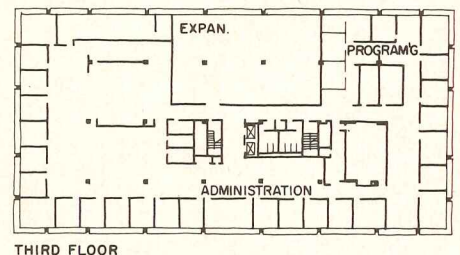
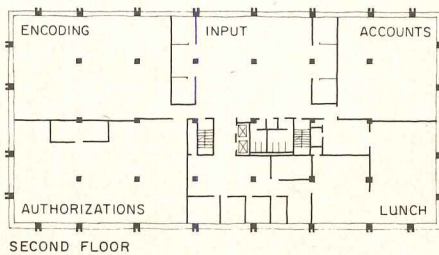
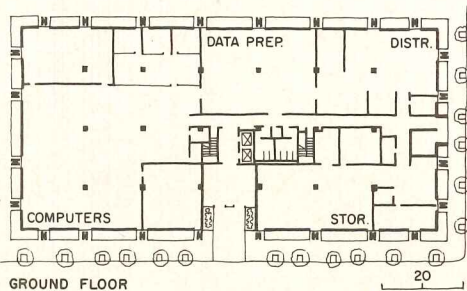


tion to a single tenant, can—thanks to its central-core plan and simple fenestration—just as well accommodate a multiple tenant occupancy. The building is three stories high, in conformity with a 40-foot height limit for this section of San Francisco's waterfront, and is in pleasant scale with— if more boldly contemporary than—neighboring older buildings. Existing sidewalks were narrow (nine feet) so the building, except for its columns, was set back six feet, permitting trees along the curb to

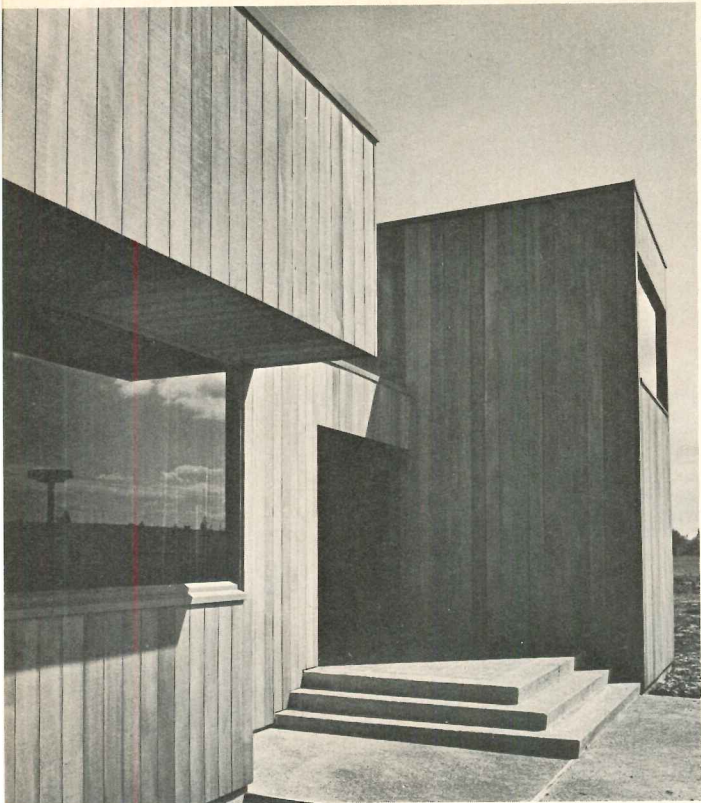
buffer first floor offices from traffic noise. High windows in the handsome street level brick wall also cut traffic noise. The building is of poured-in-place concrete with a steel roof structure, the change reflected in the third floor exterior. The tenants engaged the building architects to design open, brightly colored interiors. The economics of the developer's program required design, construction and occupancy of the building within one year at a cost under \$20 per square foot for the base

building. Architects and contractors met the program on schedule and within budget.

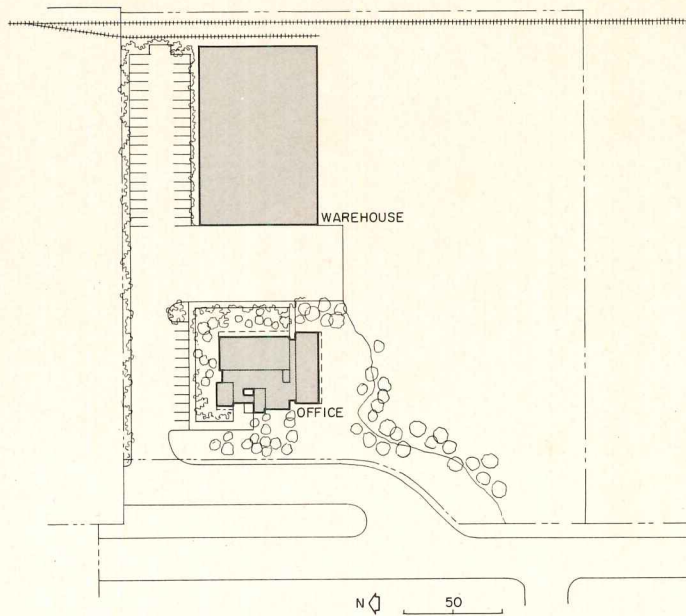
WESTERN STATES BANKCARD ASSOCIATION, San Francisco, California. Architects: M. Arthur Gensler Jr. & Associates, Inc.—Harold Edelstein, project director; Steve C. Thompson, project designer. Engineers: David Alan Welisch, structural; Higash Associates, mechanical; Edward S. Shinn & Associates, electrical; Wilson, Ihrig & Associates, Inc., acoustical consultant. Interiors and graphics: M. Arthur Gensler Jr. & Associates, Inc. Landscape architects: Royston, Hanamoto, Beck & Abey. Contractor: Rothschild & Raffin, Inc.



Jeremiah O. Bragstad photos



Photography Northwest photos



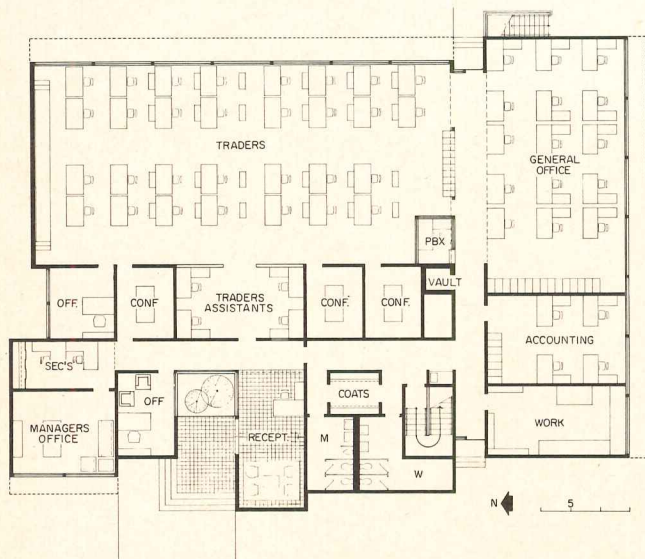
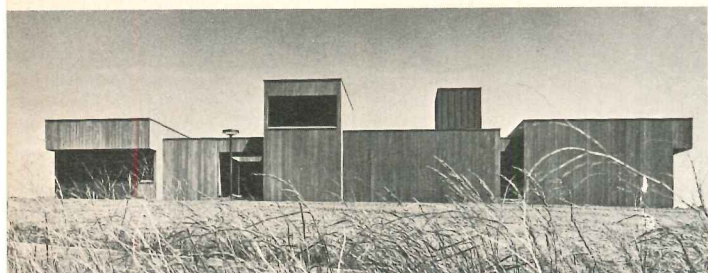
## FORMS EXPRESS VARIETY OF FUNCTIONS

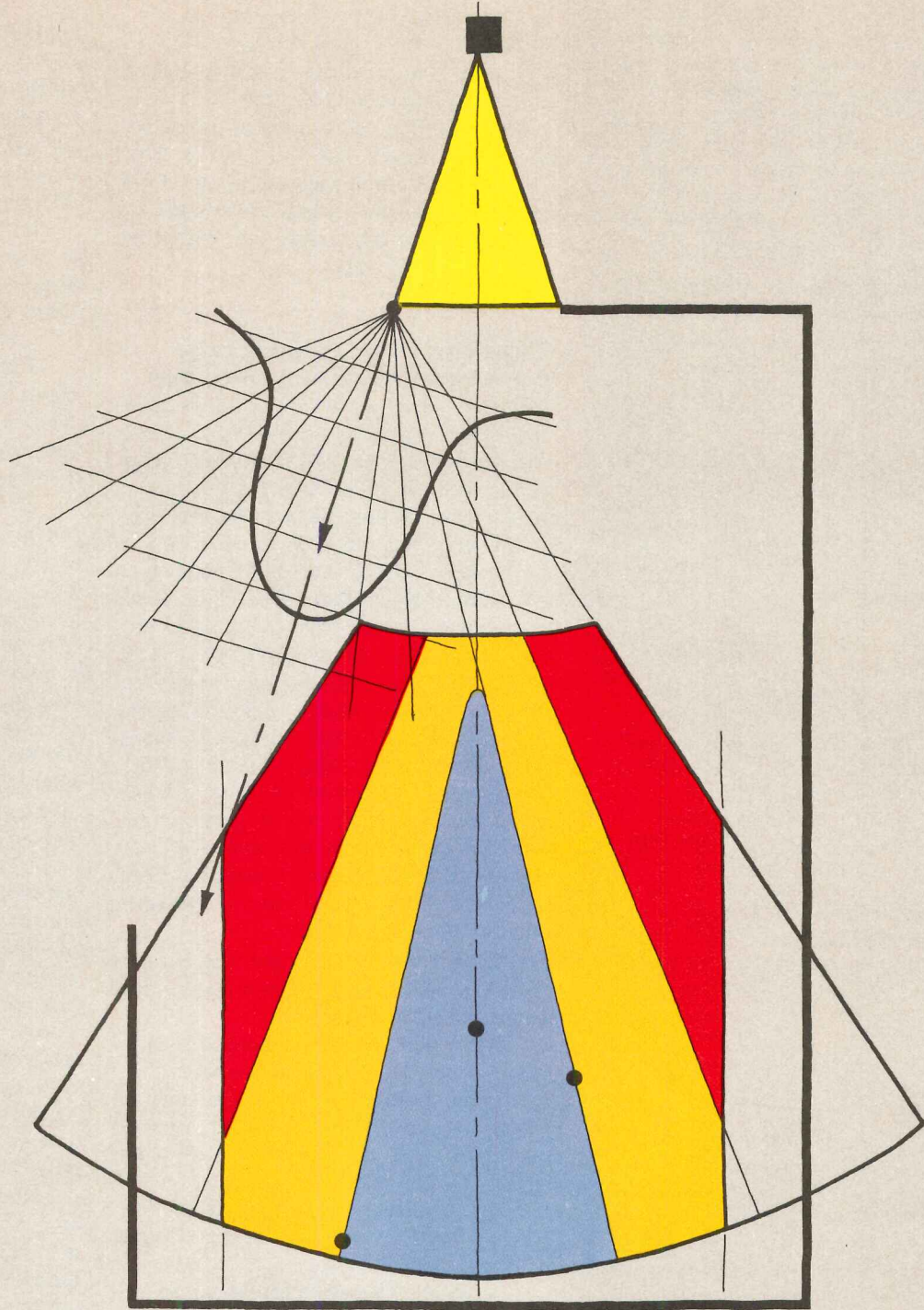
The carefully studied box-like forms of this office building for a lumber brokerage firm derive from the variety of functions which take place in the building and which the

client wished expressed outwardly. Volume, height and scale of each element relate to the number of people in each space as well as to its function and importance, providing individual identity within the over-all design. The major space is the trader's room, with windows along one entire wall and clear span framing on its long dimension to permit easy expansion. Also expandable is the general office space. Walls in the accounting and work rooms are moveable for changing needs. The warehouse behind the

office building is a permitted use in this industrial park and is used to store a limited amount of lumber. Resawn cedar T&G boards are used on the exterior; interiors are wood paneled.

AMERICAN INTERNATIONAL FOREST PRODUCTS, INC., Beaverton, Oregon. Architects: *Fletcher, Finch & Associates*. Engineers: *Harlan Luck*, structural; *H.Y. Malagon*, mechanical; *Downing & Reis*, electrical. Interior design consultant: *Howard Hermanson*. Landscape architect: *Robert Perron*. General contractor: *Grigsby & Bishop*.





## The planning disciplines for audio-visual facilities

If audio-visual communications are to work effectively, then their requirements must be considered in the very early stages of building design. This special report, presented this month and next, discusses some of the specific design guidelines involved in providing for good sight and sound, and for the new concept of electronic distribution of the full range of audio-visual media. This report has been prepared by engineering specialists on the staff of Hubert Wilke, Inc., communications facilities consultants—a pioneer in the field. The firm has worked with leading architects to develop solutions for audio-visual design in a wide variety of situations, including conference, training and board rooms; auditoriums and lecture halls; closed-circuit TV studios. Their work has been incorporated into facilities for Chase Manhattan Bank, DuPont, Eastman Kodak Company, Mount Sinai Hospital (New York), Sears, Roebuck and Company, and Standard Oil of New Jersey.

Until recently, rooms were not really planned for audio-visual use. Equipment was ordered even though power receptacles may not have been readily accessible, and room lighting not suitable. Proper sightlines were, more often than not, a matter of pure luck. But today, architects and their clients are beginning to realize that audio-visual facilities very much affect interior space planning, and, on some occasions, the basic building.

The architect should have guidelines from the audio-visual consultant as to the over-all deployment of space for these facilities before he gets into the layout stage. Such liaison between the consultant and the architect can save days of costly changes. These guidelines are developed from programming of the audio-visual facilities, based upon knowledge of the client's past experience, a determination of his future needs, and upon observations of what he really needs.

Serious consideration of future provisions is vital to the owner's long-range interest. At the start, he may not have the money to spend to get what he really needs; or, he may not be prepared to make the commitment of staff to operate and program a highly-sophisticated facility. In such cases the client should lower his sights in terms of original equipment. The consultant should recommend only that equipment the client can use, but, at the same time, make provisions so that the client can incorporate more sophisticated techniques later.

While clients have become more quality conscious about audio-visual facilities, they still need to become more concerned with such matters as sound. Sound usually is not noticed unless it is bad. But if it is excellent, the over-all effect is considerably improved.

Both broad and detailed technological changes are affecting the design of audio-visual facilities. An example of the latter is use of high-output lamps for projectors which make possible front-screen projection while room lights are on. Another example is the use of a slightly curved screen to improve optics, thereby greatly increasing the number of prime-viewing seats. This development takes on added significances as more and more multi-image presentations are made.

By integrating audio-visual equipment, and perhaps lighting, into a total system, it is possible for cues to be programmed so that at the push of a button, curtains will open, a screen move into position, and lighting brought to the desired level for mood or utility.

Technology also has some broad implications. For example, there is the untapped potential of electronic distribution of slides, film, live and recorded TV—within and between offices domestically and, eventually, around the world via satellite.

Still, sophisticated electronics are not destined to replace the chalkboard, flipchart, and overhead projector very soon. Their ease of use and low cost means they will be required at least for several generations to come.

## GUIDELINES FOR GOOD SEEING

by Raymond H. Wadsworth,  
senior associate, Hubert Wilke, Inc.

Many buildings, particularly office buildings, are getting larger, but also smaller—smaller in the sense that ceiling heights are getting lower and lower. This trend has a direct bearing on maximum capacity for good seeing. The lower the ceiling, the smaller the visual image on the screen, the smaller the number of good seats.

### Ceiling height is the governing factor in determining "workable" room length

When projected visual media are used, the "workable" length of a room bears a direct relationship to the width of the image, which in turn is limited by the ceiling height. This relationship may be evaluated by applying the rule that the distance to the farthest viewer not be greater than  $6W$ , where  $W$  is the width of a single image on the screen (Figure 1).<sup>\*</sup> The standard aspect ratio (proportions) of 1.33 to 1.00 for 16mm motion picture images yields the greatest image height,  $H$ , of any of the standard formats, and will, therefore, govern most ceiling height calculations. Images produced by other formats will have less height for a given width, with the exception of the square formats of the overhead projector, superslide and Instamatic slide, and, of course, the vertically-oriented 35mm slide.

Table 1 lists the standard aspect ratios of width-to-height for commonly used projection transparencies.

The required ceiling height,  $C$ , can be found using the following assumptions:

1. the bottom of the screen will be placed 4 ft 0 in. above the floor, so head silhouettes will not interfere with sight lines.

2. projections will be limited to horizontal formats where the height is equal to or less than  $W/1.33$

3. distance between top of screen and ceiling will be 6 in., to permit suitable trim and appearance.

The above may be expressed by the relation

$$C = 4 + W/1.33 + 0.5 \text{ ft}$$

Where  $W$  may be taken as  $1/6$  of the room length,  $L$ .

Then

$$C = 4 + L/(6 \times 1.33) + 0.5$$

From which

$$L = 8C - 36 \text{ ft} \dots \dots \dots (1)$$

*Example:* A conference room using projected images is to be located on a floor with an 8 ft 6 in. finished ceiling height. What is the longest room that should be planned?

*Solution:*

$$L = 8C - 36$$

$$L = (8 \times 8.5) - 36 = 68 - 36$$

$$L = 32 \text{ ft usable length of room.}$$

In the foregoing example, only horizontal image formats were considered. Sometimes, however, vertically-oriented images (slides) are also projected, resulting in a screen height value,  $H$ , equal to  $W$ , requiring additional ceiling height. If we maintain the 4 ft. 0 in. dimension from bottom of screen to floor, equation (1) takes the following form,

$$L = 6C - 27 \dots \dots \dots (2)$$

so that in the previous example, if vertical images are to be shown, the length of the room, for a ceiling height of 8ft 6in. is:

$$L = (6 \times 8.5) - 27 = 24 \text{ ft.}$$

This reduction in room length is a severe penalty to pay for using a vertical slide, and is one reason why many installations going into office buildings with low ceilings will not use the vertical format.

Of course, the screen could be dropped lower to accommodate an occasional vertical slide, resulting in poor sightlines. If we were to use a 32-ft-long room, the image width would equal  $L/6$  or 5ft 0in. When this image is projected vertically the bottom of the image would be only 3 ft from the floor. This is a workable compromise if the seating is conference style and the viewing group is not too large, but when the viewers are seated auditorium style, and the verticals contain chart and tabular data, viewing becomes a chore.

### Full-sector seating can take more people, but space utilization can be wasteful

Obviously the wider the room, the more people it will seat for a given length, but when room width approaches two-thirds room length, the gain in seating cannot justify the wasted space accumulating at each side along the wedge-shaped viewing limits (poor viewing). Figure 2 illustrates the situation when applied to a rear projection system.

Rooms using front projection systems have a higher seating efficiency than those with rear screens; that is, more viewers can receive a brighter image, because of the optical geometry of the reflection pattern of a front screen. This increase is appreciably greater in the case of a curved front screen, as will be shown.

When the shape of the viewing areas for front and rear projection systems are compared, we see that in practical rear screen applications the light beam is shortened to conserve space. This would not be the case if we could locate the projector as far behind the screen in a rear screen projection system, as we do in front of the screen in a conventional front projection (Figures 3 and 4).

In practical rear screen systems, space is not available to place the projector so far from the screen—short focal length lenses are used to shorten the distance by a factor of about four. Now the viewing area changes shape. Figure 5, drawn to the same scale as Figure 3, shows how the viewing area is reduced. Further reduction in seating area occurs when the new super-

<sup>\*</sup>This rule is based upon a person being able to read 15 lines of printing on a standard slide.

Rules for good seeing and space utilization control the geometry of the seating plan

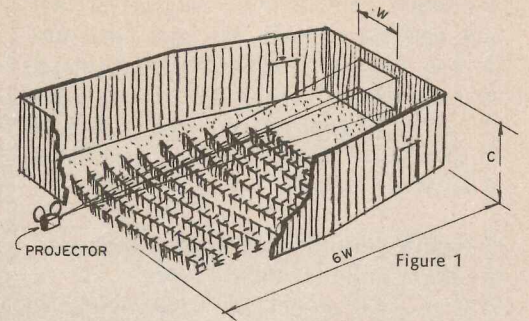


TABLE 1. STANDARD APERTURE DIMENSIONS AND ASPECT RATIOS

Kind of film	Height, Inches	Width, Inches	Aspect Ratio
8 mm motion picture	.129	.172	1.33:1
Super-8 mm m.p.	.158	.211	1.33
16 mm motion picture	.284	.380	1.33
35 mm motion picture	.600	.825	1.37
2 x 2 single frame	.688	.906	1.32
2 x 2 double frame	.906	1.344	1.48
2 x 2 super slide	1.500	1.500	1.00
3 1/4 x 4 lantern slide	2.75	3.00	1.09
3 1/4 x 4 Polaroid slide	2.40	3.26	1.36
4 x 5 slide	3.50	4.50	1.28

Note: Aspect ratios of wide screen formats vary from type to type, but the most popular are:  
 16 mm Cinemascope.....A.R. = 2.65:1  
 35 mm Cinemascope.....A.R. = 2.34:1

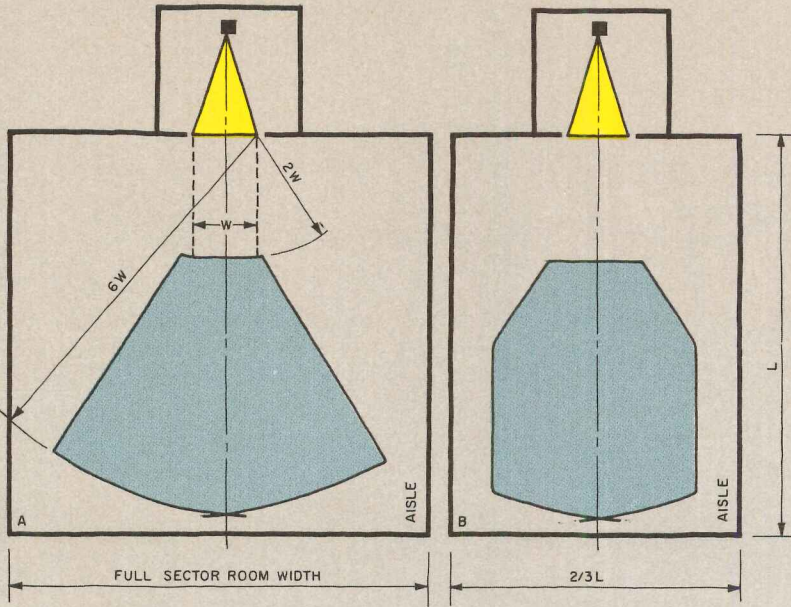


Figure 2

The distance from the farthest viewer to the screen should not be more than six times screen width. Screen width, in turn, is governed by the ceiling height, and the ratio of image width to image height—known as the aspect ratio (Table 1) (Figure 1). The dimensions of full-sector seating (Figure 2a) are determined by a distance of  $2W$  to the first row of seats,  $6W$  to the last row of seats, and, on the sides, by an angular relationship to the light beam that puts a limit on the brightness variation and distortion the viewer observes. Full-sector seating is wasteful of space, however. In 2a seating area is 30 per cent of room area, while in 2b, where room width is reduced to  $2/3L$ , seating area is 40 per cent of room area.

Practical considerations for projector location control the seating area for rear-screen application

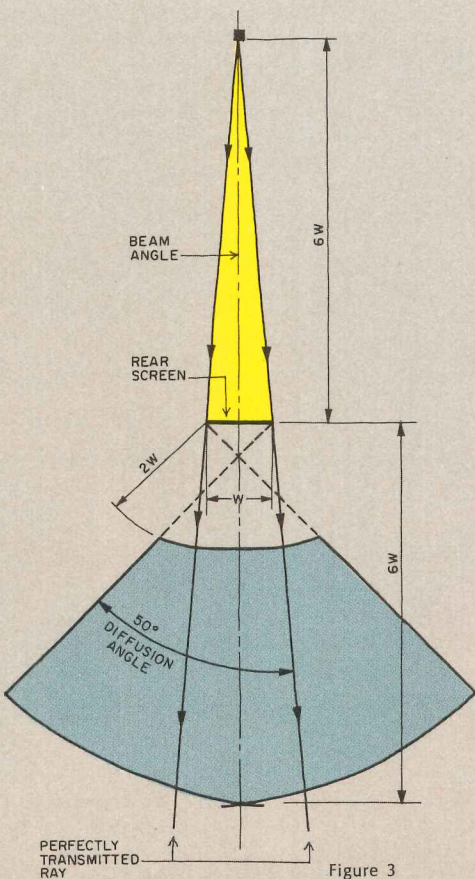


Figure 3

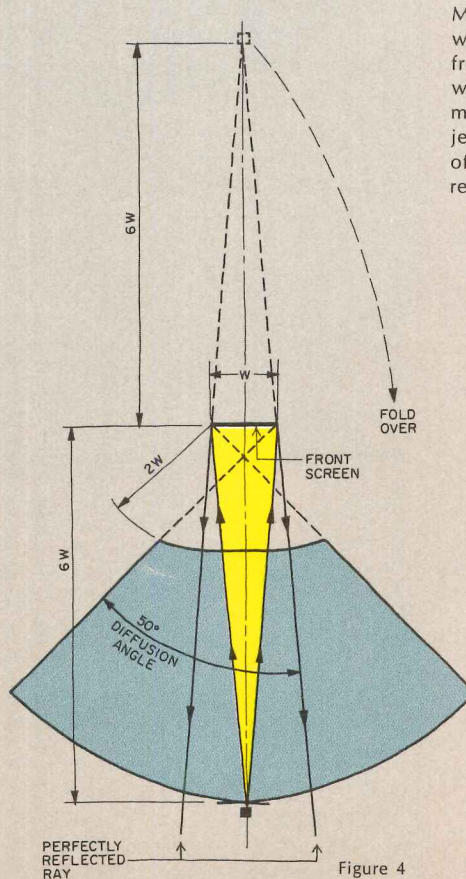


Figure 4

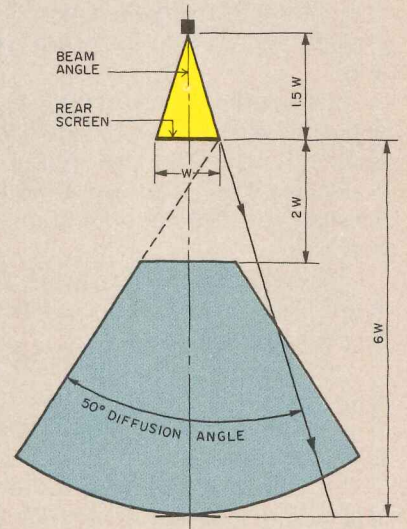


Figure 5

Maximum seating with rear-screen projection would be achieved with the projector located  $6W$  from the screen (Figure 3). In most cases this would result in an impractical layout. The  $6W$  dimension works, of course, with front-screen projection (Figure 4). A practical distance for location of a rear-screen projector is  $1.5W$  (Figure 5). This reduces full-sector seating by one-third.

wideangle lenses are used, as well as when dual and triple images are projected side-by-side. For the standard 2-in. focal length lens, permitting a projection room depth of  $1.7W$ , the good seating area is reduced to two-thirds (67 per cent) of that shown as ideal in Figure 3.

### Curved front-projection screens increase the permissible number of seats

When a front projection screen is curved at an optimum radius in plain view, the resulting reflection pattern of the projected beam becomes entirely different from the flat-rear and flat-front screens. Figure 6(a) illustrates how the curved screen works to "focus" the perfectly reflected rays to a common optimum point, while (b) and (c) show the ever-widening pattern of the flat screens. The seating area is determined by how much of a diffusion angle a screen can impart to the perfectly transmitted or reflected ray. If we assume that in the case of each screen, the perfect ray can be diffused 50 degrees to the left and 50 degrees to the right, then the resulting seating patterns would be as in Figure 7.

### Preferably, the brightness of the screen should not seem to vary over its area

Layout of the seating area based upon diffusion angles is not the only criterion. Often overlooked is the distribution within this area of the various zones of image brightness, which can vary from fair to excellent. Zones of image brightness vary because of several design factors:

1. the screen has a certain configuration, i.e., flat, angled, or curved,
2. the screen is transmitting or reflecting, i.e., a rear- or front-projection system,
3. the screen has certain light-handling characteristics, depending upon its material and pattern, i.e., glass, fabric, plaster, laminate; and lenticular, matte, or beaded,
4. the projection devices illuminate the screen with a certain quantity and distribution of light over the screen area, depending on light source and optics.

It is revealing to compare the zones of image brightness for the three configurations shown in Figures 4, 5, and 7. We will assume the following arbitrary classification:

If the perfectly reflected ray is diffused not more than  $\pm 20$  degrees to reach an observer's eye, the area within such a boundary will be classified as an *excellent* viewing area, referring to maximum image brilliance.

If the diffusion is between  $\pm 20$  and  $\pm 30$  degrees, the corresponding area will be classified *very good*.

If between  $\pm 30$  and  $\pm 40$  degrees, *good*.

If between  $\pm 40$  and  $\pm 50$  degrees, *fair*.

It is obvious that there has to be some quantitative relationship between the number of degrees of diffusion of the so-called perfect ray and the resulting image bright-

## The number of "excellent" seats is greatly increased when the screen is curved with front-screen projection

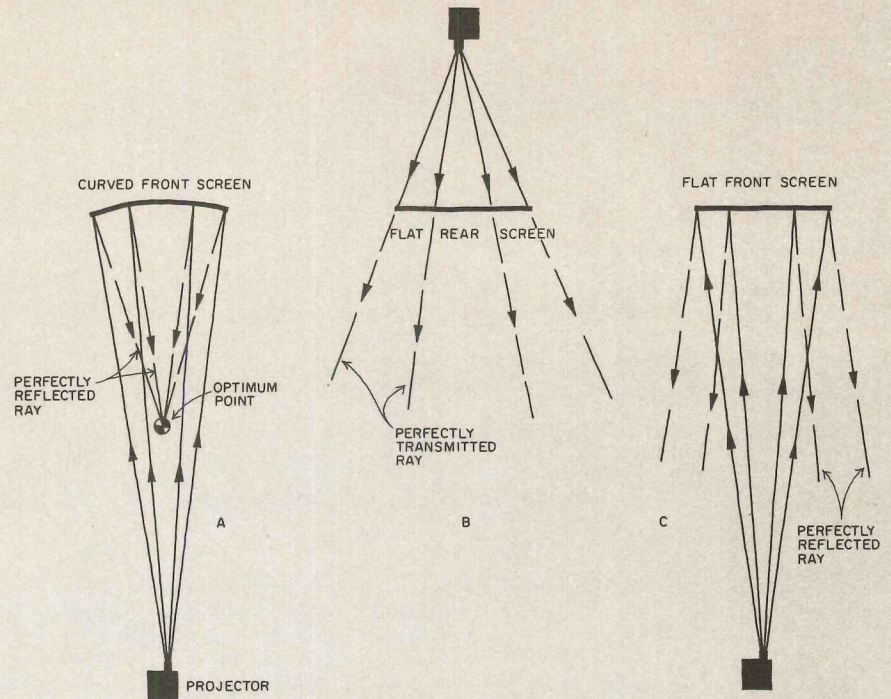


Figure 6

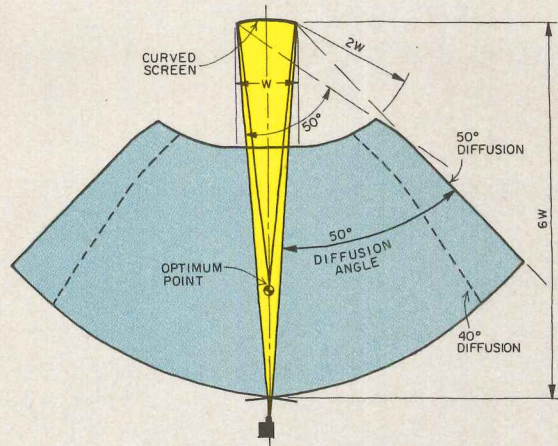
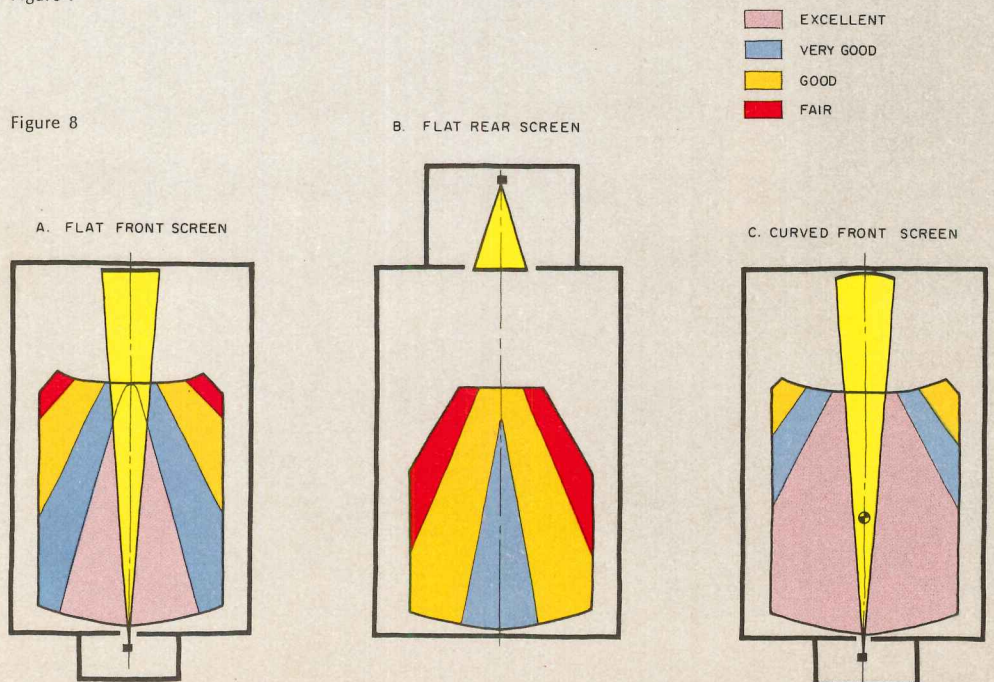


Figure 7

A curved screen reflects more of the light rays toward the center of the room, thereby improving the brightness variations across the screen for more viewers (Figures 6 and 7). For example, at the optimum point all rays are perfectly reflected, so brightness is constant across the screen for the viewer at this point. In Figure 8, seating areas have been classified from "fair" to "excellent," based upon the fact that brightness variation of the screen is minimum for viewers in the center of the room, and greatest on the sides. Further, at seating locations where the angle of diffusion of the light beam is 50 degrees, image distortion is about as much as the viewer wants to tolerate.

Figure 8



**Good viewing (as affected by variations in screen brightness) depends upon screen characteristics**

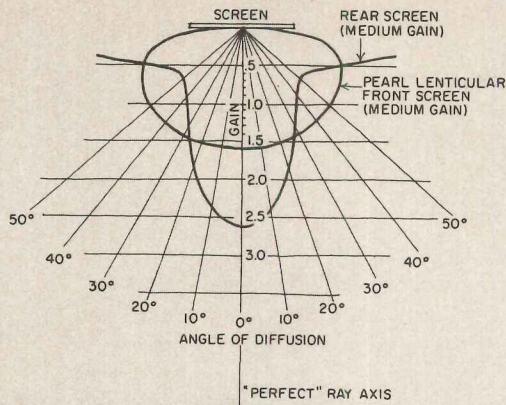


Figure 9

The number of units of illumination that a viewer sees from a given ray of light depends upon the angle at which he views the "perfectly" reflected ray (front screen) or transmitted ray (rear screen). Reason is that the proportion of light delivered to the viewer to that received from the projector varies with the angle of diffusion from the "perfect" ray (Figure 9).

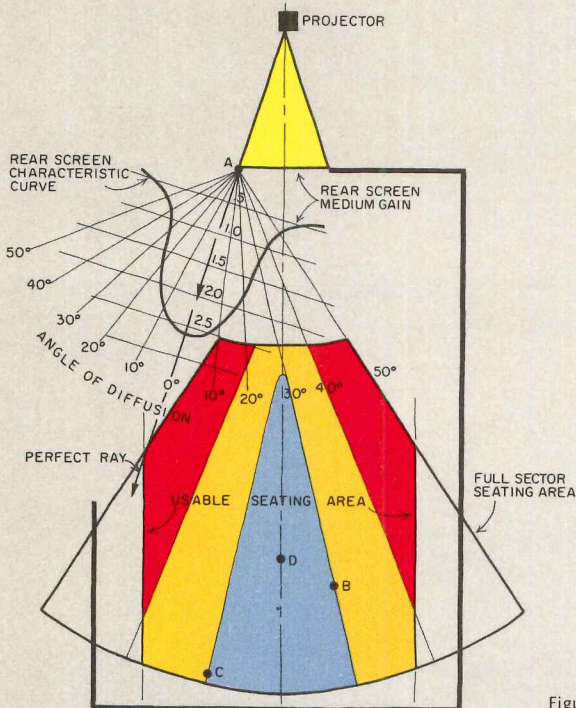


Figure 10

Figure 10 shows Figure 9 superimposed upon Figure 8b for the outer ray of the projector beam. From this type of drawing, brightness variations across the screen can be determined for any zone, fair to excellent, and for any type of screen.

TABLE 2: EFFECT OF SCREEN TYPE ON QUALITY OF VIEWING

Item	Type of Projection Screen		
	Flat Front	Flat Rear	Curved Front
(a) Total area of room, per cent	100	100	100
(b) Portion of room usable for viewing, per cent	55	47	55
(c) Distribution of image brightness zones in (b), per cent			
excellent	44	—	78
very good	34	23	16
good	16	53	6
fair	6	24	—

TABLE 3: SCREEN BRIGHTNESS VARIATION

Zone of brightness rating	Per cent of viewers	Brightness variation
<i>Rear Screen</i>		
Excellent	—	—
Very good	26	12.5-26
Good	53	9-25
Fair	21	7-24
<i>Curved front screen</i>		
Excellent	78	15-16
Very good	16	14-15.5
Good	6	12-15.5
Fair	67	—

ness, and of course this will depend entirely upon the four brightness zone parameters previously listed.

Figure 8 is the result of plotting the different image brightness zones for front, rear, and curved front screens, for a single image format in a properly proportioned room.

The areas of the various zones are tabulated listed in Table 2.

In order to evaluate the tabulated figures, it is necessary to take a brief look at a typical screen characteristic performance curve for a common rear-projection material and a popular front-screen fabric. Although dozens of screen materials are available we can illustrate the procedure by considering only a rear screen of medium "gain" or efficiency, and a front screen of medium "gain." The performance curves for these two screens have been superimposed on a single graph, and appear in Figure 9.

The term "gain" refers to the brightness of the image at a given point on the screen compared to the intensity of the light received from the projector at that same point. Because the screen cannot manufacture light, high-"gain" screens channel high brightness in the direction of the perfect ray, only at the expense of very low brightness at the higher angles of diffusion. High "gain" is not desirable if it does not take place over a rather wide viewing angle, unless the audience area is narrow and deep. It is thus generally more important to have a rather flat characteristic over a  $\pm 50$  degree diffusion angle, than to have a steeply rising peak over a rather shallow angle of view.

Let us now superimpose Figure 9, the screen characteristic curve, on Figure 8 (b), with the 0 degree angle of diffusion axis in line with the left hand extreme projector ray. This is shown in Figure 10.

The central area, rated very good in Figure 8 (b) shows the limits of seating within which a viewer can look at the entire width of the screen, without witnessing angular diffusion of a perfect ray of more than 30 degrees.

Now a viewer seated along the right-hand 30 degree boundary at B will see his least-bright image when he looks at the extreme left side of the screen. This constitutes a "worst condition" for the 30 degree zone. Reading the intersection of the 30 degree angle of diffusion with the screen characteristic curve, we find a gain of about 1.25. This means that if the screen received 10 units of light from the projector, it would transmit 12.5 units to the viewer. Similarly, if a viewer sat at C, and looked at point A, he would enjoy a gain of 2.0, and would receive 20 units of light.

By moving the characteristic curve plot to a central position, with the 0 degree axis aligned with screen and room center line, we would find that a viewer seated along the centerline at D, when looking at screen center, would receive  $2.6 \times 10 = 26$

units of brightness from the screen.

Table 3 on the previous page summarizes what we have just analyzed:

The curved front screen shows a remarkably uniform range of screen brightness values—there are really no “bad” seats in the house. With the rear screen system we note brightness variations of 2:1 and 3:1, which accounts for the dim appearance of the image when viewed at wide angles.

Performance of the flat front screen will fall below that of the curved screen, both in brightness and distribution.

**Space requirements and projection systems will vary depending upon use of the room**

We might be tempted to conclude that the curved screen is the ultimate answer to all projection situations—but it is not. There are many times when a front-projection system shouldn't be used at all. The limitations of the rear screen must likewise be understood. Some applications might favor either type, and the choice might be for some reason other than performance of screen viewing.

**Where is rear screen best?**

Here are several types of applications for which the rear screen system is recommended:

1. *Educational.* Classrooms, lecture halls, and learning spaces can derive maximum benefit from the rear-screen system if the viewing audience is kept within the prescribed limits of satisfactory image brightness variations. The most common error made in the design of such spaces is to attempt wide-angle seating. Restricted area seating should be employed when projected visual images are shown. It is impossible to view the screen with satisfactory image brightness when sitting in extreme end zone seats, even though these side seats are usable for live presentations.

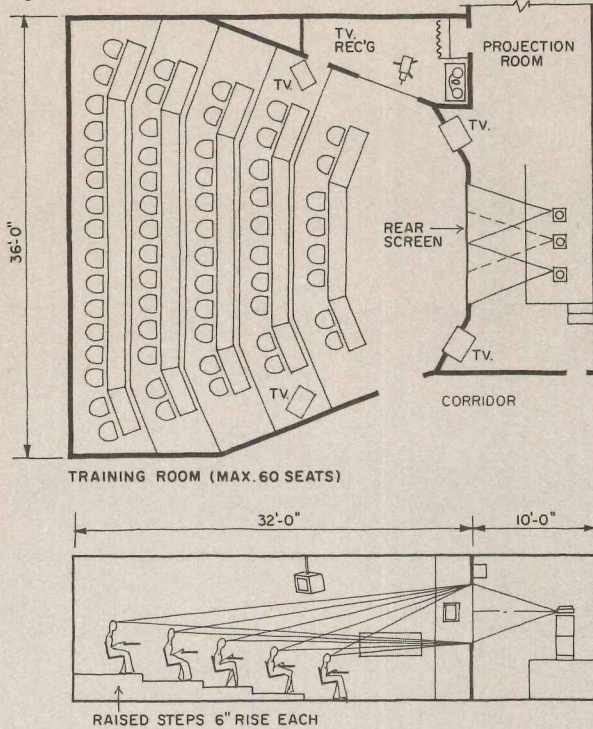
The use of higher ambient light levels is also permissible with the rear screen system—necessary for audience participation and demonstration.

2. *Training rooms.* These spaces usually require audience participation and live demonstrations, and may need variable lighting levels for different situations. Figure 11 is an example of design for the single-purpose usage of a training room. Note how the room is tapered toward the front, to more closely conform to the seating area. The resulting space saved is used to create a television recording room on the left side, and to lend width to the corridor on the right to achieve better traffic flow.

3. *Small conference, meeting, board rooms.* Small meeting rooms, holding from six to 12 people, are common in many buildings. Audio-visual planning for these spaces is usually dismissed with an automatic decision to use “roll-in” equipment. This kind of decision, made to save budget by not outfitting a room with a complete,

**Numerous factors must be considered in weighing front-screen vs. rear-screen projection**

Figure 11



The training room in Figure 11 has rear projection; thus, room lights can be left on while images are shown on the screen. With rear-screen projection there are fewer good seats; here, space poor for seating is utilized for a TV receiving room and to enlarge a corridor.

The board room shown in Figure 12 calls for as many as six images to be shown on the screen at one time. Space is saved in the projection room, and “keystone” of images minimized by using front projection. The projection room also serves another smaller conference room.

The RCA board room shown in the photos (Figure 13) has a deeper-than-normal rear-screen projection room to permit longer focal-length lenses to be used, thus increasing the brightest viewing zone. Interior design: Ford & Earl Design Associates.

Figure 12

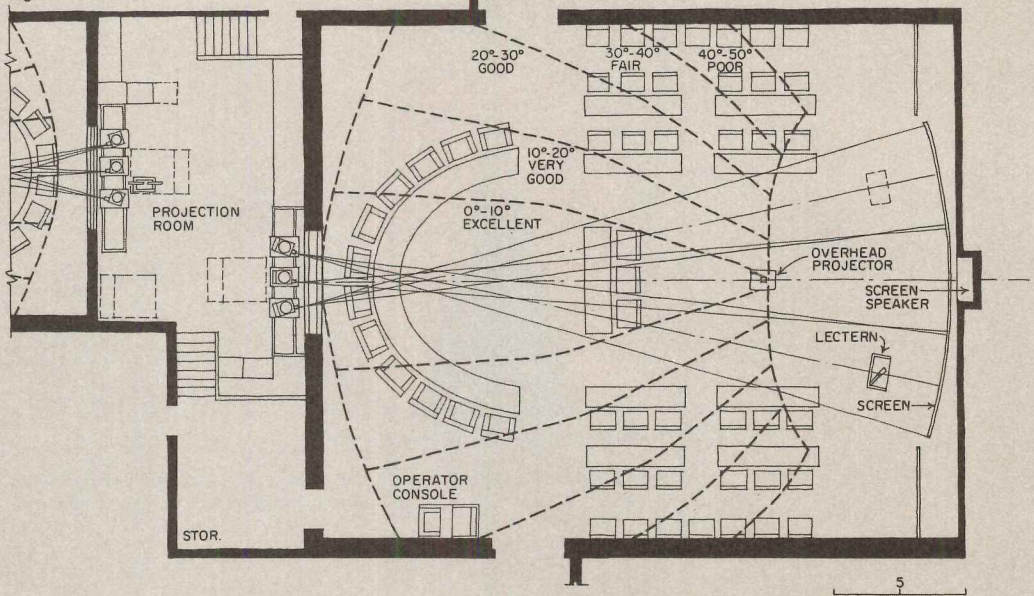
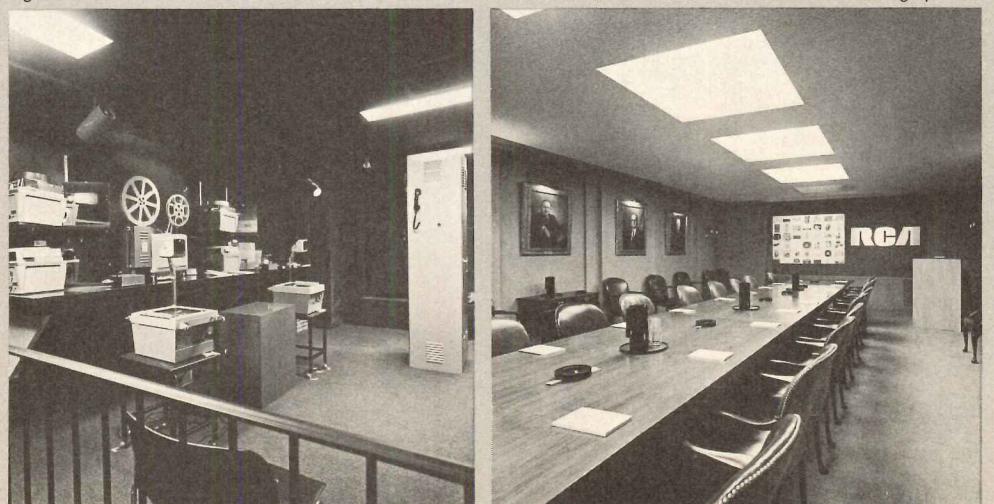


Figure 13



Gil Amiaga photos



permanent installation, does not take advantage of the state-of-the-art. But with very little added expense, and a little planning, the inconvenience of noisy projectors and table-top operation can be eliminated.

For example, a small room located adjacent to a conference room can be designed for rear-screen projection, and also can double as storage space. Equipment may still be brought from a "pool" and may be operated remotely from the room. Result is a quiet room in which adequate lighting can be used while visual images are being shown.

These spaces are usually small—that is, not larger than 12 by 18 ft. All that is needed is a permanent dual-image rear screen 3 ft 0 in. high by 6 ft 0 in. wide, with a 5 ft 3 in. deep space behind it, and a shelf on the far wall for projectors. The only other part of the system that need be built-in is the audio system, which might consist of, say, four ceiling speakers.

4. *Display areas.* Rear projection systems are ideal for lobby and similar display areas, wherever the screen and projectors must be "close coupled" to be free of lighting restrictions and public interference.

#### Where are front screens best?

While many spaces can use either front-screen or rear-screen projection, there are certain applications where the front screen is definitely best. Following are typical:

1. *Large lecture halls, small auditoriums.* These spaces are usually used for large group viewing of a less intimate nature than are the smaller classroom and lecture rooms. Many times, full-length features and entertainment films are shown requiring almost a theater environment with very dim house lighting. Seating areas are usually fairly wide-angle, because the room often is used for live presentations, dance groups, demonstrations, etc. As the screens grow larger, considerable space is saved by using the front projection booth as compared to excessively deep rear screen space for rear projection.

The decision here will be whether to use the flat or curved screen, not rear or front projection. The curved screen is unquestionably best visually, but there may be architectural problems involved in its use. For example, flat screens can be "flown," transported as sliding panels vertically or horizontally, or rolled out of sight, whereas a curved screen is usually fixed in place.

2. *Large board rooms and other corporate use areas.* Some board rooms require much more use of visually-presented media than an occasional viewing of company marketing and sales data. A typical example is the rather sophisticated arrangement shown in Figure 12. One of the requirements was the need to project up to six images in selected positions across the screen. It is much more prac-

### Low-ceiling audio-visual rooms can be "standardized" in terms of seating and projection room sizes

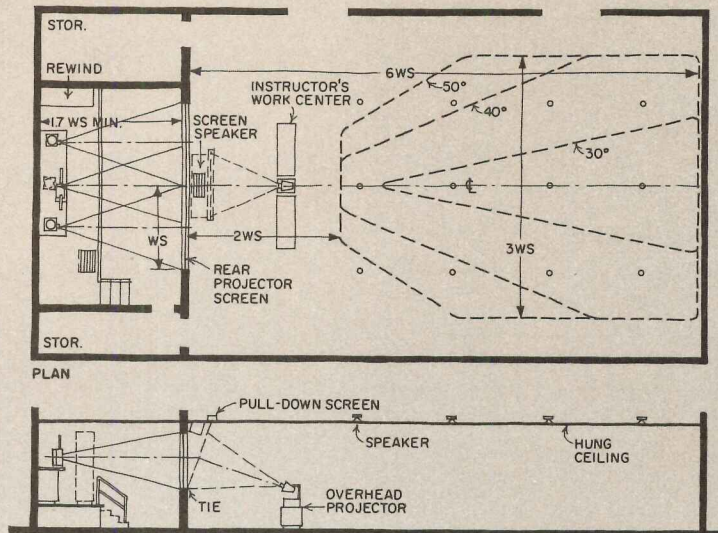


Figure 14

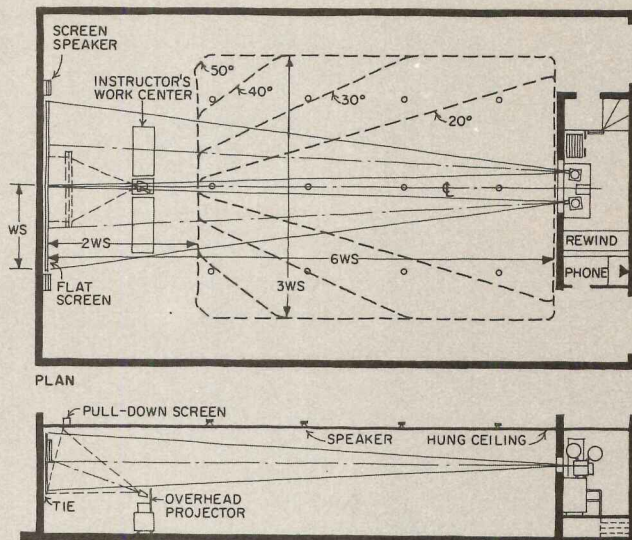


Figure 15

These plans and sections show typical layouts for low-ceiling audio-visual rooms such as might be used for training, meeting or conference rooms. Geometry and size of seating area is shown for front-screen (flat and curved) projection and for rear-screen projection.

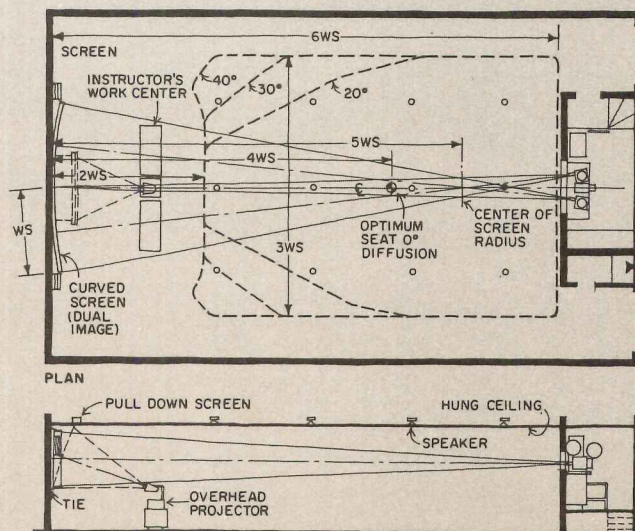


Figure 16

## Dimensional requirements and seating capacities for rooms using the three types of projection systems

TABLE 3

COL.	①	②	③	④		⑤	⑥	⑦	⑧		⑩	⑪	⑫	
				HEIGHT	WIDTH				RADIUS	DISTANCE			REAR PROJ.	FRONT PROJ.
ITEM NO.	CEILING HEIGHT OF ROOM FT.	SINGLE IMAGE SCREEN		DUAL IMAGE SCREEN		WIDTH OF AUDIENCE SPACE, FT.	LENGTH OF ROOM, FT.	CURVED SCREEN	AREA OF SINGLE IMAGE, SQ. FT.	REQ'D LIGHT OUTPUT OF PROJ., LUMENS	HEIGHT OF PROJECTION ROOM PLATFORM			
		HEIGHT H FT.	WIDTH W <sub>s</sub> FT.	HEIGHT H FT.	WIDTH W <sub>d</sub> FT.						HEIGHT OF ROOM PLAT- FORM	FRONT PROJ.		
1	8'-6"	2'-9"	4'-0"	2'-9"	8'-0"	12'-0"	24'-0"	19'-2"	16'-0"	11	210	0'-10"	1'-6"	
2	"	3'-1"	4'-6"	3'-1"	9'-0"	13'-6"	27'-0"	21'-7"	18'-0"	13.8	260	1'-0"	1'-6"	
3	"	3'-5"	5'-0"	3'-5"	10'-0"	15'-0"	30'-0"	24'-0"	20'-0"	17	320	1'-2"	1'-6"	
4	"	3'-9"	5'-6"	3'-9"	11'-0"	16'-6"	33'-0"	26'-5"	22'-0"	20.6	390	1'-4"	1'-6"	
5	"	4'-1"	6'-0"	4'-1"	12'-0"	18'-0"	36'-0"	28'-11"	24'-0"	24.5	460	1'-6"	1'-6"	
6	9'-0"	3'-5"	5'-0"	3'-5"	10'-0"	15'-0"	30'-0"	24'-0"	20'-0"	17	320	1'-2"	1'-6"	
7	"	3'-9"	5'-6"	3'-9"	11'-0"	16'-6"	33'-0"	26'-5"	22'-0"	20.6	390	1'-4"	1'-6"	
8	"	4'-1"	6'-0"	4'-1"	12'-0"	18'-0"	36'-0"	28'-11"	24'-0"	24.5	460	1'-6"	1'-6"	
9	"	4'-6"	6'-8"	4'-6"	13'-4"	20'-0"	40'-0"	32'-0"	26'-8"	30	565	1'-9"	1'-6"	
10	9'-6"	3'-9"	5'-6"	3'-9"	11'-0"	16'-6"	33'-0"	26'-5"	22'-0"	20.6	390	1'-4"	1'-6"	
11	"	4'-1"	6'-0"	4'-1"	12'-0"	18'-0"	36'-0"	28'-11"	24'-0"	24.5	460	1'-6"	1'-6"	
12	"	4'-6"	6'-8"	4'-6"	13'-4"	20'-0"	40'-0"	32'-0"	26'-8"	30	565	1'-9"	1'-9"	
13	"	5'-0"	7'-5"	5'-0"	14'-10"	22'-3"	44'-6"	35'-7"	29'-8"	37.3	700	2'-0"	2'-0"	
14	10'-0"	4'-1"	6'-0"	4'-1"	12'-0"	18'-0"	36'-0"	28'-11"	24'-0"	24.5	460	1'-6"	1'-6"	
15	"	4'-6"	6'-8"	4'-6"	13'-4"	20'-0"	40'-0"	32'-0"	26'-8"	30	565	1'-9"	1'-9"	
16	"	5'-0"	7'-5"	5'-0"	14'-10"	22'-3"	44'-6"	35'-7"	29'-8"	37.3	700	2'-0"	2'-0"	
17	"	5'-6"	8'-2"	5'-6"	16'-4"	24'-6"	49'-0"	39'-4"	32'-8"	45	850	2'-3"	2'-3"	

① THESE VALUES ARE MAXIMUM, BASED ON 4'-0" CLEAR BELOW SCREEN.  
 ② IMAGE DIMENSIONS BASED ON 35 MM SLIDE, 3" D DOUBLE FRAME.  
 ③ ADD 4'-0" EACH FOR SIDE AISLES.  
 ④ BASED ON 80% SCREEN EFFICIENCY.

REAR SCREEN

COL.	①	④ FOLDING CHAIRS WITH WRITING SURFACE				⑤ TABLES, 5'-0" LONG x 2'-0" WIDE, 2 SEATS PER TABLE							
		NO. SEATS/ROW		NUMBER OF ROWS 36" SPACING	TOTAL SEATS		NO. TABLES/ROW		NUMBER OF ROWS 54" (MIN.) SPACING	TOTAL SEATS			
		WITH CENTER AISLE	WITHOUT CENTER AISLE		WITH CENTER AISLE	WITHOUT CENTER AISLE	WITH CENTER AISLE	WITHOUT CENTER AISLE		WITH CENTER AISLE	WITHOUT CENTER AISLE		
1	8'-6"	—	—	4,5,6...①	6	—	—	33	1,2...②	—	4	14	—
2	"	—	—	4,5,7...①	7	—	—	44	2...②	2,3...③	4	16	22
3	"	—	—	4,5,8...①	8	—	—	57	—	2,3...③	5	—	28
4	"	—	—	5,7,9...①	8	—	—	66	—	2,3...③	6	—	34
5	"	—	—	5,6,8,9...①	9	—	—	73	—	2,4...③	6	—	44
6	9'-0"	—	—	4,5,8...①	8	—	—	57	—	2,3...③	5	—	28
7	"	—	—	5,7,9...①	8	—	—	66	—	2,3...③	6	—	34
8	"	—	—	5,6,8,9...①	9	—	—	73	—	2,4...③	6	—	44
9	"	—	—	5,6,8,10...①	10	—	—	89	—	2,3,4...③	7	—	50
10	9'-6"	—	—	5,7,9...①	8	—	—	66	—	2,3...③	6	—	34
11	"	—	—	5,6,8,9...①	9	—	—	73	—	2,4...③	6	—	44
12	"	—	—	5,6,8,10...①	10	—	—	89	—	2,3,4...③	7	—	50
13	"	—	—	6,7,9,11...①	11	—	—	110	3,4...③	—	7	54	—
14	10'-0"	—	—	5,6,8,9...①	9	—	—	73	—	2,4...③	6	—	44
15	"	—	—	5,6,8,10...①	10	—	—	89	—	2,3,4...③	7	—	50
16	"	—	—	6,7,9,11...①	11	—	—	110	3,4...③	—	7	54	—
17	"	—	—	6,9,10,12...①	12	—	—	133	2,2,4...③	3,4,5...③	8	56	74

① INDICATES FIRST ROW 4 SEATS, SECOND ROW 5 SEATS ETC.  
 ② NO CENTER AISLE AT FIRST ROW.  
 ③ NO CENTER AISLE AT FIRST TWO ROWS ONLY.

FRONT SCREEN (FLAT OR CURVED)

COL.	①	④ FOLDING CHAIRS WITH WRITING SURFACE				⑤ TABLES, 5'-0" LONG x 2'-0" WIDE 2 SEATS PER TABLE						
		NO. SEATS/ROW		NUMBER OF ROWS 36" SPACING	TOTAL SEATS		NO. TABLES/ROW		NUMBER OF ROWS 54" (MIN.) SPACING	TOTAL SEATS		
		WITH CENTER AISLE	WITHOUT CENTER AISLE		WITH CENTER AISLE	WITHOUT CENTER AISLE	WITH CENTER AISLE	WITHOUT CENTER AISLE		WITH CENTER AISLE	WITHOUT CENTER AISLE	
1	8'-6"	—	—	6	—	—	36	2	—	4	16	—
2	"	—	—	7	7	—	49	2	—	5	20	—
3	"	—	—	8	—	—	64	—	3	5	—	30
4	"	—	—	9	8	—	72	—	3	6	—	36
5	"	8	9	9	72	81	—	—	4	6	—	48
6	9'-0"	—	—	8	8	—	64	—	3	5	—	30
7	"	—	—	9	8	—	72	—	3	6	—	36
8	"	8	9	9	72	81	—	—	4	6	—	48
9	"	8	10	10	80	100	—	—	4	7	—	56
10	9'-6"	—	—	9	8	—	72	—	3	6	—	36
11	"	8	9	9	72	81	—	—	4	6	—	48
12	"	8	10	10	80	100	—	—	4	7	—	56
13	"	10	11	11	110	121	4	5	7	56	70	—
14	10'-0"	8	9	9	72	81	—	—	4	6	—	48
15	"	8	10	10	80	100	—	—	4	7	—	56
16	"	10	11	11	110	121	4	5	7	56	70	—
17	"	10	12	12	120	144	4	5	8	64	80	—

tical to project from a booth-located cluster of projectors in a situation like this than to position projectors behind the screen on individual image centers with short throw. Not only is keystone kept within acceptable limits, but considerable space is saved, and a much more efficient operating arrangement is achieved.

In front screen applications where viewer participation is necessary, the room lighting system and its control play a very important part in the over-all design, and in fact can make the difference between an excellent and a marginal installation. Regardless of the various modes of operation, these must be workable so as not to degrade projected images when visuals are introduced. Projector light sources usually require the newer high intensity lamps to offset the ambient light that the screen has to face.

3. *Merchandising meeting rooms.* These large areas are used by manufacturers to introduce sales campaigns, and for line review and area management programs. Depending upon the size of the corporation, as many as 200 or more managers, buyers, and sales executives may meet in a single area. Heavy dependence is placed upon the use of projected visual images to show product, finish, fabric, color and texture. This is a job for a high-gain curved screen, sized for multiple images, and using projectors of the highest intensity light sources. Controlled room lighting is again a vital necessity, and a higher-than-standard ceiling is needed to permit proper screen height and position.

4. *Screening rooms.* These rooms are traditionally front-screen oriented, where films can be previewed in a darkened theater-like environment. Matte screens are most often used so that all viewers see an image of uniform brightness, without hot spots. Here again, if the room design permits, the curved screen will give excellent performance, placing all of the seats in the zone of highest image brightness.

The much-used overhead and opaque projectors are designed as front screen devices, and should always be used as such if the projector is being used as an active teaching aid, where the user must face his audience and work with visual materials. When information being presented does not require hand-marked overlays and graphics, the over-head projector may project rear screen. The newly renovated RCA board room, located in New York City, uses such a rear screen arrangement with dual images. A view of the projection room, with twin overhead projectors in operating position is shown on page 142. The depth of the space for the rear screen slide and movie projectors is deeper than usual to permit longer focal viewing area in the brightest viewing zone is increased.

# ZINC prevents corrosion from getting a seat in Wrigley Field

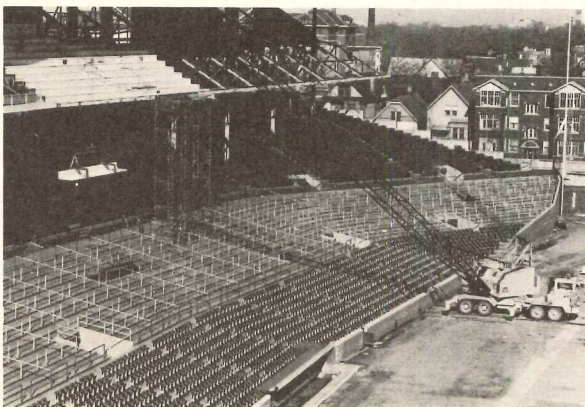
The newly refurbished seating sections in the home of the Cubs use pre-cast concrete panels reinforced with hot dip zinc galvanized steel.

"The galvanizing of reinforcing steel and mesh was specified to eliminate rusting and corrosion in the event of any cracking in the concrete and as part of the requirement of having all imbedded metal items rust resistant to the highest degree possible," said Charles E. Correa, president of LBC, Inc., general contractor for the project.

About 1000 pre-cast L-shaped panels, 19' long by 2'9" wide by 18" high and weighing a ton apiece were used in the \$1,200,000.00 project.

The zinc-protected reinforcing steel was decided upon after consultation among the architect, consulting engineer, owner and general contractor. By preventing sub-surface rust, galvanized re-rod also eliminates surface cracking or spalling from internal pressures caused by rust build-up.

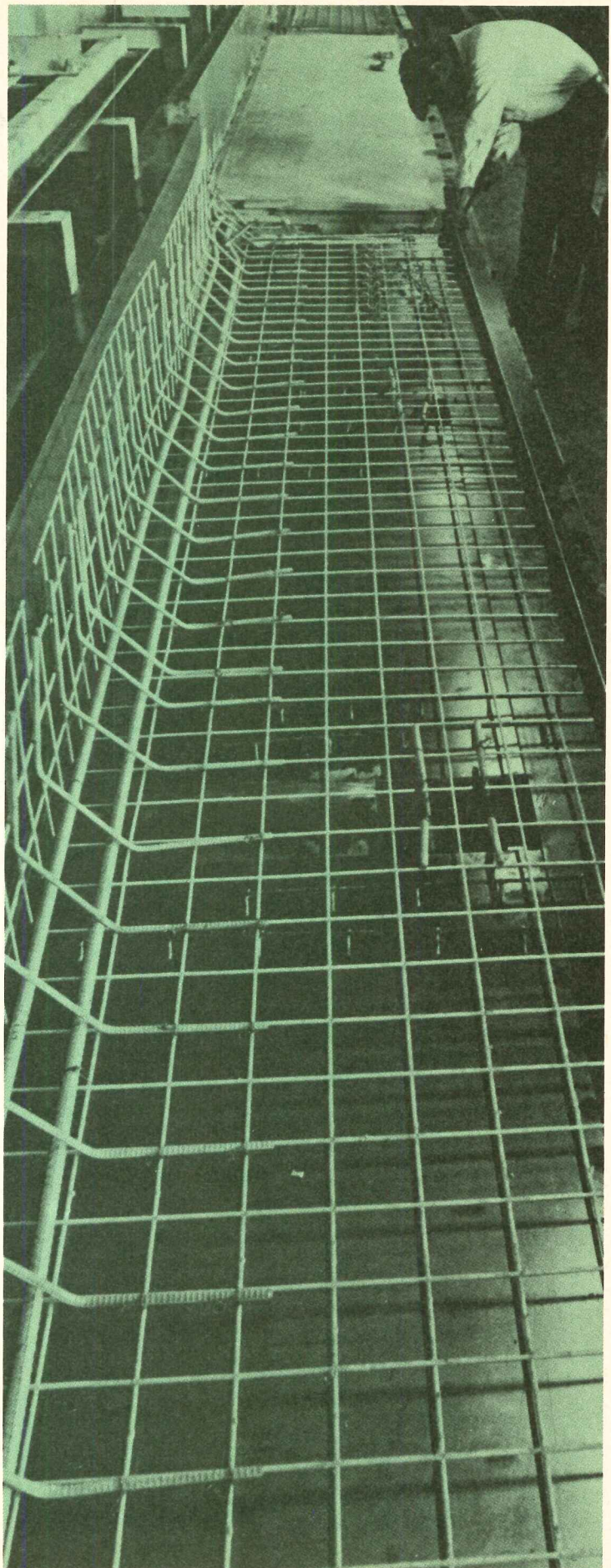
Used in concrete or as a separate material, galvanized steel provides the most practical combination of strength, corrosion resistance and economy.



Architects—Solomon, Cordwell, Buenz & Associates • Structural steel design engineers—Alfred Benesch & Company • Concrete panels—Prestcrete Corp. and Midwest Prestressed Concrete Co.

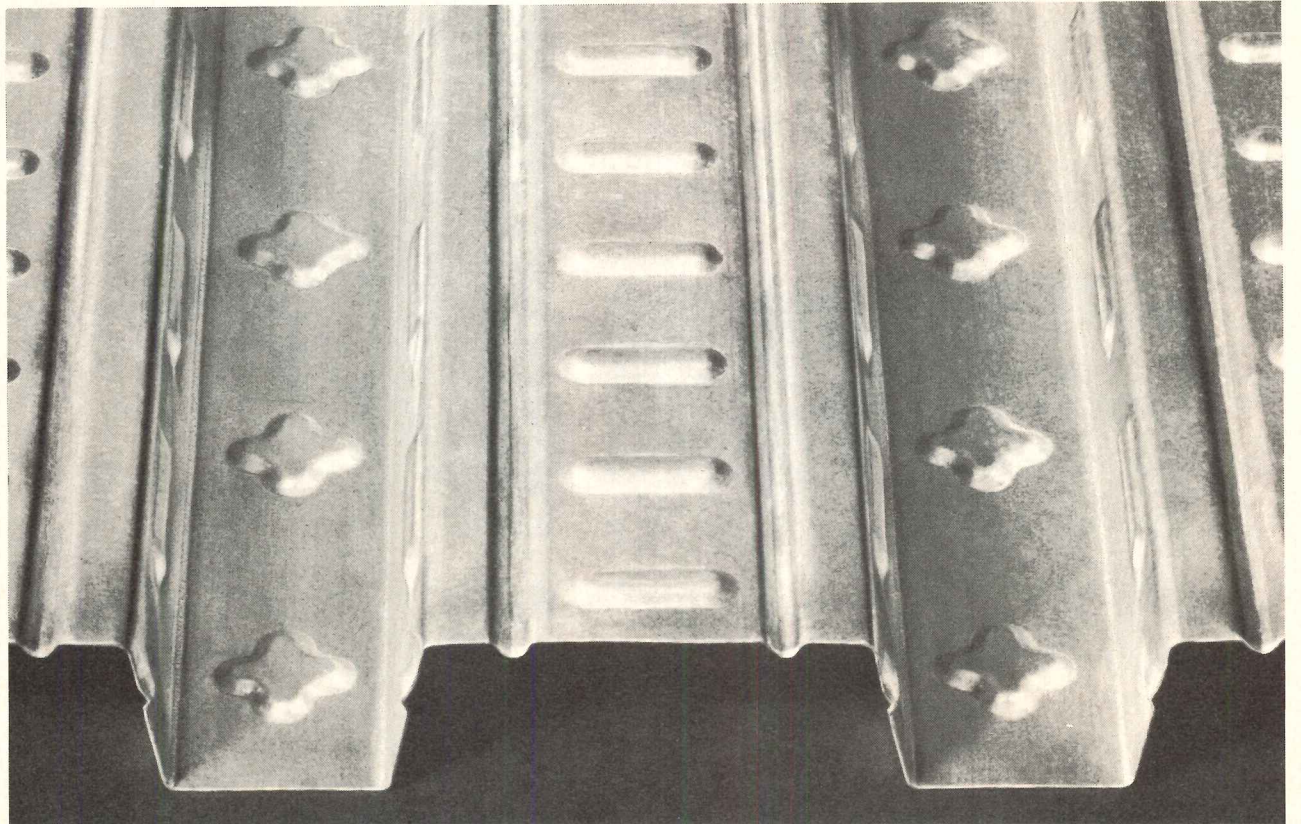
**ST. JOE**  
MINERALS CORPORATION

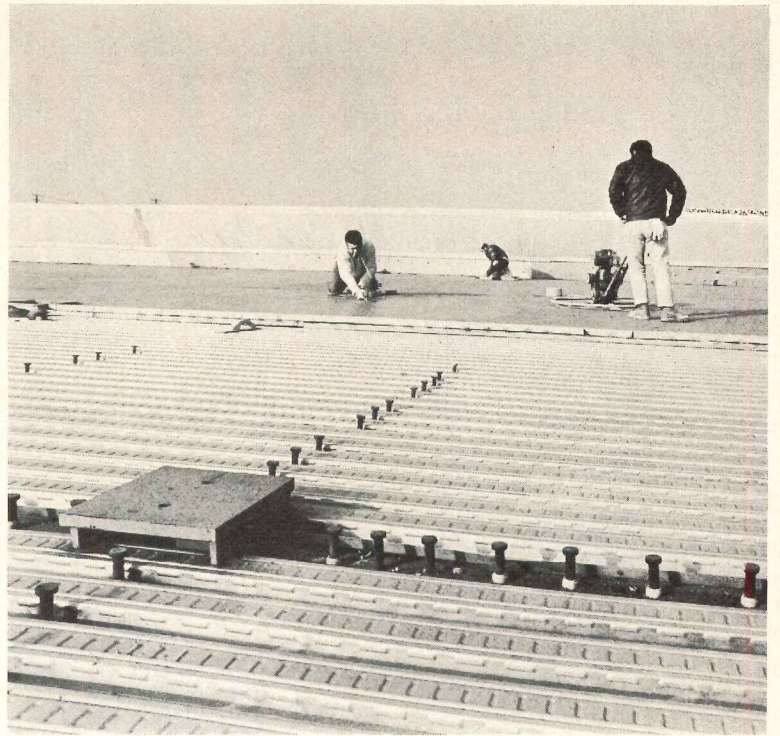
250 Park Avenue, New York, New York 10017, Tel. (212) 986-7474



ZN-471

# Our Versatile Bump...





# It can turn a roof into a floor.

It's not magic; it's just an example of the practical versatility of our SUPERBOND BC Deck—the composite deck with more bumps (embossments) than any other.

The Adam, Meldrum & Anderson department store, outside Buffalo, N.Y., was designed and constructed by Brown and Matthews for United National Corporation with a finished concrete floor (shown in photo) under the roofing.

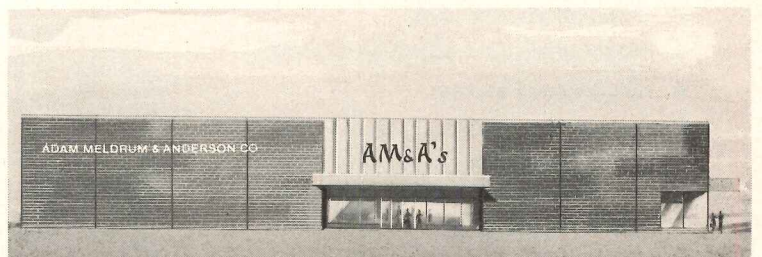
That way, if AM&A wants to add more floors, all they have to do is take off the roofing and extend the steel framework (the square "plate" in the photo is the top of a column which will be covered by the roofing).

Our SUPERBOND BC Deck was chosen because it offers the greatest shear-bond resistance for maximum lateral strength and stability, and can easily handle the dead-weight load of the roof.

In addition, by using our deck in a composite system, B&M was able to use shallower beams. This reduced the over-all height of the building and the cost of exterior walls and all interior materials—and of course, steel costs, too.

SUPERBOND BC Deck comes in wipe-coat and 1¼ oz. galvanized, and prime coat painted. For more information, write for our free brochure WC-380R1.

The versatile bumps. Much too practical to be magic.



Designers, Engineers and Constructors: Brown & Matthews, Inc.

  
**Wheeling Corrugating Company**  
A DIVISION OF WHEELING-PITTSBURGH STEEL CORPORATION

96% of what we make builds highways, buildings and reputations.

*For more data, circle 62 on inquiry card*

**SEALTIGHT** **HIAC** *Acrylic*  
**CONCRETE SEALER**



...makes outside concrete surfaces as beautiful and easy to clean as inside floors.

- **Highly resistant to oil; grease; de-icing salts; hydrochloric, acetic and sulfuric acids; caustic sodas and most industrial chemicals.**
- **High acrylic content.**
- **High or medium sheen as desired.**
- **High speed drying.**
- **Highly versatile . . . seals, protects and beautifies concrete, terrazzo, slate, stone, exposed aggregate and other ceramic-type materials.**

... inside or outside, HIAC is a concrete sealer that provides excellent weatherproofing, stainproofing, sealing and dustproofing qualities. HIAC amplifies the natural beauty of concrete and masonry. It can be applied to provide the degree of sheen and protection desired . . . the more coats applied, the higher the resulting sheen of the protective film. The hard, smooth, clear HIAC protective film will not discolor or turn yellow.

The rugged, long-lasting HIAC film is highly resistant to stain . . . spills may be easily wiped up or merely hosed away. Offers excellent wearing qualities for foot and vehicular traffic.



For complete information request your Free copy of Product Catalog No. 2-1.



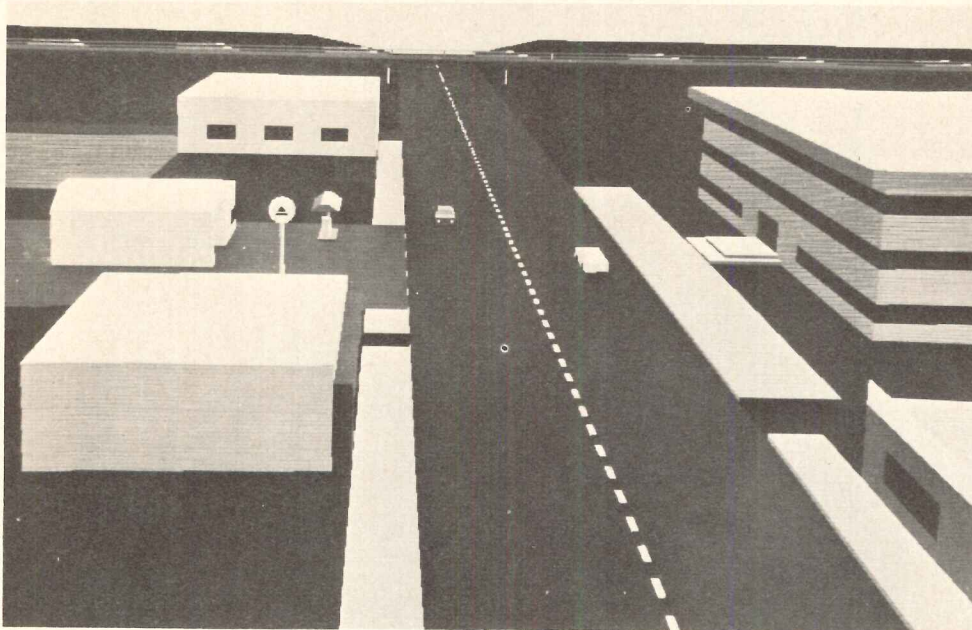
**W. R. MEADOWS, INC.**  
**30 KIMBALL STREET • ELGIN, ILLINOIS 60120**

*Other Plants*

**ATLANTA, GEORGIA  
 YORK, PENNSYLVANIA  
 WESTON, ONTARIO, CANADA**

For more data, circle 63 on inquiry card

**Computer-generated motion pictures of three-dimensional objects are processed**



A technique for producing motion pictures of three-dimensional objects represented mathematically on a computer has been developed by a computer systems firm. In addition to motion pictures, the technique yields still pictures, slides and film strips.

Shown here are reprints of two computer-

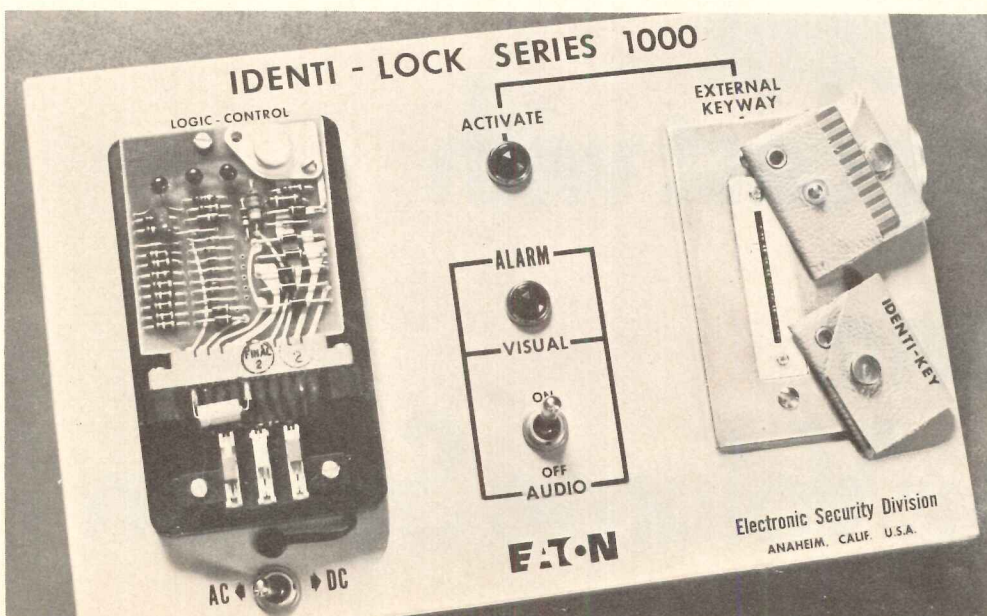
generated photos of objects existing solely in computer memory.

Working from blueprints and computer studies, a life-like movie can be made of a proposed building which would duplicate the view of a person walking past or through it, the company reports.

The method of production is based on a geometric modeling technique mathematically representing elements of the picture-taking process. Almost any object can be reproduced on film, the company claims. ■ Mathematical Applications Group, Inc., White Plains, N.Y.

Circle 300 on inquiry card

**Electronic security system combines access control with selective identification**

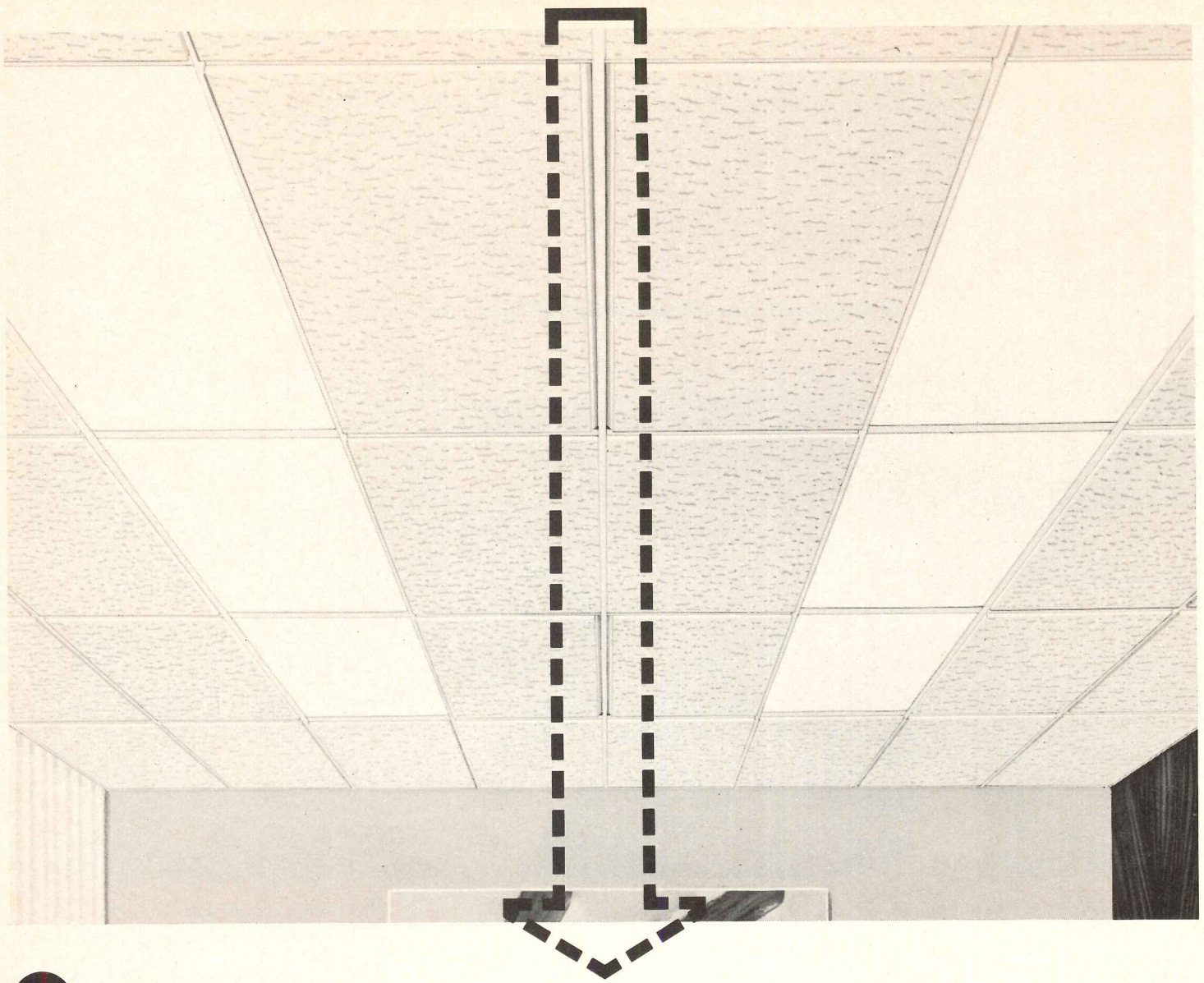


The Identi-Lock Series 1000 consists of binary-coded electronic circuits called controllers that serve as "keys" to operate the access control, or keyway (see photo). A programmed logic control panel determines the validity of each key. The system is designed to operate with any standard electric strike or door opener.

To gain entrance, a key holder slips his key into the electronic keyway, which recognizes and compares the key code with the code numbers the control panel has been programmed to accept. When the codes are identical, the door is opened. If an unauthorized key is used or an attempt is made to "pick the lock," an alarm is triggered.

If a key controller is lost or stolen, the central unit can be re-programmed in less than a minute's time to reject the key. Programs can be changed to accommodate work shifts, or on a day-to-day basis. ■ Eaton Corp., Electronic Security Div., Anaheim, Calif.

Circle 301 on inquiry card  
more products on page 152



**Save 50 cents  
a square foot on first cost.**

**Save 50 percent  
on operating cost with**

**new VariTrane  
Variable Air Volume System**



## New VariTrane Variable Air Volume System

Trane announces VariTrane, a new variable air volume system which controls temperature by varying the volume of air flowing into a room. Primary applications are in office buildings, schools and institutional buildings of any size, from single-story to high-rise.

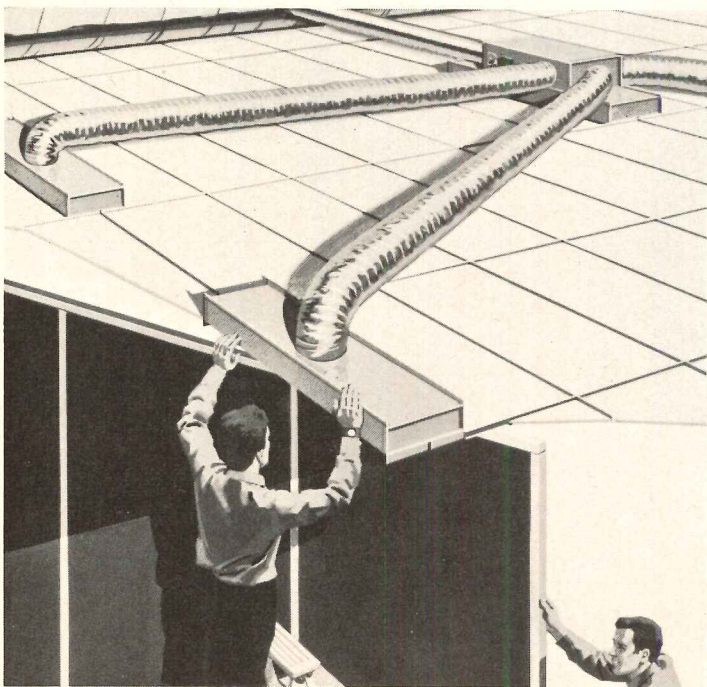
### Cuts first cost up to 50 cents/sq. ft. (20%)

Double duct and terminal reheat systems, which are frequently used for commercial building air conditioning, cool air only to heat it up again. A VariTrane System can reduce equipment cost up to 20% by cutting out the expense of the larger equipment and additional ductwork or piping required by these systems.

### Cuts operating costs up to 50%

With a variable air volume system, the cost of extra refrigeration and heat energy needed to cool and reheat the air is avoided. Also, it can provide significant savings in fan horsepower for larger buildings. The result is a saving on the total building operating cost of up to 50% which produces an increase of up to 25% in owners' cash flow.

When compared to other variable air volume systems, VariTrane provides additional cost savings because it requires 10-15% even less total fan pressure. This further reduces annual operating costs by about \$4.50 per ton, equivalent to an added yearly saving of \$2,250 on a 500-ton system.



## Control flexibility

VariTrane controls are actuated by individual wall-mounted thermostats which provide for ease of adjustment and closer control of room temperature at low air flow than may be possible with unit mounted thermostats.

## Installation and relocation flexibility

VariTrane offers true modular flexibility. With the popular T-bar ceiling system, units and thermostats are easily relocated to meet new tenant needs, and at small cost, because no alterations to ducts, chilled water or drain lines are involved. It can also be utilized with most other popular ceiling systems.

## Attractive appearance

VariTrane diffusers are narrow and unobtrusive. It's unlikely that most people will even notice them. They do not have to be set in a straight line but can be positioned anywhere to suit the design of the ceiling. And they can be painted to blend with any finish.

## Quiet

The VariTrane terminal unit is designed to absorb most air noises. This results in sound levels up to 5 decibels lower than other variable air volume systems for the same volume of air provided to the space.

## Single-source responsibility

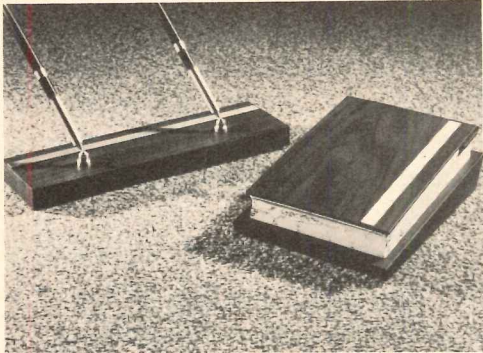
The Trane Company can supply all major products for your building air conditioning system—including water chillers, air handling equipment, terminal units and diffusers. This allows a building owner to look to only one supplier, instead of several, for any service required on the major components of his air conditioning system.

For complete information on VariTrane Systems—call your local Trane office or write: Mr. R. L. McLain, The Trane Company, La Crosse, Wisconsin 54601.

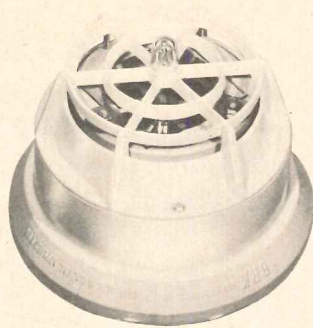
**TRANE**<sup>®</sup>  
AIR CONDITIONING

For more data, circle 64 on inquiry card

continued from page 149



**CARPET** / Designed for contract use, this multi-colored plush tufted carpet with nylon pile is offered in eleven different color combinations. ■ Philadelphia Carpet Co., Cartersville, Ga.  
Circle 302 on inquiry card

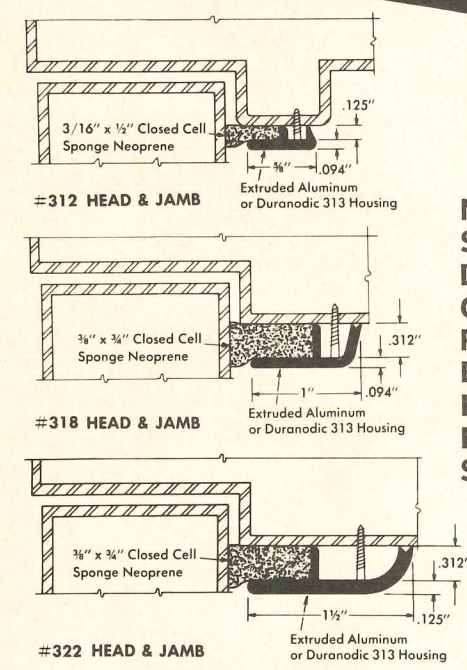


**SMOKE SENSOR** / This detector can be used with existing fire detection systems. The unit can be ceiling-mounted. ■ BRK Electronics, Aurora, Ill.  
Circle 303 on inquiry card



**PLANTERS** / Designed for interior and exterior use, these five shapes are offered in two sizes. ■ Martin Design Consultants, Los Angeles.  
Circle 304 on inquiry card

our 47th year

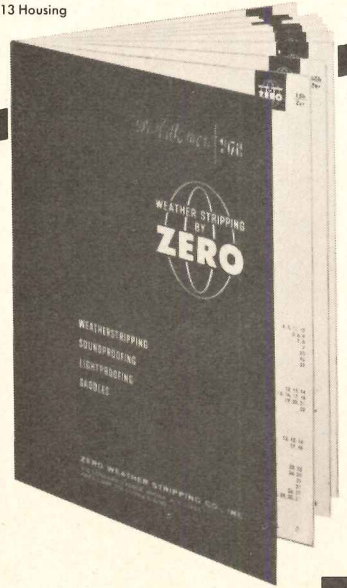


**NEW, SPECIALLY DESIGNED GROUP OF HEAD AND JAMB PROTECTORS. EXTRA-THICK HOUSINGS FOR ADDED STRENGTH.**

the most complete and authoritative guide for—

- WEATHER STRIPPING
- SOUND PROOFING
- LIGHT PROOFING
- THRESHOLDS

Zero's new Catalog shows many new products, contains 184 full size drawings.



Write today for your copy

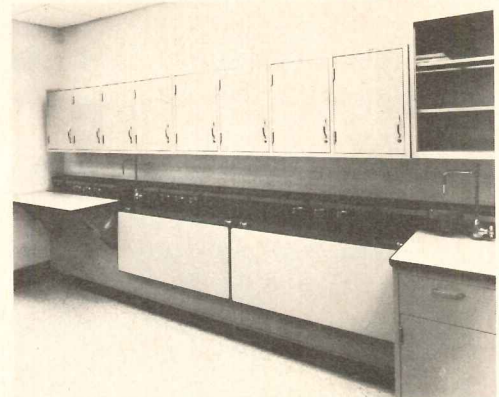
**ZERO WEATHER STRIPPING CO., INC.**

Our 47th year of service to architects

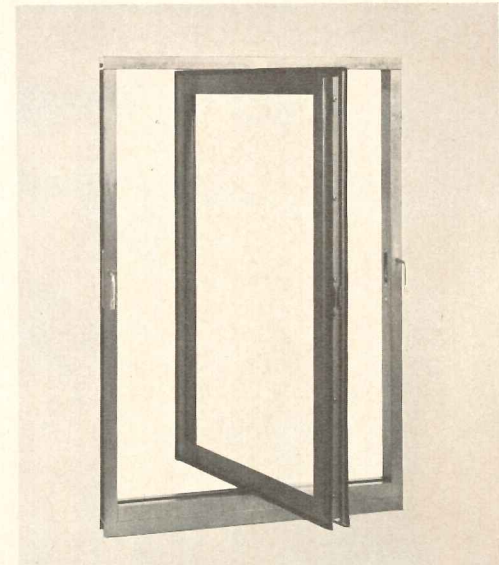
415 Concord Avenue, Bronx, New York 10455 • (212) LU 5-3230



For more data, circle 65 on inquiry card



**LABORATORY TABLES** / Covered with a glass-ceramic material with a fiberglass hardboard backing, these table surfaces are virtually unaffected by heat, thermal shock or chemicals, the manufacturer reports. Spot tests with a variety of chemicals left no permanent discoloration. Maximum use temperature of the lab top is reported to be more than 1,000 F. ■ Corning Glass Works, Corning, N.Y.  
Circle 305 on inquiry card



**REVERSIBLE WINDOW** / Manufactured from solid, hot-rolled steel sections, the window accommodates insulating glass up to one-in. thick. The ventilator rotates 180 degrees. ■ Hope's Windows, Jamestown, N.Y.  
Circle 306 on inquiry card

more products on page 168

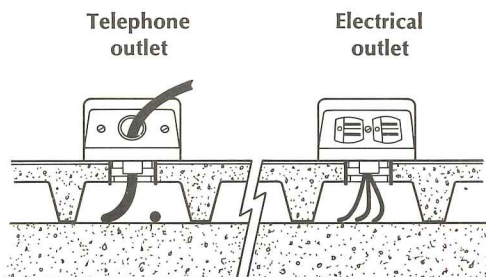
# Access flooring solves office remodeling problems

*...economically and for years to come.*

By using Weber access flooring Caterpillar Tractor Co. found an economical solution to a number of familiar remodeling problems. While a comparison of initial costs with other methods favored the access flooring, future cost savings were the real deciding factor.

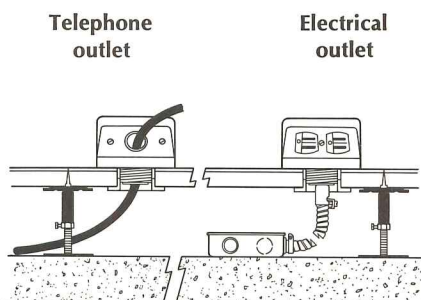
Caterpillar's Building TT in East Peoria, Illinois was built in the 1930's. Its solid concrete floor contained no electrical raceways and, by 1970, was as much as 3 inches out of level in places. Remodeling of the building entailed two requirements: (1) sufficient underfloor capacity for electrical and telephone services, both present and future, and (2) a level surface for economical installation of movable wall partitions.

Both requirements could have been achieved by pouring a new concrete slab with raceway over the old one but only at the loss of flexibility of future office rearrangement and probable wiring changes. Caterpillar records show that relocation of just one desk telephone costs from \$17 to \$25 when a tiled concrete floor must be drilled to reach a conventional raceway.



**Slab-on-slab, with raceways**

A Weber access flooring system with 27" x 27" panels, surfaced with one-piece vinyl asbestos tiles and supported on 6" adjustable pedestals, proved to be the bet-



**Access Flooring on old slab**

ter solution. The raised floor provides adequate space for present and future wiring. Floor outlets can be located practically anywhere in a matter of minutes and, when necessary, a floor panel and outlet often can be moved as a unit when a desk is relocated. Further, installation of the system produces a level floor—one to which wall partitions can be quickly fastened.

This floor system fills another Caterpillar requirement, resistance to water penetrating the underfloor area. The automatic floor scrubbers used at Caterpillar dispense a detergent solution as they operate. To prevent the possibility of waste water build-up in the underfloor cavity that might damage electrical wiring and telephone lines, Weber developed a special Dual-Durometer edge molding for the

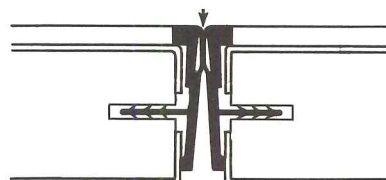
modular floor panels. It incorporates a soft, flexible vinyl rib that effectively seals the joints between panels and restricts leakage of water and air.

Detailed cost comparisons were made at Caterpillar between the alternative methods of floor renovation. It was found that the access flooring system, even with the Dual-Durometer edge, cost only 2% more than the conventional method. Considering the unlimited flexibility of office layout, the savings in future wiring changes, and the economies in partition installation, Caterpillar will realize significant long-range savings from the Weber access flooring system. (Installations of this type range from \$2.65 to \$2.95 per sq. ft., exclusive of electrical and telephone services.)

The application of access flooring in both new and remodeled buildings—including offices, schools and laboratories—is the subject of some informative literature that's yours for the asking. Write or call Weber Technical Products, Division of Walter Kidde & Company, Inc., 1340 Monroe N.W., Grand Rapids, Michigan 49502. Phone 616-361-7341.

See our catalog, No. 13.16/We, in Sweet's Architectural File.

**Compressed seals prevent seepage water**



Patent applied for

**Dual-Durometer Panel Molding**

For more data, circle 67 on inquiry card

◆ For more data, circle 66 on inquiry card

For more data, circle 68 on inquiry card ◆

**Wide-Lite\* Floodlights.**  
**They can sure**  
**turn some people off.**



**SHIPPING**  
**DEPT.**

Exterior illumination can be more than good lighting. It can be good security. Wide-Lite brings you both benefits with a wide choice of floodlights.

Light for drama and impact. Light for critical tasks. Light for outside activities. And you're lighting for safety, too.

Wide-Lite virtually wrote the book on floodlighting. (We were the first to make efficient use of the mercury vapor lamp, for example.) We're still the industry leader in matching lighting know-how to your specific needs. With versatile fixtures like these:

#### THE "WIDE-LITE" SW SERIES.

For lighting large buildings, parking lots, sports facilities, and all outdoor areas requiring smooth high level illumination, this floodlight obtains outstanding results with today's most modern light sources. A choice of reflector materials and designs, lamps, and mounting flexibility give the "Wide-Lite" SW series exceptional adaptability.

Available in models for 1000 and 400 watt mercury vapor and metal halide, and for 400 watt high pressure sodium lamps.

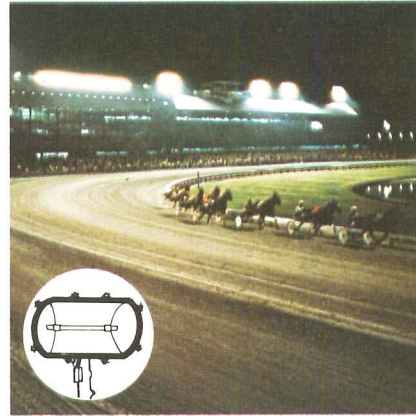
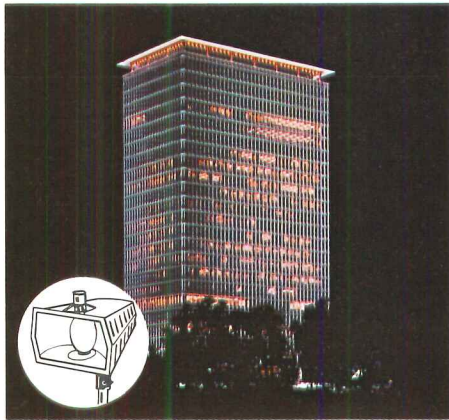
#### THE "WIDE-LITE" F SERIES.

The best, and by far the most economical, outdoor luminaire for extremely broad patterns of light with exceptional uniformity. Parking lots, work areas, loading docks, buildings. The F series is right.

Choose from four patented, segmented reflector systems in 1000 and 400 watt models for mercury vapor and metal halide light sources. Another "Wide-Lite" exclusive—the patented "Stabilux" socket that eliminates lamp breakage from shock or vibration.

#### THE "WIDE-LITE" FJ SERIES.

If you don't need high wattage, don't pay for it. Select FJ fixtures by Wide-Lite, and still get broad, smooth light patterns on building facades, parking areas, alleys, freeway underpasses, etc. These floodlights may be pole, flat base, or wall mounted. FJs offer vertical adjustment for better beam utilization and feature lower glare than fixtures with prismatic lenses.



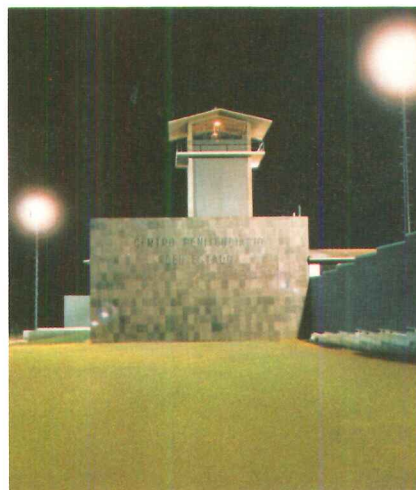
The FJ series is for 250, 175, and 100 watt mercury vapor lamps.

#### "WIDE-LITE LUMITOR."

This is the fixture for efficient, trouble-free quartz-iodine lighting. And certainly the lowest in initial cost. Proved, reliable provisions for heat control—patented "Seal-Cool" lamp clips—and exceptional photometric performance. Well-defined vertical and broad horizontal patterns make these fixtures ideal for sports fields, architecture, or billboards requiring tight vertical beams.

Available for use with 1500, 1250, and 500 watt quartz-iodine lamps.

Your "Wide-Lite" representative, who's in the Yellow Pages under Lighting, can show you a complete line of floodlights. All feature the unique design features and quality workmanship that have made Wide-Lite the floodlighting leader.



*Some people, such as the gentleman on the facing page, will continue to be turned off by "Wide-Lite" floodlighting. This maximum-security prison's F fixtures also incorporate "LiteMatic"—Wide-Lite's emergency/auxiliary lighting system. "LiteMatic" never leaves a man in the dark, even if there's a momentary or sustained power failure.*

## WideLite®


P. O. Box 191, Dept. AR-1056-6/71

Houston, Texas 77001

Also manufactured in Australia, Belgium, Canada, Mexico and Great Britain

A division of Esquire, Inc.

\*Trademark of Wide-Lite Corporation



# HILLYARD

## FLOOR TREATMENTS

### Used in America's Most Modern Athletic Complexes

*Basketball Field House, in background, part of a new \$1.9 million Health and Physical Education Complex at Pan American College, Edinburg, Texas. Architect: Kenneth Bentsen Associates, Houston, Texas.*

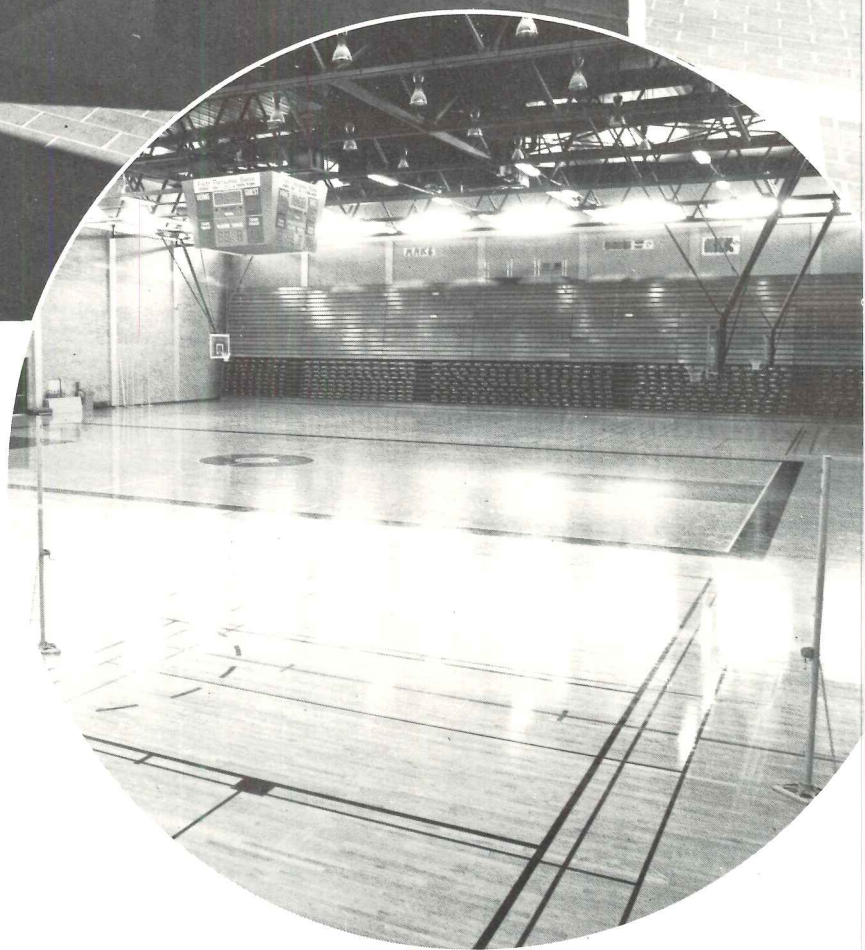
When Pan American College opened its 1969-70 basketball season in its beautiful new Field House, TROPHY® Gym Seal and Finish was on the floor.

Completion of the new physical education plant was the culmination of a 19-year dream for Pan American Athletic Director James A. Brooks, who went to Edinburg when the school was still a junior college with 320 students. In 1952, the college became a four-year school and Brooks' athletes began making themselves known. Basketball Coach Sam Williams twice took his team to the NAIA finals, winning the championship in 1963.

As in nearly 20,000 other gyms, arenas and sports complexes, TROPHY Seal and Finish was selected for the basketball and other wood sports floors. TROPHY forms a hard, smooth, slip-resistant, glare-free surface that is chosen most for championship play. It also offers unequalled wearability, beauty and ease of maintenance.

#### **HILLYARD SPECIFICATIONS MANUAL FOR EVERY FLOOR YOU SPECIFY.**

Write for your copy today. Loose-leafed and numbered, each file will be kept up to date for you. Also ask, at no obligation, for the expert advice and assistance of a certified Hillyard architectural consultant.



### **HILLYARD** FLOOR TREATMENTS

ST. JOSEPH, MISSOURI U.S.A.  
Totowa, N.J. San Jose, Calif.  
Minneapolis, Minn. Dallas, Tex.  
Boston, Mass.

IN CANADA: Calgary, Alberta  
London, Ontario



SINCE 1907

*The most widely recommended and approved treatments for every surface*

For more data, circle 69 on inquiry card

◆ For more data, circle 68 on inquiry card

For more data, circle 70 on inquiry card ◆

New Alpha 3000 is a security system. A fire alarm system. A patrol tour system. An equipment monitoring system. A communications system. A card reader system. A CCTV system. Even a building automation system. It's all of these... or any part.

---

Alpha 3000 makes specifying a protection system a whole lot easier. Lets you forget about multiple wiring layouts, system gaps and overlaps.

Honeywell will work with you. Help analyze your client's unique needs... protection,

building automation. Or both. Then, develop a *cost-effective* solution.

We integrate whatever protection and environmental devices are needed into a *single* master system. A system that can grow with your client... change as he changes. Using a common transmission cable. With leased-line reach. And a single reporting format and command keyboard.

You have just *one* company to work with... *one-source* responsibility from system analysis to final check-out and service. Honeywell, G2118, Minneapolis, Minn. 55408



**Honeywell**

The Automation Company

It's  
all together  
now!

For more data, circle 73 on inquiry card



*"Vinyl is vinyl."*

**-Don't you believe it!**

Vicrtex, the pioneer, has developed unique manufacturing techniques that guarantee a quality product. Our deeply impregnated colors won't "wear off." You get 3-way protection against mildew in our especially-treated fabric backings, our vinyls, our adhesives. Except in unusually high risk areas (acids, etc.), Vicrtex standard finishes make spot- and stain-removal easy and fast.

In addition, you're sure of Class "A" (or better) Fire Hazard classification, a broad one-year guarantee against manufacturing defects — and the Industry's richest range of original patterns, uncommonly decorative, in hundreds of colors.

Write today for your copy of our *Practical Guide to Specification, Selection, Use and Care of Vicrtex Vinyl Wallcoverings.*

**L.E. CARPENTER**

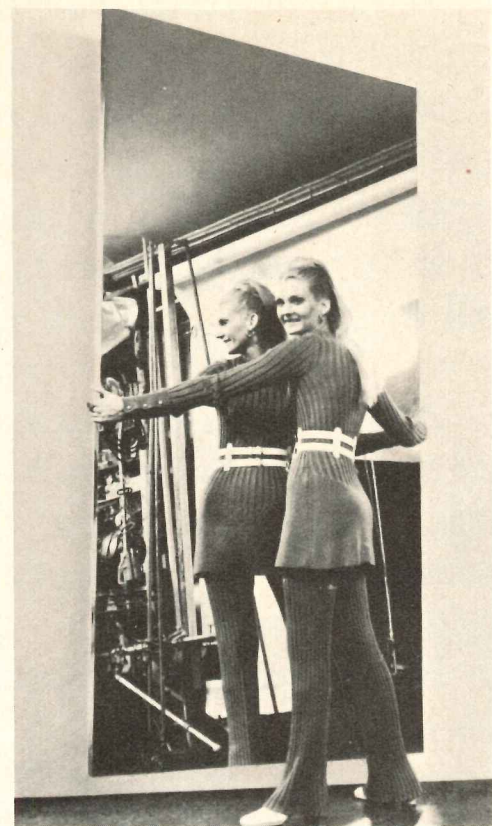
AND COMPANY



A DAYCO COMPANY

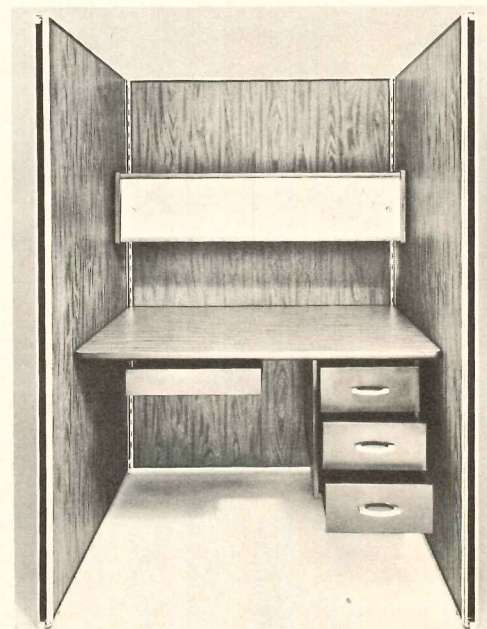
964 Third Avenue, New York, N.Y. 10022 • (212) 355-3080  
Mill: Wharton, N.J. • In Canada: Gulf Oil Canada Ltd.

Distributed in Principal Cities from Hawaii to the Caribbean by: VICRTEX SALES DIVISION: New York, Chicago, Atlanta, Los Angeles, San Francisco, Boston / HOWELLS, INC.: Salt Lake City / PAUL RASMUSSEN, INC.: Honolulu / R. B. ADLER, INC.: Santurce, Puerto Rico



**GLASSLESS MIRRORS** / Available in sizes up to 24 ft long, these mirrors are made of a thin polyester film mounted over a flat metal frame. They weigh as little as six ounces per sq ft. These unbreakable mirrors are designed for both commercial and residential use. ■ Kamar Products Inc., Irvington-on-Hudson, N.Y.

Circle 307 on inquiry card



**PARTITIONS** / These multi-use panels may be used as space dividers, or walls enclosing study carrels and other units. Panels are made of heavy wood-edge frames and honeycomb interiors covered with quarter board. Top and bottom rails and side stiles are formed of anodized aluminum. ■ Peabody Seating Co., North Manchester, Ind.

Circle 308 on inquiry card

more products on page 176

For more data, circle 74 on inquiry card



# wherever you need lighting you need Plexiglas®

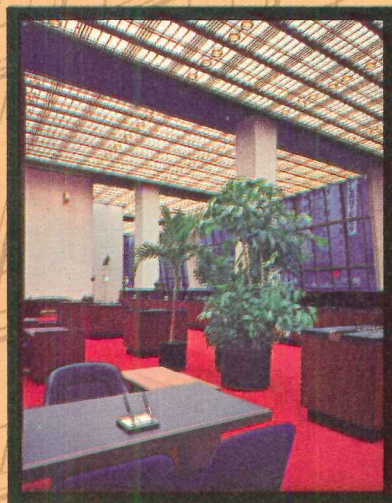
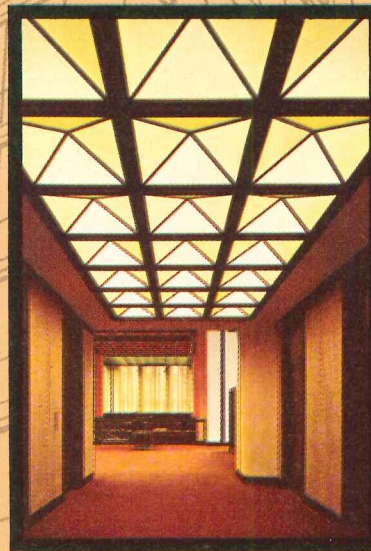
Plexiglas acrylic plastic is the only lens and diffuser material that puts it all together for quality lighting. Only Plexiglas provides the necessary combination of outstanding advantages to make its use applicable to virtually any lighting requirement.

These advantages include: □ Breakage resistance □ Precise light control at low cost □ Non-yellowing □ Great design flexibility □ Easy maintenance □ Safety in installation and service □ Capability for large area illumination □ Broad building code approvals □ Availability of tints and colors for special effects.

Our new brochure shows how these properties are being applied in many of today's greatest buildings. Send the coupon below for your copy.

**ROHM  
AND  
HAAS**   
PHILADELPHIA, PA. 19105

For more data, circle 75 on inquiry card



Rohm and Haas Company (AR)  
Independence Mall West  
Philadelphia, Pa. 19105

Please send me a copy of your new brochure  
"Plexiglas for Lighting Great Buildings".

Name \_\_\_\_\_

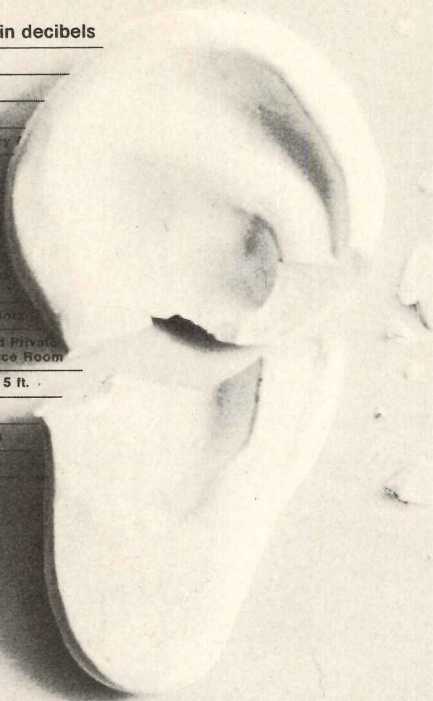
Company \_\_\_\_\_

Address \_\_\_\_\_

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

# Listen:

relative intensity,	sound pressure in decibels
100,000,000,000,000	140 Jet Aircraft
10,000,000,000,000	130 Artillery Fire
1,000,000,000,000	120 Elevated Train
100,000,000,000	110 Heavy Machinery
10,000,000,000	100 Industrial Plant
1,000,000,000	90 Printing Press
100,000,000	80 Hi Fi
10,000,000	70 Vacuum Cleaner
1,000,000	60 Secretarial Area Clerical Areas
100,000	50 Halls and Corridors
10,000	40 Quiet Home and Private Office Conference Room
1,000	30 Soft Whisper at 5 ft.
100	20 Empty Theater
10	10 Rustling Leaves
1	0




## 10 decibels may not sound like much, but...


10 decibels can make a critical difference in the next industrial plant you design or build. Because for every 10-decibel increase, the *relative intensity* of the sound multiplies ten times, as shown in the chart.

And even though such an increase is not always readily apparent to the ear, it can have pronounced effects. On employee morale. Health. Productivity. On overall profit and loss. And now, because of recent amendments to the Walsh-Healey Act, 10 decibels can mean the difference between getting valuable federal contracts—and not getting them.

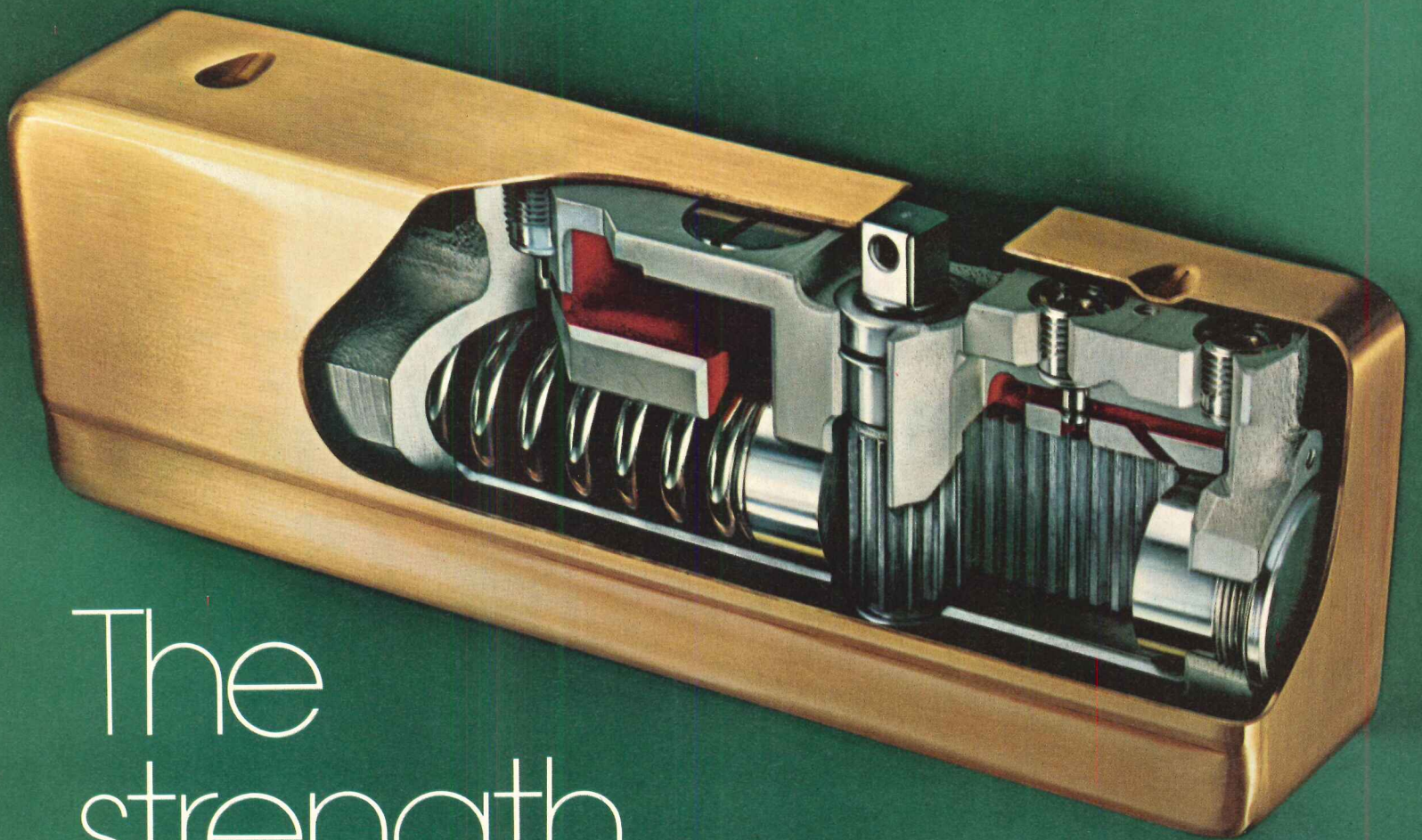
Inland-Ryerson engineers know how important 10 decibels can be to you. And they'll gladly show you how Inryco™ Acoustideck® and Acoustiwall™ can provide a solid base for designing effective sound control into a new plant.

Send for free booklet, "Reducing Industrial Noise," Catalog 23-8. For information on Acoustideck and Acoustiwall, ask for Catalog 23-1, "Inryco Roof Systems" and Catalog 22-1, "Inryco Wall Systems" (Sweet's Architectural File, Section 7). Write Inland-Ryerson Construction Products Company, Dept. F, 4033 West Burnham Street, Milwaukee, Wisconsin 53201.

**INLAND**   
**RYERSON**

General Offices: Chicago, Illinois  
A member of the  steel family

For more data, circle 76 on inquiry card



The  
strength

The  
style

The  
range

Door closers.  
Look at them as we do.  
From the inside,  
where strength and power  
combine to easily close  
the heaviest doors.

Now look at their eye appeal.  
Clean, smooth lines.  
Handsome finishes.  
Style.

Take a look, too, at the choice:  
The powerglide<sup>®</sup>,  
the 1200 Series.  
A door closer for every door,  
in every value range,  
with every feature.

Sargent door closers . . .  
well worth another look.

 **SARGENT**<sup>®</sup>

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

*For more data, circle 77 on inquiry card*

# We're out to change your mind about Tyler Pipe.

A lot of you think of us as the leading source for cast iron soil pipe and fittings. ♪ No-Hub® couplings and TY-SEAL® gaskets. And you're right.

Others think of us as a full-line source for DWV system specification products under our Wade name. You're partly right, too.

Many of our customers know us as a supplier of quality ABS plastic fittings.

Still others of you think of us as a leading supplier of waterworks and municipal fittings. You're on the right track but you're not getting the whole picture.

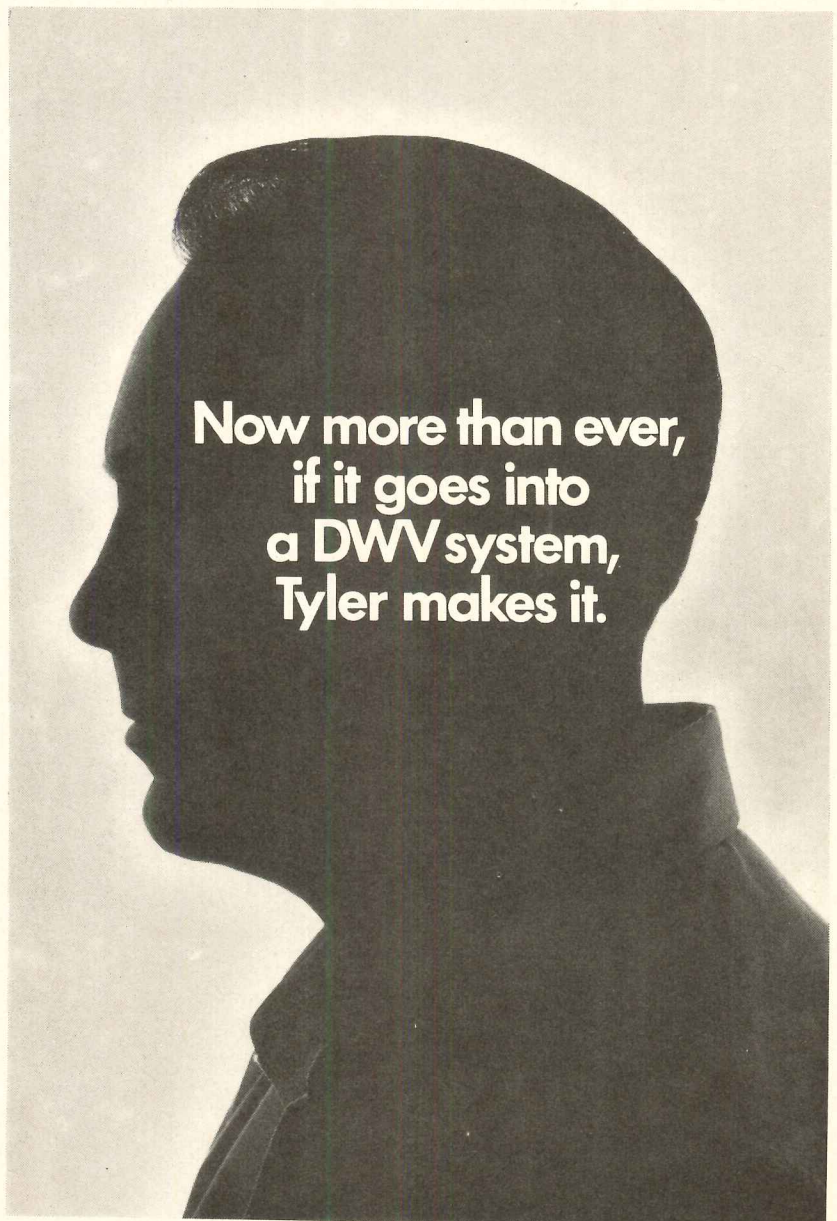
And that's why we're out to change your mind about us.

Tyler Pipe is all four of the things just mentioned.

That's a good point to remember because it means you can come to just one source for everything you need, for any DWV system requirement.

So think of Tyler Pipe as one company, one source and your one major supplier for a complete line of DWV system products. For the complete story, write P. O. Box 2027, Tyler, Texas 75701.

Now, more than ever...if it goes into a DWV system, Tyler makes it.



**Tyler Pipe**  
Subsidiary of  
Tyler Corporation

Copyright Tyler Pipe 1971

For more data, circle 78 on inquiry card

The point is, if the architect who designed this shaft had designed it shallower and a little wider, an Otis pre-engineered model elevator would have filled the bill. And the building owner would have cut his elevator costs by 20% .

Our line of standard model elevators saves you money because

they're "stock" elevators which can be delivered immediately . . . Otis standard models are literally available "off-the-shelf."

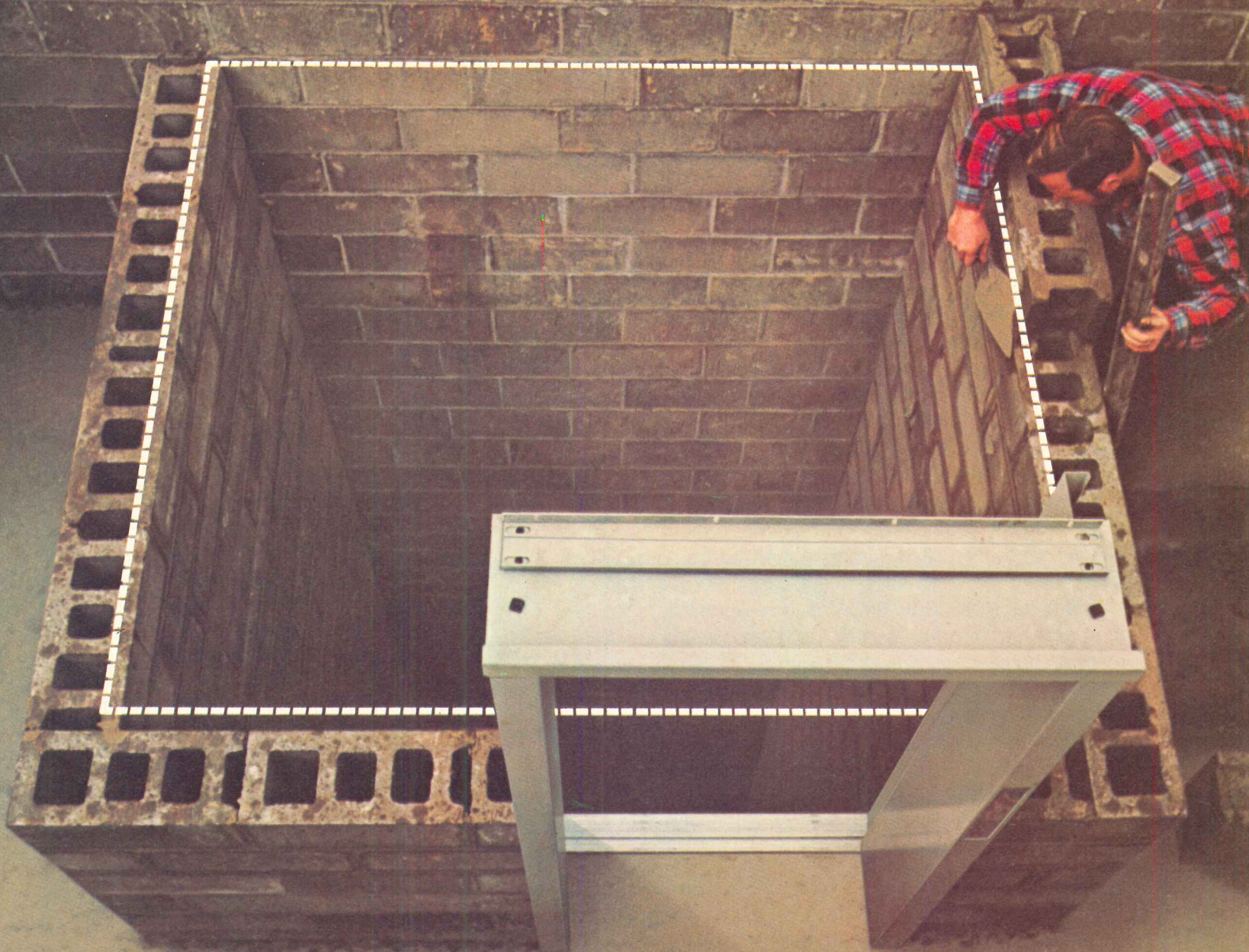
They offer the same quality engineering as Otis custom-designed elevators, with fewer frills. Installation is simple and rapid. The same world-famous Otis quality goes into

every standard model. And the same full service Otis Maintenance, with Extended Coverage, is available to keep them running for the life of the building.

What more could we offer for 20% less?

**Otis**<sup>®</sup>  
HAS A SYSTEM

**Add two  
inches and cut the  
budget 20%**



For more information on Otis standard model elevators, write on your letterhead to:  
Otis Elevator Company, Dept. R6, 260 Eleventh Avenue, New York, New York 10001.

# MICROZINC 70

the new pre-weathered  
titanium alloy  
architectural sheet metal.



L. S. Ayres & Company department store, Greenwood, Ind.  
Architect: James Associates, Indianapolis, Ind.  
Roofing & Sheet Metals: Henry S. Smither Roofing Co., Indianapolis, Ind.

Microzinc 70 gives the architect a new esthetic dimension in commercial and institutional roofing design. It's pre-weathered—the natural oxidation has been accelerated. The beautiful non-reflective grey patina complements wood or masonry.

You don't have to paint Microzinc 70. The natural, non-corrosive film makes it especially resistant to sea air and industrial atmospheres. It heals itself if scratched or marked. The coating is not artificial and therefore will not peel, crack, blister, chalk or fade.

Microzinc 70 cannot stain and therefore will not produce run-off blemishes as do many metal roofing materials.

This new zinc-titanium alloy can be used in direct contact with mortar or concrete without special protection. It is easily formed and soldered using standard sheet metal practices.

And to top it off, Microzinc 70 is less expensive than most of the other quality, long-life roofing metals.

Write for the new Microzinc 70 booklet which includes comparative properties plus design details for batten and standing seam roofs, valley flashing, gutters, fascias and gravel stops. We will also send you a sample of the pre-weathered metal so that you can examine the color and finish of Microzinc 70 for yourself.



**BALL METAL & CHEMICAL**  
DIVISION OF BALL CORPORATION  
710 OLD STAGE COACH ROAD  
GREENEVILLE, TENN. 37743

For more data, circle 79 on inquiry card



## Sitting Pretty.

You always are... with Massey Chairs.

Good looking, comfortable and dependable. Massey chairs are built that way. For the complete story on Massey quality, see your Massey dealer, or write:

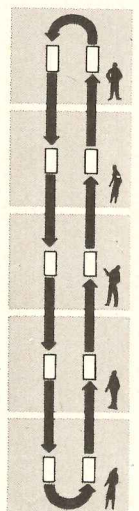


For more data, circle 80 on inquiry card

## Automatic, vertical, multi-story MAIL CONVEYORS



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



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



**Standard  
Conveyor  
COMPANY**

312-F Second Street, North St. Paul, Minn. 55109

For more data, circle 81 on inquiry card

NATIONAL

DELTA AIR LINES

# What carpet did we specify, Sam?

## *Lees.*

Why?

Well, do you remember the Frammis job where we spot checked the carpet and found the face weight 21 oz. instead of 22 as per specifications—It never happened when we checked Lees Carpet—

**With Lees**

**You get what you order.**

...and on the Glommer building that XYZ Carpet Company mixed first and second grade nylon instead of all first grade nylon as specified for the price line—

**With Lees**

**You get the carpet you pay for.**

...then you know what late delivery has done to us in the past...and slow service on problems after installation—

**With Lees**

**You get the prompt service you pay for.**

You're absolutely right. Lees it is—

**But Sam what are we doing in an airport?**

Well you know the tight space situation, Tom. And besides we're on four-year-old Design III Antron® Carpeting by Lees—36 million people and it still looks like new!

**Specify Lees, Sam.**

Right, Tom.

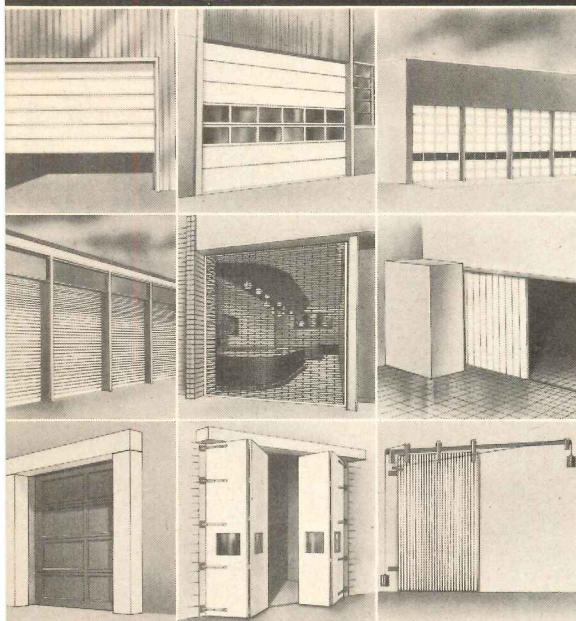
**LEES**  
CARPETS

A Division of Burlington Industries, Inc.  
national headquarters • Norristown, Pennsylvania 19401  
215-666-7770 • (Philadelphia: 215-247-3560)

See Lees Carpets Wednesday June 23rd through Friday June 25th at NEOCON 3  
(National Exposition of Contract & Interior Furnishings), Room 1814 in the Merchandise Mart, Chicago.  
For more data, circle 82 on inquiry card

LEES

when  
it comes to  
filling  
an opening...  
any opening



## CRAWFORD has the DOOR

Industrial, Commercial  
Institutional, Residential

- Sectional Doors: Steel, Fiberglass, Aluminum, Wood—Flush and Panel
- Security and Counterweighted Doors
- Rolling Doors: Steel, Stainless Steel, Aluminum
- Rolling Grilles: Steel, Stainless Steel, Aluminum, Bronze
- Rolling Counter Shutters: Wood, Steel, Stainless Steel, Aluminum
- Side Coiling Grilles and Doors: Wood, Steel, Stainless Steel, Aluminum, Bronze
- U. L. Labeled Rolling Doors, Counter Shutters, Metal Clad and Corrugated Sliding Fire Doors
- All Special Engineered Doors
- a Full Line of Accessories: Electric Operators and Controls, Pass Doors, Removable Mullions, Dor-Seal Dock Shelters.

FOR FULL DETAILS SEE YOUR SWEETS ARCHITECTURAL CATALOG FILE Section 8.9/Cra "Uprising Sectional Doors" and/or Section 8.7/Cr "Rolling Doors, Grilles, Shutters and Sliding Fire Doors."

Contact your local Crawford Distributor for specific data.

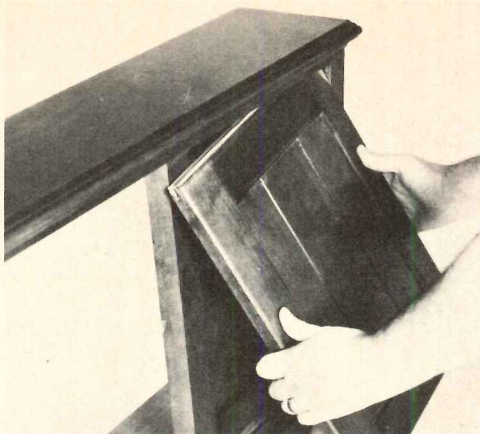


**CRAWFORD**

Crawford Door Company, 4270  
High Street, Ecorse, Michigan

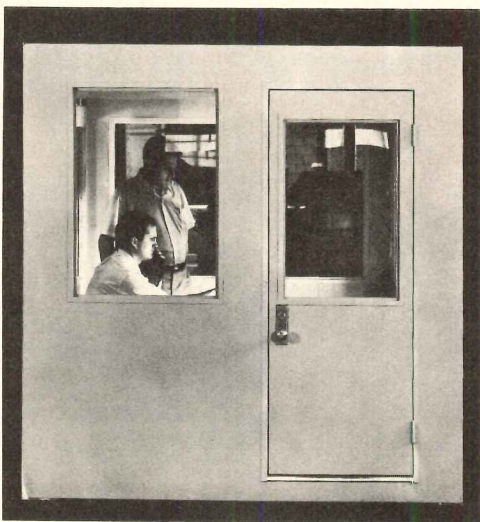
48229

Division of The Celotex Corp.



**SLIDING DOOR HARDWARE** / Plungers and guides installed inside the cabinet allow doors to slide inward and in back of one another without using any more space than doors on a track. When closed, doors appear to be hinged, with no off-set look. Designed to accommodate 1/2-in., 5/8-in., or 3/4-in. door thicknesses, each set of hardware covers up to 48 inches maximum width. This hardware is not recommended for door heights over 42 inches. ■ Bara Industries Corp., Somerville, N.J.

Circle 309 on inquiry card



**PORTABLE ACOUSTIC ROOM** / Designed for in-plant use, this unit features a 3-in.-thick wall and ceiling construction with noise absorption capability. The ventilation system is silenced. The unit can be easily moved by fork lift. ■ Eckel Industries, Inc., Cambridge, Mass.

Circle 310 on inquiry card

**DOORS** / These flush doors, faced with plastic-finished hardboard, are available in a variety of colors and textured surfaces. They have hollow-cores. Stiles, rails and lockblocks are made of sugar pine. The doors are also available with two solid-core options. The board core has a flame-spread rating under 25 and a smoke rating under 5. ■ Marlite Paneling, Dover, Ohio.



Circle 311 on inquiry card

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

**MO-SAI INSTITUTE, INC.**



Information Office  
110 Social Hall Ave.  
Salt Lake City, Utah 84111  
Members, Producers' Council

**ALLIED BUILDING SYSTEM, INC.**  
260 Tolland Turnpike  
Manchester, Connecticut 06040

A wholly-owned subsidiary of  
**PLASTICRETE CORPORATION**  
1883 Dixwell Avenue  
Hamden, Connecticut 06514

**BADGER CONCRETE CO.**  
P.O. Box 1068  
437 Marion Road  
Oshkosh, Wisconsin 54902

**BEER PRECAST CONCRETE LIMITED**  
110 Manville Road  
Scarborough, Ontario, Canada

**CAMBRIDGE CEMENT STONE CO.**  
P.O. Box 41  
156 Lincoln Street  
Allston, Massachusetts 02134

**ECONOMY CAST STONE CO.**  
P.O. Box 3-P  
100 E. Franklin Street  
Richmond, Virginia 23207

**GOODSTONE MANUFACTURING CO., INC.**  
470 Hollenbeck Street  
Rochester, New York 14621

**HAMILTON CONCRETE PRODUCTS CO.**  
1401 East 39th Street  
Chattanooga, Tennessee 37407

**HARTER CONCRETE PRODUCTS, INC.**  
1628 West Main Street  
Oklahoma City, Oklahoma 73106

**JACKSON STONE CO., INC.**  
P.O. Box 4355  
Fondren Station  
Jackson, Mississippi 39216

**OLYMPIAN STONE CO., INC.**  
P.O. Box 685  
192nd N.E. and Union Hill Road  
Redmond, Washington 98052

**THE GEO. RACKLE & SONS CO.**  
Newburg Station  
Cleveland, Ohio 44105

**THE RACKLE PRECAST OPERATIONS  
TRINITY DIVISION OF  
GENERAL PORTLAND CEMENT CO.**  
8400 East Freeway  
P.O. Box 15008  
Houston, Texas 77020

**SEKIGAHARA STONE CO., LTD.**  
2-11-1 Takara-Cho, Chuo-Ku  
Tokyo, Japan

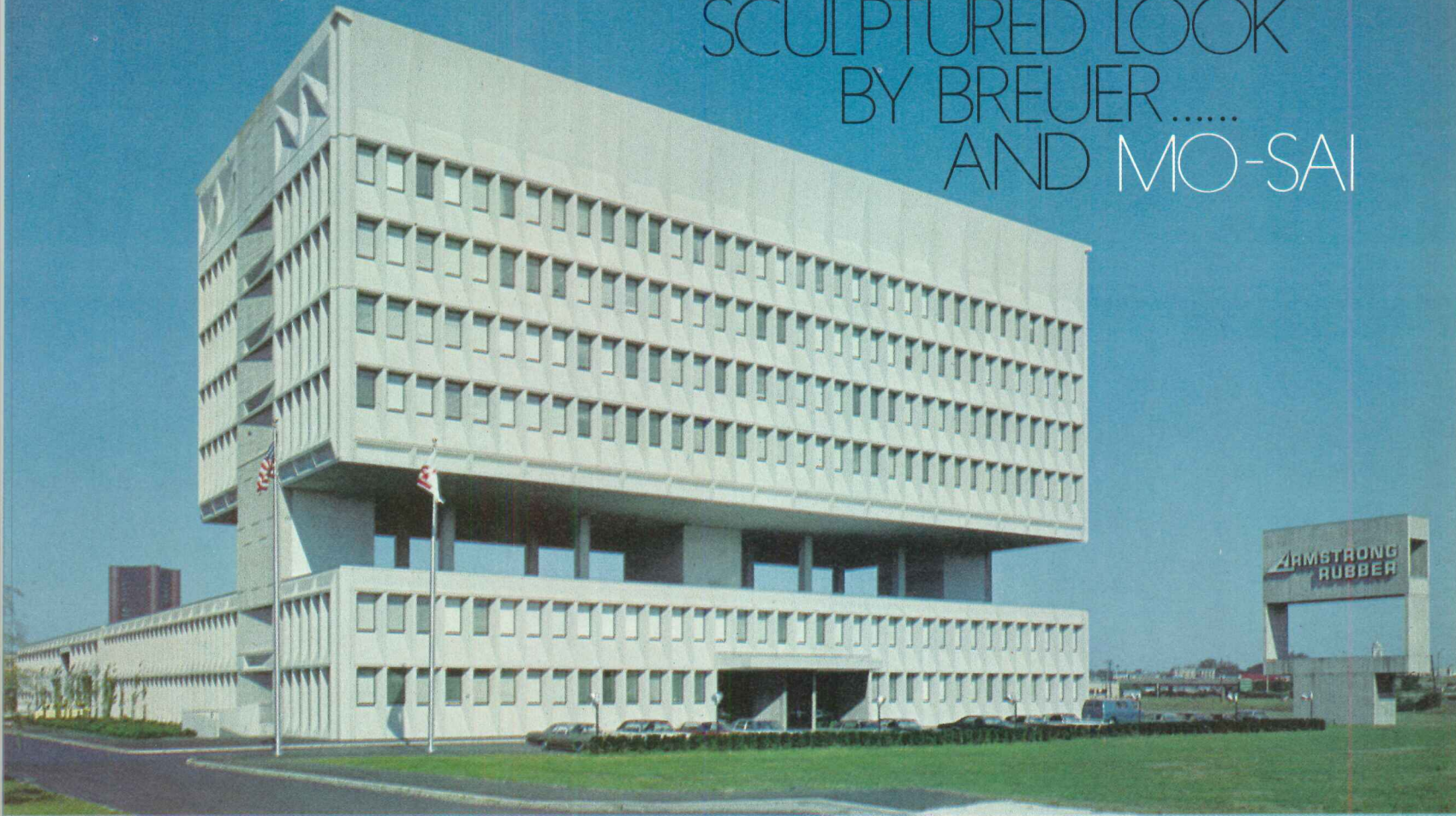
**SOUTHERN CAST STONE CO., INC.**  
P.O. Box 1669  
Sutherland Ave. and Concord Street  
Knoxville, Tennessee 37901

**TEXAS INDUSTRIES, INC.**  
Structural Products Division  
P.O. Box 400  
Arlington, Texas 76010

**WILSON CONCRETE CO.**  
P.O. Box 56  
Red Oak, Iowa 51566  
P.O. Box 7208  
South Omaha Station  
Highway 75 Avery Road  
Omaha, Nebraska 68107



THAT  
SCULPTURED LOOK  
BY BREUER.....  
AND MO-SAI



Armstrong Rubber Company, Corporate Headquarters / Research and Development, New Haven, Connecticut / Architects: Marcel Breuer and Robert F. Gatje

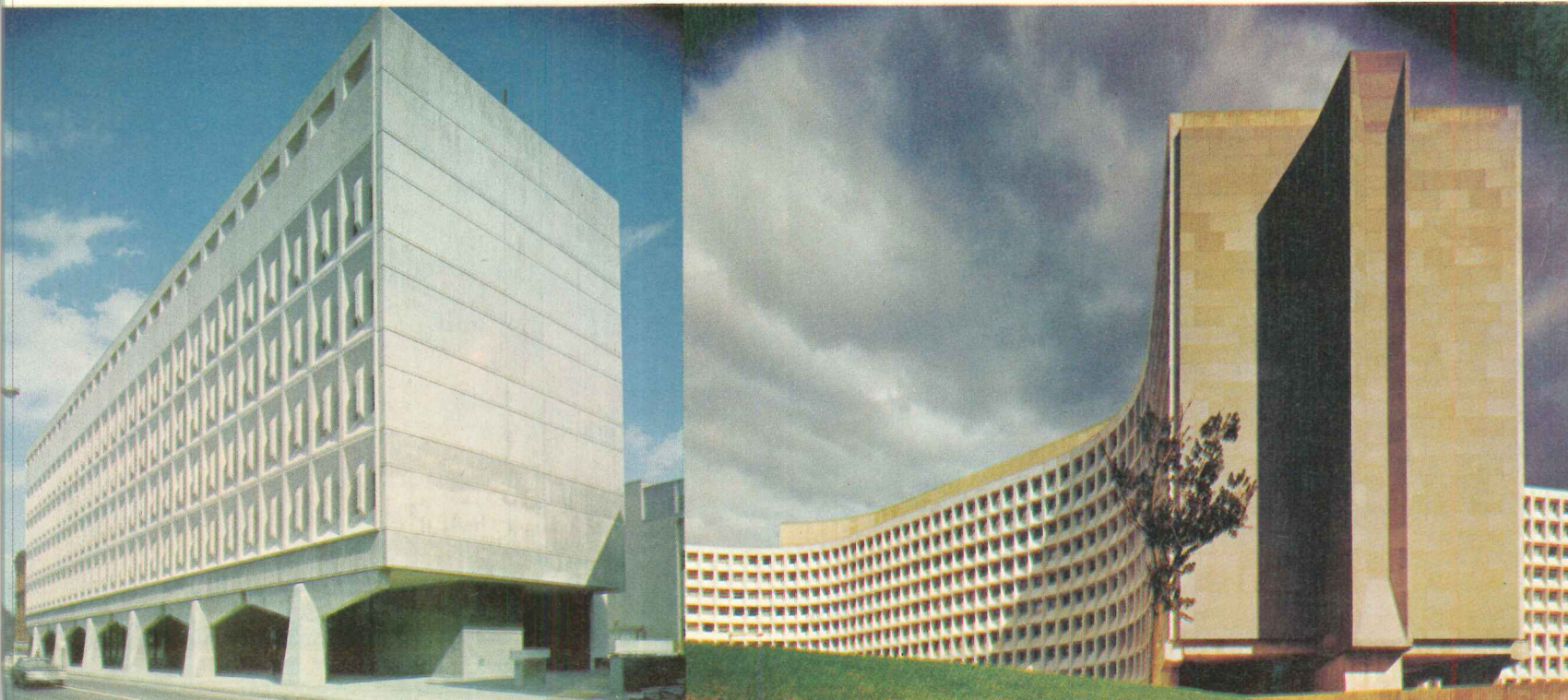
There are certain hallmarks by which pace-setting architectural trends can often be identified. The "sculptured look" is characteristic of the work of many of our leading contemporary architects... but particularly of Marcel Breuer and his design colleagues. The three projects in this page, all factory manufactured to Mo-Sai quality standards by firms licensed by Mo-Sai Institute, Inc., are interesting current examples in the use of versatile precast architectural concrete... made the Mo-Sai way.

*Mo-Sai*<sup>®</sup>

PRECAST, PRESTRESSED CONCRETE  
WITH EXPOSED AGGREGATE

Engineering / Applied Science Building / Yale University, New Haven, Connecticut  
Architects: Marcel Breuer and Hamilton P. Smith

HUD Headquarters, Washington, D.C. / Architects: Marcel Breuer and Herbert Beckhard



# PPG Solarban<sup>®</sup> Twindow<sup>®</sup> Glass



The Ohio Medical Products Building is simple, striking and uncluttered.

Its PPG Environmental Glass is precise, clean and functional.

The architects for this building chose a PPG Environmental Glass, *Solarban Twindow* insulating glass, and used it as an active design medium.

They told us: "Transparent glass wasn't desirable. To be faithful to this client's image, the design could not be cluttered. It had to offer the same precision as found in the client's product." (Ohio Medical manufactures life-support systems.) "Our design ideal was 'simplified sculpture' and the *Solarban Twindow*

Units, with their high reflectivity, provided this. The reflections are precise and clean."

The *Solarban Twindow* glass also offered high visibility for the building and a constantly changing appearance in the facade.

In addition, the architects and engineers found that the performance of the glass would offset its higher cost by contributing to the reduction of HVAC equipment. This was determined by the computerized Building Cost Analysis, an exclusive PPG service for architects, builders, engineers and owners.

See PPG about *Solarban Twindow* Units—or the others in our family of Environmental Glass for your next building. Early in the design stages. There's a PPG Environmental Glass that you can use as an active design medium to meet any esthetic con-

sideration, solve any environmental problem and provide a solid return on investment. Write PPG Industries, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

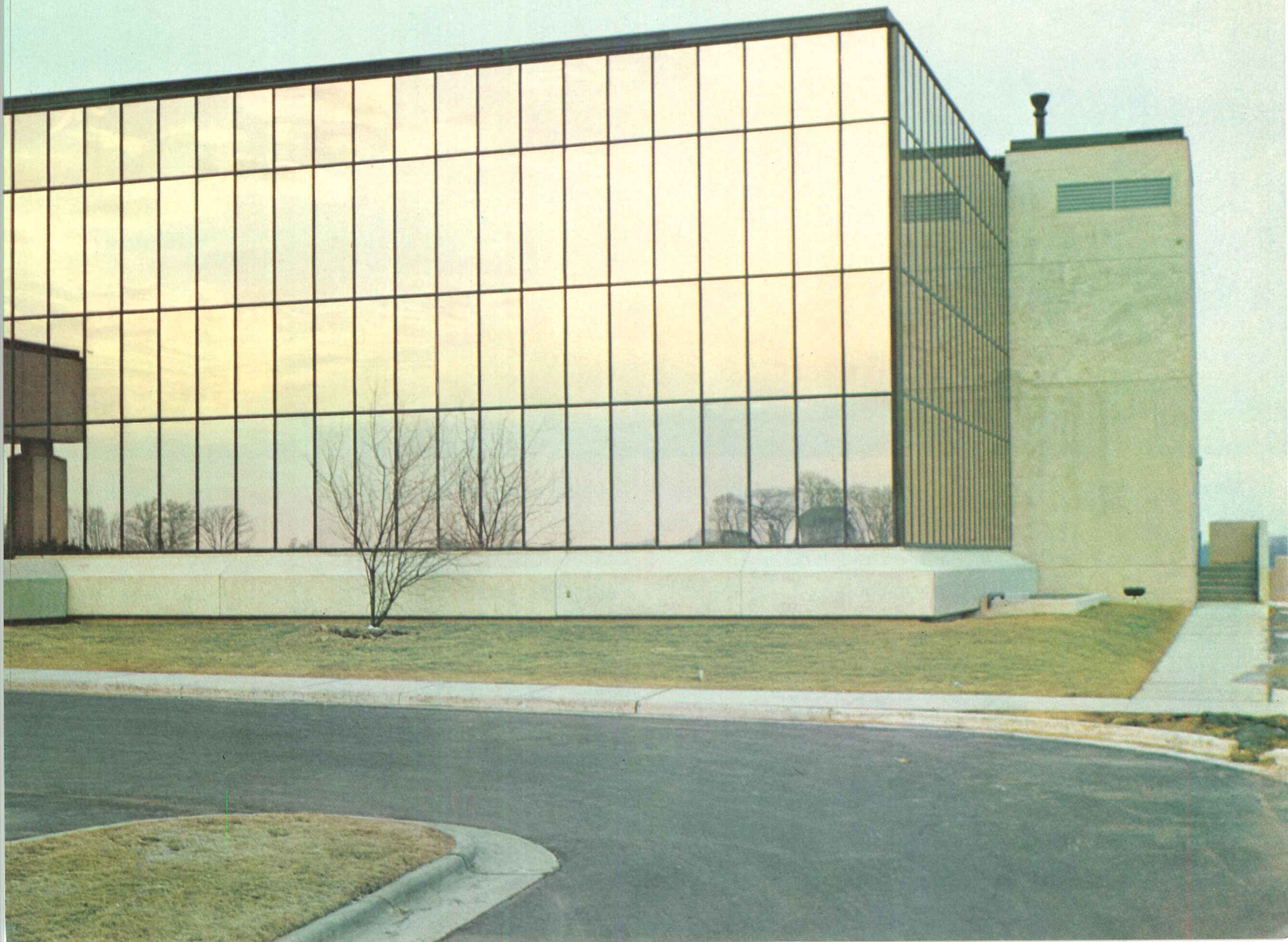
#### PPG: a Concern for the Future

Owner: Ohio Medical Products, a division of Air Reduction, Inc., Madison, Wis.

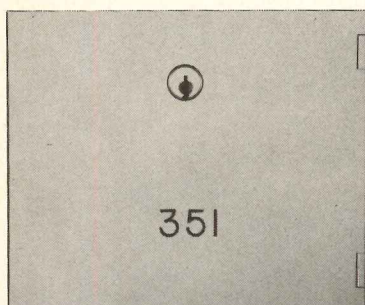
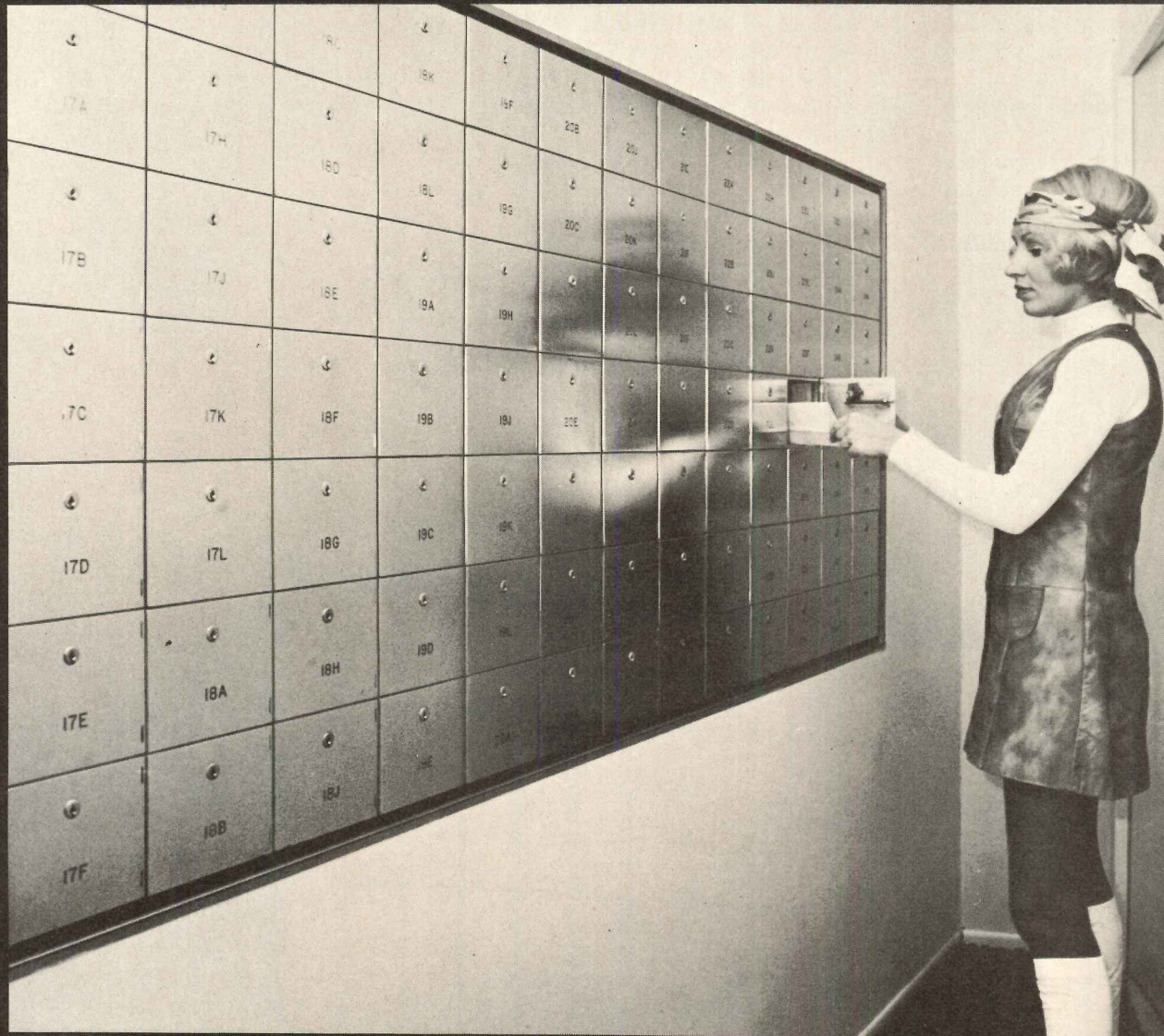
Project Engineers: Mead and Hunt, Inc., Madison, Wis.

Architect: Strang Partners, Inc., Madison, Wis.

For more data, circle 86 on inquiry card



# SMOOTH SWINGERS



Custom designed letter box installations by Wood Products feature concealed and inaccessible hinge pins. Enhance the modern lobby of this high rise apartment building. This tamper-proof, flush-mounting design includes 5-pin tumbler lock protection to assure security as well as beauty.

Letter boxes by Wood Products are available with solid cast bronze or cast aluminum doors. Models for rear loading . . . models with Slim Master® doors for front loading. All models meet U.S. Post Office Department regulations for apartment buildings or wherever letter boxes are carrier-serviced.

Complete installation plans furnished free of charge. Simply send rough sketch, showing space available and type, size and quantity of boxes desired.



**WOOD PRODUCTS**  
DIVISION OF EMHART CORPORATION  
BERLIN, CONNECTICUT 06037

*For more data, circle 87 on inquiry card*

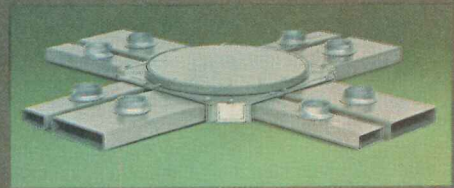
# Some communication systems have holes in them.

The communications explosion can really sneak up on you. If you're not ready for it, you may have to use poke-through holes to accommodate new phones, new sophisticated equipment. And that can be

a fire hazard. So get set. Put a Walkerduct Underfloor System in your building specs. It will help keep the building booming.

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

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



**walkerduct**<sup>®</sup>  
WALKER/  
PARKERSBURG  
A **textron** DIVISION



# SPECIAL CARE NOT REQUIRED

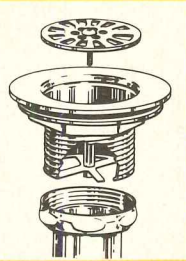


Model RC-8-A fully-recessed stainless steel water cooler



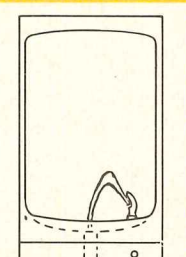
**NON-WELDED CORNERS** are easy to clean — won't trap dirt or germs.

**LARGE DRAIN** — 1 1/4" free-flow area prevents clogging. Strainer is removable for cleaning.



**STREAM-HEIGHT CONTROL** — Automatically maintains stream height under varying water pressures.

**DEEP BASIN** prevents splashing and possible damage to walls and floors.



The RC-8-A is a fully-recessed fountain with cooler that meets all requirements of the "Hill-Burton" program. Fountain receptor and removable access panel are satin-finish stainless steel. To provide convenient source for drinking water at nurses' station, the RC-8-A can also be equipped with push-button glass filler. For complete information on the RC-8-A, write today.

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

SUBSIDIARY • KING-SEELEY  THERMOS CO.

*Halsey Taylor*®

For more data, circle 89 on inquiry card

## OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry card, pages 227-228

**SOUND INSULATION** / "Plenum Barriers and Sound Rated Doors With Sheet Lead," a 4-page bulletin, describes the uses of sheet lead for sound insulation applications. ■ Lead Industries Assn., Inc., New York City.\*

Circle 400 on inquiry card

**WASHROOM FIXTURES** / A line of wash fountains, pre-assembled wash centers, shower room fixtures and special equipment is described in a 12-page catalog. Specifications, dimensional drawings and data on optional features are included. ■ Bradley Washfountain Co., Menomonee Falls, Wis.\*

Circle 401 on inquiry card

**HORIZONTAL DOORS** / A 16-page catalog describes a complete line for industrial, commercial and institutional buildings. Specifications are given for spring-operated floor, pit and sidewalk doors, roof scuttles and ceiling-access doors. ■ The Bilco Co., New Haven, Conn.\*

Circle 402 on inquiry card

**CEILING SYSTEMS** / A complete line is described in a 68-page catalog. Included is an integrated system containing air handling, lighting, and fire protection requirements. ■ Armstrong Cork Co., Lancaster, Pa.\*

Circle 403 on inquiry card

**PARTITIONS** / A guide to the selection of partition systems for hotels and motor inns illustrates the manufacturer's line. Specifications are given. ■ United States Gypsum Co., Chicago.\*

Circle 404 on inquiry card

**PLYWOOD SHEATHING** / A 20-page brochure contains sections on roof decking, wall and floor sheathing. Updated species and grade guide tables plus a guide chart and identification index for engineered grades of plywood are given. ■ American Plywood Assn., Tacoma, Wash.\*

Circle 405 on inquiry card

**TELEPHONE BOOTHS** / The efficient planning of telephone centers is described in a 4-page brochure. Booths can be wall-mounted, pedestal-mounted, or free-standing. Stand-up and seating models are illustrated. ■ Acoustics Development Corp., Northbrook, Ill.\*

Circle 406 on inquiry card

**AIR CURTAIN EQUIPMENT** / A factory-assembled "package" concept for commercial and public buildings is described in a brochure. Basic equipment for moving and heating the air is assembled into a single unit at the factory rather than on-site. ■ The Stanley Works, New Britain, Conn.\*

Circle 407 on inquiry card

**FACING** / A glass-ceramic facing for both interior and exterior use is described in a 14-page brochure. A section explains mounting systems developed by the manufacturer for this material. The facing comes in a range of colors and is available in matte or glossy finishes. ■ Corning Glass Works, Pyram Products Group, Corning, N.Y.

Circle 408 on inquiry card

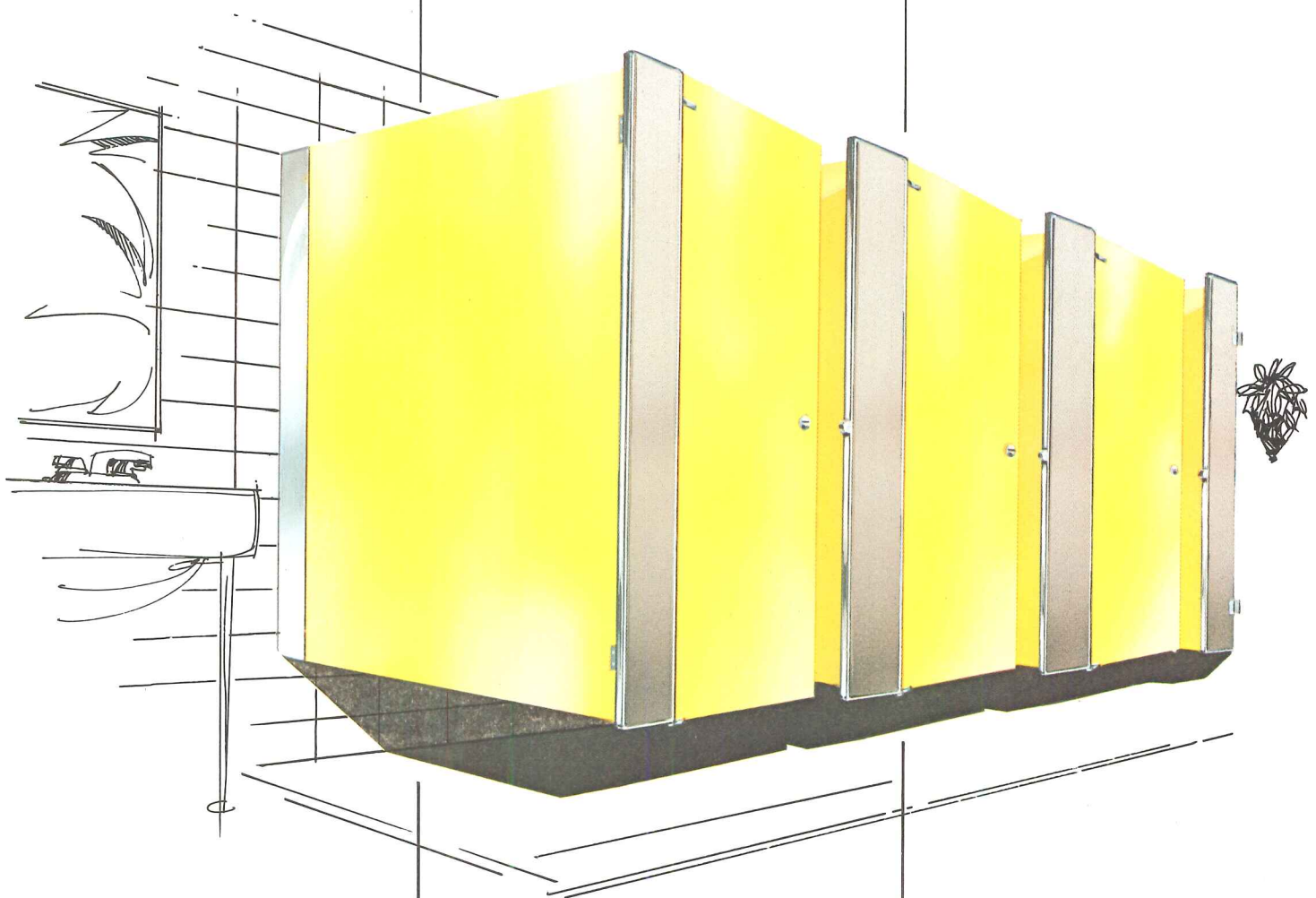
\*Additional product information in Sweet's Architectural File

more literature on page 202

ARCHITECTS  
SPECIFY PORCENA,  
WALL-HUNG  
SANYMETALS  
BECAUSE....

*Porcena partitions* (Porcena is fusion of glass to steel) are cigarette-proof, rust-proof, odor proof and virtually impervious to scratches, corrosion, acids and caustics. They require only a damp cloth to maintain their jewel-bright finish indefinitely. Porcena, the super surface, continues to prove its everlasting wearability far beyond any other surface.

*Wall Hung* partitions are mounted with a vice grip and tension pad mounting assembly that assures rigid installations for the life of the building. They eliminate the need for ceiling soffits or special floor considerations. Most recessed accessories including paper holders, receptacles and flush buttons are easily accommodated.



*Sanymetal* recesses all door hardware... hinge brackets do not overlap pilaster... hinge castings nest in precise, performed recesses providing a smooth, flush, safe and sanitary surface. Latches are internal and quiet doors ride level on concealed thrust bearings.

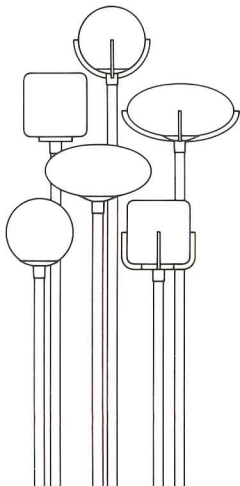
Get the full story on Sanymetals today. Check your Sweet's file or write for full information.

**Sanymetals®**  
THE *Sanymetal* PRODUCTS COMPANY, INC.  
1701 URBANA ROAD, CLEVELAND, OHIO 44112

# LANDMARK



beautiful way to end the day



Here is the latest innovation from ITT Landmark. Ellipsoids, spheres, and cubes in high impact acrylic add to the pleasant atmosphere at the end of the day and continue the sunset mood into the night. With or without the decorative frou-frou these efficient outdoor luminaires are attractive additions to every environment.

You have a choice of wattages from 100 to 400. Light sources include metallic halide, mercury and incandescent. Sizes of these translucent units vary with illumination requirements. Easy pole-top set-screw mounting. For specifications and prices contact ITT Landmark Lighting, Southaven, Mississippi 38671.

**LANDMARK LIGHTING ITT**


*For more data, circle 91 on inquiry card*

*For more data, circle 92 on inquiry card* ▶





**Speed Queen and your Speed Queen Commercial Route Operator can help you plan coin-operated laundry facilities for dormitories, low and high rise apartments.**

Look to the  for the best in commercial laundry equipment



**SPEED QUEEN**®



DIVISION  
OF McGRAW-EDISON  
COMPANY

Send this coupon for a free brochure which can help you plan a laundry facility. Room layouts, equipment sizes, wiring and venting are discussed.

Mr. E. W. Jess,  
Manager, Commercial Department  
Speed Queen, Ripon, Wisconsin 54971

AR-6

Gene, please forward your laundry room design brochure.

Please send me the name of the Speed Queen Route Operator nearest me.

I would like a Speed Queen representative to call.

Name and title \_\_\_\_\_

Firm name \_\_\_\_\_

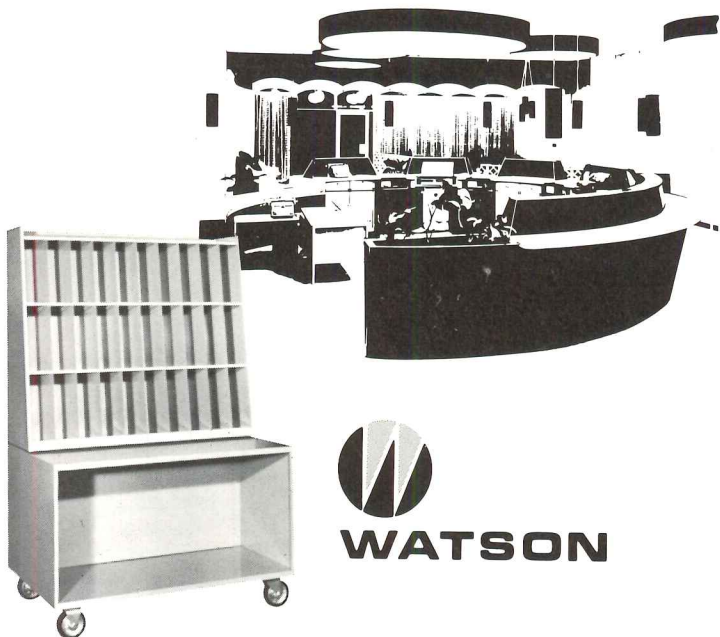
Address \_\_\_\_\_

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

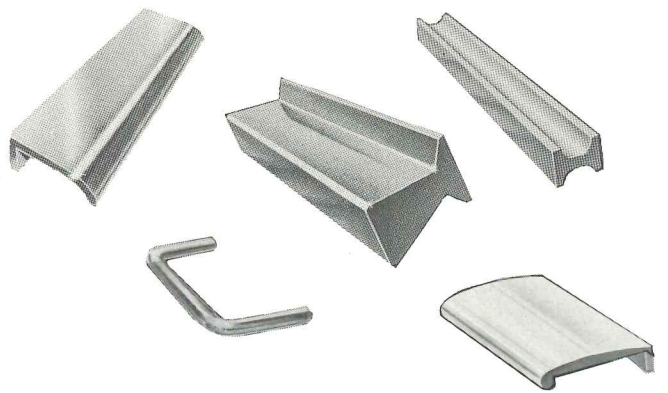
# WATSON CREATES ORIGINALS

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

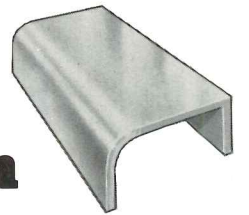
For creative design service, write to:  
WATSON MANUFACTURING CO. JAMESTOWN, N.Y. 14701 716/484-0171



For more data, circle 94 on inquiry card



**for when  
you design  
great  
furniture**



## PULLS

Shown are a few from the large selection. Extruded aluminum in anodized clear, brass, bronze or black. Many styles also available in 6 ft. lengths.

## KNOBS

Shown are a few from a large selection. Machined from bar stock brass or aluminum. Finishes: brass, all standard hardware finishes. Aluminum, anodized clear, brass, bronze or black.

## A COMPLETE CATALOG

of the full EPCO line of Pulls, Knobs, Magnetic Catches, track and mirror frames will be sent on request.

## SEE SWEET'S CATALOG

under Architectural file and Light Construction file.



**THE ENGINEERED  
PRODUCTS COMPANY**

P.O. BOX 108

FLINT, MICHIGAN 48501

TELEPHONE AREA 313 767-2050

For more data, circle 127 on inquiry card

*Why steel joists were  
the right answer to  
this building need*

# The PACIFIC BUILDING...

no interior obstruction  
on any floor!

"This is a magnificent building, and the steel joists used in its construction played a major part in making it so," say owners Richard Hadley and Al Clise. "We are highly impressed by the economy, flexibility, ease of use, versatility and other advantages offered by steel joists in modern building construction."

A handsome addition to the Seattle skyline, the Pacific Building includes 16 floors of office space and six floors of parking. There are no interior columns, no load-bearing partitions. The structure includes the longest spans (74 feet) of any office building in Seattle. Construction time was approximately one year.

High-strength, lightweight open web steel joists provide an ideal answer for high-rise construction. They go in fast . . . can be set in place with time-saving, cost saving speed and ease. And they're available in a wide selection of lengths, depths and load-carrying capacities.

For complete technical information, send coupon today for your free copy of our 1971 Edition, Specifications and Load Tables for Open Web Steel Joists and Longspan Steel Joists.



## STEEL JOIST INSTITUTE

Suite 707, 2001 Jefferson Davis Highway  
Arlington, Virginia 22202

For more data, circle 95 on inquiry card

**Mail to: Steel Joist Institute**

Suite 707, 2001 Jefferson Davis Highway  
Arlington, Virginia 22202

Please send me a copy of your 1971 Specifications and Load Tables

NAME \_\_\_\_\_

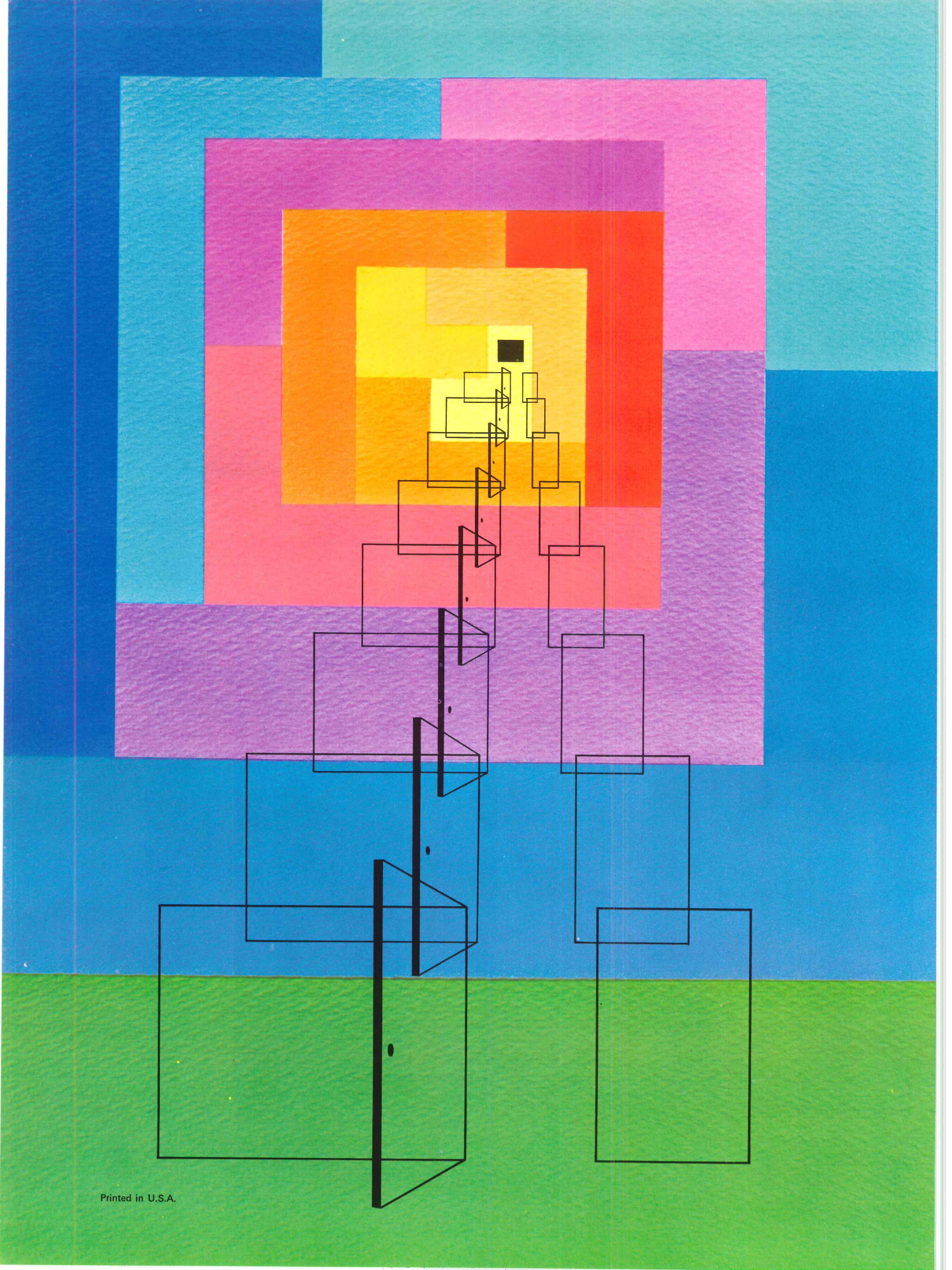
TITLE \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

71-008



# FRONTIERS IN SPACE CONTROL

## ELECTRIC HINGE by HAGER

---

Industry tradition might say this is a hinge born before its time . . . an electric hinge for a door that, as yet, has no electric lock set for the hinge circuit to activate.

But manufacturers are already working on wired door circuits for security systems. Hager would not want them to be left waiting for a hinge that will carry the current through.

The electric hinge has a number of contact points that make or break the circuit as the door opens or closes. Yet it is something like a conventional hinge in size and appearance.

The wiring detail, the varied circuits possible, and the reaction to central control are subject to wide application.

The electric hinge and other new products soon to be introduced by historically-old Hager with its dynamically young attitude are creating frontiers that invite architectural exploration.



Patent Pending



**HAGER HINGE COMPANY**  
139 Victor St., St. Louis, Mo. 63104  
In Canada: HAGER HINGE CANADA, LTD.

*"Everything Hinges on Hager!"*



**FRITZ HANSEN**  
979 Third Avenue  
New York 10022

“Office furniture doesn't have to be dull! It can be both imaginative and practical. Fritz Hansen's versatile M-40 office furniture proves it. Based on a unique modular concept with interchangeable components, the M-40 collection has extraordinary flexibility. In oak or mahogany. For more information on this complete modular group, please write for our catalog.”



For more data, circle 98 on inquiry card

Everything you  
always wanted to  
know about  
sprinklers\*

\*BUT WERE AFRAID TO ASK

Our new, 32-page SPRINKLER SYSTEM GUIDE lays it all out. Building codes . . . insurance considerations . . . fire protection costs . . . and much more we can't tell here. Dozens of explicit illustrations. It's free. Send for it . . . before you get burned!



THE VIKING CORPORATION  
210 N. INDUSTRIAL PARK ROAD  
HASTINGS, MICH., U.S.A. 49058

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_

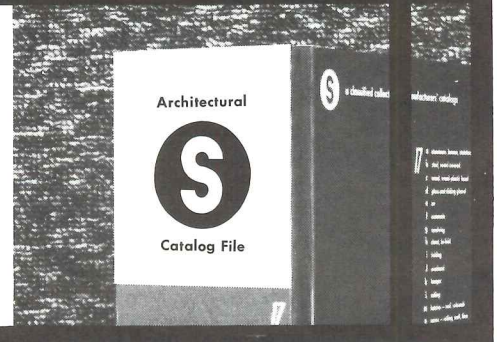
For more data, circle 97 on inquiry card

For more data, circle 96 on inquiry card



pondering carpet  
for  
BOARD ROOM, CHALET,  
HOSPITAL, SCHOOL,  
BANK, MOTEL . . . ?

see us in  
**SWEET'S**  
ARCHITECTURAL  
OR INTERIOR  
DESIGN FILES



B E R V E N



OF  
CALIFORNIA

discover  
*the  
beautiful way  
to be practical*

2600 Ventura Ave., Fresno, CA 93717  
SHOWROOMS PRINCIPAL CITIES OF U.S.

For more data, circle 130 on inquiry card

# Make a grand entrance with G-P Curtis® doors



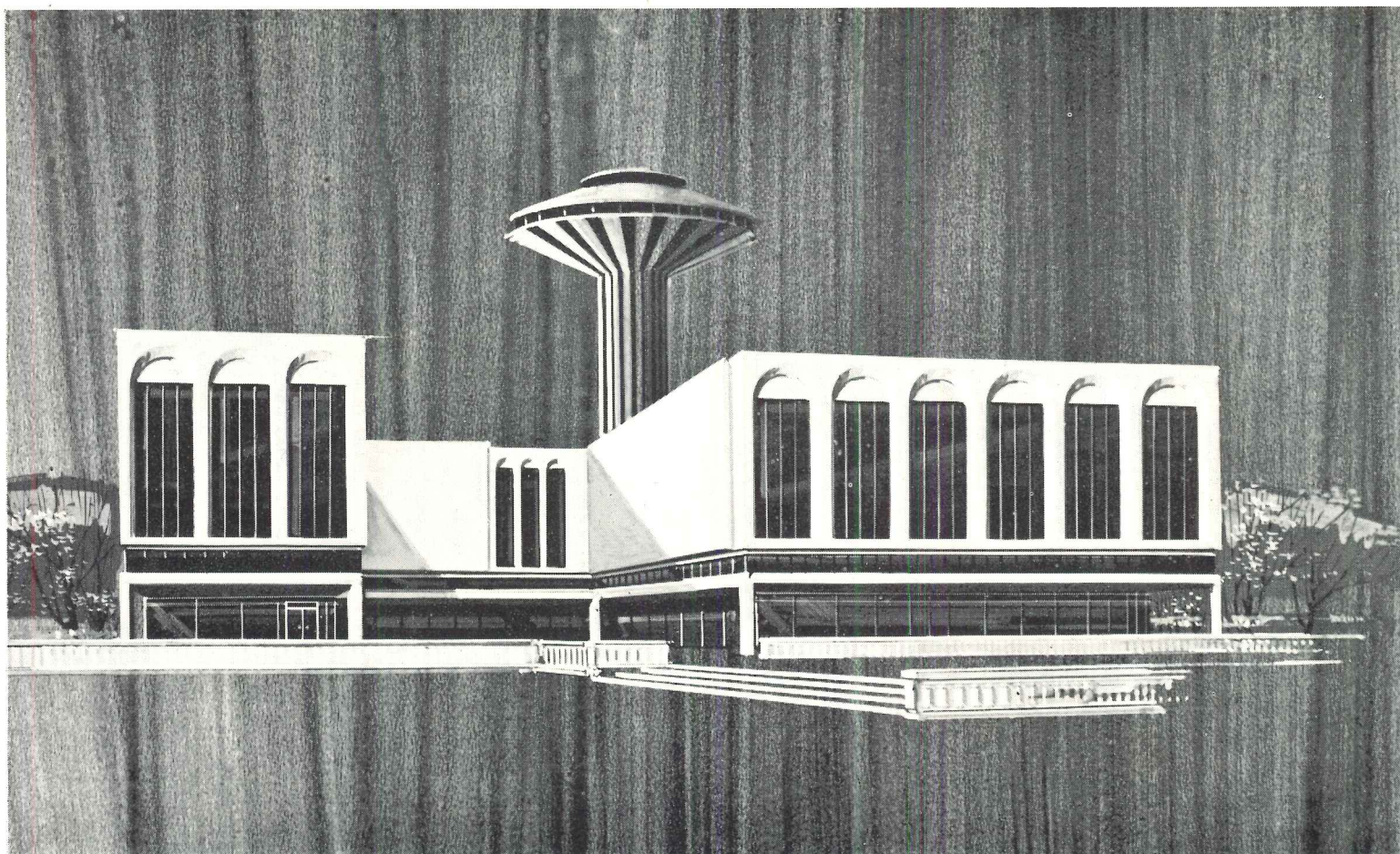
You take such pains with the rest of the building, why take chances with the doors? For years, Georgia-Pacific's Curtis® doors have been famous for quality. They're sturdy doors. Tough. With a look and feel that says fine craftsmanship. What's more, all Curtis doors are color matched and can be ordered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

For more data, circle 85 on inquiry card.



**GEORGIA-PACIFIC**

PORTLAND, OREGON 97204



# **Weath·R·Proof** *insulating glass*

*Weath·R·Proof*—A reliable product without quality worries.

*Weath·R·Proof*—With complete design flexibility to express your most creative ideas.

*Weath·R·Proof*—Manufactured by a company that will meet your construction deadlines with personal attention from start to job completion, all backed with a . . .

*Weath·R·Proof*—20 year warranty.

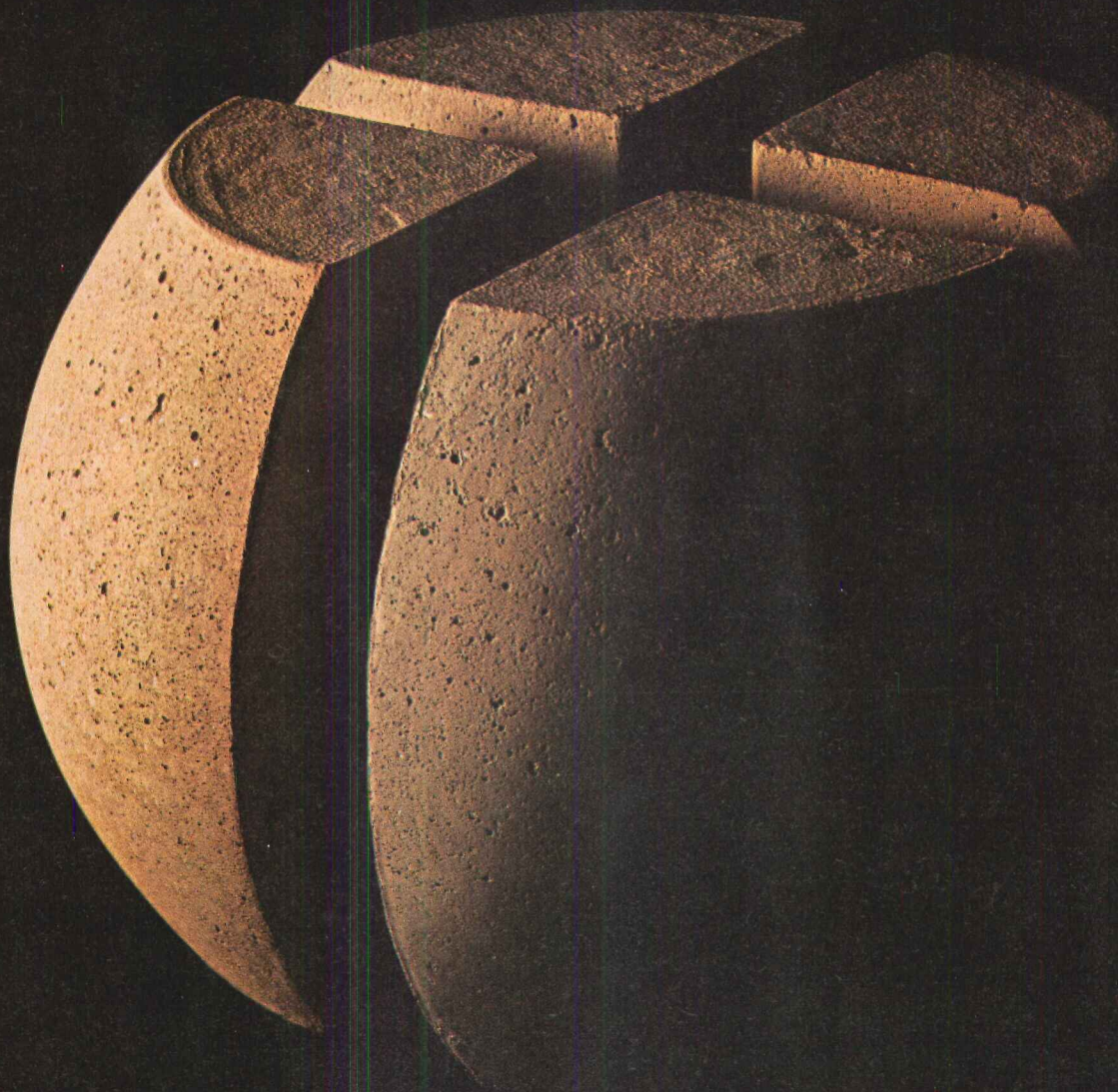


**THERMOPROOF GLASS COMPANY**  
4815 Cabot Avenue—Detroit, Mich. 48210  
Subsidiary of Shatterproof Glass Corporation

For more data, circle 100 on inquiry card



Today the world is a little warmer place.



There's a new concrete under the sun. It's made with Trinity Warmtone. And it has every advantage gray concrete has without the coldness.

Trinity Warmtone derives its rich natural tan color from the manufacturing process. Contains no pigment. Can't change colors on you from one batch to another. In fact, color consistency is **guaranteed!**

Trinity Warmtone in its short history is already becoming an industry standard for a humanized concrete environment.

Write for your Trinity Warmtone information kit. And visit our Gold Room in Dallas, the most complete architectural concrete showroom in the world.

From General Portland Cement Company to you. With warm regards.



**warmtone™**

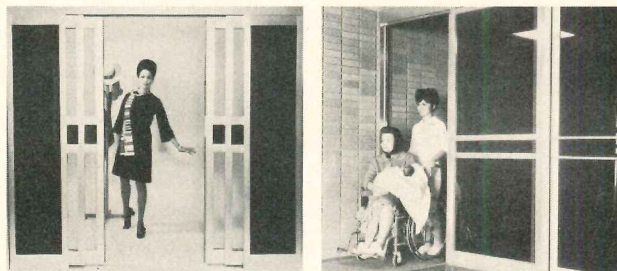
The New Cement for Creativity in Concrete.  
From the People Who Make Trinity White.

Trinity Division/General Portland Cement Company  
P. O. Box 2698 • Dallas, Texas 75221 • (214) 638-4700

*For more data, circle 101 on inquiry card*

# Horton will pretty your face.

The design flexibility offered by Horton Automatic entrances is virtually limitless. Somewhere among Horton's vast creative design possibilities you'll find an eminently functional door of distinctive beauty. A door that can pretty the facade of any commercial or industrial building you're designing. □ Horton developed the first successful commercial sliding door mechanism in 1956, and has been synonymous with imaginative innovation ever since. For example, Horton's automatic door, with the patented Swing-Slide Breakaway Feature, has been approved by Underwriter's Laboratory as an exitway, meeting or exceeding the strictest building codes. □ Horton Automatic entrances. Another fine product from a company famed for quality products, Overhead Door Corporation. For more information on Horton Automatics and the name of your local Horton distributor, write us. They can pretty any face you can create.





**Vari-Tran<sup>®</sup> coated insulating glass (one of L-O-F's most expensive glasses) in an all electric building.  
Result: lower construction costs, lower cost of operation.**



## How Vari-Tran reduced the cost per rentable square foot.

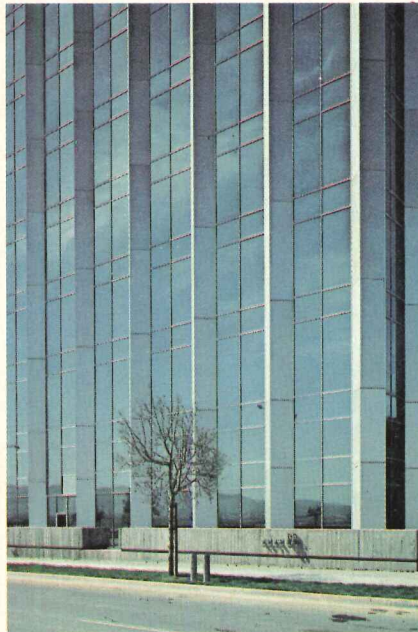
James A. Knowles and Associates, Consulting Mechanical Engineers, of Los Angeles, made a glass cost analysis of glazing this building with Thermopane® insulating glass with an outboard light of Vari-Tran 114 coating versus conventional 1/4" Parallel-O-Grey® plate. They compared the glass in terms of heat loss and gain, initial glass costs, total building cost, effects on taxes and insurance, annual operating costs, etc. (See summary.)

## Vari-Tran justified on construction cost savings, alone.

The study definitely proved that Thermopane/Vari-Tran would save the owners money on initial and long-range investment. With Vari-Tran's superior heat-reflecting qualities, it was economically feasible to design an all-electric building, eliminating space requirements for boilers.



The reflective glass increased rentable area on the upper 15 stories due to smaller fan-coil machinery on each floor. The estimated rental area gained was 3% of total on these floors, representing rental income of \$46,656 per year. The additional rental income, and owning and operating cost savings, total \$66,478 per year. If this amount were capitalized at 10%, an initial investment of \$664,780 could be justified.



The improved 'U' value of the double glazed glass had a significant effect on reducing the size — and cost — of the heat recovery cycle required by all-electric concept.

As to the aesthetics, the silvery Vari-Tran 114 blends with the aluminum exterior columns and the spandrels of Tuf-flex® tempered glass, also Vari-Tran coated. (Vari-Tran is available in golden as well as silvery coatings in light transmittances of 8, 14 and 20 percent. Each provides significant reduction in solar heat and glare.)

If you would like a computerized cost analysis of the glass wall of a building you're planning, contact your L-O-F Architectural Representative, or Architectural Dept., Libbey-Owens-Ford Company, Toledo, Ohio 43624.

## Here's what Vari-Tran, the glass that cuts building costs, will save.

### ECONOMIC GLASS COST ANALYSIS

by James A. Knowles and Associates, Los Angeles

A differential 'Annual Cost of Owning and Operating' between the larger capacity air conditioning plant required for the conventional heat absorbing glass as opposed to the plant capacity required by the Vari-Tran 114 is as follows:

#### 1. Additional Investment —

<b>A. Added A.C. Machinery Cost</b> . . . . .	\$56,300
<b>B. Larger Roof Machinery Space</b> . . . . .	\$ 6,320
<b>C. Larger Gas, Electrical Services</b> . . . . .	\$ 7,100
<b>Total Additional Investment</b> . . . . .	\$69,720

#### 2. Additional Annual Owning Cost —

<b>A. Amortization and Depreciation for 20 years at 10% (CRF-0.11746)</b> . . . . .	\$ 8,200
<b>B. Taxes and Insurance</b> . . . . .	\$ 3,140
<b>Total Added Annual Owning Cost</b> . . . . .	\$11,340

#### 3. Additional Annual Operating Cost —

<b>A. Preventive Maintenance</b> . . . . .	\$ 719
<b>B. Repairs and Replacement</b> . . . . .	\$ 992
<b>C. Gas, Water and Electricity</b> . . . . .	\$ 6,771
<b>Total Added Annual Operating Cost</b> . . . . .	\$ 8,482

#### 4. Summary —

<b>A. Additional Annual Owning Cost</b> . . . . .	\$11,340
<b>B. Additional Annual Operating Cost</b> . . . . .	\$ 8,482
<b>Total Added Owning and Operating Cost for conventional heat absorbing glass</b> . . . . .	\$19,822

**LOF** **Hi-Performance Glass**  
GLASS *The glass that cuts building costs*

# The same know-how that built our reputation now builds our laminate casework.

The same careful attention to detail, the same design expertise, the same flexibility that architects have come to rely upon in St. Charles custom casework of steel and wood is now to be found in our new plastic laminate casework. It,

too, bears the unmistakable signs of St. Charles craftsmanship—functional strength and cleanliness of line. If your need is for plastic laminate, look to St. Charles for casework that outperforms the rest.



## *St. Charles*® Plastic Laminate Casework

St. Charles Manufacturing Company, St. Charles, Illinois 60174

36 years of leadership in creating custom casework • Write for our plastic laminate casework catalog

*For more data, circle 104 on inquiry card*



# HOPE'S ALUMINUM WINDOWS

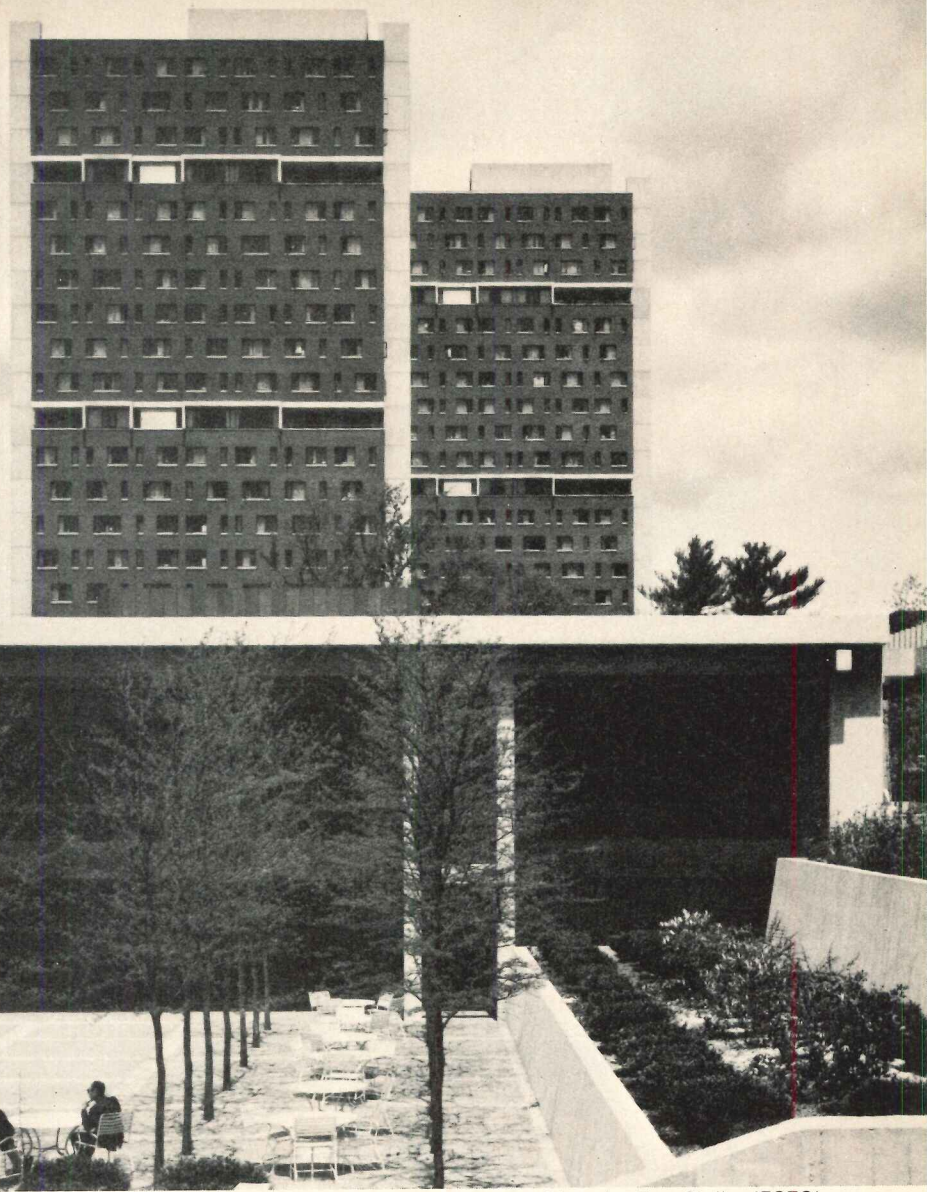


Photo by Ezra Stoller (ESTO)

University of Massachusetts, Southwest Quadrangle, Amherst, Massachusetts • Hugh Stubbins and Associates, Architects • Daniel O'Connell's Sons, Inc., and George F. Driscoll Company, Joint Venture General Contractors

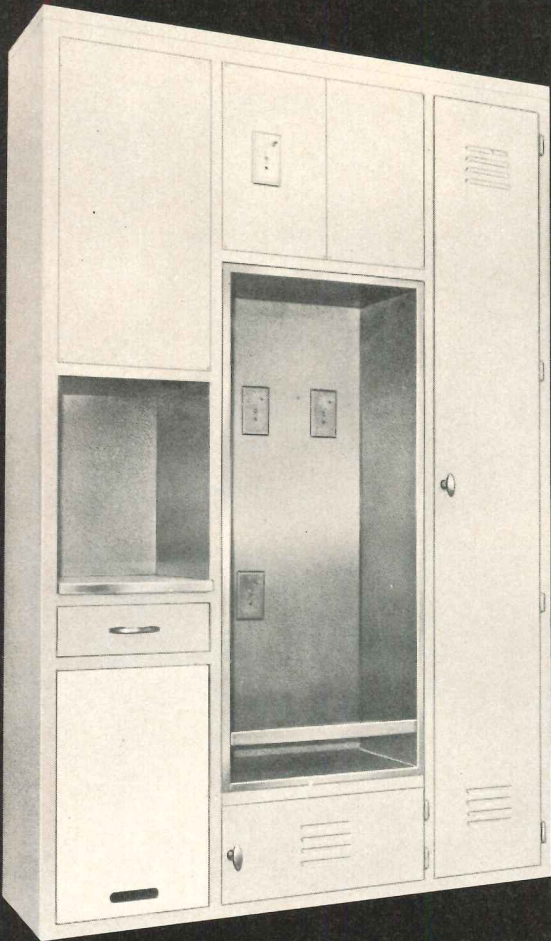
For the 22-floor dormitory towers in this striking complex of modern university buildings, the architects selected Hope's field-proven Series 220 Aluminum Casement Windows. Series 220 frames and weatherstripped ventilators are custom-made from strong tubular aluminum extrusions, 2" deep front-to-back, having  $\frac{3}{4}$ " high glazing legs. All frame and ventilator corners are miter cut and electrically flash welded throughout the entire section profiles. Pile-type weatherstrip interlocked into both inside and outside ventilator contacts is standard as are snap-in type glazing beads. Casement ventilators are hung on rugged aluminum cleaning hinges with extruded leaves solidly welded to both ventilator and frame. Finish is Duranodic\* 313 Dark Bronze, processed in Hope's own licensed facilities. Series 220 windows are designed and recommended for conditions where top quality units with unusually high strength are required. In this instance, as in all Hope's installations, erection by Hope's own erection crews eliminated the problem of divided responsibility and assured proper installation of materials. Architects have been specifying Hope's windows for buildings at leading universities for more than half a century. This role in the expansion of American higher education is one that Hope's Windows is proud to play.

\* Trade name of Aluminum Company of America.

## HOPE'S WINDOWS

*Jamestown, New York 14701*

A DIVISION OF ROBLIN HOPE'S INDUSTRIES, INC.



Custom-built AVM Intensive Care Unit, equipped for electronic monitoring keeps patients under constant surveillance.

# Humanity, Our Client

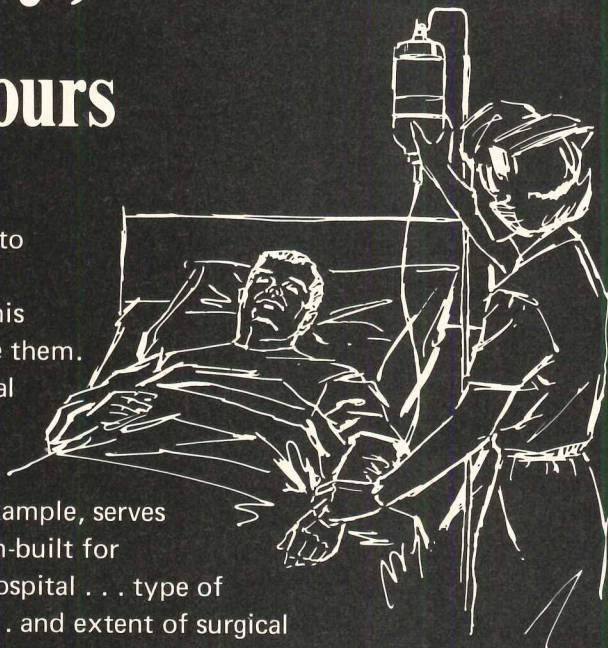
## ...yours and ours

Human problems come into sharpest focus in hospitals.

The concerned architect knows this and does what he can to relieve them. For one thing, he provides hospital casework that causes no problems of its own.

Intensive Care casework, for example, serves perfectly when it has been custom-built for the type and size of the hospital . . . type of patients to be served . . . and extent of surgical and post-operative treatments required.

AVM JAMESTOWN INTENSIVE CARE UNITS  
MAY BE ORDERED TO YOUR EXACT SPECIFICATIONS.



## JAMESTOWN PRODUCTS DIVISION

JAMESTOWN, NEW YORK 14701

### OFFICE LITERATURE

*continued from page 182*

**METAL SPIRES AND STEEPLES** / A 4-page folder describes five methods of spire construction. Specifications are given. ■ Overly Manufacturing Co., Greensburg, Pa.

*Circle 409 on inquiry card*

**ZINC ALLOY** / Roofing and flashing applications for this alloy sheet are given in a 12-page brochure. Specifications are given. ■ The New Jersey Zinc Co., Bethlehem, Pa.

*Circle 410 on inquiry card*

**COMMERCIAL REFRIGERATORS** / A line including four self-contained and five top-mount models is described in two bulletins. They are available in welded aluminum, stainless steel, or combination aluminum/stainless. ■ Foster Refrigerator Corp., Hudson, N.Y.

*Circle 411 on inquiry card*

**DOOR CONTROL** / A combination closer-holder system which reportedly provides absolute top and bottom door control is described in a 4-page brochure. Operating features and specifications are given. ■ Rixson Inc., Checkmate Div., Franklin Park, Ill.\*

*Circle 412 on inquiry card*

**COMMERCIAL OVENS** / Seventy models are described in a 12-page brochure. Production capacities are given for convection, deck, and microwave ovens. ■ General Electric Co., Commercial Equipment Dept., Chicago, Ill.,

*Circle 413 on inquiry card*

**HARDWOOD PANELING** / Two lines are described in a 4-color brochure. Woods available include cedar, teak, walnut, rosewood, cherry and hickory. All panels are pre-finished. ■ Potlatch Forests, Inc., San Francisco.

*Circle 414 on inquiry card*

**LABORATORY FURNITURE** / A line of flexible units is illustrated in a folder. Cabinets may be moved from frame to frame. Units may be set up as wall sections, center benches or corner assemblies. ■ S. Blickman, Weehawken, N.J.

*Circle 415 on inquiry card*

**SEATING** / An 8-page catalog describes a line of stack chairs and gang tables. Over 200 items are shown. ■ Fixtures Mfg. Co., Kansas City, Mo.

*Circle 416 on inquiry card*

**VINYL WALL COVERINGS** / A complete line is presented in an 8-page brochure. Thirty-one patterns are illustrated. Specifications are given. ■ L. E. Carpenter & Co., New York City.

*Circle 417 on inquiry card*

**SUBWAY GRAPHICS** / The use of porcelain enamel graphics to provide directional information in the Boston subway system is described in a 6-page brochure. ■ Porcelain Enamel Institute, Washington, D.C.

*Circle 418 on inquiry card*

**ROOF INSULATION** / A noncombustible, rigid board-form insulating material is described in a 4-page folder. ■ Armstrong Cork Co., Building Products Div., Lancaster, Pa.

*Circle 419 on inquiry card*

\*Additional product information in Sweet's Architectural File

*more literature on page 216*

♦ For more data, circle 105 on inquiry card



# When he's old enough to design his own buildings, coatings made with KYNAR 500<sup>®</sup> will still be young.

When he has his name on the door of that architectural firm, finishes based on KYNAR 500<sup>®</sup> will still retain their original appearance. In spite of more than 20 years attack by sun, weather and pollutants.\*

KYNAR 500 is the best base for color coatings on architectural metals. It resists chemicals, chalking, fading, corrosion and mortar stain. And won't crack, or craze. So matching is easy.

Use KYNAR 500 on your next building.  
Write Pennwalt Corporation, Pennwalt Building,  
Three Parkway, Philadelphia, 19102.

\*Based on accelerated life tests.

©Kynar 500 is Pennwalt's registered trademark for its vinylidene fluoride resin.

Make your base specification **KYNAR 500<sup>®</sup>**

 **PENNWALT**  
ARCHITECTURAL COATINGS



For more data, circle 108 on inquiry card

Bradglas® bowl colors  
borrowed from nature.



Shades of Mother Nature. Bright brick from red clay country. Subtle salmon. Surf green. Deep desert yellow. And seven others. Contemporary colors, clean lines . . . to fit in with today's washrooms.

Bradglas® Washfountains. Colorful like nature. Durable like steel. Smooth, nonporous. Resistant to abrasion, acid and corrosion. Won't swell, shrink or warp. Won't chip, peel or flake. Vandal-proof and fire-safe, too.


Reinforced polyester, so they're tough, to take it when the going is rough. Light for easy installation . . . 80% lighter than precast stone. Cut installation costs too . . . because they serve up to eight people with one set of plumbing connections. Save on wall and floor space. More sanitary than lavatories because they're foot operated.

Circular and semi-circular Washfountains. For the places you've never considered putting Washfountains before. See your Bradley washroom systems specialist about them.

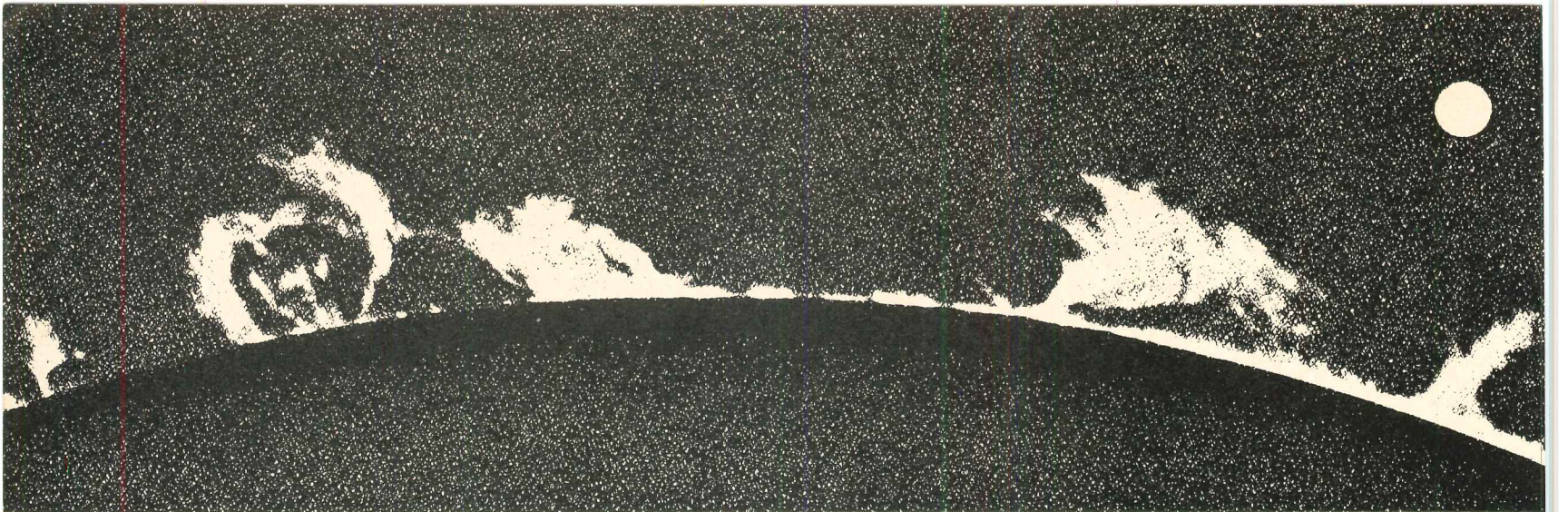
Bradley Washfountain Co., 9109 Fountain Boulevard, Menomonee Falls, Wisconsin 53051

*For more data, circle 109 on inquiry card*



11 bright  
ideas from  
 Bradley

Leader in Washroom Fixtures and Accessories.



## Outside heat raises inside cooling costs. Zonolite can help reduce the problem at its foundation.

Look into Grace-Zonolite® Masonry Fill Insulation. It's incredible stuff. To put it another way, it's a lightweight, free-flowing, water-repellent, vermin-proof, rot-proof, fire-proof, sound-deadening, inorganic, granular vermiculite!

Year after year, it can deliver savings in cooling and heating dollars that far exceed the initial cost of the fill.

Other virtues? Yep. Zonolite® Masonry Fill Insulation reduces sound transmission 20% to 31%. It increases a 2-hour fire rating to 4. It pours in at the rate of 28 square feet per minute. It's acceptable in FHA-financed housing.

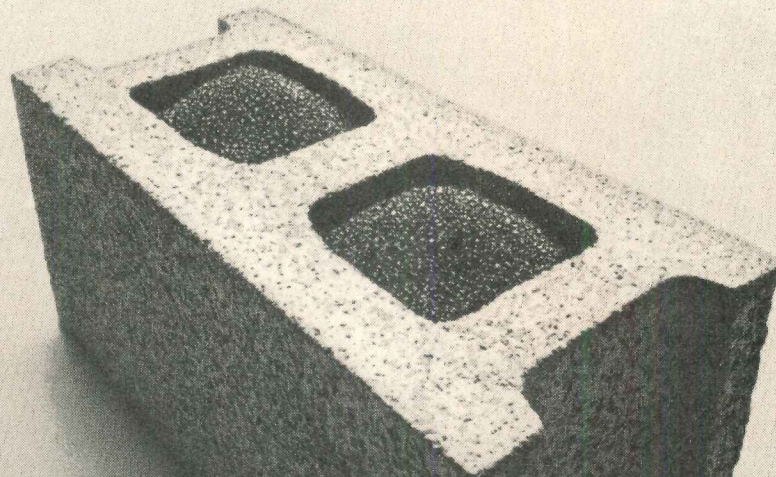
Want all the details, test data, specifications, and such? Say the word!

### "U" VALUES—concrete block walls

Wall Thickness, Inches	Type of Block	Block Only	
		Uninsulated	Insulated
6	Lightweight	.40	.26
	Heavyweight	.33	.17
8	Lightweight	.53	.36
	Heavyweight	.33	.12
12	Lightweight	.46	.25
	Heavyweight	.33	.12

## ZONOLITE

W. R. GRACE & CO.  
62 Whittemore Avenue  
Cambridge, Mass. 02140



# Just say Grace.

# Knoll International

745 Fifth Avenue, New York 10022

**Andrew Ivar Morrison and Bruce R. Hannah design for Knoll.**

Two Young New Yorkers begin a collaboration with Knoll on a suspension seating group which received Alcoa's 1970 "Ventures in Design" award: the designs are judged on the use of aluminum in a practical innovative way.

Knoll International operates in 31 countries.

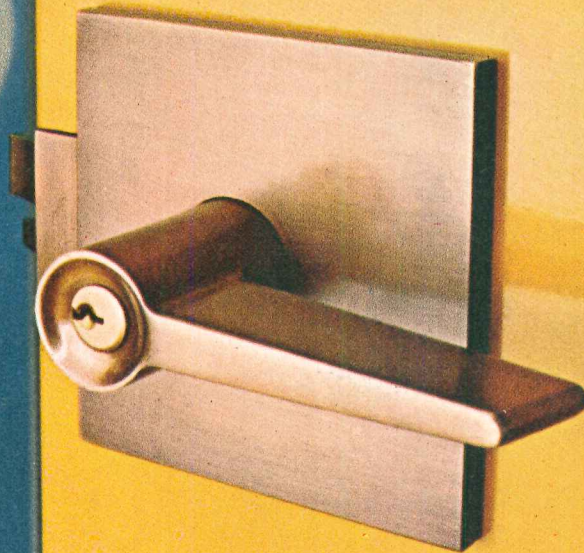
For more data, circle 111 on inquiry card



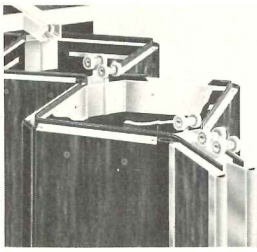
# 910L Metro... where you program for security

When the input is Corbin, you're programming for safety, security and speed. Corbin Unit® locksets are renowned for combining maximum security and fast, economical installation with design leadership second to none. Contact a Corbin distributor for information and service or write P & F Corbin, Division of Emhart Corporation, Berlin, Conn. 06037. In Canada, Corbin Lock Division.

*For more data, circle 112 on inquiry card*

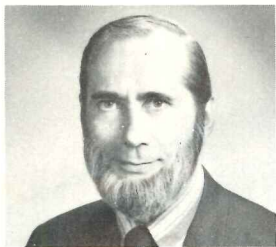


# UPDATE *A classified advertising section devoted to helping architects and engineers keep up to date on building product manufacturers.*



**SONICWAL STC40 BY PANELFOLD.** An exciting new concept in wood folding partitions has been developed. Panelfold's acoustically rated, twin panel Sonicwal is a hard panel alternative to the other types of accordion folding partitions. It has been tested at Riverbank Acoustical Laboratory under ASTM E90-70. Details and specifications can easily be found in your Sweet's Architectural File 10.2 Pa. Write for our twelve page color brochure. Panelfold Doors, Inc., 10750 N.W. 36th Ave., Miami, Florida 33167.

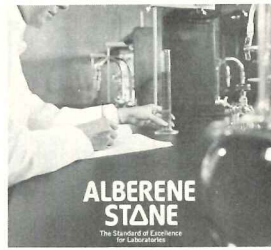
For more data, circle 113 on inquiry card



**Mr. Gordon J. Pollock, Research Director** of The Mills Company, manufacturer of movable interior wall systems, is a panel speaker on "Systems and Interface Problems" Session 3. This session scheduled at Cobo Hall in Detroit, June 22, 1971 is part of the National Conference and Exposition

for the Building Team, an industry service developed by the American Institute of Architects and the Producers' Council, Inc. In the special Systems Section of the exhibit area The Mills Company will display its newest designs of interior walls interfacing with ceilings, floors and exterior walls. We hope you can attend.

For more data, circle 115 on inquiry card



**ALBERENE STONE** Division of Georgia Marble Company has issued a new, full-color brochure on Alberene Stone for laboratory counter tops, sinks and fume hoods. The copiously illustrated brochure deals with the characteristics of the unique stone and its range of uses. There are many detail

drawings of both standard and special applications, including 12 sink designs that demonstrate the versatility of the material and its adaptability to unusual requirements. Architects involved in the highly specialized area of laboratory design will find the

For more data, circle 114 on inquiry card

**An ACOUSTICAL CONSULTING SERVICE** on a fee basis to industries with noise control problems is now available from National Gypsum Company. The service includes evaluation studies, selection and location of production equipment, and installation of sound absorptive materials.

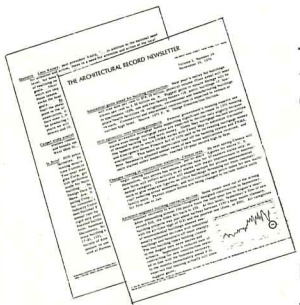
National Gypsum, a manufacturer of building materials, including products developed for sound control, has extensive facilities for building materials research. Their acoustical testing laboratory is equipped for a complete range of sophisticated noise tests.

Details are offered in a brochure, "Industrial Noise Control," Write: Director of Technical Service, National Gypsum Company, Research Division, 1650 Military Road, Buffalo, New York 14217.

For more data, circle 116 on inquiry card

## ESPECIALLY FOR MEN WITH MARKETING RESPONSIBILITIES IN THE BUILDING INDUSTRY

**THE ARCHITECTURAL RECORD NEWSLETTER** is designed and written to help you keep pace with building industry developments that affect your company.



This marketing information service brings you important news and developments each month on:

- Market trends
- Marketing Methods
- Industry plans
- Legislative developments
- Government programs
- Association activities

**PLACE YOUR ORDER NOW . . .** just fill in the coupon below and mail it today!

THE ARCHITECTURAL RECORD NEWSLETTER  
330 West 42nd Street, New York, N.Y. 10036

Please enter my subscription for 12 months @ \$30.

NAME \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

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

TITLE OR POSITION \_\_\_\_\_

FIRM NAME \_\_\_\_\_

FIRM ADDRESS \_\_\_\_\_

A/3  PAYMENT ENCLOSED  BILL ME  BILL MY FIRM

## IDENTIFY IN METAL...

to blend beauty with function and enhance any interior design. Combine solid bronze or aluminum cast letters with custom tablets in bronze, aluminum or "Silverbronze" . . . and add signs, symbols, trademarks, etched plaques and name plates . . . for a completely integrated identification plan. Wide variety of sizes, styles, finishes, colors. Write for FREE CATALOG describing Matthews' complete Identification-In-Metal capabilities.

See us in  
Sweet's Interior Design,  
File A-6



**FRANCIS I. duPONT & CO.**  
MEMBERS NEW YORK STOCK EXCHANGE



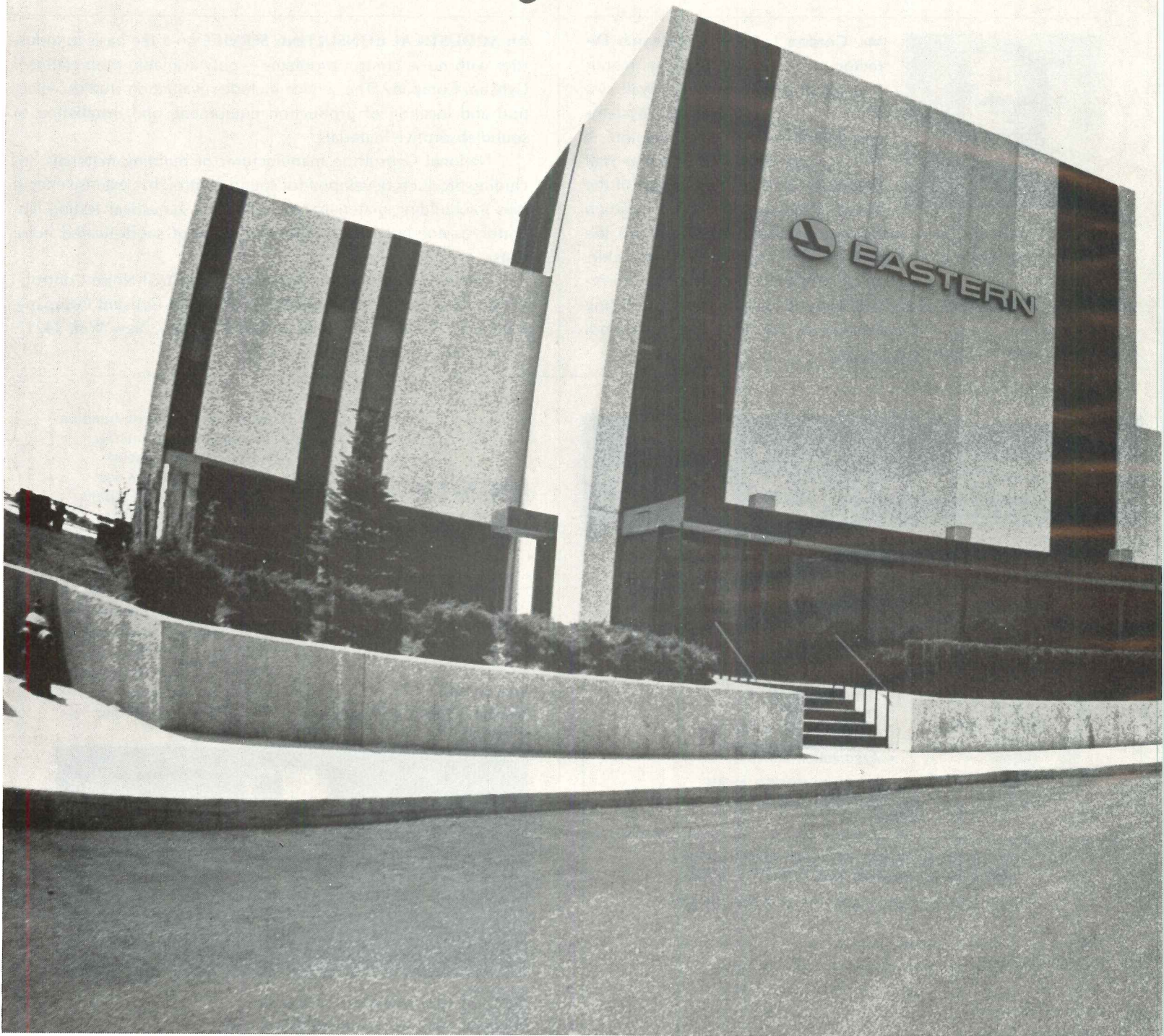
**Identification in Metal**  
**JAS. H. MATTHEWS & CO.**

1315 W. Liberty Ave., Pittsburgh, Pennsylvania 15226

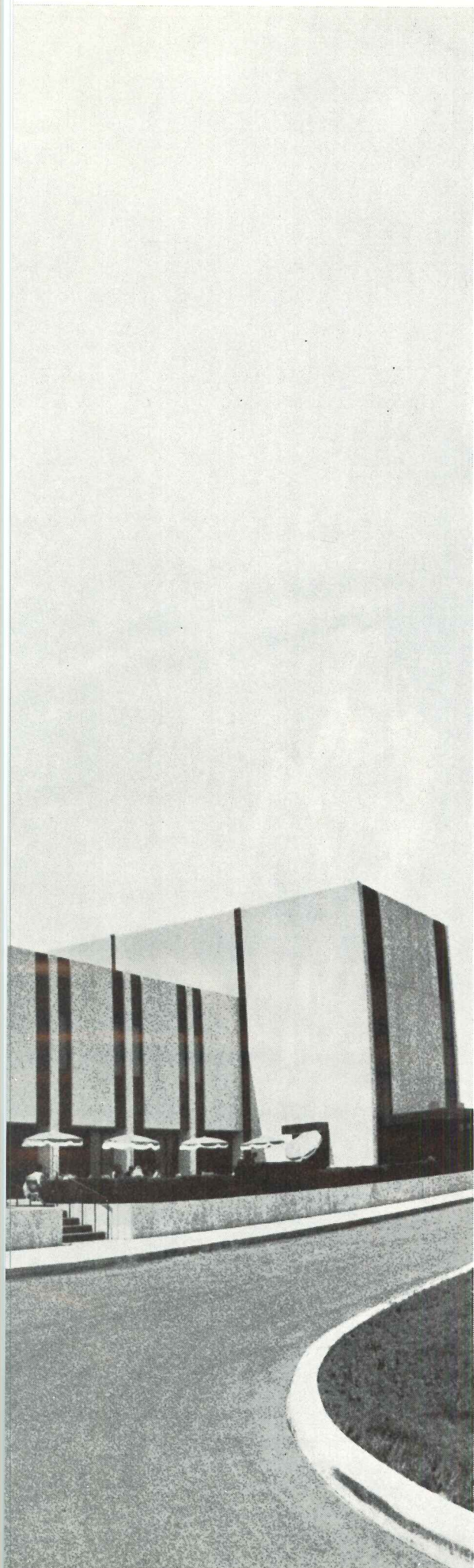
PLANTS IN PITTSBURGH, PENNSYLVANIA; SEARCY, ARKANSAS; MILTON, ONTARIO;  
SUN CITY, CALIFORNIA; SENECA FALLS, NEW YORK; EL MONTE, CALIFORNIA.

For more data, circle 128 on inquiry card

**The electric climate is  
for architects who want  
unlimited design  
flexibility.**







**Read how it helped  
Holabird & Root design a  
5-million dollar airline reservation  
center that saves thousands of  
dollars annually for its owners.**

Before designing the new Eastern Airlines' reservation center in Oak Brook, Illinois, architect-engineers Holabird & Root of Chicago had studies done to determine the most favorable environmental system for their client. The findings? *The electric climate* won out over all other systems.

By planning everything electric, including the heat, the architect-engineers *and* their client benefited. The architects could design with unlimited imagination because there's an electric system to fit any building. And Eastern Airlines? They got first cost savings with *the electric climate*! Furthermore, they saved time, space and money—because electrical equipment is easy and fast to install, is compact and doesn't require a large maintenance staff.

Your electric utility company can tell you how *the electric climate* can add new flexibility to your next architectural assignment. Call them today.



**Live better electrically**  
Edison Electric Institute, 750 Third Avenue, New York, N.Y. 10017

*For more data, circle 117 on inquiry card*



# The thing-bringer

The thing-bringer is Telelift. The unique and totally automatic materials distribution system that allows you complete freedom of design. While saving your client space and operating costs with fingertip distribution.

A modular concept of track, stations, and self-propelled cars, Telelift quietly, quickly travels straight up,

down or across. Delivering materials via the shortest route without a central dispatcher.

Concealed or exposed, Telelift will deliver maximum performance for years to come. Its modular design allowing for future change and expansion.

A Mosler systems

analyst can tell you much more about Telelift. Or our other thing-bringer, the Mosler Pneumatic Tube Systems. The most dependable pneumatic tube systems available. Write Mosler, Hamilton, Ohio 45012.

**Mosler** An American-Standard Company  
When you think of Mosler today, think of today's Mosler.

*For more data, circle 93 on inquiry card*

# If any other anti-static fiber fails, you can expect an apology.

# If ours fails, you can expect a new carpet.



Saying you're sorry isn't going to make a customer any less sorry he bought an anti-static carpet that doesn't perform.

Unless he's been promised a new carpet.

And the only one to do that is Dow Badische.

We guarantee that a nylon or acrylic-mod-acrylic carpet blended with as little as 2% Zefstat® anti-static metallic yarn will reduce static below the level of human sensitivity for the useful life of the carpet or five years.

Or else we replace the entire carpet, free of all charges.

Of course, we're willing to give you this strong a guarantee because we're absolutely certain not only that Zefstat works, but that it's better than anybody else's answer to the static problem.

The only thing we'll apologize for is hurting our competitors' feelings.

For more information, write Dow Badische Company, 350 Fifth Avenue, New York, N.Y. 10001.

Zefstat is a registered trademark of Dow Badische Company.

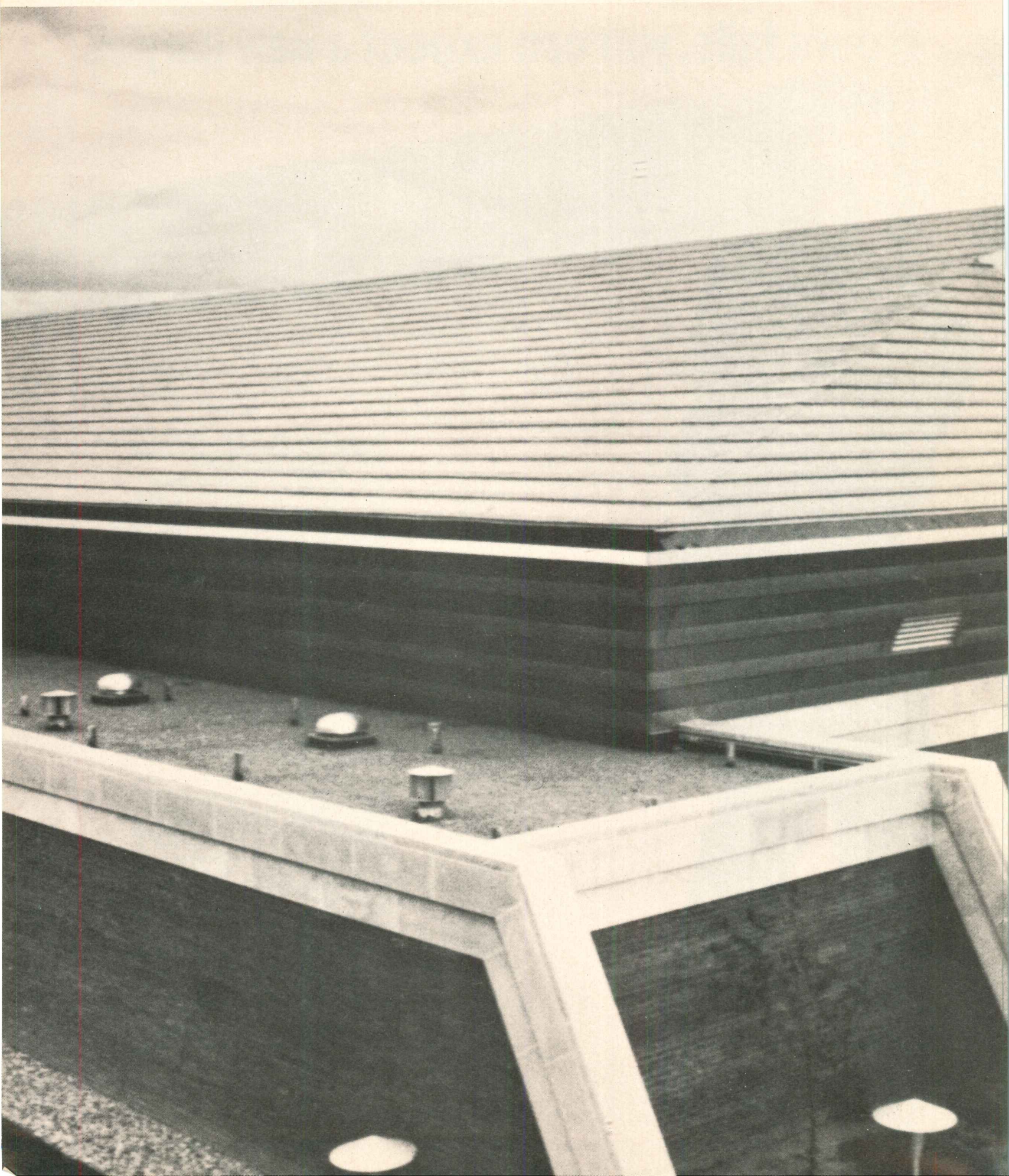
Dow Badische Company guarantees to the original purchaser that a carpet made with Zefstat will not generate static in excess of 2,500 volts down to a relative humidity of 20% at 70°F. (The threshold of average human sensitivity is considered to be 3,000 volts.) This anti-shock feature is guaranteed for the useful life of the carpet or five years, whichever is sooner.

If the anti-shock performance fails to meet the above standard and if human comfort is adversely affected by static generation, the purchaser must notify the manufacturer and make the carpet available for testing by Dow Badische Company. If failure is verified by our tests, the carpet will be replaced, free of all charges, including the cost of installation.

**ZEFSTAT**   
THE ONLY ANTI-STATIC YARN GUARANTEED FOR 5 YEARS

For more data, circle 118 on inquiry card

# The Stainless



# Spectacular.

AT \$1.90 PER SQUARE FOOT,  
AMERICA'S LARGEST  
BERMUDA ROOF IS A  
BOX OFFICE SUCCESS.

The city is Wyandotte, located 12 miles south of Detroit. The roof is 26-gage type 304 DUROFLASH® stainless from Republic Steel. The building is the Benjamin F. Yack Recreation Center. It's a big roof. Thirty tons of DUROFLASH stainless steel roofing sheets. Forty-one thousand square feet. Bermuda type. Reported to be the largest of its kind in the country. Installed with spectacular ease, at a price of just \$1.90 per square foot.

To general contractor E. H. Wittman, the stainless steel roof represented one of the most trouble-free phases of the entire project. "Stainless is long-lasting... will probably never need replacing... is very pliable and easy to work, and holds its true color."

The roof's stainless steel was delivered to the job site as flat sheets on skids in 10-foot lengths and 36-inch widths. All fabrication was done directly on the job site. The stainless sheets were cut to size and all flanges were formed with press brake equipment.

The roof is muted silver. But color is the only thing muted about it. This roof is proud, and says so in no uncertain terms. Republic Steel Corporation, Cleveland, OH 44101.

The new Benjamin F. Yack Recreation Center is a multi-use facility (public ice and roller skating, league hockey, band concerts, home and antique shows, graduation exercises) with a skating rink bigger than Detroit's and seating for 2,000 at ice events... double that when the ice is covered.

Owner: City of Wyandotte, Michigan  
Mayor — William Sullivan  
Architect: Jack W. Yops  
Contractor: E. H. Wittman Construction Co., Inc.  
Firebaugh & Reynolds Roofing Co.



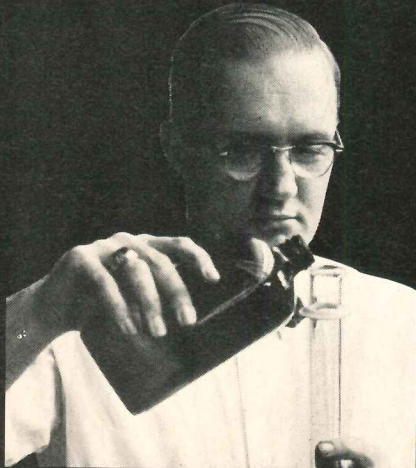
## Republicsteel

For more data, circle 119 on inquiry card

# The laundry planning help you'll need in the '70's has already been done at American.

The laundry and dry-cleaning industry has witnessed sweeping changes in recent years—changes which will also effect the captive facilities in projects you design.

New synthetic fabrics have called for new methods of processing. And rising costs have signalled a need



for greater degrees of automation.

Anticipating these changes and engineering new methods and equipment

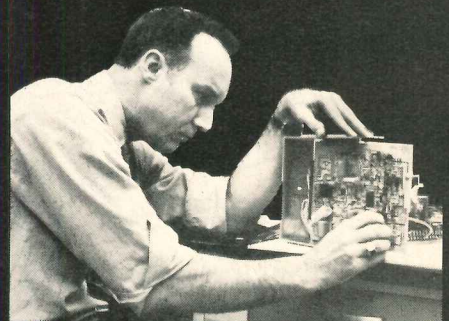


to accommodate them has been the works of a far reaching R&D program at American Laundry Machinery Industries. And from it has emerged many new and improved machinery designs for every step in the laundry process.

This kind of thinking ahead makes us especially well-equipped to assist you in planning the "new" laundries you'll need in the years ahead.

We can help with complete floor plans, equipment recommendations, flow diagrams, capacity and personnel data—anything you

need to provide the most efficient facility for the purpose. Because, after all . . . The thinking has already been done.



## Ready now for the needs of the '70's are...

The American Industrial Drycleaning System for Blends

The 6044 Cascadex Washer-Extractor

The Super Thermatic Drying and Conditioning Tumbler

The Tru-Feed Spreader Feeder

The Foltronic Primary Folder

The Trumatic II Primary Folder

The Trumatic Cross Folder

The Formatic Steam Finisher

**American**  

American Laundry Machinery Industries  
5050 Section Avenue Cincinnati, Ohio 45212

*For more data, circle 129 on inquiry card*

## RECORD IMPRESSIONS

A new service offering reprints, reports and back issues.

- ① THE DESIGN OF INTERIORS—June 1969  
16 pgs. 4-color .50 per copy
  - ② RECORD INTERIORS—January 1970  
24 pgs. 4-color .50 per copy
- ③ RECORD INTERIORS of 1971—January 1971  
20 pgs. 4-color .50 per copy
  - ④ MUSEUMS—BLDG. TYPES STUDY 398  
16 pgs. 4-color .50 per copy
- ⑤ CREATING CONSOLIDATED CLINICAL TECHNIQUES  
SPACES FOR AN EXPANDING ROLE IN HEALTH CARE  
8 pgs. 4-color .50 per copy
  - ⑥ DESIGN FOR MERCHANDISING  
16 pgs. 1.00 per copy
- ⑦ OPERATION BREAKTHROUGH—BLDG. TYPES STUDY  
Describing 22 industrialized building systems  
HUD picked as winners  
16 pgs. B&W .50 per copy
  - ⑧ AIRPORTS—BLDG. TYPES STUDY  
Master planning; Landside/airside  
traffic; terminal facilities; other design work  
16 pgs. B&W 1.00 per copy
- ⑨ AIR CONDITIONING: A NEW INTERPRETATION  
Updated reports from 1967, 1969, 1970  
64 pgs. 2-color softbound 4.95 per copy
  - ⑩ RECORD HOUSES 1968—2.00 per copy
- ⑪ RECORD HOUSES 1969—2.00 per copy
  - ⑫ RECORD HOUSES 1970—3.25 per copy
- ⑬ CAMPUS DESIGN FOR SUCF—AN ANALYSIS OF EXCELLENCE  
24 pgs. 2-color 1.00 per copy
  - ⑭ SEALING JOINTS: 1968 SPECIAL REPORT  
8 pgs. 2-color .50 per copy
- ⑮ BUILDINGS FOR A BROAD SPECTRUM OF HEALTH CARE  
16 pgs. B&W 1.00 per copy
  - ⑯ URBAN HOUSING:  
30 pgs. 2-color 1.00 per copy

Record Impressions  
ARCHITECTURAL RECORD  
330 West 42nd Street  
New York, New York 10036  
Att. Joseph R. Wunk

No. of copies	No. of copies	No. of copies	No. of copies
① _____	④ _____	⑦ _____	⑩ _____
② _____	⑤ _____	⑧ _____	⑪ _____
③ _____	⑥ _____	⑨ _____	⑫ _____
			⑬ _____
			⑭ _____
			⑮ _____
			⑯ _____

Enclosed is my check  Money order  for \$ \_\_\_\_\_

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

# WHAT'S NEW IN ARCHITECTURAL SIGNING?

Contemporary  
Letter styles are  
What's new in  
Architectural Signing.

The Graphics Lab has them.

Write for your copy of our catalog.  
Letter Styles for the 70's.



**KNIGHT MANUFACTURING COMPANY**

5975 Armour Drive P.O. Box 15282 Houston, Texas 77020

For more data, circle 120 on inquiry card



## Ventaire Prefinished Decking

Super V-Panel or flat-surface Ceilok, Ventaire Deckings are available in a wide range of weights and sizes. Excellent strength-to-weight ratios and load bearing characteristics yield long span capabilities that reduce steel under structure requirements and lower erection costs. Deckings furnished in prefinished acrylic white, baked enamel color or frosted Anodized.

**Ventaire  
Corporation**

4245 So. 93 E. Ave.  
Tulsa, Oklahoma 74145  
(918) 622-1191

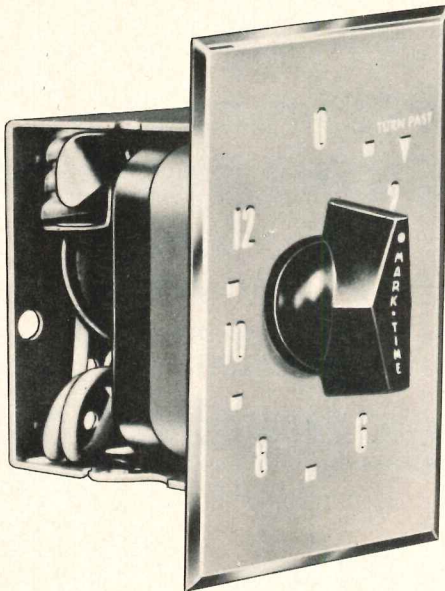
For complete specifications see Sweet's Architectural or Construction Files

For more data, circle 121 on inquiry card



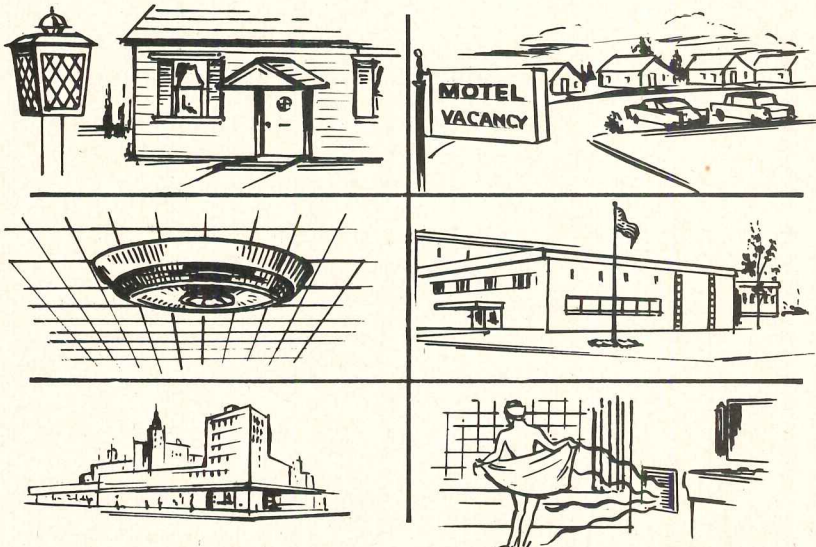
# Wall Box Time Switch

**THE ONLY TIMER WITH DIAL FACE PLATE  
THAT MOUNTS FLUSH TO THE WALL!**



**Turns Off Lights,  
Fans, Heaters  
AUTOMATICALLY  
In Timings  
From 3 Minutes  
to 12 HOURS!**

Save electricity, add comfort and convenience, extend life of equipment. Easily installed in standard wall boxes. Recommended for hotels, motels, homes, apartment houses, public buildings. Available through wholesalers everywhere. Send for literature.



## M. H. RHODES, Inc.

Hartford, Conn. 06101

In Canada—M. H. Rhodes (Canada) Ltd., Ottawa 5, Ontario

**DRAPERY HARDWARE** / Selection of track systems, drapery heading and operating systems are discussed in a 20-page guide. Specifications are included. ■ Kirsch Co., Sturgis, Mich.

Circle 420 on inquiry card

**COLOR DESIGN** / "Color Dynamics: The Inside Story," describes a systematic approach to the functional and decorative use of color in industry. The principles of camouflage, color contrast, safety color coding and after-image are discussed in planning a system for industrial plants. ■ PPG Industries, Pittsburgh.

Circle 421 on inquiry card

**OFFICE SEATING** / A wide variety of traditional and modern seating is described in a 25-page catalog. The seating includes executive and secretarial desks, side chairs and sofas. Information on sizes, materials, and finishes is given. ■ R-Way Furniture Co., Sheboygan, Wis.

Circle 422 on inquiry card

**ALUMINUM** / Guidance on alloy and gage selection, and design and installation details for the use of aluminum sheet in building construction are given in a 32-page manual. It does not deal with products or proprietary systems. ■ Aluminum Assn., New York City.

Circle 423 on inquiry card

**CAMPUS TRANSIT** / "Rapid Transit for Large Universities," a 24-page booklet, explains how current rapid transit technology can best be adapted to the movement of large numbers of people on campuses. ■ Westinghouse Electric Corp., Transportation Div., Pittsburgh.

Circle 424 on inquiry card

**ACOUSTICAL GLASS** / Acoustical ratings, sound/pressure levels and applications for a laminated glass are given in an 8-page brochure. ■ Amerada Glass Co., Elk Grove Village, Ill.\*

Circle 425 on inquiry card

**RAISED FLOORING SYSTEM** / A steel-encased system designed for maximum access under floor area in data processing rooms, hospitals and offices is described in a 4-page catalog. Complete specifications are included. ■ Westinghouse Electric Corp., Grand Rapids, Mich.\*

Circle 426 on inquiry card

**FLUORESCENT LIGHTING FIXTURES** / Over 200 types and sizes for commercial and institutional use are described in a booklet. A section of the booklet discusses differential refractive lenses, a system which permits low direct glare levels. ■ Holophane Co., New York City.

Circle 427 on inquiry card

**ROLLING DOORS** / A line of rolling metal and fire doors is presented in a 20-page brochure. Also described are rolling grilles, fire shutters and sliding grilles. All are available in galvanized steel, aluminum and stainless steel. ■ Cornell Iron Works, Inc., Wilkes-Barre, Pa.\*

Circle 428 on inquiry card

**ALUMINUM POOLS** / Installation photos and descriptions of the manufacturer's gutter system are contained in a 4-page brochure. ■ Overly Mfg. Co., Greensburg, Pa.\*

Circle 429 on inquiry card

\*Additional product information in Sweet's Architectural File

For more data, circle 122 on inquiry card



# Which sealants give you more of what you're looking for?

## Here are the facts:

Some Sealant Performance Characteristics			
	Thiokol's Polysulfide	Competition A (1-part Silicone)	Competition B (1-part Acrylic Solvent Release)
Sealant movement capability	25%	20%	5%
Adhesion after water immersion to: Concrete Glass Aluminum	Excellent Excellent Excellent	Questionable Fair Questionable	Questionable Fair Questionable
Aging characteristics	None	None	Toughens
History of use in buildings	24 years	7 years	10 years
High temperature	Good	Excellent	Flows
Low temperature	Good	Excellent	Embrittles
Use where immersed in water	Yes	No	No
Dirt pickup after cure	None	Very bad	Very bad
Tear resistance	Good	Poor	Good

Compared with two leading competitive types of sealants, the Thiokol polysulfide entry wins in a breeze.

It's not surprising. Besides having a track record which includes the longest period of successful use, sealants based on Thiokol's LP polysulfide polymer are constantly tested to assure topnotch performance.

Under our exclusive Seal of Security program, polysulfide-based sealants are regularly checked to meet rigid specifications. In fact, our technicians and chemists check more than 200 samples every year.

The check consists of a series of tough tests, ranging from four to six weeks. Samples are tortured, twisted, stretched, heated and frozen to make sure they can survive what the ele-



ments dish out over long periods of time.

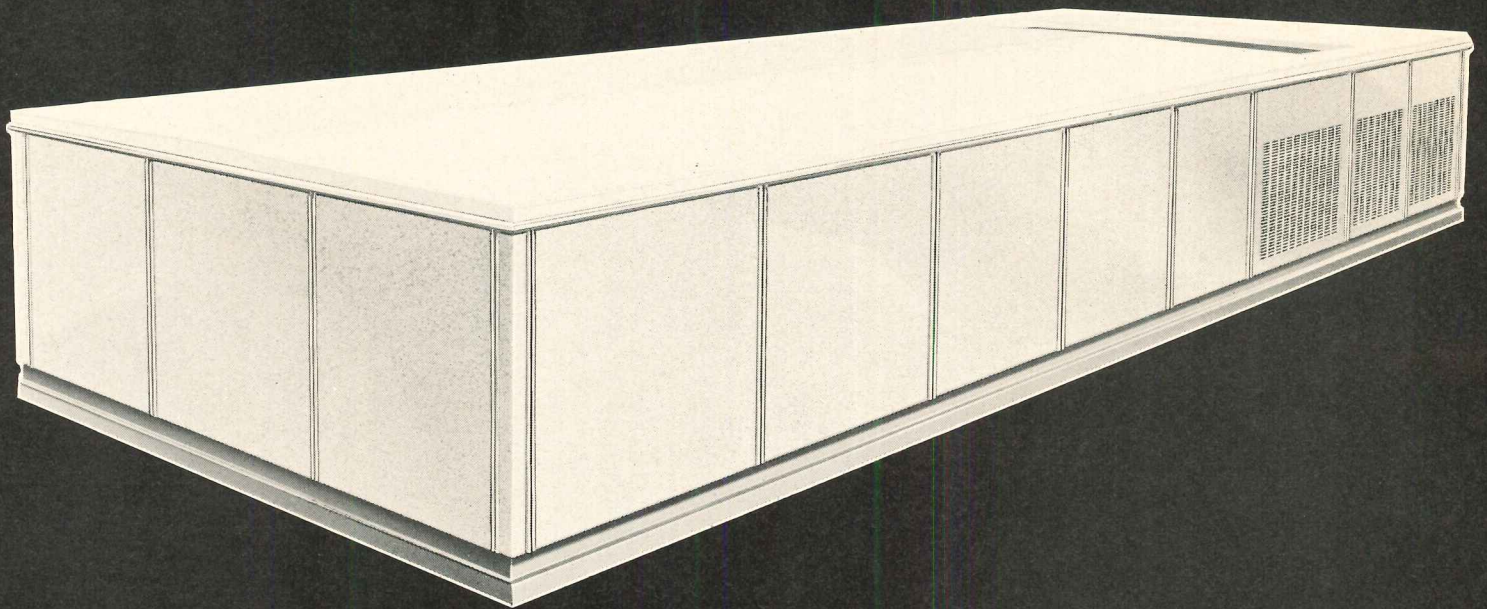
If the sealant passes each and every test, then it's entitled to bear Thiokol's Seal of Security. We're proud of this program. It's the first of its kind in the United States. And, since its inception in 1965, more than 300 sealants, produced by 20 manufacturers, have earned the right to carry the seal.

Insist on sealants with the Thiokol Seal of Security and you can't go wrong. For a more detailed comparison between polysulfide-based sealants and eight other types write: Thiokol Chemical Corporation, P.O. Box 1296, Trenton, N.J. 08607.

# Thiokol

For more data, circle 123 on inquiry card

# What we've done to make Schemenauer rooftop units\* the most reliable.



## \*Multizone systems for:

1. Heating-cooling-ventilating
2. Heating-ventilating with optional provision for future cooling
3. Cooling-ventilating

### What is reliability?

To a building owner it means comfort he can depend on. It means low fuel and power consumption. And it means absolute minimum maintenance.

To an architect, and an engineer, it means satisfied clients.

To an installer it means fewer call-backs.

Now here are some of the built-in features that have earned Schemenauer multizone rooftop units a reputation for reliability.

### Two heating/cooling systems in one rooftop unit

On our larger units (the most popular sizes) we use two separate cooling systems, two separate heating systems (on gas units). Now that's what we call fail-safe protection!

Under average cooling conditions, only one cooling system operates. In extremely hot weather, both systems operate. And, if one system should become inoperative for any reason, the other will continue to operate so that occupants would never be without cooling.

Dual gas heating systems give the same fail-safe protection. Either one supplies enough heat, even in sub-zero weather, to prevent freeze-up in any of the zones served.

### Save up to 50% in operating cost

The dual cooling system means that we use two half-size compressors instead of one large one. So under average cooling conditions, only one is operating—at half the electric power consumption (compared to a single compressor with cylinder unloading which decreases the power consumption approximately 25%). Because a smaller compressor runs for longer time periods than a large one, even more power is saved because there are less frequent motor start-ups.

On the dual heating system, automatic controls modulate gas input down to 20% depending on comfort requirements. As a result, only enough heat is produced to supply the need. Fuel dollars aren't wasted.

### We make use of "free heat"

While the Schemenauer unit is cooling some zones, other zones might need heating. That's when we take advantage of the "free heat" in the hot refrigerant coil. By diverting a portion of the cooled, dehumidified, filtered air through that hot coil, we use the heat that is normally wasted. So you get a mixture of cooled air and "free" heated air to meet varied requirements of each thermostatically controlled zone. You don't even have to operate the unit's heating system until temperatures go below sixty degrees.

### Positive-acting multizone dampers control comfort accurately

Oversize dampers eliminate damper "position hunting" which can cause wide temperature variations within zones. The air supply for up to 12 zones is handled quickly and accurately by our full-

modulating, 45-degree proportioning-type dampers. The result is better control over both heating and cooling.

### Designed with service in mind

Schemenauer rooftop units are designed to 1) eliminate potential service problems, 2) make service easier if it should be necessary and 3) eliminate a possible panic situation by providing back-up systems (in our larger rooftop units) for both heating and cooling.

Like any equipment exposed to weather, a rooftop unit needs weather protection. Protection like our one-piece fiberglass roof. It can't leak. Like double-walled aluminum side panels with a baked enamel finish that can't rust. And like protected panel insulation that can't tear.

Our kind of protection includes special fasteners that bolt and seal the side panels to sturdy aluminum posts. And, weather-tight gaskets that join the rooftop unit to its curb base.

These Schemenauer innovations make our rooftops almost service free. But, like all mechanical equipment, some routine service is necessary and we have that in mind, too.

Most filters, for example, are accessible from either side of the unit. Pilots on gas-fired units are the automatic electric type. Components such as furnaces and compressors are half the usual size and weight (there are two of each on large units), making them much easier to handle.

Small access side panels slip out easily and the aluminum upright panel dividers can be removed without cutting or welding. A remote monitoring panel identifies and locates mechanical problems and this saves costly troubleshooting time. We've even labeled the major compartments to make the serviceman's job easier and faster.

There's a lot more to tell you about Schemenauer multizone rooftop units. They're the units designed to last as long as the buildings they're installed on. Just clip and mail the coupon.

- 
- Tell me more about reliable Schemenauer rooftop units for  
—gas —electric —steam —hot water applications.  
 Have your representative arrange for an appointment. RT-14467

NAME \_\_\_\_\_

TITLE \_\_\_\_\_ FIRM \_\_\_\_\_

STREET \_\_\_\_\_ CITY \_\_\_\_\_

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

Mail to: Modine, 1510 DeKoven Avenue, Racine, Wis. 53401

-----



**MODINE**

**Nothing quite equals Modine/Schemenauer  
heating and air conditioning quality.**

# ARCHITECTURAL RECORD

Published by McGraw-Hill, Inc., 330 West 42nd Street, New York, New York 10036. © 1971. All rights reserved

## SEMI-ANNUAL INDEX VOLUME 149 JAN.-JUNE 1971

Readers using the index will find buildings entered in three ways: by architect's name, by building or owner's name, and by building type (apartments, hospitals, schools, etc.) Other categories cover subjects in the engineering section (concrete, lighting, prefabrication, etc.). ABBREVIATIONS: AB—Architectural Business; AE—Architectural Engineering; BC—Building Components; BTS—Building Types Study.

### A

- Aalto, Alvar, archt.; Mount Angel Abbey Library, St. Benedict, Ore.—May 1971, pp. 111-116
- Acott, Richard & Assocs., archts.; Crate & Barrel North, Chicago—Feb. 1971, BTS, pp. 89-104
- Air Conditioning. "Engines Do Double Duty: Refrigeration or Standby Power", Clarkson Memorial Hosp., Omaha, Neb.; Leo A. Daly Co., archts. & engrs.—Mar. 1971, AE, pp. 151-152. "Three New Variable Air Volume Systems: Comfort, Economy"—Mar. 1971, BC, p. 153-154
- Albert, Frants & Abend, William M. (of HCD Collaborative), archts.; Little, John R., Residences, San Anselmo, Cal.—Mid-May 1971, pp. 94-95
- A.I.A. Human Resources Council, report on the first national meeting in Omaha, Feb. 27 by Jim Morgan—Apr. 1971, p. 10
- Apartments-Hsg. Building Types Study 420, "Urban Housing," Intro. by Robert Jensen—Apr. 1971, pp. 115-138. "Apartments: Adapting to a Changing Market" by James E. Carlson—Feb. 1971, AB, p. 60. "An Efficient Multi-Story Space Frame Built from a Few Basic Components," the Mah-Le Messurier System—Apr. 1971, AE, pp. 139-144. "The Residential Blanket, an Exploratory Scheme for City Living; Michael E. Reynolds, dsnr.—April 1971, BTS, pp. 136-138. Albert, Frants & Abend, William M. (of HCD Collaborative), archts.; Little, John R., Residences, San Anselmo, Cal.—Mid-May 1971, pp. 94-95. Banks, Richard, archt.; his own apartment, N.Y.C.—Jan. 1971, p. 92. Booth, Laurence & Nagle, James, archts.; townhouses, Chicago—Mid-May 1971, pp. 88-89. Copelin, John K. & Lee, William M.S., archts.; Palmetto Dunes Golf Villas, Hilton Head Island, S.C.—Mid-May 1971, pp. 96-98. Davis, Brody & Assocs., archts.; Harlem River Park Project, Bronx, N.Y.—Apr. 1971, BTS, p. 126. Fisher-Friedman Assocs., archts.; Islandia Townhouses, Alameda, Cal.—Mid-May 1971, pp. 90-91. Hoberman & Wasserman, archts.; Coney Island Vest Pocket Housing, sites 5 & 6, Brooklyn—Apr. 1971, BTS, p. 127. Jacobsen, Hugh Newell, archt.; Tidesfall Townhouses, Columbia, Md.—Mid-May 1971, pp. 92-93. Jones, Walk + Mah, Francis, archts.; Luther Towers, Memphis—Apr. 1971, BTS, pp. 122-123. Martin, Williams & Soderstrom, David A., archts.; East Burnside Apts., Portland, Ore.—Mid-May 1971, pp. 84-85. Meier, Richard, Assocs., archts.; Twin Parks Northeast, Bronx—Apr. 1971, BTS, p. 125. Oistad, George C., Jr., archt. & owner, Hoven Apts., Seattle—Mid-May 1971, pp. 82-83. Pard Team, Inc., archts.; North Harvard Project, Boston—Apr. 1971, BTS, pp. 120-121. Prentice & Chan, Ohlhausen, archts.; Twin Parks Northwest Project, Bronx, N.Y.—Apr. 1971, BTS, p. 130. Seligman, Werner, & Assocs., archts.; Elm-Maple St. Hsg., Ithaca, N.Y.—Apr. 1971, BTS, pp. 128-129.
- Shelley Systems, Inc., archts.; Vivienda 70, Santurce, Puerto Rico—Apr. 1971, BTS, pp. 116-119. Stubbins, Hugh, & Assocs., Inc.; Warren Gardens Inc., Roxbury, Mass.—Mid-May 1971, pp. 86-87. Urban Design Group of the N.Y.C. Planning Dept. Systems Bldg.; Ajzyk Jagoda, principal urban dsnr. & archt.—Apr. 1971, BTS, pp. 132-135. Wechsler, Max, & Assocs., archts.; Wright Park Hsg., Rome, N.Y.—Apr. 1971, BTS, p. 131
- Architects Design Group (Terry G. Twitchell & Nancy A. Miao) archts.; house, Harrison, N.Y.—Mid-May 1971, pp. 66-69
- Architectural Business. "Apartments: Adapting to a Changing Market" by James E. Carlson—Feb. 1971, p. 60. "Architectural Firm Uses Half-size Drawing System"—May 1971, p. 58. "Construction Completion Schedules: the Experience of the Sixties" by James E. Carlson—May 1971, p. 63. "Construction in 1970; an Industry in Transition" by James E. Carlson—Mar. 1971, p. 70. "Construction Labor in the Sixties: the Phenomenon of Scarcity" by James E. Carlson—June 1971, p. 76. "Construction Management and Project Administration: Common Goals for Professional Services"—June 1971, pp. 69-70. "F. W. Dodge Construction Outlook: 1971 First Update" by George A. Christie—Apr. 1971, p. 76. "Keys to Growth: Quality, Cost Control and Service", the firm of Yearwood & Johnson, archts., Nashville—Apr. 1971, pp. 67-70. "A New Federal Program in Professional Contracts" by Ernest Mickel—Feb. 1971, pp. 57-58. "Pros and Cons of Corporate Professional Practice"—Mar. 1971, pp. 66, 68. "Seasonality in Construction: Climate and Custom" by James E. Carlson—Jan. 1971, p. 60. "A State Construction Fund: Management for Quality"—Jan. 1971, pp. 55-56. "State Registration Laws Can Trip You" by John Warren Giles—May 1971, p. 55. "A Professional Approach to Construction Management & Project Administration," by William B. Foxhall—June 1971, AB, pp. 69-70
- Architectural Engineering: "An Efficient Multi-story Space Frame Built from a Few Basic Components", the Mah-Le Messurier System—Apr. 1971, pp. 139-144. "Engines Do Double Duty: Refrigeration or Standby Power", Clarkson Memorial Hosp., Omaha, Neb.; Leo A. Daly Co., archts. & engrs.—Mar. 1971, pp. 151-152. "Good Footcandles" for Better Quality Lighting—Jan. 1971, pp. 129-132. "Needed: a Standard for Insulating Glass." Feb. 1971, pp. 133-136. "Predicting Ballast Noise from H.I.D. Lighting Systems" by A. C. McNamara, Jr.—May 1971, pp. 139-142. "The Planning Disciplines of Audio-visual Facilities," by Raymond Wadsworth—June 1971, pp. 137-144
- Articles. "(Artificial, Intelligent) Architecture: Computers in Design" by Thomas P. Moran—Mar. 1971, pp. 129-134. "Beginning the Debate on a National Planning Policy" by Jonathan Barnett (Issues in Architecture Series)—May 1971, pp. 117-118. "Creating Consolidated Clinical Techniques Spaces for an Expanding Role in Health Care," by Sheila Clibbon, A.R.I.B.A., & Marvin L. Sachs, M.D.—Feb. 1971, pp. 105-112
- Au, Cutting, Smith & Assocs., Ltd., archts.; Ward Plaza, Honolulu, Hawaii—June 1971, BTS, pp. 130-131
- Audio-Visual, "The Planning Disciplines of Audio-visual Facilities," by R. Wadsworth—June 1971, AE, pp. 137-144

### B

- Baker, James B. (of Baker & Blake) archt.; house for Rev. & Mrs. Frederick Q. Shafer, Annandale-on-Hudson, N.Y.—Mid-May 1971, pp. 60-63
- Banks, Kling, Vincent, archt.; Fidelity Bank Branch, Philadelphia Interntl. Airport—Jan. 1971, pp. 88-89. Mies van der Rohe, Ludwig, exec. archt.; Sidney Bregman, archts. & engrs.; Toronto-Dominion Centre, Toronto, Can.—Mar. 1971, pp. 105-114
- Banks, Richard, archt., his own apartment, N.Y.C.—Jan. 1971, p. 92
- Banwell, Richard & Burton L. Rockwell, archts.; Lafayette-Orinda United Presbyterian Church, Lafayette, Cal.—June 1971, pp. 113-114
- Barnes, Edward Larrabee, archt.; St. Paul's School, Kittredge Dorms., Concord, N.H.—Mar. 1971, pp. 115-118. SUNY at Potsdam—Jan. 1971, BTS, pp. 110-111
- Barnett, Jonathan; Issues in Architecture Series: "Beginning the Debate on a National Planning Policy"—May 1971, pp. 117-118
- Beckhard, Herbert, archt.; house for Mr. and Mrs. George Reed, Danbury, Conn.—May 1971, pp. 122-124. House for Mr. and Mrs. Arnold Rosenberg, E. Hampton, N.Y.—May 1971, pp. 119-121
- Berchin, Allyn, Design Office, interior dsnr., Le Dernier Cri (store), N.Y.C.—Feb. 1971, BTS, pp. 89-104
- Black, Pagliuso, Kikuchi & O'Dowd, archts.; Dr. Edward E. Givins orthodontist's office, Redondo Beach, Cal.—Mar. 1971, BTS, p. 150. Their own office, Palos Verdes, Cal.—Apr. 1971, pp. 101-103
- Booth, Laurence & Nagle, James, archts.; townhouses, Chicago—Mid-May 1971, pp. 88-89
- Bregman, Sidney, archts. & engrs.; Ludwig Mies van der Rohe, exec. archt.; Toronto-Dominion Centre, Toronto—Mar. 1971, pp. 105-114
- Breuer, Marcel & Gatje, Robert, archts., IBM office, laboratory & facility, Boca Raton, Fla.—Feb. 1971, pp. 113-118
- Brighton Branch Library, Brighton, Mass.; The Architects Collaborative Inc., archts.—Apr. 1971, pp. 109-114

### C

- California City, Kern County, Cal.; Venturi & Rauch, archts. & urban dsnr. for Great Western Cities, Inc.—June 1971, pp. 117-120
- Callister & Payne, archts.; The Bazaar at the Village Green, Heritage Village, Southbury, Conn.—May 1971, pp. 107-110. Unitarian Center, The, San Francisco—June 1971, pp. 115-116
- Campbell-Yost & Partners, archts.; Child Development & Rehabilitation Ctr., Portland, Ore.—Mar. 1971, BTS, pp. 143-145
- Carson, Lundin & Shaw, archts.; SUNY Agricultural and Technical College at Canton—Jan. 1971, BTS, pp. 106-109
- City & Regional Plng. Venturi & Rauch, archts. & urban dsnr., California City, Kern County, Cal.—June 1971, pp. 117-120
- Clibbon, Sheila, A.R.I.B.A., & Marvin L. Sachs, M.D., "Creating Consolidated Clinical Techniques Spaces for an Expanding Role in Health Care"—Feb. 1971, pp. 105-112
- College Bldgs. Building Types Study 417, "An Analysis of Excellence: a Report on the N.Y. State University Construction Fund" by Mildred F. Schmetz—Jan. 1971, pp. 105-128. Barnes, Edward L., archt.; SUNY at Potsdam—Jan. 1971, BTS, p.

110-111. Carson, Lundin & Shaw, archts.; SUNY Agricultural & Technical College at Canton—Jan. 1971, BTS, pp. 106-109. Gruzen & Partners, archts.; SUNY at Stony Brook dorm-dining hall—Jan. 1971, BTS, p. 118. Kessler, William, & Assocs., archts.; SUNY at Stony Brook lecture hall—Jan. 1971, BTS, pp. 120-121. Murphy, C.F. Associates, archts. & engrs.; Malcolm X Community College, Chicago—May 1971, pp. 98-99. Rochester, Univ. of, Psychology Bldg., Rochester, N.Y.—May 1971, pp. 100-101. Pei, I.M., & Partners, archts.; SUNY at Fredonia—Jan. 1971, BTS, pp. 112-115. Roth, Emery & Sons, archts.; SUNY at Stony Brook dorm-dining hall—Jan. 1971, BTS, p. 119. Sasaki, Dawson, DeMay & Assocs., archts.; SUNY at Buffalo, Amherst Campus, comprehensive master plan—Jan. 1971, BTS, pp. 124-128. Skidmore, Owings & Merrill, archts.; SUNY at Oswego—Jan. 1971, BTS, p. 116. Stone, Edward D., archt.; SUNY at Albany—Jan. 1971, BTS, p. 117. Stubbins, Hugh & Assocs., archts.; Rochester Institute of Technology, College of Fine & Applied Arts & College of Graphic Arts & Photography, Rochester, N.Y.—Apr. 1971, pp. 93-100. Thompson, Benjamin & Assocs., archts.; SUNY at Buffalo, Amherst Campus, subcampus plan—Jan. 1971, BTS, pp. 124-128.

Combs, Earl Burns, archt. & owner; house, Fire Island Pines, N.Y.—Mid-May 1971, pp. 70-71

Community Ctrs. Polshek, James Stewart & Assocs., project archt.; Toscanini, Walfredo, archts.; Clinton Youth & Family Ctr., N.Y.C.—June 1971, pp. 107-110

Computers. "(Artificial, Intelligent) Architecture: Computers in Design" by Thomas P. Moran—Mar. 1971, pp. 129-134

Copelin, John K., & Lee, William M. S., archts.; Palmetto Dunes Golf Villas, Hilton Head Island, S.C.—Mid-May 1971, pp. 96-98

Craig, Zeidler & Strong, archts., house for Mr. Eberhard H. Zeidler, Toronto—Feb. 1971, pp. 119-122

## D

Davis, Brody & Assocs., archts., Harlem River Park project, Bronx, N.Y.—Apr. 1971, BTS, p. 126

DeHaan, Norman, Assocs., Inc., interior dsnsr., Woolf Bros. Subway (store), Kansas City, Mo.—Feb. 1971, BTS, pp. 89-104

DeMars & Wells, exec. archts.; Mount Angel Abbey Library, St. Benedict, Ore.; Alvar Aalto, archt.—May 1971, p. 111-116

The Design Collaborative, archts.; their own office, Baltimore, Md.—Jan. 1971, p. 97

Downing, William, Assocs., archts. Monarch Machine Tool Co., Cortland, N.Y.—Feb. 1971, pp. 126-129

Drumme Rosane Anderson Inc., archts.; Volkswagen Northeastern Distributor, Inc., Wilmington, Mass.—June 1971, BTS, pp. 124-125

Dworsky, Daniel L., & Assocs., archts.; CBS Studio Ctr., Exec. Office Bldg., North Hollywood, Cal.—June 1971, BTS, pp. 126-127

## E

Electrical Systems. "Engines do Double Duty: Refrigeration or Standby Power", Clarkson Memorial Hosp., Omaha, Neb.; Leo A. Daly Co., archts. & engrs.—Mar. 1971, A.E., pp. 151-152

## F

Ferendino/Grafton/Pancoast, archts. & engrs.; their own office, Coral Gables, Fla.—Apr. 1971, pp. 104-105

Fischer-Friedman Assocs., archts.; Islandia Townhouses, Alameda, Cal.—Mid-May 1971, pp. 90-91

Flansburgh, Earl R., & Assocs., Inc., archts.; Kent Elementary School, Boston—May 1971, BTS, pp. 134-135. Ripley Elementary School, Concord, Mass.—May 1971, BTS, pp. 132-133

Fowler, John, archt.; Yale Freshman Commons Cafe, New Haven—Jan. 1971, pp. 100-101

Francis Cauffman Wilkinson & Pepper, archts.;

Horizon House (mental health rehabilitation ctr.), Philadelphia—Mar. 1971, BTS, pp. 148-149

## G

Gatje, Robert & Marcel Breuer, archts., IBM office, laboratory & mfg. facility, Boca Raton, Fla.—Feb. 1971, pp. 113-118

Gensler, M. Arthur, Jr., & Assocs., Inc., archts.; Western States Bankcard Assocs., San Francisco—June 1971, BTS, pp. 134-135

Glass. "Needed: a Standard for Insulating Glass." Feb. 1971, AE, pp. 133-136

Goldfinger, Myron, archt. & owner; house, Waccabuc, N.Y.—Mid-May 1971, pp. 78-81

Gonzales Assocs., archts.; Scottsdale Civic Ctr., Scottsdale, Ariz.—Mar. 1971, pp. 119-124

Graham, Robert, Jr., house, Fairfield County, Conn.; Eliot Noyes, archt.—Mid-May 1971, pp. 64-65

Grossman, Theodore A., Jr., archt. (the TAG Assocs.) & owner; house, Parker, Colo.—Mid-May 1971, pp. 32-33

Growald, Martin, archt.; house, central N.Y. State—Mid-May 1971, pp. 58-59

Gruzen & Partners, archts.; SUNY at Stony Brook dormitory-dining hall—Jan. 1971, BTS, p. 118

## H

Haid, David, archt. & owner; house, Evanston, Ill.—Mid-May 1971, pp. 48-49

Hardison & Komatsu, archts.; Crescent Park Children's Ctr., Richmond, Cal.—Mar. 1971, BTS, p. 137

HCD Collaborative (Frants Albert & William M. Abend), archts.; Little, John R., Residences, San Anselmo, Cal.—Mid-May 1971, pp. 94-95

Heery & Heery, archts.; Grove Press Offices, N.Y.C.—Jan. 1971, pp. 102-103

Hinson, Harry, interior dsnr.; B. H. Wragge & Pierre Cardin boutiques, Bonwit-Teller, N.Y.C.—Feb. 1971, BTS, pp. 89-104

Hirshen & Van Der Ryn (now Hirshen & Partners), archts.; East Palo Alto Health Ctr., Palo Alto, Cal.—Mar. 1971, BTS, pp. 138-139

Hisaka, Don M., & Assocs., archts.; Crile Elementary School, Parma, Ohio—May 1971, BTS, pp. 126-129

Hoberman & Wasserman, archts.; Coney Island Vest Pocket Housing, sites 5 & 6, Brooklyn, N.Y.—Apr. 1971, BTS, p. 127

Hospitals. Daly, Leo A., Co., archts. & engrs.; Clarkson Memorial Hospital, Omaha; "Engines Do Double Duty: Refrigeration or Standby Power"—Mar. 1971, AE, pp. 151-152. "Creating Consolidated Clinical Techniques Spaces for an Expanding Role in Health Care" by Sheila Clibbon, A.R.I.B.A., & Marvin L. Sachs, M.D.—Feb. 1971, pp. 105-112. Stone, Edward D., archt.;

Valley General Hospital, Renton, Wash.—Jan. 1971, pp. 98-99

Houses. Baker, James B. (of Baker & Blake), archt.; for Rev. and Mrs. Frederick Q. Shafer, Annandale-on-Hudson, N.Y.—Mid-May 1971, pp. 60-63. Beckhard, Herbert, archt.; for Mr. and Mrs. George Reed, Danbury, Conn.—May 1971, pp. 122-124 and for Mr. and Mrs. Arnold Rosenberg, East Hampton, N.Y.—May 1971, pp. 119-121. Combs, Earl Burns, archt. & owner; Fire Island Pines, N.Y.—Mid-May 1971, pp. 70-71. Goldfinger, Myron, archt. & owner; Waccabuc, N.Y.—Mid-May 1971, pp. 78-81. Grossman, Theodore A., Jr. (the TAG Assocs.), archt. & owner. Parker, Colo.—Mid-May 1971, pp. 32-33. Growald, Martin, archt.; central N. Y. State—Mid-May 1971, pp. 58-59. Haid, David, archt. & owner; Evanston, Ill.—Mid-May 1971, pp. 48-49. Jacobsen, Hugh Newell, archt.; house, Easton, Md.—Mid-May 1971, pp. 50-53. Jaffe, Norman, archt.; for Mr. & Mrs. Stephen Perl binder, Sagaponac, N.Y.—Mid-May 1971, pp. 34-37. Jones, Walk C., III, archt. & owner; Memphis—Mid-May 1971, pp. 38-39. Kroeger, Keith & Perfido, Leonard, archts.; Waccabuc, N.Y.—Mid-May 1971, pp. 28-31. Lautner, John, archt.; for Mr. & Mrs. Daniel Stevens, Malibu Beach, Calif.—Mid-May 1971, pp. 44-47.

Mills, Willis N., Jr., & Martin, Timothy, archts., for Mr. and Mrs. Daniel Burnham, Dublin, N.H.—Mid-May 1971, pp. 76-77. Neski, Julian & Barbara, archts.; for Mr. & Mrs. Robert Sabel, Bridgehampton, N.Y.—Mid-May 1971, pp. 22-25. Noyes, Eliot, & Assocs., archts., Hodgson house, Snowmass, Colo.—Mar. 1971, pp. 125-128, & for Robert Graham, Jr., Fairfield County, Conn.—Mid-May 1971, pp. 64-65. Sauer, Louis, Assocs., archts.; for Mr. & Mrs. Leonard Frankel, Margate, N.J.—Mid-May 1971, pp. 54-55. Singer, Donald, archt.; for Mr. & Mrs. Joseph Schmidt, Coconut Grove, Fla.—Mid-May 1971, pp. 56-57. Smotrich, David I. & Platt, Charles A., archts.; for Mrs. & Mrs. Franklin E. Parker, Mendham, N.J.—Mid-May 1971, pp. 40-43. Specter, David Kenneth, archt.; house, East Hampton, N.Y.—Mid-May 1971, pp. 72-75. Riley, J. Alexander, archt. & owner; Inverness, Cal.—Mid-May 1971, pp. 26-27. Twitchell, Terry G. & Miao, Nancy A. (of Architects Design Group), archts.; Harrison, N.Y.—Mid-May 1971, pp. 66-69. Craig, Zeidler and Strong, archts.; for Mr. Eberhard H. Zeidler, Toronto, Ont.—Feb. 1971, pp. 119-122

Hoven Apts., Seattle; George C. Oistad, Jr., archt. & owner—Mid-May 1971, pp. 82-83

## I

IBM Office, Laboratory & Mfg. Facility, Boca Raton, Fla.; Marcel Breuer and Robert Gatje, archts.—Feb. 1971, pp. 113-118

Industrial Bldgs. "Three Industrial Buildings," Intro. by Robert Jensen—Feb. 1971, pp. 123-132. Breuer, Marcel & Gatje, Robert, archts.; IBM office, laboratory & mfg. facility, Boca Raton, Fla.—Feb. 1971, pp. 113-118. Downing, William, Assocs., archts.; Monarch Machine Tool Co., Cortland, N.Y.—Feb. 1971, pp. 126-129. Johnson, E. Verner & Hotvedt, Robert N., & Assocs., archts.; Brockton Water Filtration Plant, Brockton, Mass.—Feb. 1971, pp. 124-125. Murphy, C. F. Assocs., archts. & engrs.; Skil Corp. mfg. bldg., Wheeling, Ill.—May 1971, p. 95-97. Stifter & Baum, archts.; Pepperell Spring Water Co., Pepperell, Mass.—Feb. 1971, pp. 130-132

Islandia Townhouses, Alameda, Cal.; Fisher-Friedman Assocs., archts.—Mid-May 1971, pp. 90-91

## J

Jacobson, Hugh Newell, archt.; house, Easton, Md.—Mid-May 1971, pp. 50-53. King of the Road Motor Inn, Nashville—Jan. 1971, pp. 94-95. Tidesfall Townhouses, Columbia, Md.—Mid-May 1971, pp. 92-93

Jaffe, Norman, archt.; house for Mr. & Mrs. Stephen Perl binder, Sagaponac, N.Y.—Mid-May 1971, pp. 34-37

Jensen, George, N.Y.C.; James Stewart Polshek & Assocs., archts.—Feb. 1971, BTS, pp. 89-104

Jensen & Langeberg, archts.; Piedmont Ave. Children's Ctr., Oakland, Cal.—Mar. 1971, BTS, p. 137

Johnson, E. Verner, Hotvedt, Robert N., & Assocs., archts.; Brockton Water Filtration Plant, Brockton, Mass.—Feb. 1971, pp. 124-125

Jones, Walk C., III, archt. & owner; house, Memphis—Mid-May 1971, pp. 38-39

Jones, Walk + Mah, Francis, archts.; Luther Towers, Memphis.—Apr. 1971, BTS, pp. 122-123

Jova/Daniels/Busby, archts.; their own office, Atlanta—Apr. 1971, pp. 106-107

## K

Kallmann & McKinnell, archts., Phillips Exeter Academy, The: New Athletic Facility, Exeter, N.H.—June 1971, pp. 97-106

Kent Elementary School, Boston, Mass.; Earl R. Flansburgh & Assocs., Inc. archts.—May 1971, BTS, pp. 134-135

Kessler, William & Assocs., archts.; SUNY at Stony Brook lecture hall—Jan. 1971, BTS, pp. 120-121

King of the Road Motor Inn, Nashville; Hugh N. Jacobsen, archt.—Jan. 1971, pp. 94-95

Kissinger Petroleum Ltd. Hdqtrs. Bldg., Denver, RNL, Inc., archts.—June 1971, BTS, pp. 132-133  
Kling, Vincent, archt.; Fidelity Bank Branch, Philadelphia Internatl. Airport—Jan. 1971, pp. 88-89  
Kramer, Kramer & Gordon, archts.; Hawthorne Cedar Knolls Residential Treatment Ctr., Hawthorne, N.Y.—Mar. 1971, BTS, pp. 146-147  
Kroeger, Keith & Perfido, Leonard, archts.; house, Waccabuc, N.Y.—Mid-May 1971, pp. 28-31

## L

Lafayette-Orinda United Presbyterian Church, Lafayette, Cal.; Burton L. Rockwell & Richard Banwell, archts.—June 1971, pp. 113-114  
Larimer Square (store), Denver; RNL Inc., archts.—Feb. 1971, BTS, pp. 89-104  
Lautner, John, archt., house for Mr. & Mrs. Daniel Stevens, Malibu Beach, Cal.—Mid-May 1971, pp. 44-47  
Le Dernier Cri, N.Y.C.; Allyn Berchin Design Office, interior dsns.—Feb. 1971, BTS, pp. 89-104  
Leefe, James of Leefe & Ehrenkrantz, archts.; Museum West, San Francisco—Jan. 1971, p. 93  
LeMessurier, William, engr., "An Efficient Multi-story Space Frame Built from a Few Basic Components," the Mah-LeMessurier System—Apr. 1971, AE, pp. 139-144. Luther Towers, Memphis, using the Mah-LeMessurier bldg. system—Apr. 1971, pp. 122-123  
"Le Monde" Restaurant, TWA Terminal, JFK Airport, N.Y.C.: Warren Platner, archt. with Kevin Roche and John Dinkeloo, archts.—Jan. 1971, pp. 85-87  
Libraries. Aalto, Alvar, archt.; Mt. Angel Abbey Library, St. Benedict, Ore.—May 1971, pp. 111-116. Gonzales Assocs., Archts.; Scottsdale Civic Ctr. Library, Scottsdale, Ariz.—Mar. 1971, pp. 119-124. The Architects Collaborative Inc., archts.; Brighton Branch Library, Brighton, Mass.—Apr. 1971, pp. 109-114  
Lighting. "Good Footcandles" for Better Quality Lighting—Jan. 1971, AE, pp. 129-132. "Predicting Ballast Noise from H.I.D. Lighting Systems" by A.C. McNamara, Jr.—May 1971, AE, pp. 139-142  
Little, John R., Residences, San Anselmo, Cal.; Frants Albert & William M. Abend (of HCD Collaborative), archts.—Mid-May 1971, pp. 94-95  
Luther Towers, Memphis; Walk Jones + Francis Mah, Inc., archts.—Apr. 1971, BTS, pp. 122-123

## M

Mah, Francis, archt. (of Walk Jones + Francis Mah, Inc.), Luther Towers, Memphis, using the Mah-LeMessurier bldg. system—Apr. 1971, pp. 122-123. "An Efficient Multi-story Space Frame Built from a Few Basic Components," the Mah-LeMessurier System—Apr. 1971, AE, pp. 139-144  
Malcolm X Community College, Chicago; C.F. Murphy Assocs., archts. & engrs.—May 1971, pp. 98-99  
Marquis & Stoller, archts.; Child Care Ctr. #3, San Francisco—Mar. 1971, BTS, p. 136  
Martin, William & Soderstrom, David A., archts., East Burnside Apts., Portland, Ore.—Mid-May 1971, pp. 84-85  
McCormick Place On-the-Lake (convention ctr.), Chicago; C.F. Murphy Assocs., archts., engrs. & landscape archts.—May 1971, pp. 102-105  
McCue Boone Tomsick, archts.; Alza Corp., Palo Alto, Cal.—June 1971, BTS, pp. 128-129  
McNamara, Jr., A.C., "Predicting Ballast Noise from H.I.D. Lighting Systems"—May 1971, AE, pp. 139-142  
Medical Bldgs. Building Types Study 419, "Buildings for a Broad Spectrum of Health Care" by Elisabeth Kendall Thompson—Mar. 1971, pp. 135-150. Black, Pagliuso, Kikuchi & O'Dowd, archts.; Givens, Dr. Edward E., orthodontist's office, Redondo Beach, Cal.—Mar. 1971, BTS, p. 150. Campbell-Yost & Partners, archts.; Child Development & Rehabilitation Ctr., Portland, Ore.—Mar. 1971, BTS, pp. 143-145. Francis Cauffman Wilkinson & Pepper, archts.; Horizon House (mental health rehabilitation ctr.), Philadelphia,

Pa.—Mar. 1971, BTS, pp. 148-149. Hardison & Komatsu, archts.; Crescent Park Children's Ctr., Richmond, Cal.—Mar. 1971, BTS, p. 137. Hirshen & van der Ryn (now Hirshen & Partners), archts.; East Palo Alto Health Ctr., Palo Alto, Cal.—Mar. 1971, BTS, pp. 138-139. Jensen & Langeberg, archts.; Piedmont Ave. Children's Ctr., Oakland, Cal.—Mar. 1971, BTS, p. 137. Kramer, Kramer & Gordon, archts.; Hawthorne Cedar Knolls Residential Treatment Ctr. (for delinquents), Hawthorne, N.Y.—Mar. 1971, BTS, pp. 146-147. Marquis & Stoller, archts.; Child Care Ctr. #3, Hunter's Point, San Francisco—Mar. 1971, BTS, p. 136. Ostwald & Kelly, archts.; Child Care Ctr. #2, Hunter's Point, San Francisco—Mar. 1971, BTS, p. 136. Smith & Munter, archts.; dental office, Brooklyn—Jan. 1971, p. 96. SMS Partnership, The, archts.; Dayton Medical Ctr., Greenwich, Conn.—Mar. 1971, BTS, p. 142. Wolff Zimmer Gunsul Frasca Ritter, archts.; Permanente Clinic, The, Beaverton, Ore.—Mar. 1971, BTS, pp. 140-141  
Meier, Richard Assocs., archts.; Twin Parks Northeast, Bronx, N.Y.—Apr. 1971, BTS, p. 125  
Miao, Nancy A. & Twitchell, Terry G. (of Architects Design Group), archts.; house, Harrison, N.Y.—Mid-May 1971, pp. 66-69  
Mies van der Rohe, Ludwig, exec. archt.; Sidney Bregman, archts. & engrs.; Toronto-Dominion Centre, Toronto, Can.—Mar. 1971, pp. 105-114  
Mills, Willis N., Jr. & Martin, Timothy, archts.; house for Mr. and Mrs. Daniel Burham, Dublin, N.H.—Mid-May 1971, pp. 76-77  
Mittelstadt, Robert, archt. & Monte S. Bell, Streeter & Quarles West (store), San Francisco—Feb. 1971, BTS, p. 89-104  
Monarch Machine Tool Company, Cortland, N.Y.; William Downing Assocs., archts.—Feb. 1971, pp. 126-129  
Moran, Thomas P. "(Artificial, Intelligent) Architecture: Computers in Design"—Mar. 1971, pp. 129-134  
Morgan, William, archt.; School for Exceptional (retarded) Children, Jacksonville, Fla.—May 1971, BTS, pp. 130-131  
Motels. King of the Road Motor Inn, Nashville; Hugh N. Jacobsen, archt.—Jan. 1971, pp. 94-95  
Mount Angel Abbey Library, St. Benedict, Ore.; Alvar Aalto, archt.—May 1971, pp. 111-116  
Murphy, C. F. Assocs., Five projects: Illinois Bell Telephone Co., Dorchester Bldg., Chicago; Skil Corp. mfg. bldg., Wheeling, Ill.; Malcolm X Community College, Chicago; U. of Rochester Psychology Bldg., Rochester, N.Y.; McCormick Place On-the-Lake, Chicago, by Mildred F. Schmertz—May 1971, pp. 95-106  
Museums. Leefe & Ehrenkrantz, archts.; Museum West, San Francisco—Jan. 1971, p. 93

## N

Neski, Julian & Barbara, archts.; house for Mr. & Mrs. Robert Sabel, Bridgehampton, N.Y.—Mid-1971, pp. 22-25  
N.Y. State Urban Development Corp., N.Y.C.; Smotrich & Platt, archts.—Jan. 1971, pp. 90-91  
North Harvard Project, Boston; Pard Team Inc., archts.—Apr. 1971, BTS, pp. 120-121  
Noyes, Eliot, archt.; house for Robert Graham, Jr., Fairfield County, Conn.—Mid-May 1971, pp. 64-65. Hodgson House, Snowmass, Colo.—Mar. 1971, pp. 125-128

## O

Office Bldgs. Building Types Study 423—June 1971, pp. 121-136. Au, Cutting, Smith & Assocs., Ltd., archts.; Ward Plaza, Honolulu, Hawaii—June 1971, BTS, pp. 130-131. Black, Pagliuso, Kikuchi & O'Dowd, archts. & engrs., their own office, Palos Verdes, Cal.—Apr. 1971, pp. 101-103. Breuer, Marcel & Gatje, Robert, archts.; IBM office, laboratory & mfg. facility, Boca Raton, Fla.—Feb. 1971, pp. 113-118. Design Collaborative, The, archts.; their own office, Baltimore, Md.—Jan. 1971, p. 97. Drummey Rosane Anderson Inc., archts.; Volkswagen Northeastern Dis-

tributor, Inc., Wilmington, Mass.—June 1971, BTS, pp. 124-125. Dworsky, Daniel L., & Assocs., archts.; CBS Studio Ctr., Exec. Office Bldg., North Hollywood, Cal.—June 1971, BTS, pp. 126-127. Ferendino/Grafton/Pancoast, archts. & engrs., their own offices, Coral Gables, Fla.—Apr. 1971, pp. 104-105. Gensler, M. Arthur, Jr., & Assocs., Inc., archts.; Western States Bankcard Assn., San Francisco—June 1971, BTS, pp. 134-135. Heery & Heery, archts.; Grove Press Offices, N.Y.C.—Jan. 1971, pp. 102-103. Jova/Daniels/Busby, archts.; their own office, Atlanta—Apr. 1971, pp. 106-107. McCue Boone Tomsick, archts.; Alza Corp., Palo Alto, Cal.—June 1971, BTS, pp. 128-129. Mies van der Rohe, Ludwig, exec. archt.; Bregman, Sidney, archts. & engrs.; Toronto-Dominion Centre, Toronto, Can.—Mar. 1971, pp. 105-114. Prentice & Chan, Ohlhausen, archts.; office for Scali, McCabe, Sloves, N.Y.C.—Jan. 1971, p. 104. RNL, Inc., archts.; Kissinger Petroleum Ltd. Hdqtrs. Bldg., Denver—June 1971, BTS, pp. 132-133. Roth, Harold & Saad, Edward, archts.; their own office, Hamden, Conn.—Apr. 1971, p. 108. Schofield & Colgan, archts.; Union Camp Corp., Corporate Hdqtrs., Wayne, N.J.—June 1971, BTS, pp. 122-123. Smotrich & Platt, archts.; Richard Saravey, assoc. archt.; N.Y. State Urban Development Corp. offices, N.Y.C.—Jan. 1971, pp. 90-91  
Oistad, George C., Jr., archt. & owner, Hoven Apts., Seattle—Mid-May 1971, pp. 82-83  
Ostwald & Kelly, archts.; Child Care Ctr. #2, San Francisco—Mar. 1971, BTS, p. 136

## P

Palmetto Dunes Golf Villas, Hilton Head Island, S.C.; John K. Copelin & William M. S. Lee, archts.—Mid-May 1971, pp. 96-98  
Pard Team Inc., archts.; North Harvard Project, Boston—Apr. 1971, BTS, pp. 120-121  
Pei, I.M. & Partners, archts.; SUNY at Fredonia—Jan. 1971, BTS, pp. 112-115  
Pepperell Spring Water Co., Pepperell, Mass. Stifter & Baum, archts.—Feb. 1971, pp. 130-132  
Permanente Clinic, The, Beaverton, Ore.; Wolff Zimmer Gunsul Frasca Ritter, archts.—Mar. 1971, BTS, pp. 140-141  
Phillips Exeter Academy, The: New Athletics Facility, Exeter, N.H.; Kallmann & McKinnell, archts.—June 1971, pp. 97-106  
Piedmont Ave. Children's Ctr., Oakland, Calif.; Jensen & Langeberg, archts.—Mar. 1971, BTS, p. 137  
Platner, Warren, archt., & Kevin Roche and John Dinkeloo, archts.; "Le Monde" Restaurant, TWA Terminal, JFK Airport, N.Y.C.—Jan. 1971, pp. 85-87  
Polshak, James Stewart, & Assocs., archts.; Clinton Youth & Family Ctr., N.Y.C. (Walfredo Toscanini, archt.; J. S. Polshak, project archt.)—June 1971, pp. 107-110. Jensen, George (store), N.Y.C.—Feb. 1971, BTS, pp. 89-104  
Prentice & Chan, Ohlhausen, archts.; office for Scali, McCabe, Sloves, N.Y.C.—Jan. 1971, p. 104. Twin Parks Northwest Project, Bronx, N.Y.—Apr. 1971, BTS, p. 130  
Public Bldgs. Gonzales Assocs., archts.; Scottsdale Civic Ctr. city hall, Scottsdale, Ariz.—Mar. 1971, pp. 119-124. Murphy, C.F., Assocs., archts., engrs. & landscape archts.; McCormick Place On-the-Lake, Chicago—May 1971, pp. 102-105

## R

Religious Bldgs. Callister-Payne & Rosse, archts.; Unitarian Center, The, San Francisco—June 1971, pp. 115-116. Rockwell, Burton L., & Banwell, Richard, archts.; Lafayette-Orinda United Presbyterian Church, Lafayette, Cal.—June 1971, pp. 113-114. Thiry, Paul, archt.; Christ Episcopal Church, Tacoma, Wash.—June 1971, pp. 111-112  
Restaurants. Fowler, John, archt.; Yale Freshman Commons Cafe, New Haven—Jan. 1971, pp. 100-101. Platner, Warren, archt. with Kevin Roche & John Dinkeloo, archts.; Le Monde, TWA Terminal, JFK Airport, N.Y.C.—Jan. 1971, pp. 85-87

Reynolds, Michael E., dsnr., "The Residential Blanket, an Exploratory Scheme for City Living"—Apr. 1971, BTS, pp. 136-138

Riley, J. Alexander, archt. & owner; house, Inverness, Cal.—Mid-May 1971, pp. 26-27

Ripley Elementary School, Concord, Mass.; Earl R. Flansburgh & Assocs., archts.—May 1971, BTS, pp. 132-133

RNL, Inc., archts.; Kissinger Petroleum Ltd., Hdqtrs. Bldg., Denver—June 1971, BTS, pp. 132-133. Larimer Square (store), Denver—Feb. 1971, BTS, pp. 89-104

Roche, Kevin & Dinkeloo, John & Warren Platner, archts.: "Le Monde" Restaurant, TWA Terminal, JFK Airport, N.Y.C.—Jan. 1971, pp. 85-87

Rochester Institute of Technology, College of Fine & Applied Arts & College of Graphic Arts & Photography, Rochester, N.Y.; Hugh Stubbins & Assocs., archts.—Apr. 1971, pp. 93-100

Rochester, University of, Psychology Bldg., Rochester, N.Y.; C.F. Murphy Assocs., archts. & engrs.—May 1971, pp. 100-101

Rockwell, Burton L. & Banwell, Richard, archts.; Lafayette-Orinda United Presbyterian Church, Lafayette, Cal.—June 1971, pp. 113-114

Roth, Emery & Sons, archts.; SUNY at Stony Brook dormitory-dining hall—Jan. 1971, BTS, p. 119

Roth, Harold & Saad, Edward, archts.; their own office, Hamden, Conn.—Apr. 1971, p. 108

## S

Sachs, Marvin L., M.D. & Sheila Clibbon, A.R.I.B.A., "Creating Consolidated Clinical Techniques Spaces for an Expanding Role in Health Care"—Feb. 1971, pp. 105-112

St. Paul's School, Kittredge Dorms., Concord, N.H.; Edward L. Barnes, archt.—Mar. 1971, pp. 115-118

Sasaki, Dawson, DeMay & Assocs., archts.; SUNY at Buffalo, Amherst Campus, comprehensive master plan—Jan. 1971, BTS, pp. 124-125

Sauer, Louis, Assocs., archts.; house for Mr. & Mrs. Leonard Frankel, Margate, N.J.—Mid-May 1971, pp. 54-55

Scali, McCabe, Sloves Office, N.Y.C.; Prentice & Chan, Ohlhausen, archts.—Jan. 1971, p. 104

Schofield & Colgan, archts.; Corporate Hdqtrs., Union Camp Corp., Wayne, N.J.—June 1971, BTS, pp. 122-123

Schools. Building Types Study 421, "Five Contemporary Schools" intro. by Barclay F. Gordon—May 1971, pp. 125-138. Barnes, Edward L. archt.; St. Paul's School, Kittredge Dorms., Concord, N.H.—Mar. 1971, pp. 115-118. Flansburgh, Earl R., & Assocs., Inc., archt.; Kent Elementary School, Boston—May 1971, BTS, pp. 134-135 & Ripley Elementary School, Concord, Mass.—May 1971, BTS, pp. 132-133. Hisaka, Don M., & Assocs., archts.; Crile Elementary School, Parma, Ohio—May 1971, BTS, pp. 126-129. Kallmann & McKinnell, archts.; Phillips Exeter Academy, The: New Athletics Facility, Exeter, N.H.—June 1971, pp. 97-106. Morgan, William, archt.; School for Exceptional (retarded) Children, Jacksonville, Fla.—May 1971, BTS, pp. 130-131. Stein, Richard G., Assocs., archts.; Wiltwyck School for (emotionally disturbed) Boys, Inc., Yorktown, N.Y.—May 1971, BTS, pp. 136-138

Scottsdale Civic Ctr., Scottsdale, Ariz.; Gonzales Assocs., archts.—Mar. 1971, pp. 119-124

Seligmann, Werner & Assocs., archts.; Elm-Maple St., Hsg., Ithaca, N.Y.—Apr. 1971, BTS, pp. 128-129

Shelley Systems, Inc., archts.; Vivienda 70, Santurce, Puerto Rico—Apr. 1971, BTS, pp. 116-119

Shopping Centers. Callister & Payne, archts.; The Bazaar at the Village Green, Heritage Village, Southbury, Conn.—May 1971, pp. 107-110

Singer, Donald, archt.; house for Mr. and Mrs. Joseph Schmidt, Coconut Grove, Fla.—Mid-May 1971, pp. 56-57

Skidmore, Owings & Merrill, archts.; SUNY at Oswego—Jan. 1971, BTS, p. 116

Skil Corp. Mfg. Bldg., Wheeling, Ill.; C.F. Murphy Assocs., archts. & engrs.—May 1971, p. 95-97

Smith & Munter, archts.; dental office, Brooklyn, N.Y.—Jan. 1971, p. 96

Smotrich & Platt, archts.; Richard Saravay, assoc.

archt.; N.Y. State Urban Development Corp. of-fices, N.Y.C.—Jan. 1971, pp. 90-91

Smotrich, David I. & Platt, Charles A., archts.; house for Mr. and Mrs. Franklin E. Parker, Mendham, N.J.—Mid-May 1971, pp. 40-43

SMS Partnership, The, archts.; Dayton Medical Ctr., Greenwich, Conn.—Mar. 1971, BTS, p. 142

Specter, David Kenneth, archt.; house, East Hampton, N.Y.—Mid-May 1971, pp. 72-75

SUNY. Building Types Study 417, "An Analysis of Excellence; a Report on the N.Y. State University Construction Fund" by Mildred F. Schmertz—Jan. 1971, pp. 105-128. See College Buildings.

Stein, Richard G., & Assocs., archts.; Wiltwyck School For Boys, Inc.; Yorktown, N.Y.—May 1971, BTS, pp. 136-138

Stifter & Baum, archts. Pepperell Spring Water Co., Pepperell, Mass.—Feb. 1971, pp. 130-132

Streeter & Quarles West (store), San Francisco; Robert Mittelstadt, archt. & Monte S. Bell—Feb. 1971, BTS, pp. 89-104

Stone, Edward Durrell, archt.; SUNY at Albany—Jan. 1971, BTS, p. 117. Valley General Hospital, Renton, Wash.—Jan. 1971, pp. 98-99

Stores. Building Types Study No. 418, "Design for Merchandising" intro. by James D. Morgan—Feb. 1971, pp. 89-104. Acott, Richard & Assocs., archts.; Crate & Barrel North, Chicago—Feb. 1971, BTS, pp. 89-104. Berchin, Allyn, Design Office, interior dsnr.; Le Dernier Cri, N.Y.C.—Feb. 1971, BTS, pp. 89-104. DeHaan, Norman, Assocs., Inc., interior dsnr.; Woolf Bros. Subway, Kansas City, Mo.—Feb. 1971, BTS, p. 89-104. Hinson, Harry, interior dsnr.; Bonwit-Teller, B.H. Wragge & Pierre Cardin Boutiques, N.Y.C.—Feb. 1971, BTS, pp. 89-104. Mittelstadt, Robert, archt. and Monte S. Bell; Streeter & Quarles West, San Francisco—Feb. 1971, BTS, p. 89-104. Polshak, James Stewart, & Assocs., archts.; George Jensen, N.Y.C.—Feb. 1971, BTS, pp. 89-104. RNL, Inc., archts.; Larimer Square, Denver—Feb. 1971, BTS, pp. 89-104

Structure. "An Efficient Multi-story Space Frame Built from a Few Basic Components", the Mah-LeMessurier System—Apr. 1971, AE, pp. 139-144

Stubbins, Hugh and Assocs., archts.; Rochester Institute of Technology, College of Fine & Applied Arts & College of Graphic Arts & Photography, Rochester, N.Y.—Apr. 1971, pp. 93-100. Warren Gardens Inc., Apts., Roxbury, Mass.—Mid-May 1971, pp. 86-87

Systems Building. "An Efficient Multi-story Space Frame Built from a Few Basic Components," the Mah-LeMessurier System—Apr. 1971, AE, pp. 139-144

## T

TAG Assocs., The (Theodore A. Grossman, Jr.), archt. & owner; house, Parker, Colo.—Mid-May 1971, pp. 32-33

The Architects Collaborative Inc., archts.; Brighton Branch Library, Brighton, Mass.—Apr. 1971, pp. 109-114

Thiry, Paul, archt.; Christ Episcopal Church, Tacoma, Wash.—June 1971, pp. 111-112

Thompson, Benjamin & Assocs., archts.; SUNY at Buffalo, Amherst Campus; subcampus plan—Jan. 1971, BTS, pp. 126-128

Tidesfall Townhouses, Columbia, Md.; Hugh Newell Jacobsen, archt.—Mid-May 1971, pp. 92-93

Toronto-Dominion Centre, Toronto, Can.; Ludwig Mies van der Rohe, exec. archt.; Sidney Bregman, archts. and engrs.—Mar. 1971, pp. 105-114

Toscanini, Walfredo, archt.; Clinton Youth & Family Ctr., N.Y.C.; James Stewart Polshak & Assocs., archts.; J.S. Polshak, project archt.—June 1971, pp. 107-110

Townhouses, Chicago; Laurence Booth & James Nagle, archts.—Mid-May 1971, pp. 88-89

Twin Parks Northeast, Bronx, N.Y.; Richard Meier Assocs., archts.—Apr. 1971, BTS, p. 125

Twin Parks Northwest, Bronx, N.Y.; Prentice & Chan, Ohlhausen, archts.—Apr. 1971, BTS, p. 130

Twitchell, Terry G. & Miao, Nancy A. (of Architects Design Group), archts.; house, Harrison, N.Y.—Mid-May 1971, pp. 66-69

## U

Union Camp Corp., Corporate Hdqtrs., Wayne, N.J.; Schofield & Colgan, archts.—June 1971, BTS, pp. 122-123

Unitarian Center, The, San Francisco; Callister-Payne & Rosse, archts.—June 1971, pp. 115-116

Urban Design Group Systems Building, The Urban Design Group of the N.Y.C. Planning Dept.: Ajzyk Jagoda, principal urban dsnr. & archt.—Apr. 1971, BTS, pp. 132-135

Urban Development Corporation (N.Y. State) Twin Parks Northeast, Bronx, N.Y.; Richard Meier Assocs., archts.; Harlem River Park project, Bronx, N.Y., Davis, Brody & Assocs., archts.; Coney Island Vest Pocket Housing, sites 5 & 6, Brooklyn, N.Y., Hoberman and Wasserman, archts.; Elm-Maple St. Housing, Ithaca, N.Y., Werner Seligman and Assocs. archts.; Twin Parks Northwest, Bronx, N.Y., Prentice and Chan, Ohlhausen, archts.; Wright Park Housing, Rome, N.Y., Max Wechsler & Assocs., archts.—Apr. 1971, BTS, pp. 124-131

## V

Valley General Hospital, Renton, Wash.; Edward D. Stone, archt.—Jan. 1971, pp. 98-99

Vartiainen, Erik T., dsnr. in charge for Alvar Aalto; Mount Angel Abbey Library, St. Benedict, Ore.; Alvar Aalto, archt.; DeMars & Wells, exec. archts.—May 1971, pp. 111-116

Venturi & Rauch, archts. & urban dsnr. for Great Western Cities, Inc., California City, Kern County, Cal.—June 1971, pp. 117-120

Vivienda 70, Santurce, Puerto Rico; Shelley Systems, Inc., archts.—Apr. 1971, BTS, pp. 116-119

Volkswagen Northeastern Distributor, Inc., Wilmington, Mass.; Drummey Rosane Anderson Inc., archts.—June 1971, BTS, pp. 124-125

## W

Wadsworth, Raymond H., "The Planning Disciplines of Audio-visual Facilities"—June 1971, AE, pp. 137-144

Wagner, Walter F., Jr., Editorials: "Architects and Social Responsibility: Good Beginning, and a Big Boost"—Feb. 1971, p. 9. "The 'Building Team'—and Other Ill-defined Ideas"—Apr. 1971, p. 9. "Quips, Quotes, and Perspectives"—Mar. 1971, pp. 9-10. "Some Notes on the Eve of the Convention"—June 1971, pp. 9-10. "Some Random Thoughts on the Dawn of a New Year"—Jan. 1971, pp. 9-10. "The Student and the Practitioner: Communication, Accomplishment"—May 1971, p. 9

Ward Plaza, Honolulu, Hawaii; Au, Cutting, Smith & Assocs., Ltd., archts.—June 1971, BTS, pp. 130-131

Warren Gardens Inc., Apts., Roxbury, Mass.; Hugh Stubbins & Assocs., Inc., archts.—Mid-May 1971, pp. 86-87

Wechsler, Max & Assocs., archts.; Wright Park Hsg., Rome, N.Y.—Apr. 1971, BTS, p. 131

Western States Bankcard Assn., San Francisco; M. Arthur Gensler Jr. & Assocs., Inc., archts.—June 1971, BTS, pp. 134-135

Wiltwyck School for Boys, Inc., Yorktown, N.Y.; Richard G. Stein & Assocs., archts.—May 1971, BTS, pp. 136-138

Woolf Bros. Subway (store), Kansas City, Mo.; Norman DeHaan Assocs., Inc.; interior dsnr.—Feb. 1971, BTS, pp. 89-104

Wolff Zimmer Gunsul Frasca Ritter, archts.; Permanente Clinic, The, Beaverton, Ore.—Mar. 1971, BTS, pp. 140-141

Wright Park Hsg., Rome, N.Y.; Max Wechsler & Assocs., archts.—Apr. 1971, BTS, p. 131

## Y

Yale Freshman Commons Cafe, New Haven; John Fowler, archt.—Jan. 1971, pp. 100-101

Yearwood & Johnson, archts., Nashville, "Keys to Growth: Quality, Cost Control and Service"—Apr. 1971, AB, pp. 67-70

# ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1971 Sweet's Catalog File as follows.

- A Architectural File (green)
- I Industrial Construction File (blue)
- L Light Construction File (yellow)
- D Interior Design File (black)

## A

- A-I Aerofin Corp. .... 94
- Aiphone U.S.A. Inc. ....32-5
- A AllianceWall Corporation ..... 62
- D All-Steel Equipment Inc. .... 79
- American Cyanamid Co., Fibers Division .....49, 164
- American Gas Association .....44-45
- A American Laundry Machinery Industries ..... 214
- A-I-L American Plywood Association ...153 to 158
- A American Standard, Plumbing & Heating Div. .... 31
- A-L Andersen Corp. ....60-61
- A Apache Foam Products ..... 66
- A-I-L-D Armstrong Cork Co. ....20-21
- A-I-L-D ASG Industries Inc. .... 48
- AVM Corporation Jamestown Products Division ..... 202
- A-L Azrock Floor Products .....3rd Cover

## B

- A Ball Corp. .... 174
- A-D Berven of California ..... 192
- Bethlehem Steel Corp. ....24-25
- A-I Bradley Washfountain Co. ....206-207
- Business Week Guide .....PB 6

## C

- A-D Carpenter & Co., L. E. .... 168
- Carrier Air Conditioning Co. ....44-45
- Cockle Ventilator Co., Inc. .... 163
- A Cold Spring Granite Co. ....28-29
- A-I Columbus Coated Fabrics ..... 2-3
- A-I COMBUSTION ENGINEERING—C-E Glass Division .....88-89
- A-I-D Conwed Corp. ....187-188
- Copper Development Association, Inc. ....92-93
- Corbin, P&F, Div. Emhart Corp. .... 210
- Craig Electronics .....PB 15
- A Crawford Door Company ..... 176
- A Crouse-Hinds Company .....18-19

## D

- A DAP INC. ....22-23
- A Dor-O-Matic Div. .... 77
- A Dover Corp., Elevator Div. .... 34
- D Dow Badische Co. ....211

## E

- Eaton Corp.—Electronic Security Div. . 54
- Econo Car International .....PB 13
- Edison Electric Institute .....210B-210C
- A-L Engineered Products Co. .... 186
- Evans Products Company, Forest Products Division ..... 90

## F

- D Fritz Hansen Inc. .... 192

## G

- A-I-L General Electric Co.—Large Lamp ....46-47
- I General Electric Co.—Lighting Systems Department ..... 204
- General Portland Cement Co. Trinity Div.—Warmtone ..... 195
- A-I-L-D Georgia Marble Co. ....210A
- A-D Georgia-Pacific Corporation ..... 193
- A-I Granco Steel Products Co. ....16-17
- A-I GREFCO, Inc., Building Products Div. . 33

## H

- Hager Hinge Company .....190-191
- A Haughton Elevator Company ..... 81
- A Haws Drinking Faucet Company ..... 203
- Hercules Incorporated ..... 64
- A-I Hillyard Chemical Co. .... 162
- Holophane Co., Inc. ....38-39
- Honeywell ..... 167
- A Hope's Windows, Inc. .... 201

## I

- A-I Inland-Ryerson Construction Products Co. .... 170

## J

- Jamestown Products Division AVM Corporation ..... 202
- A Jamison Door Co. .... 87
- A-I-L-D Johns-Manville ..... 30
- Jute Carpet Backing Council, Inc. .... 67

## K

- A Kawneer Co. ....84-85
- A-I Keene Corp. .... 27
- Keene Corp., Sechrist-Lighting Div. .... 95
- Knight Mfg. Co. .... 215
- D Knoll Associates ..... 209
- Krueger Manufacturing Company ..... 51

## L

- A Landmark Lighting Div., ITT ..... 184
- Latco Products .....32-5
- Lees Carpets ..... 175
- A-L Lennox Industries, Inc. ....55 to 57
- A-I-L-D Libbey-Owens-Ford Co. ....198-199
- Lyon Metal Products .....PB 16
- Lyon Van Lines .....PB 12

## M

- Massey Seating Co. .... 174
- D Matthews & Co., J. H. ....210A
- McQuay, Inc. ....72-73
- A W. R. Meadows, Inc. .... 148
- Mills Company .....210A
- Mobay Chemical Company ..... 63
- A Modern Partitions Inc. .... 96
- Modine Mfg. Co. ....218-219
- Montgomery Elevator Co. .... 37
- Mo-Sai Institute, Inc. ....176-177
- A-I Mosler Safe Co. ....210D

## N

- National Electrical Contractors Association ..... 50
- A-I-L National Gypsum Co. ....58-59, 210A
- North American Van Lines .....PB 7

## O

- A Otis Elevator Co. .... 173
- A-I Overhead Door Corp. ....196-197
- A Overly Mfg. .... 75

## P

- Paddock of California, Inc. .... 94
- Pa. Grade Crude Oil .....PB 6
- A Panelfold Doors, Inc. ....210A
- Pella Rolscreen Co. ....165-166
- A-I Pennwalt Chemicals Corp. .... 205
- A-L-D PPG INDUSTRIES, INC., Commercial Glass .....178-179

## R

- A-I Raynor Mfg. Co. .... 81
- A Republic Steel Corp. ..2nd Cover-1, 212-213
- A Rhodes, Inc., M. H. .... 216
- A Rohm and Haas Company ..... 169
- RUSSWIN, Div. Emhart Corp. .... 91

## S

- St. Charles Mfg. Co. .... 200
- St. Joe Minerals Corporation ..... 145
- A Sanymetal Products Company, Inc. .... 183
- A Sargent & Company ..... 171
- Sharp Electronics .....PB 5
- A-I Silbrico Corp. .... 65
- Sloane Mfg. Div., R&G, The Susquehanna Corp. .... 68
- Sloan Valve Company .....4th Cover
- A A. O. Smith Corp., Armor Elevator Div. .... 6-7
- Sonoco Products Company .....PB 11
- Sony .....PB 9
- Southern California Gas Company .32-6-32-7
- Speed Queen, Div. of McGraw-Edison Co. .... 185
- A Standard Conveyor Co. .... 174
- Star Sprinkler Corp. .... 8
- State Farm Insurance .....PB 2
- Steel Joist Institute ..... 189
- Swedlow, Inc. .... 32
- Sweet's Catalog Service ..... 225
- Sylvania Electric Products, Inc. ....82-83

## T

- A-I Taylor Co., The Halsey W. .... 182
- A Thermoproof Glass Co. .... 194
- A-I Thiokol Chemical Corp. .... 217
- Thonet American Chair Company ..... 86
- A-I 3 M Co.—Adhesive, Coating & Sealer Div. .... 78
- The Trane Co. ....150-151
- Trinity White, General Portland Cement Co. .... 15
- Tyler Pipe Industries ..... 172

## U

- D Uniroyal Inc. .... 71
- United Business Communications Inc. .... 81
- A-L-D U.S. Plywood Corp. .... 74
- A-L-D U.S. Steel Corp.—Cyclone Fence Div. ....11 to 14
- A-L Uvalde Rock Asphalt Co. ....3rd Cover

## V

- Vega Industries Inc. .... 26
- A Ventaire Corporation ..... 215
- Viking Corporation ..... 192



**W**

Wang Laboratories .....	PB 10
Walker/Parkersburg Div. of Textron Inc. ....	181
A Watson Mfg. Co. ....	186
A Weber Technical Products .....	159
Wells Fargo Bank .....	32-1
A-I-L-D Western Wood Products Assn. ....	52-53
A-I Wheeling Corrugating Co. ....	146-147
Wide-Lite Corporation .....	160-161
A Wood Products Div. of Emhart .....	180

**Z**

A-I Zero Weather Stripping Co., Inc. ....	152
A-I-L Zonolite Division .....	208

**ARCHITECTURAL RECORD**

McGraw-Hill, Inc., 330 West 42nd Street, New York, New York 10036  
 Advertising Sales Mgr.: Louis F. Kutscher (212) 971-2838  
 Eastern Sales Mgr.: Donald T. Lock (212) 971-3583  
 Central Sales Mgr.: Robert G. Kliesch (215) 568-6161  
 Advertising Services Mgr.: Joseph R. Wunk (212) 971-2793  
 Marketing Services Mgr.: Elizabeth Hayman (212) 971-2858  
 Classified Advertising: (212) 971-2557

**District Offices:****Atlanta 30309**

Edward G. Graves, 1375 Peachtree St., N.E., (404) 892-2868

**Boston 02116**

607 Boylston St., (617) 262-1160

**Chicago 60611**

Robert T. Franden, Edward R. Novak, 645 N. Michigan Ave.  
 (312) 664-5800

**Cleveland 44113**

Willis W. Ingersoll, 55 Public Square, (216) 781-7000

**Dallas 75201**

Angus A. Macaulay, 1800 Republic National Bank Tower, (214) 747-9721

**Denver 80202**

Richard W. Powers, 1700 Broadway, (303) 266-3863

**Detroit 48226**

Richard D. Thielmann, 2600 Penobscot Bldg., (313) 962-1793

**Houston 77002**

Angus A. Macaulay, 2270 Humble Building, (713) 224-8381

**Los Angeles 90017**

Robert L. Clark, 1125 W. Sixth St., (213) 482-5450

**New York 10036**

Donald T. Lock, 500 Fifth Ave., (212) 971-3583

**Philadelphia 19103**

Robert G. Kliesch, George T. Broskey, 6 Penn Center Plaza  
 (215) 568-6161

**Pittsburgh 15222**

Edward C. Weil, 4 Gateway Center, (412) 391-1314

**St. Louis 63105**

Richard Grater, 7751 Carondelet Ave., (314) 725-7285

**San Francisco 94111**

Richard R. Butera, 425 Battery Street (415) 362-4600

**Overseas Offices:****Brussels**

Galerie Porte de Namur, 22-26, Chaussee de Wavre  
 1050 Brussels, Belgium

**Frankfurt/Main**

Elsa-Brandstroen Str. 2, Frankfurt/Main, Germany

**London**

34 Dover Street, London W.1, England

**Milan**

Via Baracchini No. 1, Milan, Italy

**Paris**

17, rue Georges Bizet, 75 Paris 16°, France

**Tokyo**

2-5, 3-chome, Kasumigaseki, Chiyoda-ku, Tokyo, Japan

# Your 1971 Sweet's File

... features three major innovations to speed and simplify your product search:

1. Organization within the Uniform System
2. Inclusion of a new Product Index carried in each volume of the File
3. Newly designed File graphics facilitating quick search of more product areas

*Result:* More usefulness, and more ease-of-use ... of every catalog made available to you year-'round by the manufacturers represented in your new Sweet's File!

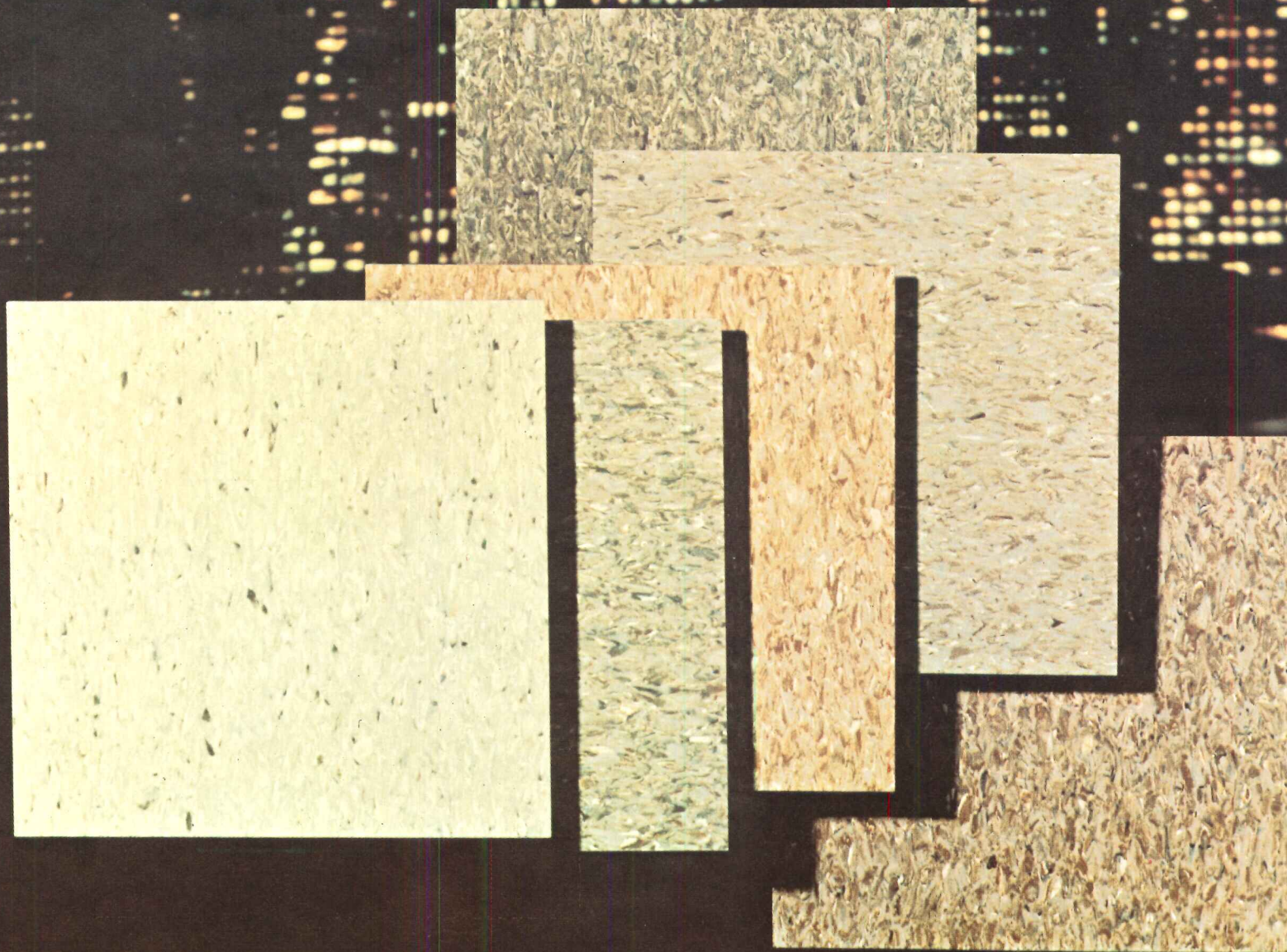
**Sweet's  
Architectural  
Catalog File**



McGraw-Hill Information Systems Company  
 330 W. 42nd Street, New York, N.Y. 10036



# Another fine floor from Azrock



## **Thru-Onyx** vinyl asbestos floor tile

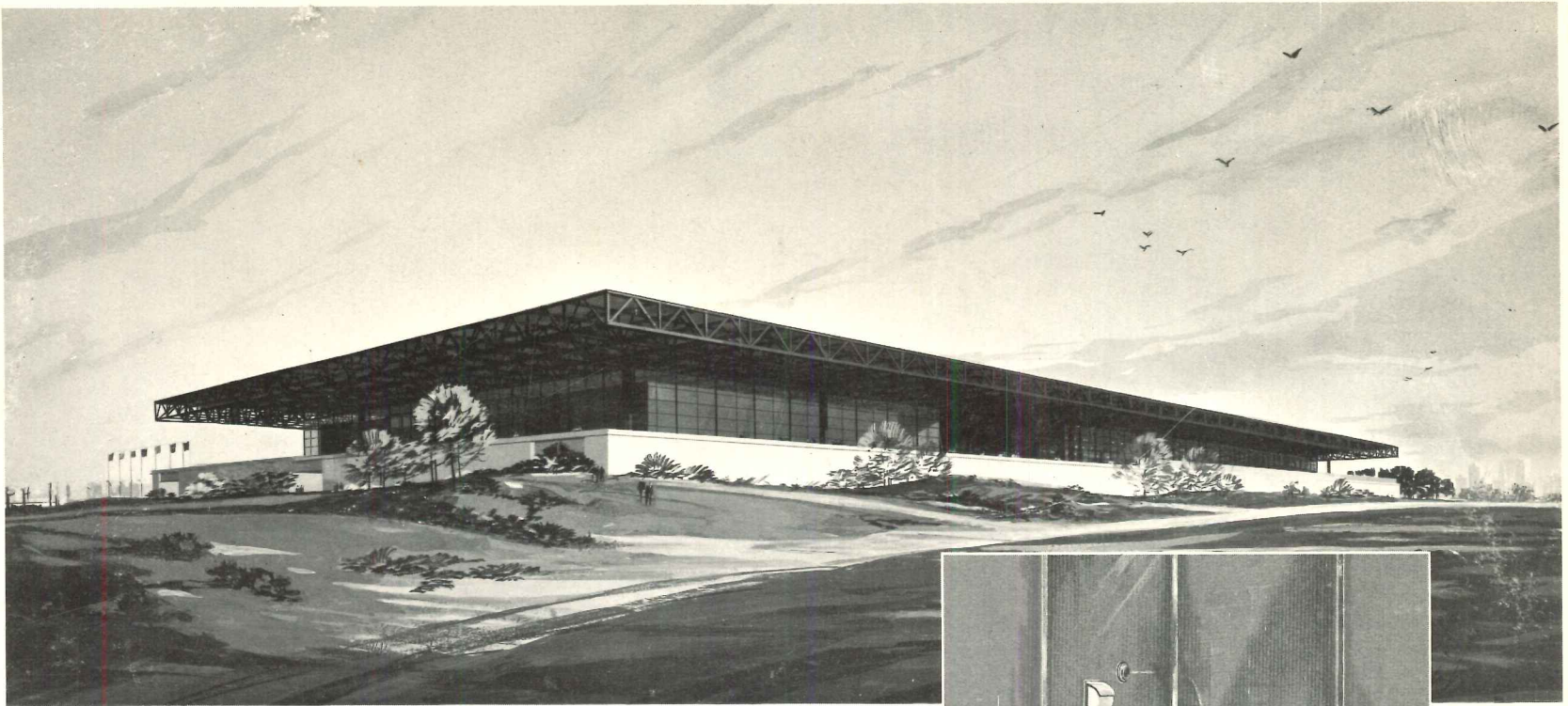
Here's an exclusive Azrock through styling that's recommended for heavy traffic commercial, institutional or residential areas. The beauty of Thru-Onyx is created with fine particles of actual marble and translucent vinyl chips, some containing asbestos. Because this patterning is distributed throughout the full thickness of the tile, it can't "walk off". Keeps its distinctive appearance through years of service. Available in 1/8" gauge, 12" x 12" size. Specify Azrock Thru-Onyx to enhance the beauty of your floor designs.

America's leading vinyl asbestos floor tile

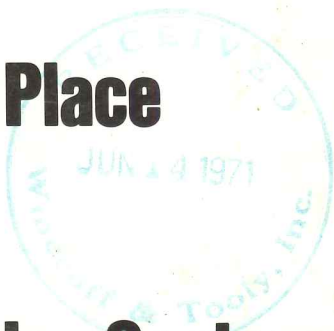


Consult Sweet's File or write for samples.  
Azrock Floor Products, 555A Frost Building, San Antonio, Texas 78205

*For more data, circle 125 on inquiry card.*



# Chicago's New McCormick Place Acclaimed



## “Most Usable Exposition Center of all Time!”

With more than a half million square feet of exhibit space on two levels—32 meeting rooms—six theatres—eight restaurants—and 20 banquet rooms, Chicago's new McCormick Place is the world's newest, most modern, and most complete exposition center.

Stretching over two city blocks beside Lake Michigan, this 95 million dollar structure has risen phoenix-like from the ashes of the first McCormick Place destroyed by fire four years ago.

Though actually a third larger than its predecessor, the new structure manages to create an atmosphere of warmth and intimacy unique in so massive a building. This illusion stems from the Architect's ability to design the lobby, corridors and other pub-

lic areas as a series of elements rather than as a formidable, overwhelming monolith.

The Sloan Flush Valve installation in McCormick Place is unique and completely new. In step with space age design, the concealed closet flush valves are *remotely* controlled by “Push to Flush” buttons conveniently located in the toilet stall partitions. Concealed urinal flush valves are similarly controlled by “Push to Flush” buttons in the wall immediately above each fixture.

Early patrons of the new McCormick Place have already expressed enthusiastic acceptance of this new Sloan Flush Valve installation, one of several new Sloan ideas. We invite you to discuss your flush valve installations with Sloan to help make your proposed building as new as tomorrow.

For more data, circle 126 on inquiry card



**SLOAN VALVE COMPANY**

4300 West Lake Street • Chicago, Illinois 60624