PITTSBURGH SKYSCRAPER ACHIEVES BREAKTHROUGH IN STEEL FIREPROOFING

HIGH-DENSITY NEW TOWN DESIGNED TO CONSERVE THE LANDSCAPE

CIVIC CENTER FOR A SMALL WESTERN CITY

BUILDING TYPES STUDY: COLLEGE BUILDINGS— ARCHITECTURE SHAPED BY A MASTER PLAN

FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD

APRIL 1967 4 A McGRAW-HILL PUBLICATION TWO DOLLARS PER COPY

FOR THE BOLD LOOK, THE CROWNING TOUCH:

NEW FLAIR FITTINGS BY KOHLER

Flair...far and away the most elegant fittings ever offered as part of a regular line. *Flair*...a gem-like blending of acrylic and brass. *Flair*...now available from Kohler in four decorator choices: amber with polished brass; charcoal, white or clear with chrome.

Flair fittings provide the crowning touch for Kohler's "Bold Look" color schemes, vividly portrayed in this year's consumer advertising. Here is Flair trim in white and chrome, fitted to an Antique Red lavatory.

Charcoal against blue, a handsome pairing. Used with Kohler Accent Color lavatories—in any of five sprightly shades—Flair fittings afford the "just right" finishing touch.

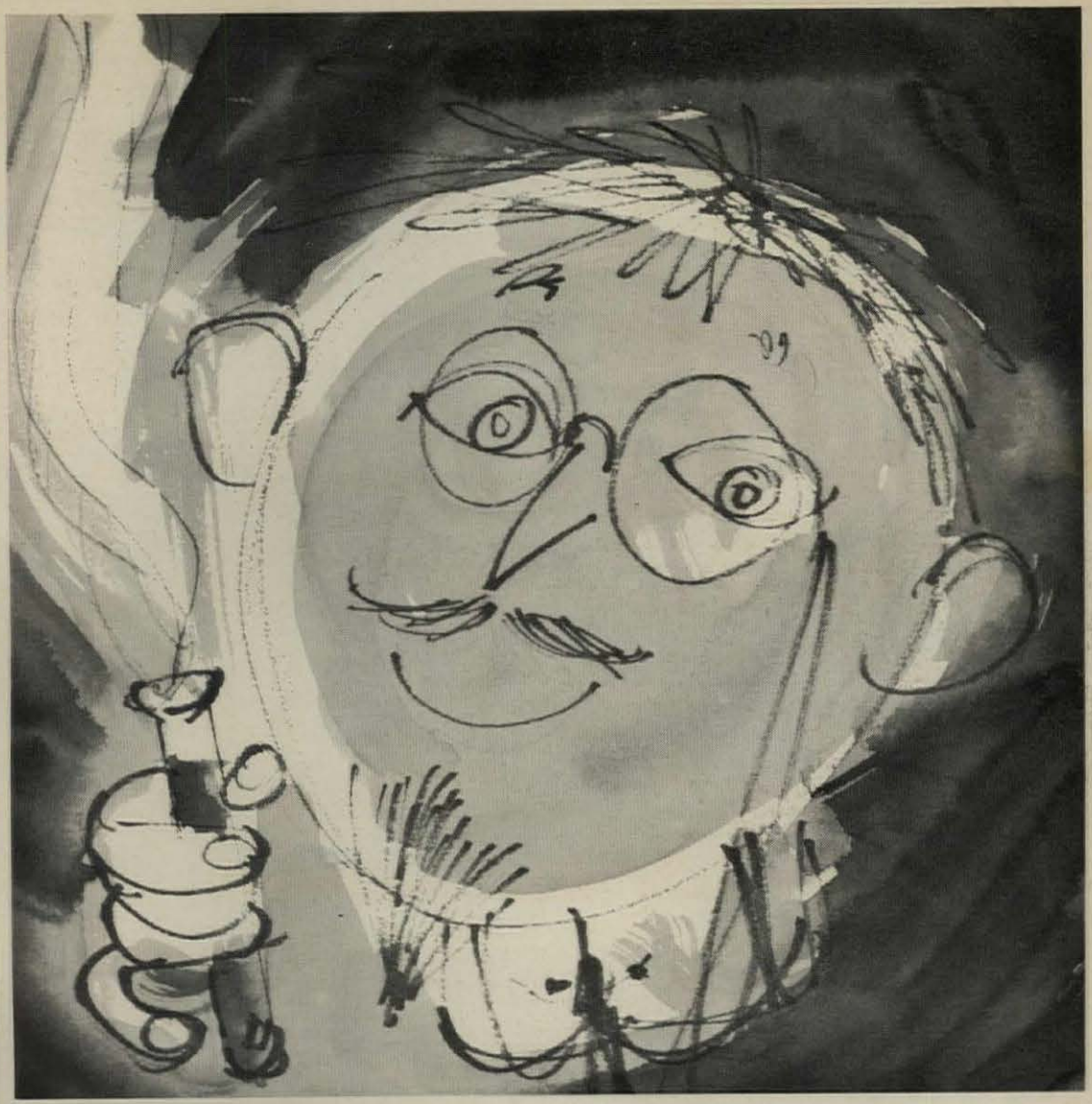
Here's a rich combination: amber on polished brass. Particularly effective when matched with Kohler's "go-with" color of the year...Avocado!

Flair fittings boast traditional Kohler excellence all the way. Diamond-bright acrylic. Highest quality brass. Superb craftsmanship. Pictured: clear on Blueberry.

KOHLER OF KOHLER

the Bold Look for '67/Kohler Co., Kohler, Wisconsin

For more data, circle 2 on inquiry card



I use DURCON® sinks...year after year after year

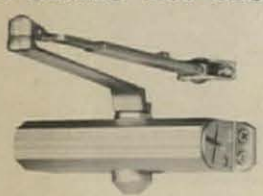
And I think they're wonderful. They are corrosion resistant, look good, and are so easy to keep clean. I pour almost everything into DURCON sinks; acids, alkalies, salts and solvents. They don't corrode; nor do they chip or crack. I'm glad we have DURCON sinks in our laboratories.

THE DURIRON COMPANY, INC. DAYTON, OHIO | DURCO

For more data, circle 3 on inquiry card

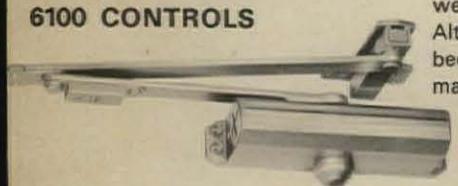
In schools, where there's lots of use . . . . . .

NORTON SERIES 1600 CLOSERS



Series 1600 closer provides door control for these busy gymnasium doors. Even here, where the closers were selected for their ability to withstand heavy traffic, installations are attractive; compatible with other door hardware.

NORTON SERIES 6100 CONTROLS



Series 6120 Uni-Trol controllers are used to control these main entrance doors as well as side exit doors. During off-peak traffic, units operate as regular door closers. Although traffic does not warrant it at the moment, the hold open mechanism has been engaged and the doors are being held open. Installation shown at right was made to correct a door control problem on an existing building.

and some abuse
NORTON® CLOSERS CONTROL DOORS—NOT DESIGN

Remember, the first impression received of your building is the contact made at the doors. This first contact is very important. At the same time, these doors must be properly controlled to assure the safety and convenience of the users of the building. Norton door controls have been designed with these dual purposes in mind—preservation of the esthetic appearance of the building while providing dependable door control.

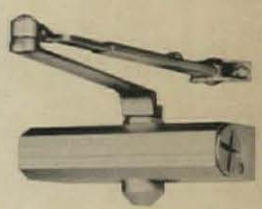
This problem is particularly acute in school buildings where the volume of traffic and the exuberance of the children put all hardware to its ultimate test. On school buildings, especially, rugged dependability and efficient door control are a necessity. You can be sure of maximum safety and long life without disrupting the esthetic appearance of your building because all Norton door control products have been engineered to control doors—not design.

NORTON SERIES 1600 CLOSERS . . . . . .

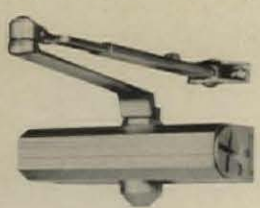
Series 1600 Tri-Style door closers offer an almost unlimited degree of application flexibility. They can be installed anywhere and you're assured perfect door control. Norton Series 1600 closers are capable of withstanding the heaviest traffic year after year.

Choose the mounting best suited to your decor.

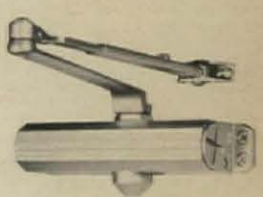
BACK MOUNTING: Closer is mounted to the door by means of thru bolts installed from the opposite side of the door.



INVISIBLE MOUNTING: Perma-hold Plate is mounted to the door. Closer is then locked to the plate. No screws are visible.



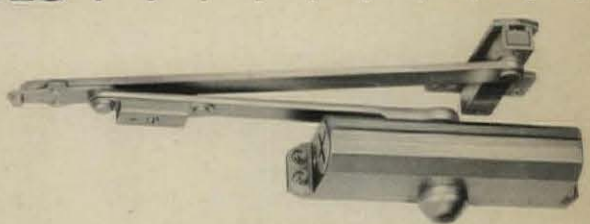
EXPOSED MOUNTING: Closer is mounted to the door by means of exposed screws.



NORTON SERIES 6100 CONTROLS . . . . . .

Series 6100 Uni-Trol control is a combination door closer/door holder. Your door is under control at all times, regardless of the volume of traffic and door frame and controller is protected from the roughest use.

This unique door control has been designed to coordinate all door control functions.

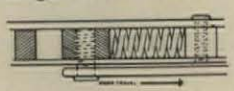


(1) Cushions the opening of the door

At almost full open, the arm engages a spring in the shock absorber mounted to the soffit plate. Opening momentum is absorbed.

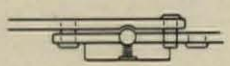
(2) Stops the door

As the spring in the shock absorber is compressed, the door is stopped. There's no shock to the door, hinges or Uni-trol.



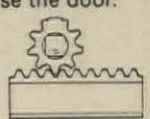
(3) Holds the door open

Spring loaded hardened steel ball in the holding mechanism is engaged by a recess in the Uni-trol fore-arm. The door is held open.



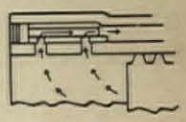
(4) Closes the door

When released a dependable Norton spring-loaded rack-and-pinion mechanism supplies power to close the door.



(5) Regulates closing and latch speeds

Dependable Norton hydraulic system provides key-operated control to regulate both closing speed and the latch speed.



FOR MORE INFORMATION CONTACT YOUR NORTON REPRESENTATIVE OR WRITE:

EATON YALE & TOWNE INC.

NORTON® DOOR CLOSER DIVISION
372 Meyer Road, Bensenville, Illinois, 60106
77 Carlingview Drive, Etobicoke, Ontario, Canada

1134

For more data, circle 4 on inquiry card

Cover: United States Steel Corporation Building
Pittsburgh, Pennsylvania
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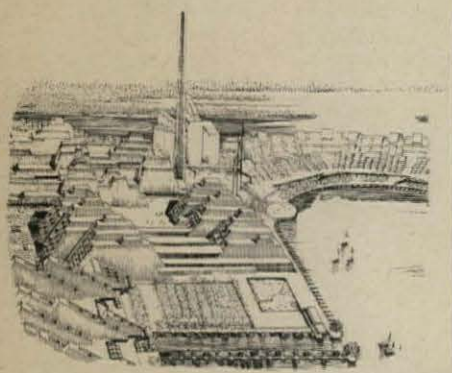
Photographer: Joseph W. Molitor

FEATURES



BUILDING TYPES STUDY 369

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ARCHITECTURAL RECORD

CONTENTS: APRIL 1967

COMING IN THE RECORD

ARCHITECTURE FOR SELLING

When a major oil company decides to try design—all the way from graphics to architecture—as a tool for selling, tests it and finds it works, the results may be felt across the country. Such an effort, and a variety of others that reflect a search for quality in facilities for retail selling, will be featured in next month's Building Types Study.

FIRST MAJOR PROJECTS OF A YOUNG PRACTICE

There seem to be some indications that more younger architects are managing to develop their practices at a larger scale earlier than used to be the case—or perhaps our continuing efforts to find the young architects who are doing work of high quality are more effective than before. In any event, a presentation next month of the work of Evans Woollen of Indianapolis will be the next in what has become a considerable series on the work of younger architects.


McGraw-Hill



ARCHITECTURAL RECORD (combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER), April 1967, Vol. 141, No. 4. Title ® reg. in U.S. Patent Office

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Bright idea

This column shower serves 6 people with one set of plumbing connections! So it cuts installation costs up to 80%. Like all Bradley Group Showers, it saves space, too—serving more people in far less space than ordinary showers. It eliminates double-wall construction and piping in outside walls. And it has its own drain, saving the cost of drains along the perimeter. Made in 2 to 6 person units. Other Bradley Group Showers include Modesty Module®, Multi-Stall, Wall-Saver®, and Panelon types. Bright ideas—space and money-saving ideas from Bradley! See your Bradley representative. And write for latest literature. Bradley Washfountain Co., 9109 Fountain Dr., Menomonee Falls, Wis. 53055.

from Bradley!

BRADLEY

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CURRENT ARCHITECTURE AND ITS COMMUNICATION

Recently (February, this page) I wrote a plea for more communication from architects to the general public. Since then I have had some thoughts about how difficult that is to accomplish.

For one thing, I remembered an occasion when I was called upon to explain modern architectural thought to a layman, and how difficult I found it. For another, I have had many an occasion to observe the difficulty that the architectural profession has in sorting out its own ideas. In this complicated world other persuasions besides architecture have had trouble with philosophies and objectives and have frequently hidden in their own mystiques. For a third observation, I have suffered considerable distress in reading what is being fed to the general public by so-called architectural critics in the popular press. It is easy to rattle off the patter of the current preoccupations, and make a great appearance of wisdom, but one has to doubt that the catchwords accomplish anything very much besides perhaps impressing the unwary listener.

First difficulty above: Some time ago, at an ordinary social cocktail party, a friend asked a seemingly natural question—what was the current hot line in architecture. Obviously he was just being what in an earlier generation was called a "good conversationalist." He wanted to be primed for further good conversation, something above the usual run of personalities and gossipy tales.

In what I thought was his spirit I replied, "Well, just start with the assumption that we are in a period of architecture and non-architecture." I had forgotten that he was a lawyer, and that this kind of verbal juggling was not his dish. He pressed me quite seriously to explain what I meant by "non-architecture." I tried to relate it to art and non-art, but he wasn't with it. I began to think of all of the complications of present endeavors and theories, and then I just excused myself to "go and freshen up my drink."

Now I could have told him about the rash of towers, or faked towers, at the corners of buildings; and I could have rattled on about its debt to Louis Kahn or Frank Lloyd Wright. Or about massive roofs, or square shingled units with topknots at the peak. Or the rise and dilution of the old International Style. But so what; what purpose would be served by pushing out the patter, and how should I choose which particular line of patter to sell him?

Perhaps I took virtue too seriously. The world these days seems to live on catchwords, and all my friend really wanted was a little chatter to pass along in egghead jousting. But I have so often snorted about the fancy pronouncements dealt out by all those "architectural critics" in the newspapers and popular magazines; I just could not join in. I am afraid that architectural writing in the public press is at a low point (with a few exceptions), and does not compare with critical views of other arts, literature or even politics. I suppose that writers for the public have to hit the dramatic notes; they are artists in their own right.

To go back to the second thought I could charge those writers more pointedly if the architectural field was more sure of its own directions. I hope nobody is going to take me to task for saying in effect that the architectural fraternity is a bit confused. I know about those basic truths, those basic necessities, those undying convictions of architecture. I am not blaming architects; I am merely pointing out that if you put all of the theorems and stout stands of architects into a computer, and asked it for a summary conclusion, the computer would buzz and buzz and then type out something like, "Are you kidding?"

Now I don't feel as crabby as all this might sound. Architecture is, like medicine or science or anthropology, trying to prepare for a staggering future of change and overload. We are in a period of testing all old truths and principles. We are experimenting with new tools, new materials, new hopes. If you are too sure of yourself now, watch out, or you will be tagged as an old fogy. That's a real danger in building design.

Back to communication: It gets easier as you have something definite to speak about, some particular design with logical bases, some good intentions to proclaim. To make the point again; an era of change and confusion makes explanation a real necessity.

—Emerson Goble

Drawn for the RECORD by Alan Dunn

"Whoever thought of reducing taxes on buildings that spent ½ of 1 per cent on fine art certainly didn't think it through!"

When products fail in use who is held responsible?

The question is a bit academic, since it seems now that the architect is held responsible for everything he has specified. But justice would seem to indicate that the manufacturer should be responsible if in fact the product does not come up to claims.

Perhaps you have already seen this "statement of policy" of the A.I.A., but it is certainly worth pushing for, and worth repeating. It is not a fact, being a statement of policy, but it is certainly timely:

"The manufacturer is expected to recognize that he is responsible for the failure of his product to perform in accordance with written data supplied by him or his authorized representatives, as well as misrepresentations of such data.

"When a product has been installed in accordance with the manufacturer's written instructions and written recommendations, and such product fails, then the manufacturer has the responsibility therefor. Such responsibility extends to related products affected by the failure, where the manufacturer has notice of the proposed use of such related products. In case of failure, manufacturers of the other products involved should make available their technical knowledge to the architect in the correction of the failure.

"The manufacturer is expected to investigate the relation of his product to other components likely or logically expected to be used in association with his. Such information should be available to the architect.

"The architect is responsible for proper design. He is expected to inform himself with respect to the properties of the products he specifies, though he is entitled to rely on manufacturers' written representations. He is advised to seek the technical opinion of the research or application engineering departments of the manufacturer when his intended use is not clearly included in the printed data of the manufacturer. He is further responsible for uses contrary to supplementary written information on proper use and installation procedure of the manufacturer.

"The architect's use of a product and its installation should extend to its compatibility with and relationship to adjacent materials and assemblies, notwithstanding the manufacturer's similar obligations."

And architects can help with design of products

Speaking to the same subject (products in use) the then president of the A.I.A., Morris Ketchum Jr., spoke strongly for the use of architects in the design of building products:

"Not only can the practitioner help the manufacturer to develop new products with that elusive quality known as good design, but he can also help to determine that the products meet the practical requirements of building construction. Many architectural offices make such consulting work a regular part of their practice, thereby rendering valuable service to the individual manufacturer, the building industry and the architectural profession.

"Such specialized advisory services are a necessity if manufacturers are to avoid poor design or inadequate field testing or unsuccessful market development. In any good marketing effort, design, production, advertising and distribution should be dovetailed.

"Inspired technical advice in the complicated coordination process of this highly specialized type of marketing is the proper task of staff architects or individual practitioners."

Manufacturers of products show interest in their use

As if in answer to the A.I.A. statement on products (above), one manufacturer has been urging manufacturers to take more notice of proper use and application of their products in building. He is Gene C. Brewer, president, U. S. Plywood Corp., who spoke thusly to the Producers' Council last fall:

"We building products manufacturers, as a group, tend to rise in righteous indignation and appropriate horror when our products are used in a manner not intended or recommended.

"Let's consider this. The basic manufacturer of building products has the largest single stake in the chain that eventually leads to a sale or use by the ultimate consumer. Yet, historically, we have had little to say in the final application of our products. Lack of contact and rapport with those responsible for the final form and use of a product can also have disastrous results.

"For this reason, methods of product distribution and application are undergoing reassessment. We no longer can afford the same old way.

"It seems to me there is only one logical answer: the manufacturer must exhibit greater concern over every facet of the marketing process.

"What could this eventually mean to the hard-pressed architect? It could lead to the thing he has been looking for—single responsibility. It would improve lines of communication and give some assurance that a product would be designed and used for the purpose for which it was intended." —*E. G.*

For modern luxury, nothing beats Acrilan.®
Nothing

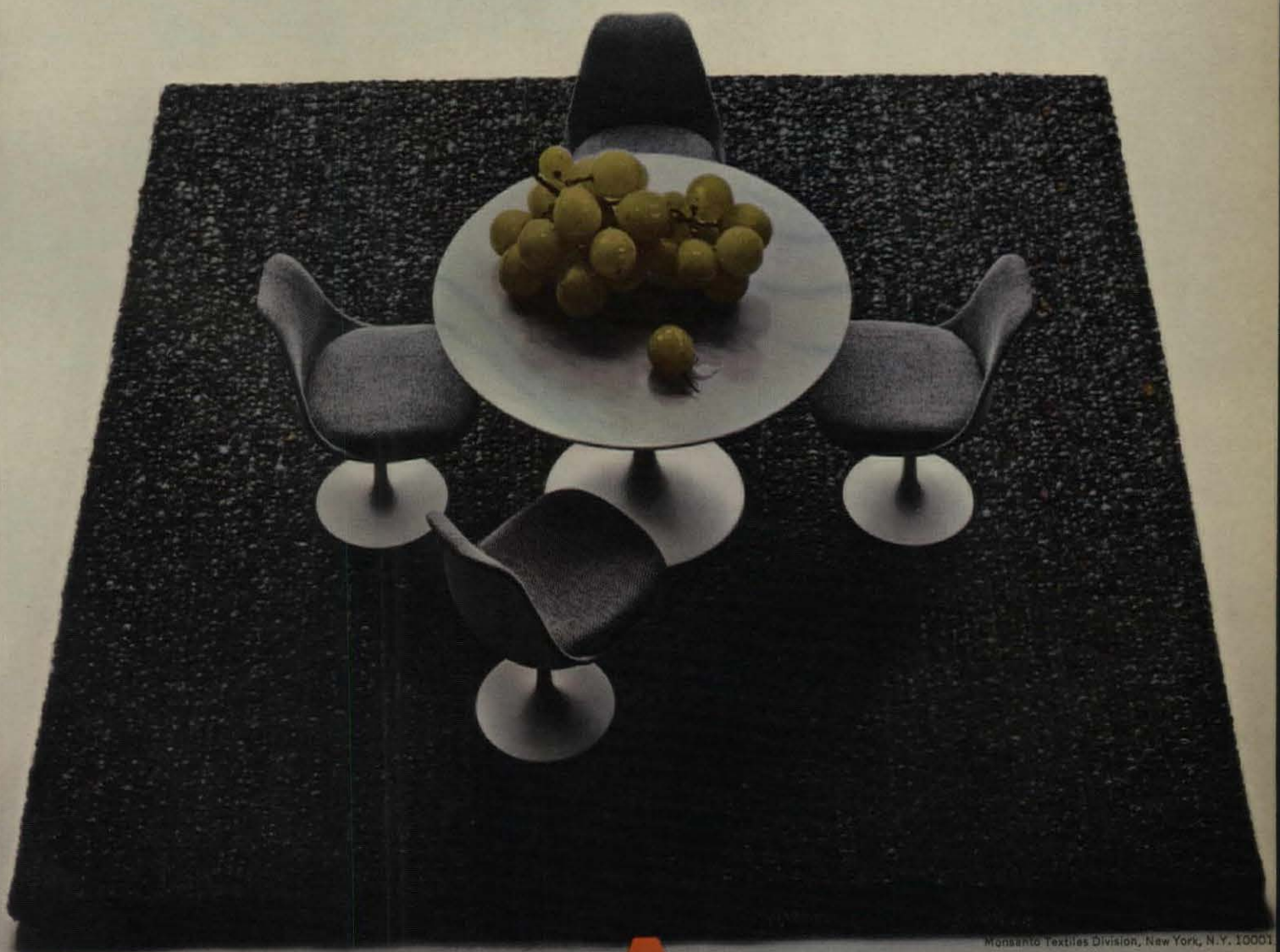
Acrilan acrylic has two kinds of luxury. The kind you see with your eyes and feel through the soles of your feet.

And the luxury of not having to be treated as if it were a tapestry. A carpet of Acrilan is made to retain its luxurious appearance in the face of repeated punishment.

It actually bounces back after being stepped on by thousands of feet. And it's simple to clean.

A carpet made with Acrilan® acrylic fiber in the pile is also mothproof. Mildewproof. Non-allergenic. You see, like all good modern things, Acrilan is functional as well as beautiful.

Which is the utmost in luxury for your client, isn't it?



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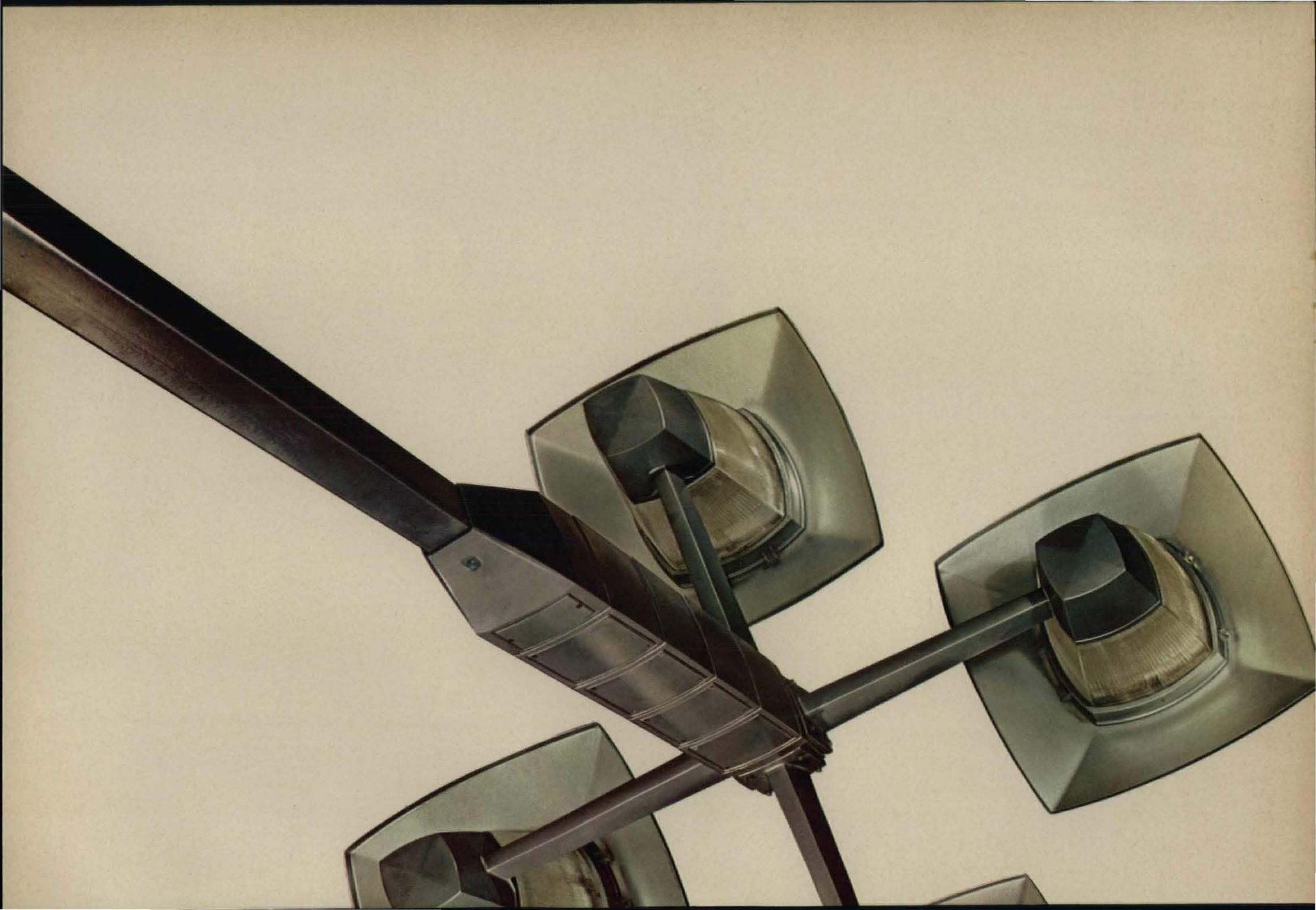
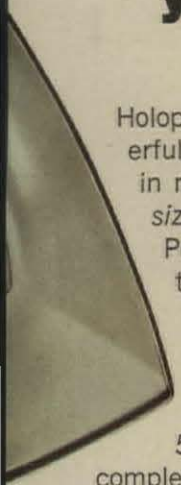


REACH!

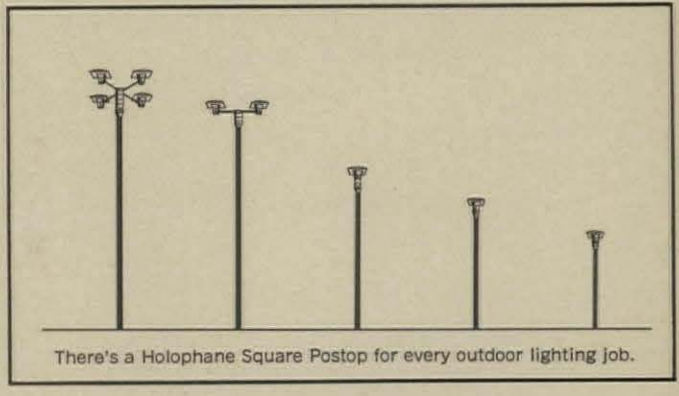
Holophane's elegantly styled new Postop luminaire reaches UP...reaches OUT...to give you MORE light over larger outdoor areas.



Holophane's 4-Square Postop® is big, bold, powerful. It packs 4000 watts, towers up to 50 feet in mounting height. It's engineered for *king-size* outdoor lighting jobs. Yet this biggest Postop shares the cleanly detailed styling that characterizes *every* member of the Postop family. It delivers the same brand of superior performance, too!

- **Powerful output** of the 4-Square Postop means units may be spaced up to 5 *times* mounting height and still provide complete area coverage.
- **Square light pattern,** a unique feature of *all* Holophane Square Postop units, eliminates dark areas and wasteful overlapping.
- **Glare-free illumination.** The 4-Square's exactingly engineered refractors control light *prismatically.* Illumination is uniform and glare free, refractor brightness low.
- **Four "layers" of light.** Each lamp distributes light over the *total* area. There's no dark quadrant should a lamp fail. For off-hour surveillance, one lamp can be used to deliver low, uniform illumination over the entire area.

Get the full story on this newest Postop—and on the whole family of Postop luminaires. Write Dept. H-4, Holophane Company, Inc., 1120 Avenue of the Americas, New York, N. Y. 10036.

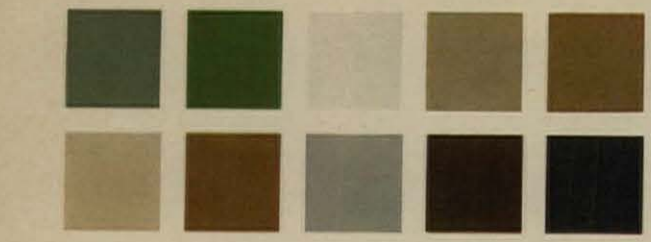


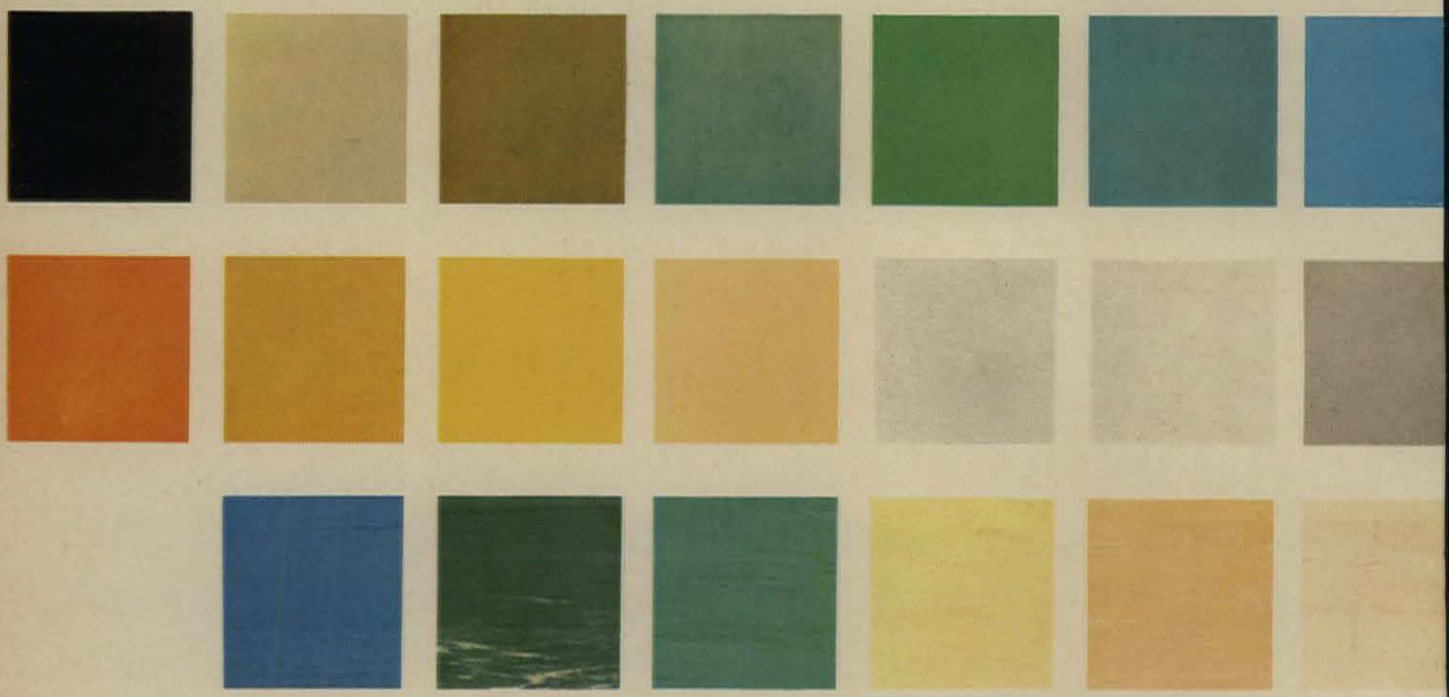
There's a Holophane Square Postop for every outdoor lighting job.

4-SQUARE POSTOP by HOLOPHANE

For more data, circle 8 on inquiry card

Why Specify from a handful of cove base colors...





Only Burke Rubber Company offers you 53 matching and contrasting cove base colors

When you specify Burke you have a choice of cove base colors for every interior, every color scheme. The versatility of our mix-and-match patterns and textures in cove base, as well as rubber and vinyl floor tile and color-coordinated stair treads, will meet your requirements for the achievement of room individuality.

A big advantage of Burke Cove Base is that it is particularly **easy** to work with. Stable rubber compounds stay flexible under all kinds of temperature conditions to compensate for irregular floors with no shrinkage after installation.

Why limit yourself? Burke offers 53 colors in plain, marbleized, and textured cove — plus many others available on special order. For more information, look for our listing in Sweets Architectural Catalog File (13e/Bu) or write for a free catalog. Contact our nearest office, listed below.

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Manufacturers of cove base, stair treads, rubber tile, vinyl tile and custom color flooring.

Exclusive Textured Cove diffuses light, softens colors, adding a touch of elegance. Nubby surface hides scuffs, scratches, seams. In 13 stock pastels and 21 others on special order.

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Your delicate touch activates the exclusive electronic call button in the world's most sophisticated elevatoring system. VIP.

Electronic buttons are not only more sensitive than mechanical ones, they last longer. And require fewer parts to maintain. They're standard with VIP, an exclusive Otis system using analog computer techniques to predict elevator workloads.

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So many extras are standard with VIP

Architect: Skidmore, Owings & Merrill
General Contractor: Carl A. Morse Inc.
Mechanical Engineer: Jaros, Baum & Bolles
Mechanical Contractor: Raisler Corp.

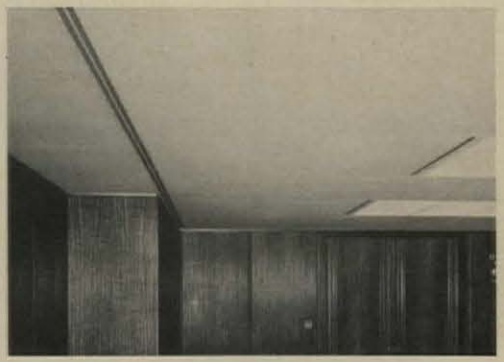
In Marine Midland's
slim new tower
by Skidmore, Owings & Merrill

Anemostat diffusers continue the clean, modular look—throughout

Two types of Anemostat® diffusers distribute a million-and-a-half cubic feet of air each minute through the 140 Broadway (Marine Midland) Building in New York City.

Building standard is Anemostat's E-1 diffuser. Though only its crisp square shape is visible, the E-1 has a circular neck that delivers air with a draftless horizontal diffusion pattern. More than 5,000 units are used throughout the building.

Anemostat SLAD straight line adjustable diffusers were selected for entrance, mezzanine and executive levels. Mounted end-to-end, the slim, fully adjustable units form clean, unbroken lines in keeping with the building's contemporary design.



Write for your copy of Anemostat's complete air distribution catalog. Anemostat Products Division, P.O. Box 1083, Scranton, Pa. 18501.

RCA **ANEMOSTAT PRODUCTS DIVISION**
DYNAMICS CORPORATION OF AMERICA

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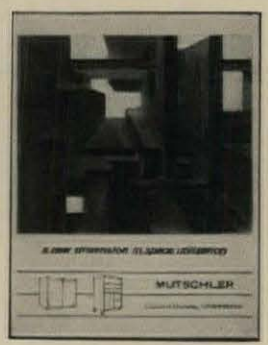
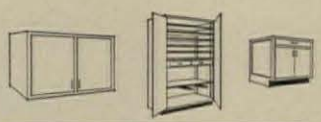
Write today for this colorful, new MUTSCHLER guide to creative storage for schools

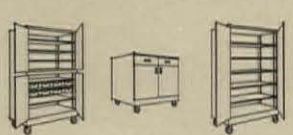


Mutschler's MULTIPLEX fixed storage components and COMSTO fixed or mobile storage units give today's architect unlimited flexibility in school storage planning. Both of these versatile systems are explained and illustrated in a brand new, full-color brochure based upon actual case history school installations. You'll find it an invaluable addition to your library . . . and a most helpful tool in current and future school design projects. Write today on your letterhead for your free copy. And by the way, you may also be interested in exploring Mutschler's complete factory planning assistance in school storage and room layout for general classrooms, home economics, arts and crafts, music and other areas.

MULTIPLEX



COMSTO®



Mutschler Brothers Company
Nappanee, Indiana 46550

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Be hypercritical, use Grace caulks and sealants

It's a fact. Less than 1% of total construction cost is accounted for by specialty construction materials. But it's a very critical 1% when you consider your reputation is in jeopardy if caulks and sealants don't deliver 100% performance. Repairs for sealant failures are far more expensive than initial costs.

It pays to be hypercritical about caulks and sealants. You can be with the Grace line. You choose the right product for the right application from the industry's widest range of caulks and sealants. Daraseal polyurethane, Hornflex polysulfide, Daraseal acrylic, Hornseal butyl, and Vulcatex oil base all carry the Grace hallmark of dependable performance. The kind of performance that welcomes hypercritical architects, engineers and contractors.

In sealants and other specialty products, the sure answer is Grace. Send for your free Grace Spec Kit today. It includes a guide to our complete product line, preprinted spec forms and specification aids. Write on your letterhead to: Grace Construction Materials, 62 Whittemore Avenue, Cambridge, Massachusetts 02140.

GRACE
CONSTRUCTION MATERIALS

CAMBRIDGE, MASSACHUSETTS • CHICAGO • EDMONTON • HOUSTON
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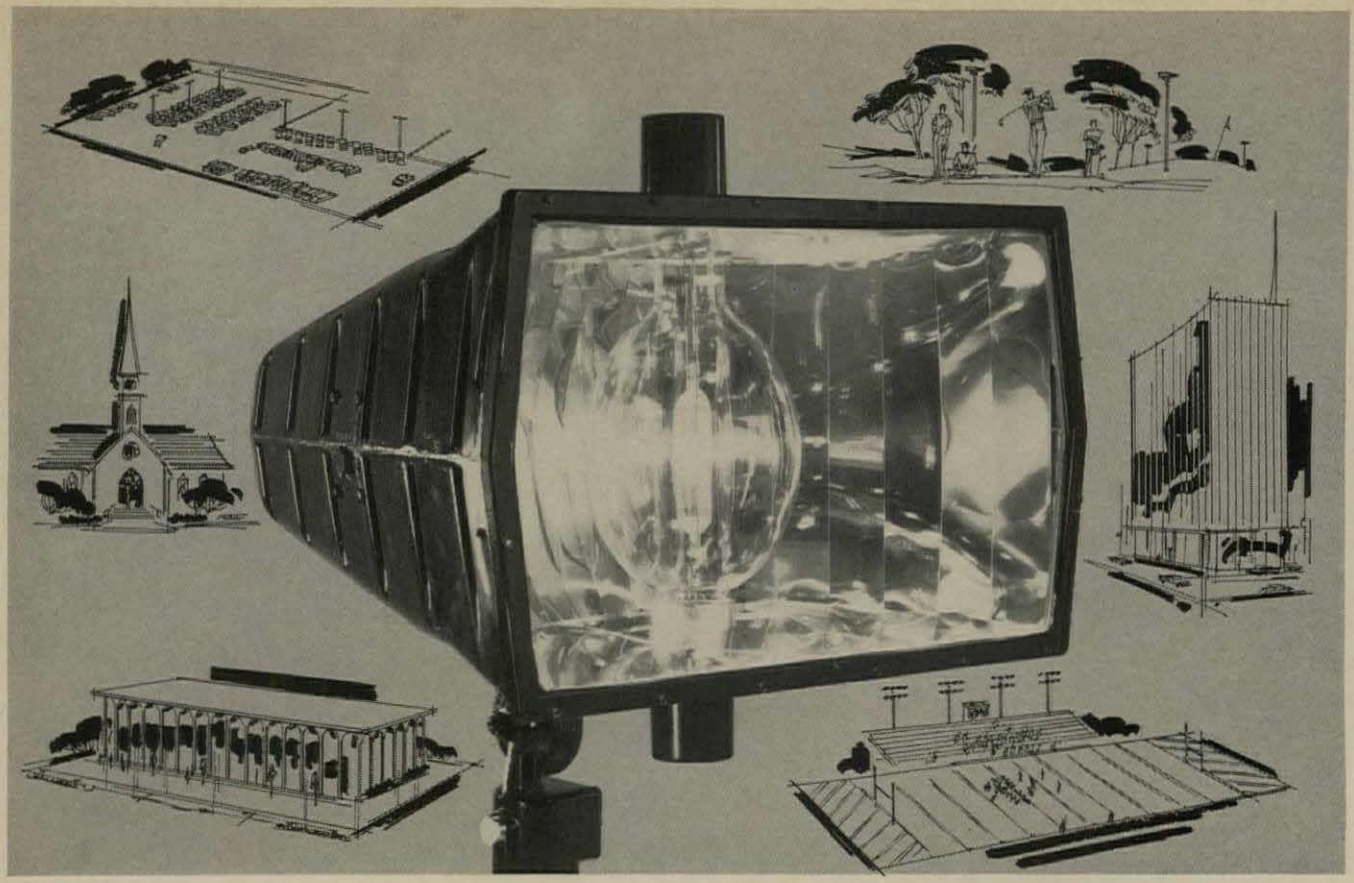

If you can't get the exact distribution pattern you want with the new Wide-Lite* SW... you can't get it with any floodlight!

But you shouldn't have any problems. The new "Wide-Lite" SW offers you the greatest application versatility of any floodlight in the industry.

- Superior photometric performance with any light source: conventional mercury vapor, metallic additive, or the newest developmental lamps
- 1000 and 400 watt models
- Choice of four reflectors for every lamp and lighting requirement
- Horizontal or vertical mounting (the SW is symmetrical in either position) to meet your particular light pattern needs.

Add to these features a choice of 22 "Wide-Lite" ballasts for the desired electrical characteristics and you have a floodlight that's *versatile!* For easy installation, all components – including ballast – are contained within the compact, cast aluminum body of the SW. And the SW comes out of the carton completely pre-wired!

Now SW floodlights have a new anodized aluminum finish that is highly resistant to abrasions, and is the best known protection against corrosion. An epoxy-base aluminum finish is optional.

Like to know more about the SW, and how it gives better light from fewer fixtures? See your "Wide-Lite" distributor. Or write to Dept. 24A-385, Wide-Lite Corporation, P. O. Box 191, Houston, Texas 77001.

WIDE-LITE.

FLOODLIGHTS • POLES • INDOOR LUMINAIRES • BALLASTS • TRANSFORMERS

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Also manufactured in Australia, Belgium, Canada and Mexico

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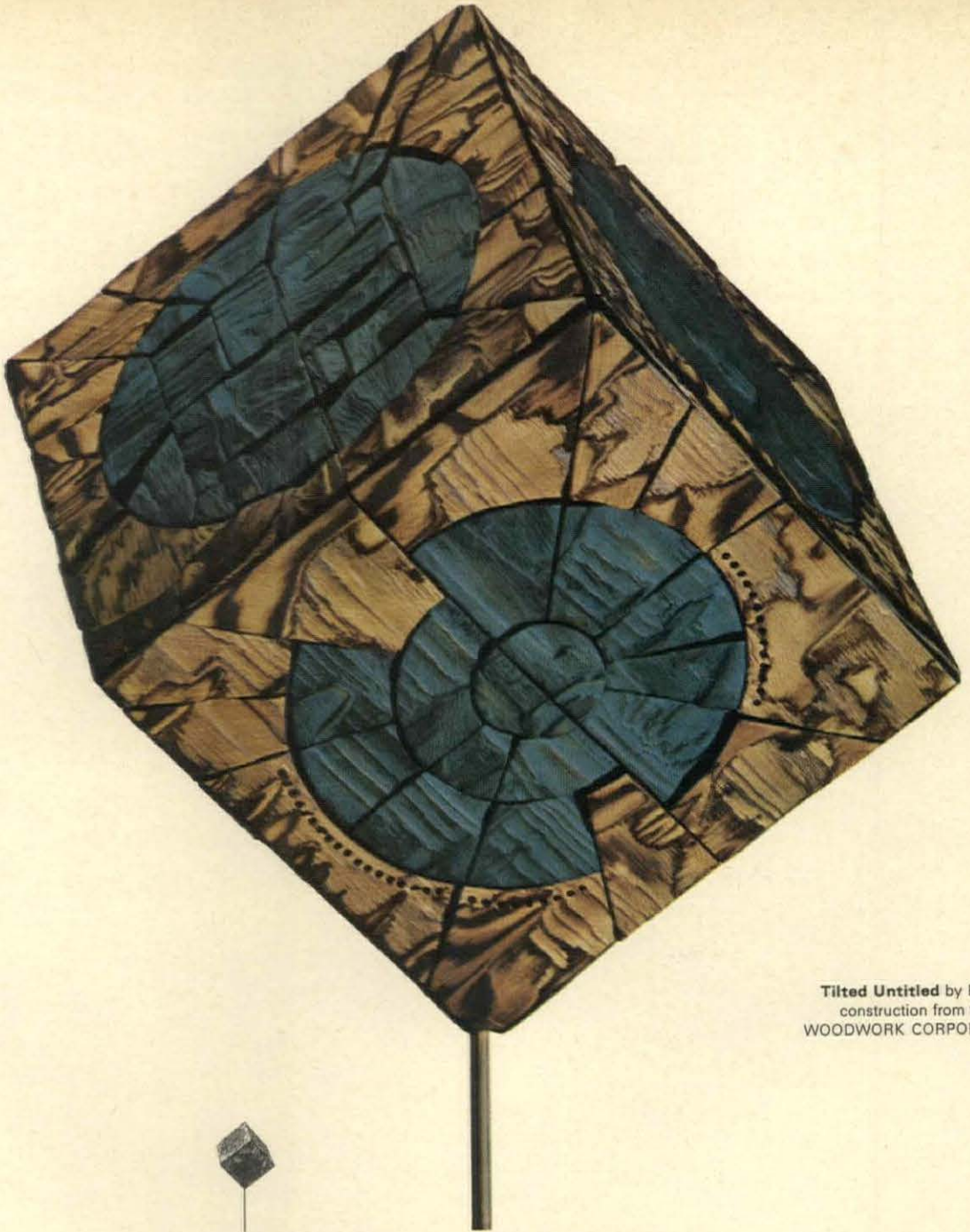

Tilted Untitled by Robert Pierron—a wood construction from the private collection of WOODWORK CORPORATION OF AMERICA

FREEDOM TO CREATE IN WOOD

The promise of wood in the hands of a sensitive designer adds beauty to structure . . . form to function . . . feeling to flexibility. For more than two generations our single-source custom service has enabled architects and designers to unleash their total creativity on the wonderful warmth of wood. We invite you to think of wood as the medium . . . freely . . . unconcerned with construction and installation. We can produce it.

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In Detroit...

UNI-PRESSURE* SELECTED FOR FIRST FEDERAL SAVINGS & LOAN

Architect & Engineer: Smith, Hinchman & Grylls Associates, Inc.
Plbg. Cont: Spitzley Corporation
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* A Tankless . . . Constant Pressure . . . Constant Speed Water Booster System

Provides Detroit's most modern savings and loan building with water at constant pressure at constant speed at all fluctuating demands at all times.

Since its introduction in 1962, the Uni-Pressure system has been recognized for its dependability and outstanding performance. Available in four basic variations, there are over 900 installations to date. The Uni-Pressure system can also be specified for use as a standby fire protection unit and should be considered when specifying new, or replacement units for outmoded roof tanks and Hydro-Pneumatic systems.

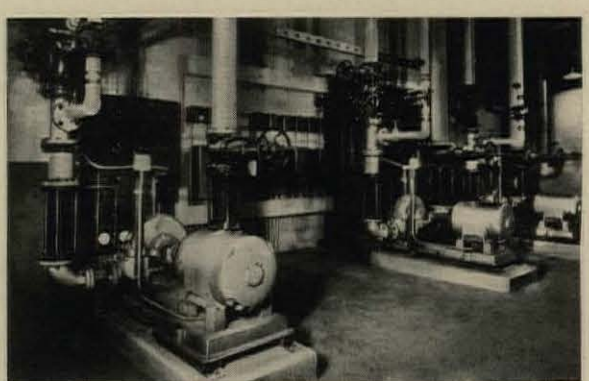
REVIEW THESE OUTSTANDING ADVANTAGES:

CONSTANT SPEED AT CONSTANT PRESSURE—No complex speed changing devices or "hunting" of controls resulting in serious pressure variations.

LOWER COST WITH SIMPLE CONTROLS—No complex electrical, mechanical speed changing devices.

NO TANK REQUIRED—requires space for pump and simple motor only.

NO SLIPPAGE—Speed changing drives have slippage factor—as much as 15%.



Typical installation of a type III Uni-Pressure System. The First Federal Savings and Loan Building system is designed to provide a minimum of 600 GPM and a system pressure of 182 psi.

HYDRODYNAMICS DIVISION
CHICAGO PUMP
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OTHER CHICAGO PUMP EQUIPMENT INSTALLED IN THE FIRST FEDERAL SAVINGS AND LOAN OF DETROIT

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imaginative masonry

use **MEDUSA CUSTOM COLOR**

Medusa Custom Color Masonry Cements can add "personalized" beauty to any masonry wall. □ Charming buff shades for that "aged" colonial appearance. Matching colors for that modern, monolithic effect. Coordinated colors to a color scheme. Accent colors to match trim, roof, etc. All are available on-the-job, ready for sand and water with Medusa Custom Color Masonry Cements. □ Try some creative artistry with colored mortar. Ask your Medusa representative about the full line of Medusa Masonry Cements. Or write Medusa, P. O. Box 5668, Cleveland, Ohio 44101.

MEDUSA PORTLAND CEMENT COMPANY

White & Gray Portland Cements • White, Gray & Custom Color Masonry Cements • ChemComp Shrinkage-Compensating Cement

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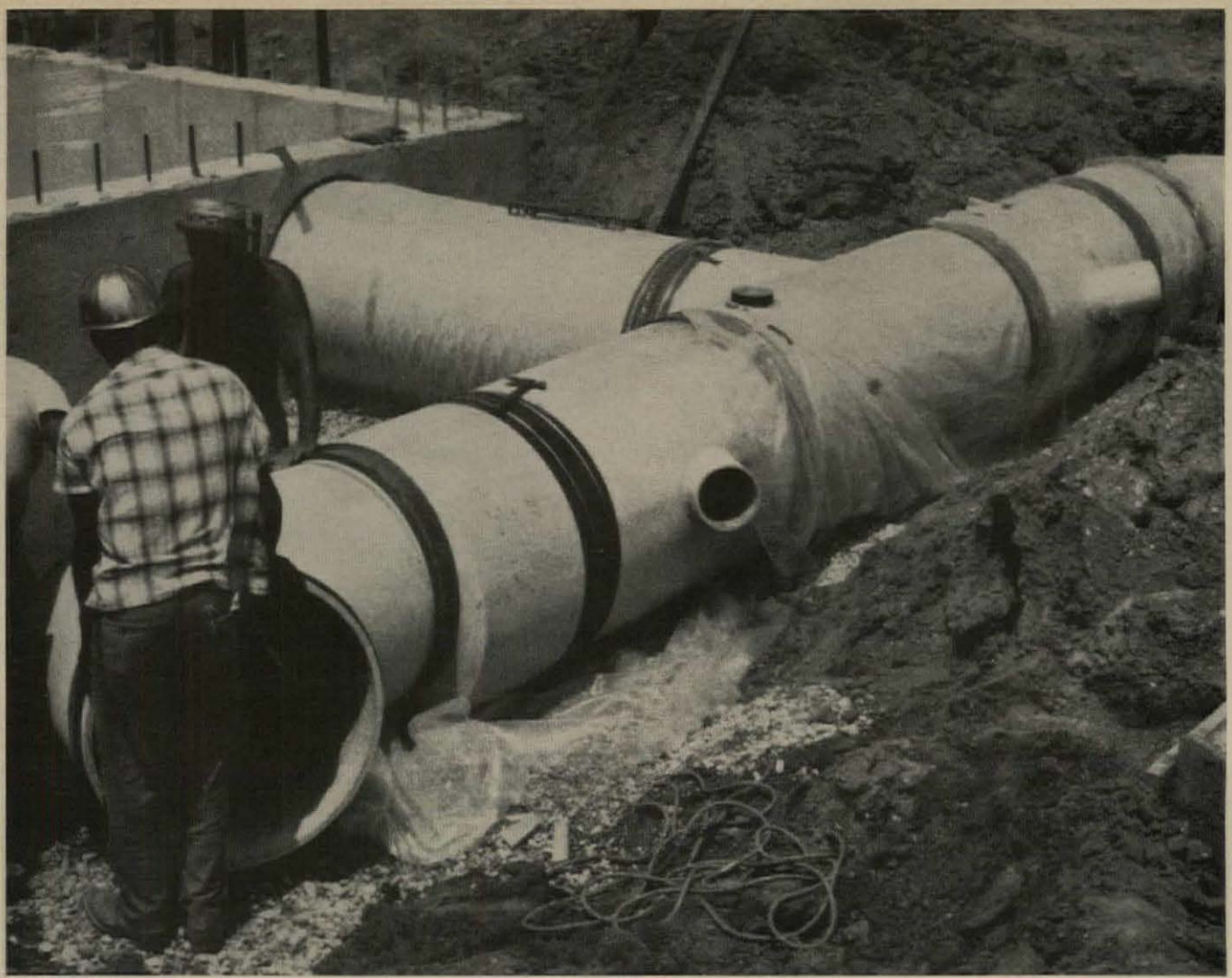

No other underslab air duct does as much for you as Transite® air duct.

Here's why:

TRANSITE* air duct and fittings are asbestos-cement materials precision-engineered to meet the exacting requirements of below-slab installation. There's no more efficient or economical system. For example:

30% less pressure drop. Smaller ducts or smaller blowers can be used because long TRANSITE air duct lengths and smooth bore allow air conveyance with 30% less pressure drop than sheet metal.

3-in-1 duct distribution system. TRANSITE air duct delivers forced warm air through diffusers and radiates heat into the slab. In the cooling cycle, cooled air is distributed through the same ducts.

Provides all materials needed. Easy-to-install TRANSITE air duct is available in a full range of sizes, 4" through 36", and with all needed fittings. Note especially the larger sizes for higher volume airflow.

Tight joint. Exclusive Stevenson coupling, a rubber sleeve fastened tight by stainless steel straps, keeps out moisture.

Installed cost savings. Lightweight, long lengths permit fast joint-making. No need to encase in concrete. Savings in concrete. Savings in installation time.

For full details, see Sweet's Architectural File or write for Bulletin TR282A at Johns-Manville, Box 362, AR-4, New York, N. Y. 10016.
Cable address: JOHNMANVIL.
Also available in Canada.

Johns-Manville

*TRANSITE is a registered Johns-Manville trademark for its brand of asbestos-cement products.

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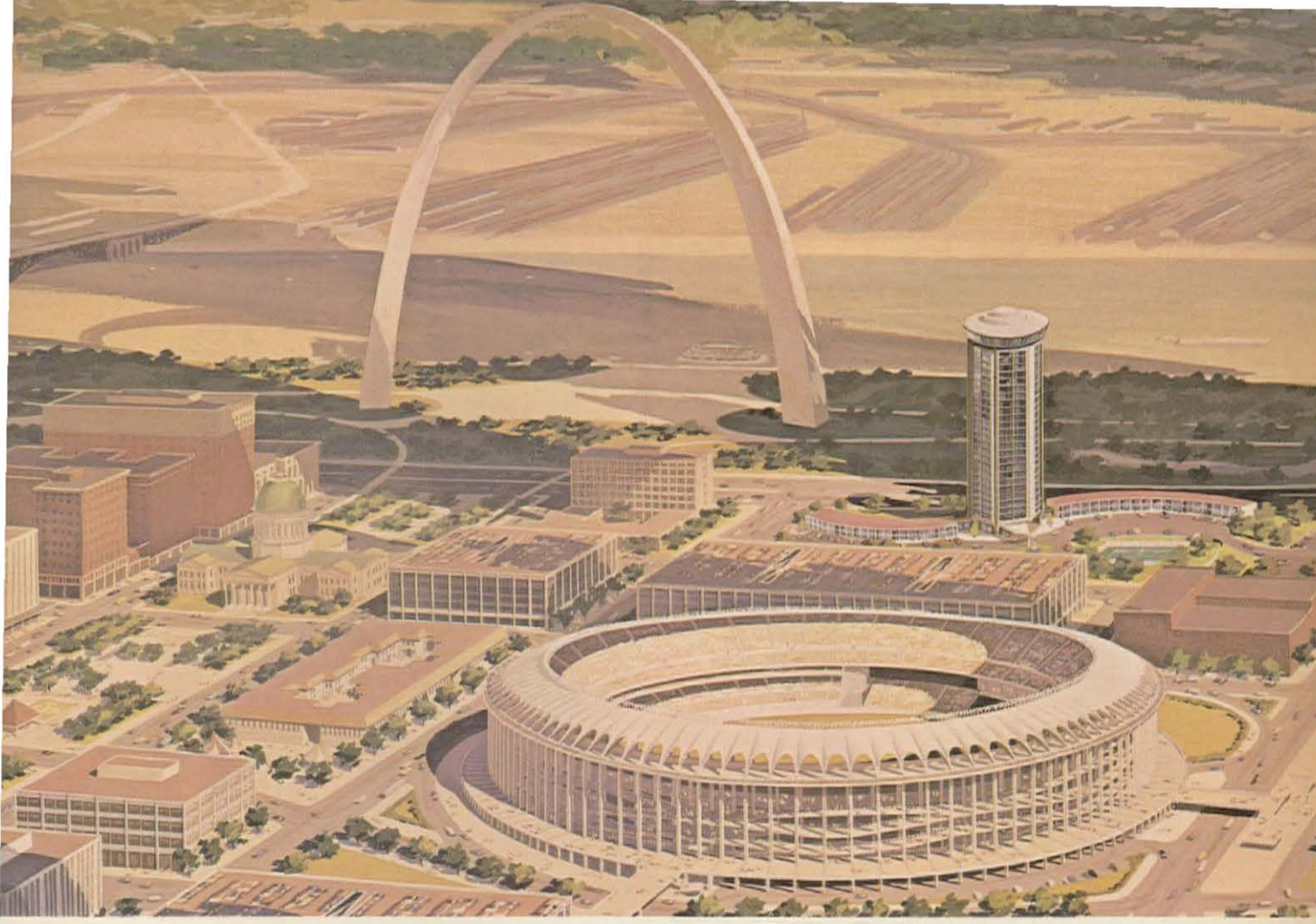
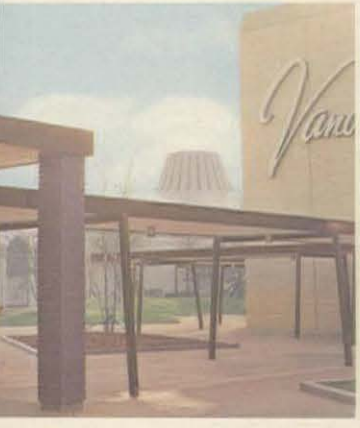


New Civic Center, BUSCH MEMORIAL STADIUM in foreground



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Southwestern Bell Telephone
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one of 4 multi-level facilities.

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Seldom have a city's redevelopment plans been more comprehensive . . . the results more dramatic . . . than in St. Louis. Talented architects have combined imagination, skill and experience in achieving a new look everywhere, from the riverfront civic center to the bustling suburbs. In the majority of these new building complexes, Pratt & Lambert paints were selected for their beauty and durability.

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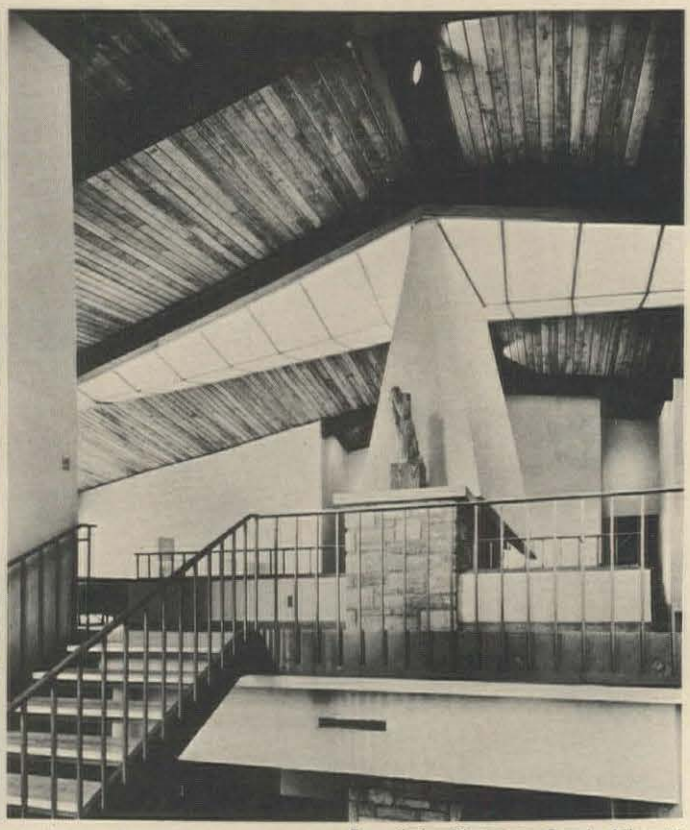
The bank and the monastery don't have much in common. Except one thing.

First National Bank of San Diego, California
Architects: Tucker, Sadler and Bennett, San Diego

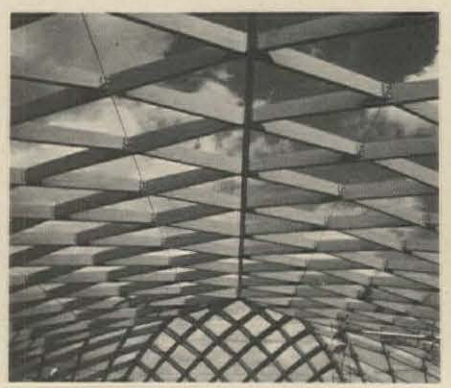


Benedictine Monastery, Pevely, Missouri
Architects: Drake-O'Meara Associates

Fire Protection... with Pyresote® fire-retardant lumber & plywood

And because of that fire protection, the Monastery received a non-combustible insurance rate by using Pyresoted® wood roof decking. And the bank? Due to the low flame spread of Pyresoted plywood cores, aesthetically rich wood paneling was permitted in the handsome office interiors.

The acceptance of Pyresote® fire-retardant lumber and plywood by nearly all regional, state, county and city building codes throughout the United States, opens an unlimited vista for the use of wood. No wonder architects like Drake-O'Meara Associates as well as Tucker, Sadler and Bennett see to it that even monasteries and banks have something in common. For full information on money-saving Pyresote® (available from licensees and dealers throughout the U.S.) write, wire or phone.



The high fire-retardance of this Pyresote® treated Lamella roof in the Mt. Vernon High School gymnasium, Mt. Vernon, Indiana, afforded substantial savings on fire insurance. Architects: Lester W. Routt & Associates; Vincennes, Indiana.

J.H. Baxter

120 Montgomery St., San Francisco 94104
3450 Wilshire Blvd., Los Angeles 90005

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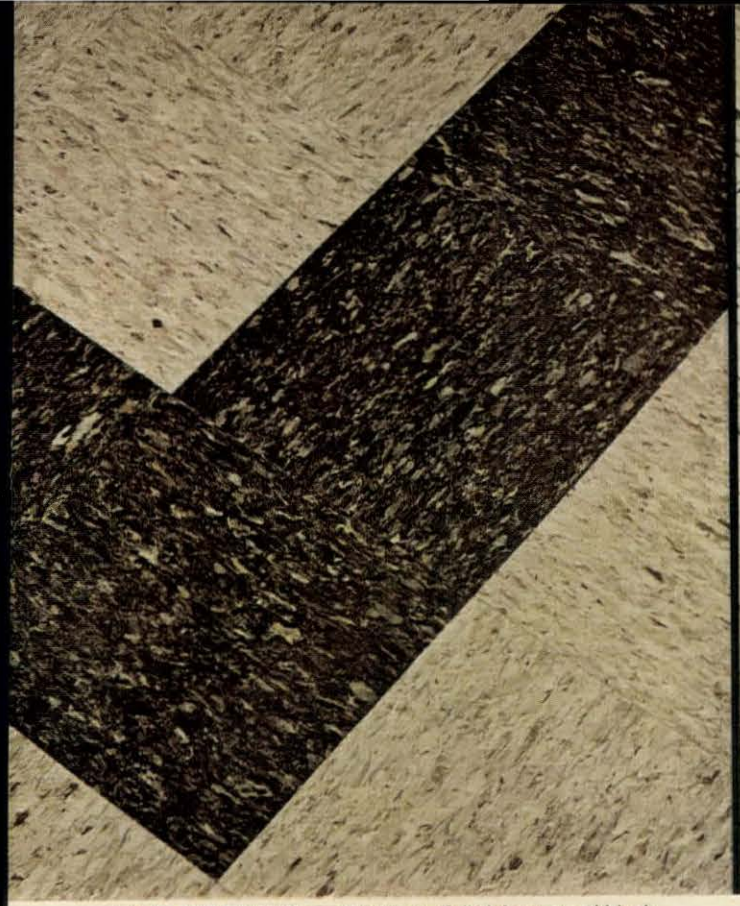
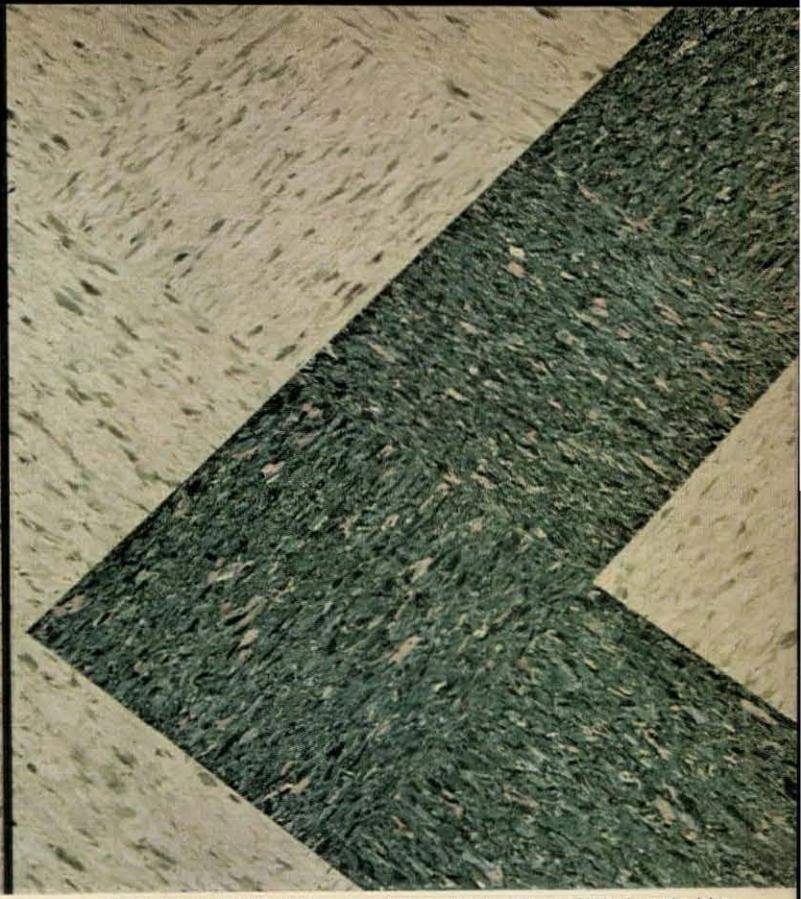


5557 **WALRUS BROWN**—earthy tones of dark brown and black



5556 **VERDE ANTIQUE**—green tones with touches of black and white

New deep ACCENT Colors in

royal stoneglow

vinyl asbestos by RUBEROID

Here's exciting relief from one-color floors! Deep accent colors in popular ROYAL STONEGLOW now make it possible to create exciting, original floor designs, borders, set off traffic areas.

ROYAL STONEGLOW—A RUBEROID Original—has a soft, polished stone beauty that won't wear off. It's rugged, resilient, resistant to scuffs, dents and stains. Fully meets specifications for commercial use—schools, hospitals, retail stores, supermarkets, office buildings.

The patterns won't wear off even when the tile wears down—because the color chips go all the way through!

Available in 7 colors, 12″ x 12″ tiles, 3/32″ and 1/8″ gauge. Call your RUBEROID representative for samples.

Want more information? Write to The RUBEROID Co. at address below.

PATTERN WON'T WEAR OFF
Color Chips Go All the Way Through

The three milled down rings are, starting from outside ring, .025", .050", .075" deep.

Arctic White
5551

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5552

Worsted Gray
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5554

Smoky Beige
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The RUBEROID Co., 733 Third Ave., New York, N. Y. 10017

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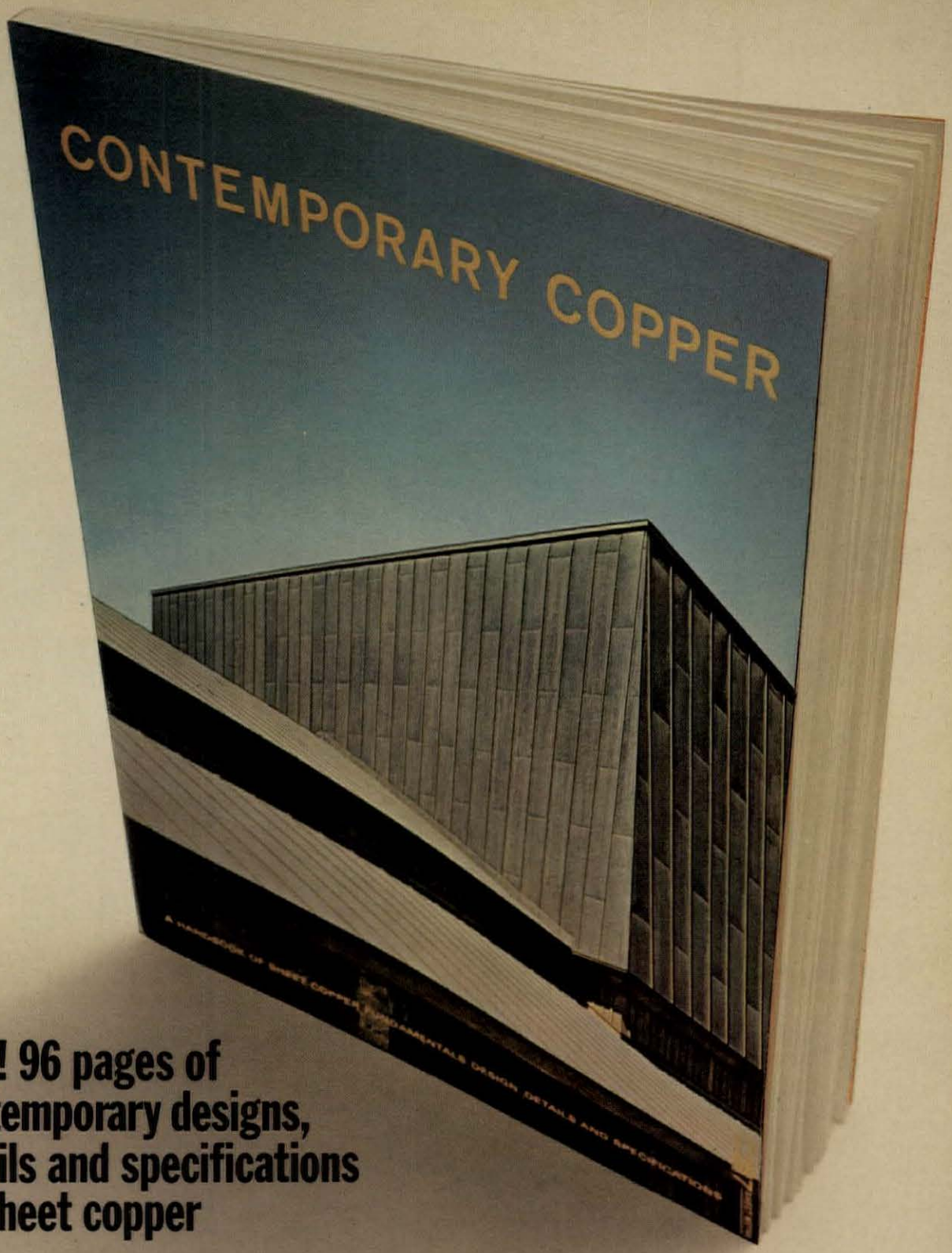

New! 96 pages of contemporary designs, details and specifications on sheet copper

The copper industry's new sheet copper manual is a complete working handbook for both the designer and the specifications writer. It features:

- 40 pages of contemporary buildings by prominent architects with photographs and key detail drawings.
- A quick-reference section on sheet copper fundamentals—from the physical properties of copper to color photographs of its gradual patination.
- Over 100 illustrations of various flashing, expansion joint, gutter and other roofing details most often used.
- An easy-to-use section of clear, concise specifications for copper roofing and sheet metal work prepared in accordance with the construction Specifications Institute.

For a copy, send in the coupon or a note on your letterhead.

COPPER DEVELOPMENT ASSOCIATION INC.

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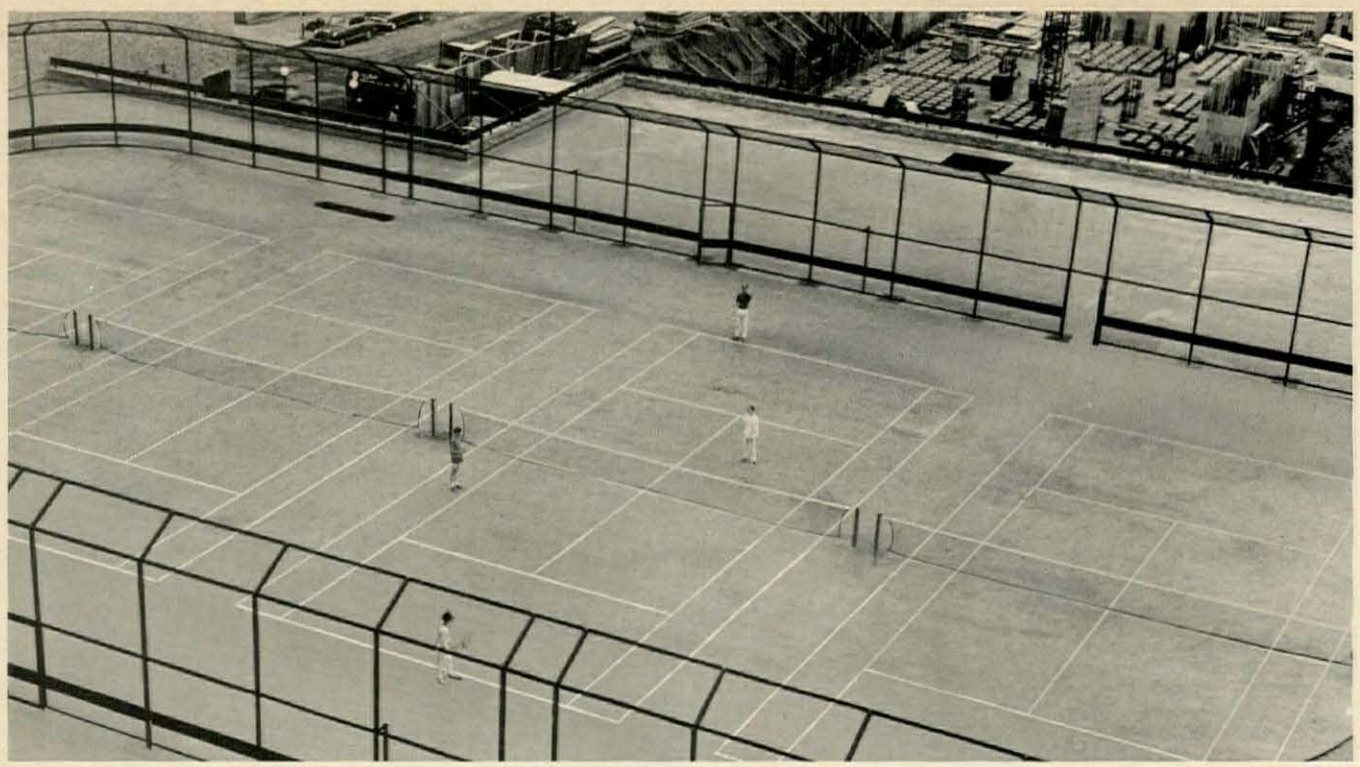
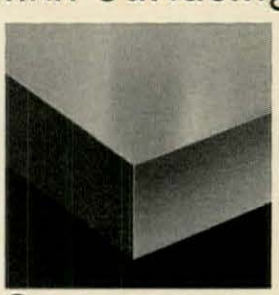


Why did Portland State College install all-weather Tartan® Surfacing for roof deck athletics?

Because there is no better surface for their needs than TARTAN Brand Surfacing. The surface had to be durable, resilient, all-weather and non-slip. TARTAN Surfacing is all of these. And when poured over the entire roof became a waterproof roofing material, as well.
Have you thought of using TARTAN Surfacing this way?
It's just one of its many uses.

Recreation & Athletic Products 3M COMPANY
367 Grove St., St. Paul, Minn. 55101 • Tel. No. 612-733-2452



See Sweets file numbers: Industrial Construction Catalog File—10d/Mi Architectural Catalog File—36c/Mi

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PANELFOLD WARDROBE DOORS

The *IN* door that doesn't *SWING*
So beautiful, durable and efficient for dormitory rooms
everyone should use them...thousands do!

Panelfold

PANELFOLD WOOD FOLDING DOORS AND PARTITIONS, 1090 E. 17 St., Hialeah, Florida
SEE SCALE/4 SCALE/8 SCALE/12 SONICWAL STC 38 IN SWEET'S 17j Pa AND 13d Pa

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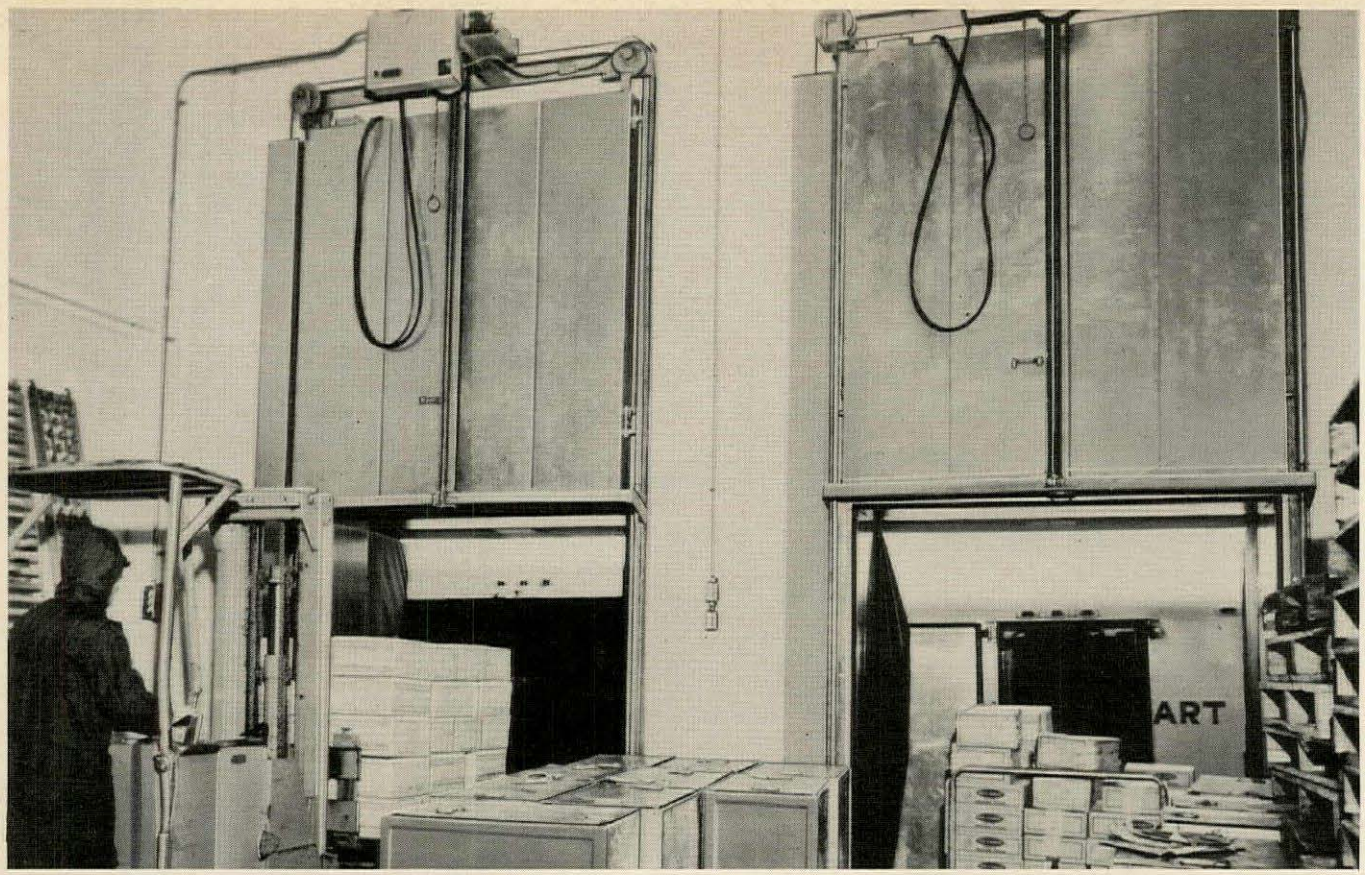
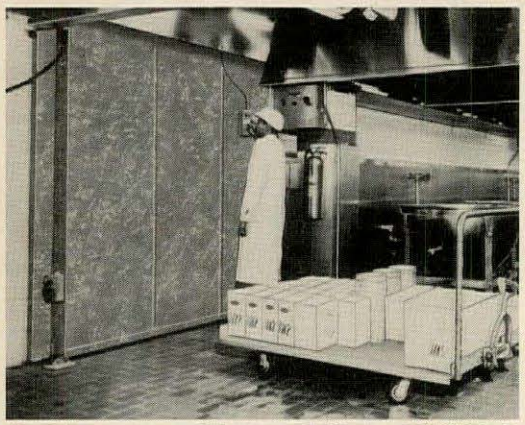
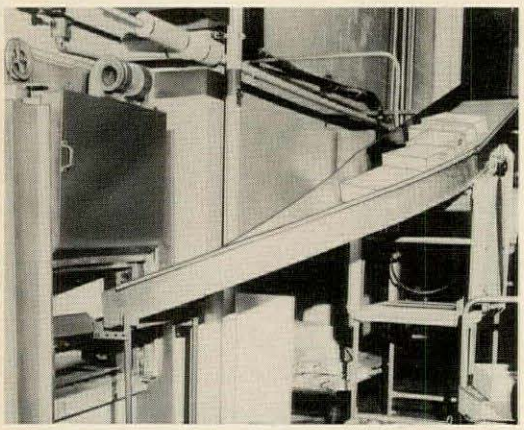


Space-saving Jamison Mark II power operated vertical sliding doors help maintain correct temperature of loading dock and facilitate truck loading.



Rapid opening and closing of Electroglide® Mark II horizontal sliding door minimizes refrigeration loss from freezer holding room adjacent to kitchen.



Efficient access between conveyor line and freezer storage is provided by vertical sliding counterweighted manual door. Blower provides air curtain when door is open.

Unusual Jamison doors add efficiency in huge new Horn & Hardart food plant

The Horn & Hardart Baking Co. recently opened a new and completely modern operation in Philadelphia, Pa. — really four plants under one roof. A bakery, commissary, frozen food processing plant and a warehouse. Within the 400,000 sq. ft. facility, 70 Jamison doors have been installed on the 33 coolers and 7 freezers.

There is practically no limit to the size and types of doors available from Jamison; and Jamison doors are solving every kind of cold storage door problem. If you are thinking of modernizing or enlarging, write today for data on cooler and freezer doors to Jamison Cold Storage Door Co., Box 70, Hagerstown, Md. 21740.

JAMISON

COLD STORAGE DOORS

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Who says electric air conditioning costs less to operate?

9 out of 10 new building owners in the West.

Electric air conditioning is specified for 9 out of 10 new commercial and industrial buildings in Southern California.

It costs less to operate.
It costs less to purchase.
It costs less to install.
It costs less to maintain and service.

Roof installations are easier because electric air conditioning units are compact and lightweight. There are none of the structural reinforcement complications as with the huge, heavy, absorption type units.

Low Southern California Edison rates make all-electric heating and air conditioning systems the best value by far. For information and facts about air conditioning-heating systems, write Southern California Edison Company, Marketing-Engineering, P.O. Box 62, Terminal Annex, Los Angeles, California 90051.

Structure, location	Type of construction	Square feet gross	Total annual cost per sq. ft. — heating & air conditioning
Fontana City Hall (Fontana)	Concrete block single story	15,300 sq. ft.	11¢
California Credit Union League (Pomona)	Steel & concrete single story	13,000 sq. ft.	14¢
A. A. & I. Building (Long Beach)	Conc. blk. & glass two stories	9,200 sq. ft.	12¢

These three cost-analysis studies are typical of hundreds in our files.

Southern California Edison

SCE

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For more data, circle 39 on inquiry card

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

Now Raynor has found a way to make the industry's leading fiberglass garage door even better. Raynor took Raylon fiberglass, already rated outstanding in value and durability, made it with du Pont Tedlar* PVF Film, and guaranteed it for 15 years! Tedlar offers exceptional protection against corrosive acids, alkalies, hot tar, greases, caustics . . . virtually everything that defaces or erodes other surfaces and finishes. Unequalled in resistance to sunlight, oxygen, and weather. Maintenance? Virtually non-existent. And price? No change. Lightweight, ruggedly built, yet attractive in appearance. Raynor also makes industrial, commercial, and residential doors in wood, steel and aluminum in all price ranges.

*TEDLAR IS A REGISTERED TRADEMARK OF DU PONT.

RAYNOR
The Brand You Can Depend On

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

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ADDRESS _____

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DEL WEBB'S

TowneHouse

PHOENIX, ARIZONA

Twelve Montgomery elevators move people and equipment at speeds up to 700 FPM in this striking new twenty-three floor tower. Montgomery E.S.P.* MEASURED DEMAND® controls traffic flow on the local and express banks of elevators.

Architect:
Flatlow-Moore-Bryan & Fairburn

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Speakers and award winners announced for A.I.A. convention

Final plans have been disclosed for the 99th national convention of the American Institute of Architects to be held in New York City May 14-18. The theme of the convention will be "The New Architect," and the theme will be developed in four sessions followed by workshops. Theme topics and speakers include: "Education and the Future of the Architectural Profession"—Dr. Harold Taylor, educator, author and a past president of Sarah Lawrence College; "Architectural Practice"—architect Charles Luckman; "Design" (with Manhattan as a case study)—by New York's Mayor John V. Lindsay; and "Technology"—Arthur C. Clarke, astronomer, science fiction writer, lecturer and inventor.

A.I.A. annual medals for distinguished achievement will be awarded as follows: Fine Arts Medal—Costantino Nivola, sculptor, New York City; Industrial Arts Medal—Ivan Chermayeff, graphic designer, New York City; Architectural Photography Medal—William C. Hedrich of Hedrich-Blessing, Chicago; Craftsmanship Medal—Sister Mary Remy Revor, chairman of the art department at Mount Mary College, Milwaukee (for her textile designs); and Allied Professions Medal—Richard Kelly, specialist in architectural lighting design, New York City.

Receiving the Institute's Architectural Firm Award will be the office of Hugh Stubbins & Associates of Cambridge, Massachusetts. The award honors a firm "wherein the continuing collaboration among individuals of the firm has been the principal force in consistently producing distinguished architecture." The Boston Architectural Center will be the recipient of the A.I.A.'s Citation of an Organization.

Six men will receive honorary memberships in the A.I.A. They include: Joseph F. Addonizio, executive director of the New York State Association of Architects; John D. Entenza, executive director of the Graham Foundation for Advanced Studies in the Fine Arts, Chicago; James Fenelon, executive director of the Minnesota Society of Architects; John Erik Jonsson, Honorary Chairman of the Board of Texas Instruments, Inc.; Edgar Kaufmann Jr., author and educator; and Benton Spruance, lithographer, painter and teacher.

Leon Chatelain Jr., a past president of the A.I.A., will be presented with the F. Stuart Fitzpatrick Memorial Award for "outstanding individual national achievement in the unification of the building industry." The award is sponsored by five construction industry organizations—the A.I.A., the Associated General Contractors of America, the National Association of Home Builders, the Producers' Council, and the Building Research Institute.

Ohio State University student Kent C. Underwood (at right with his project) will receive the seventh annual Reynolds Aluminum Prize for Architectural Students. The winning project is a retractable dome design consisting of 12 telescoping segments which move simultaneously to form or retract the overhead

closure. The segments are designed of aluminum stress skin construction over an aluminum cellular frame. The award carries an honorarium of $5,000 to be divided equally between the student and his school.

Architect plans fourteenth annual tour of Japan

California architect Kenneth M. Nishimoto has announced plans for his 14th annual architecture and gardens tour of Japan, leaving from Los Angeles on October 7. The 24-day tour, limited to 25 participants, will include visits "to all buildings of architectural significance and gardens of renown, old and new." Participants will meet Japanese architects at a social event. Complete details may be obtained from Mr. Nishimoto, 263 South Los Robles Avenue, Pasadena.

Landscape architect wins Kirkwood Plaza competition

A design to improve a 15-acre site in downtown Kirkwood, Missouri, by St. Louis landscape architect Robert J. Stoffel, has won the $3,500 first prize in the Kirkwood Civic Plaza National Design Competition. Mr. Stoffel says of his prize-winning entry: "Definition and unity of central civic space is attained by a formal double row of trees along the perimeter. Pedestrians may walk freely through the area without interference with railroad or vehicular traffic. A bridge connects the business district directly with the plaza."

Second prize of $1,000 was won by Chartier Newton and John J. Exley of College Station, Texas, and third prize of $500 was won by Paul E. Marti, Jr., of Webster Groves, Missouri. Serving on the jury were architect Joseph Murphy, landscape architect Carl Johnson and Kirkwood Mayor Robert C. Reim.

Academic appointments

Gibson A. Danes, dean of Yale University's School of Art and Architecture, has been appointed Dean of Visual Arts at Westchester College, a new campus of the State University of New York to be built at Purchase. His successor has not been named.

Joseph N. Bosserman has been appointed dean of the University of Virginia School of Architecture. Mr. Bosserman, who has been acting dean since last July, succeeds Thomas K. Fitz Patrick, who has stepped down as dean while remaining on the faculty as professor of architecture. Mr. Bosserman, 41 years old, received his bachelor's degree in architecture from Virginia in 1948 and a master's degree from Princeton in 1952.

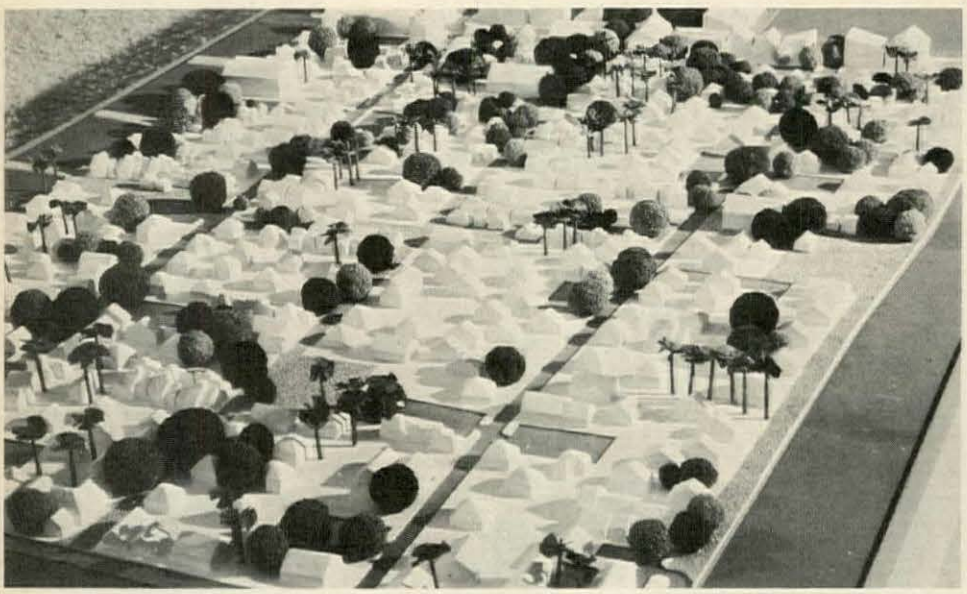
Elegant construction canopy graces downtown Chicago

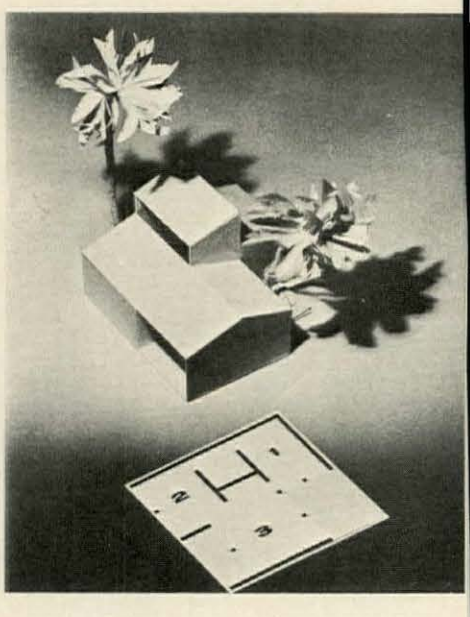
A construction canopy around the site of the new First National Bank of Chicago building in the heart of Chicago's loop (February 1965, page 13) has transformed

what is often an eyesore and a pedestrian inconvenience into a pleasant and elegant walkway. The canopy, designed by C. F. Murphy Associates and the Perkins & Will Partnership, architects for the new bank building, was cited last year by the Chicago Association of Commerce and Industry. The cantilevered archway, of structural steel and white-painted planked plywood panel construction, has unbreakable light globes hanging overhead at 10-foot intervals, a plywood boardwalk, and a four-foot paneled guard rail. Provisions for sidewalk superintendents include 11 clear acrylic plastic windows cut into the canopy wa On-site office spaces are constructed o the roof, shielded from the street by a 8-foot-high panel border on the roof. Th canopy will remain on the site for a tot of five years, making life easier for th estimated 35,000 pedestrians who pas one of the corners of the site each work ing day.

Six RECORD editors cited for 75th anniversary issue

Six editors of ARCHITECTURAL RECORD have received Jesse H. Neal Awards fo the best single issue—the 75th anniver sary issued published last July—in spe cialized business publications having circulation from 20,000 to 50,000. Th Neal awards "recognize outstanding edi torial accomplishments by editorial staf members of the American Business Press Inc." Those receiving the awards for the RECORD included Associate Editors Jonathan Barnett and William B. Foxhall and Senior Editors Robert E. Fischer James S. Hornbeck, Mildred F. Schmertz and Herbert L. Smith Jr.





Columbia University and United Nations develop Bahamian master plan

A joint undertaking by Columbia University and the United Nations has produced a master plan for the 60-square-mile island of New Providence in the Bahamas. The project, supervised by Columbia's new Institute of Urban Environment under Director Charles Abrams, is the first urban planning project ever undertaken jointly by the U.N. and a private university to aid a developing country.

Heading the project, which was worked on by 30 graduate students in architecture and city planning, is Paul Lester Wiener, adjunct professor of urban planning at Columbia. Under the supervision of Mr. Wiener and Francis Ferguson, instructor in Urban Planning, the students spent last summer on New Providence examining its problems and potentialities. The master plan analyzes present land-use and proposes new patterns of land development. Part of the project calls for the redevelopment of a blighted area of the City of Nassau, pictured above left. The plan calls for introduction of a sanitation system, creation of recreational facilities and the gradual replacement of dilapidated housing with simple, small houses. The small houses, pictured in model photograph and plan above right, will utilize available materials and skills. Total cost of the master plan to the Bahamian government was less than $20,000, all out-of-pocket expenses.

The Institute of Urban Environment will have a teaching and research program divided between domestic and foreign affairs—between urban problems of the United States and the special problems of rapid urbanization in underdeveloped countries. The Institute has received a Ford Foundation grant of $400,000 for its work in the underdeveloped world.

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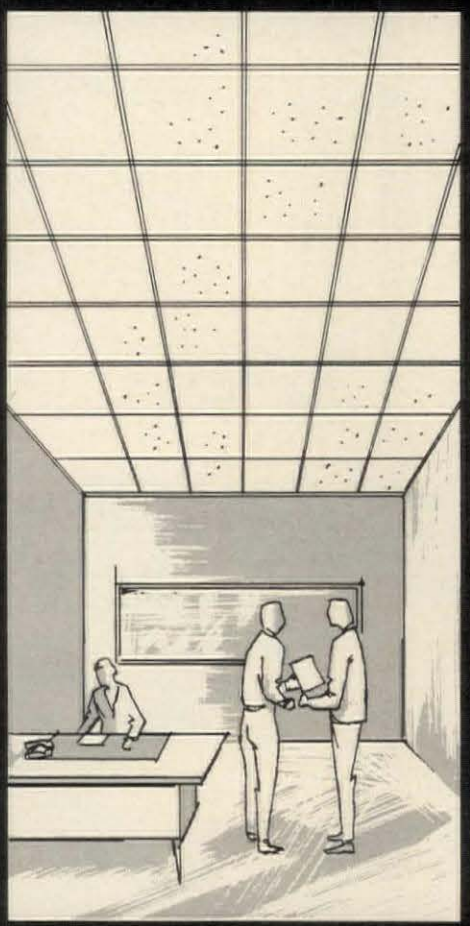
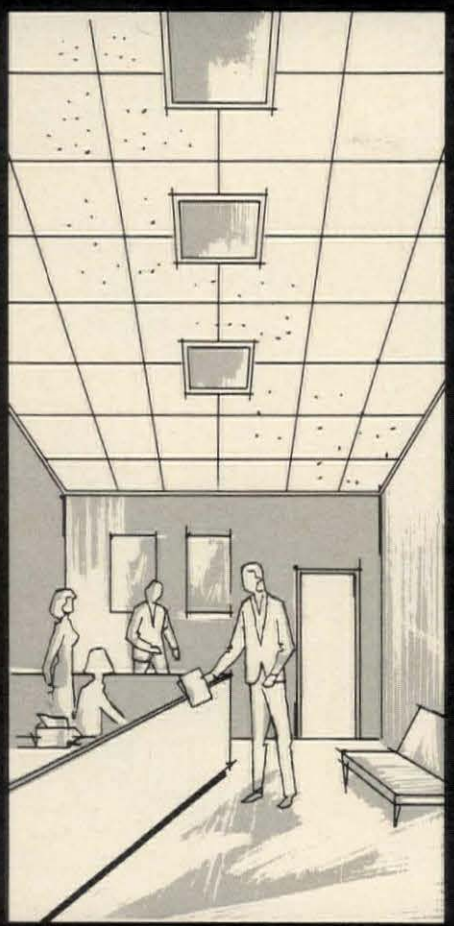


air diffusing/
ceiling suspension
systems



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and diffusers

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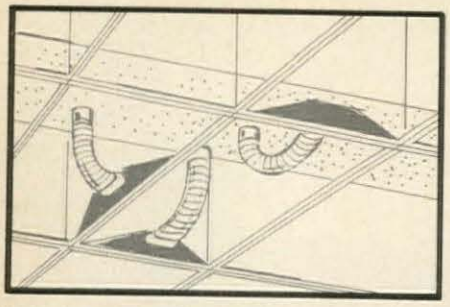
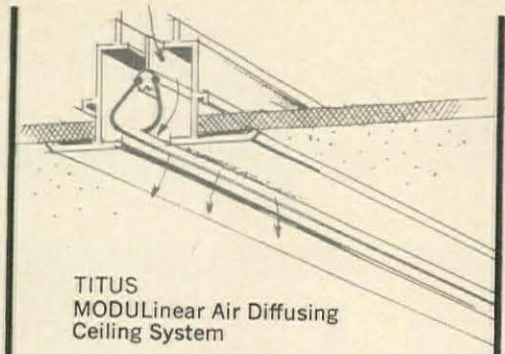


T-Line Air Diffusing/
Ceiling Suspension System



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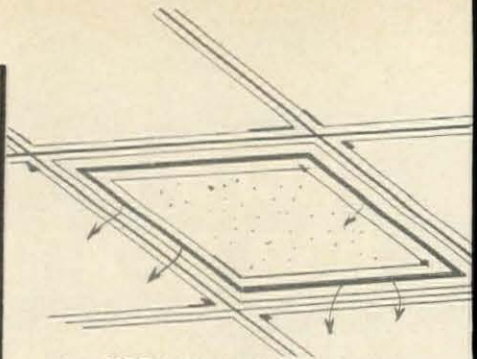

MODU-Block Air Diffusing
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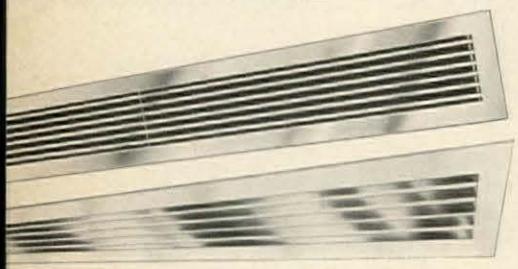
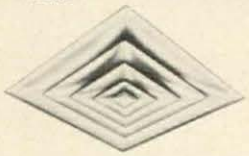
CEILING DIFFUSERS



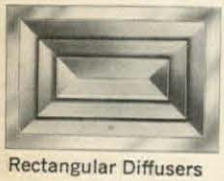
Linear Diffusers

Round Diffusers

Half Round Diffusers

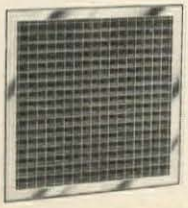


Square Diffusers



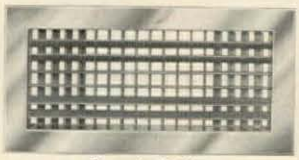
Rectangular Diffusers

Perforated Face Diffusers

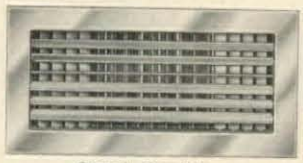


Louvered
Return
Air Grilles

SIDEWALL GRILLES & REGISTERS

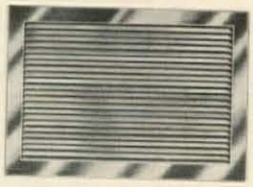


Supply Grilles

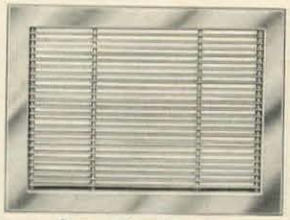


Supply Registers

Removable/Reversible Core
Grilles & Registers

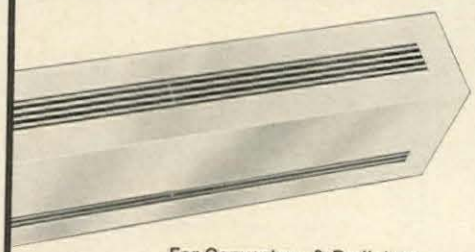


Door Grilles



Gymnasium Grilles

LINEAR DIFFUSER ENCLOSURES



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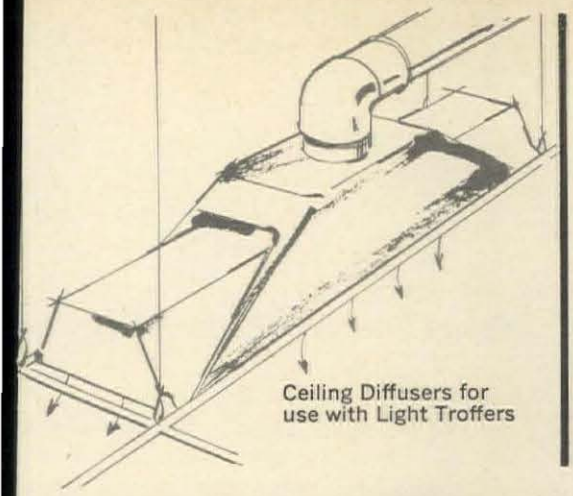

Ceiling Diffusers for use with Light Troffers

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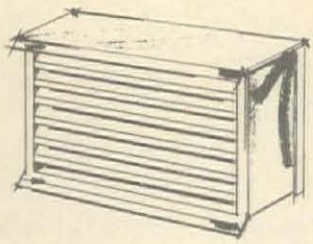
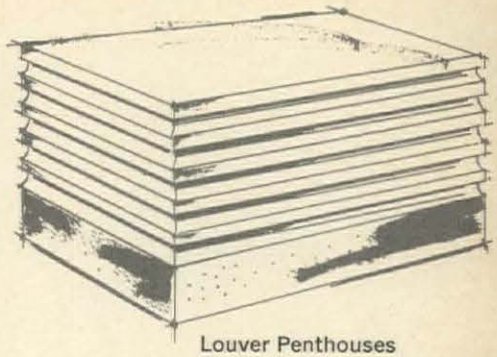


1½" and 4" Outside Louvers



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Hawaii Chapter A.I.A. presents seven honor awards and Pan Pacific Citation

R. Wenkam

Honor Award: Pago Pago International Hotel, American Samoa. Architect: Wimberly, Whisenand, Allison and Tong Architects, Ltd.

Seven honor awards, the Pan Pacific Architectural Citation and an Allied Arts Award were presented in the annual awards program of the Hawaii Chapter of the American Institute of Architects. The selection jury, composed of last year's award winners, included: Kenneth Akiyama, for Akiyama and Kekoolani; Richard Dennis; Joseph Farrell, for Lemmon, Freeth, Haines and Jones; Frank Robert; Edward Sullam; and John Tatom. Awards chairman for the chapter was Haydn H. Phillips. Jean Charlot received the chapter's Allied Arts Award "for his continuing outstanding contributions as artist, teacher and critic." The Christchurch, New Zealand, architectural firm of Warren and Mahoney received the Pan Pacific Architectural Citation.

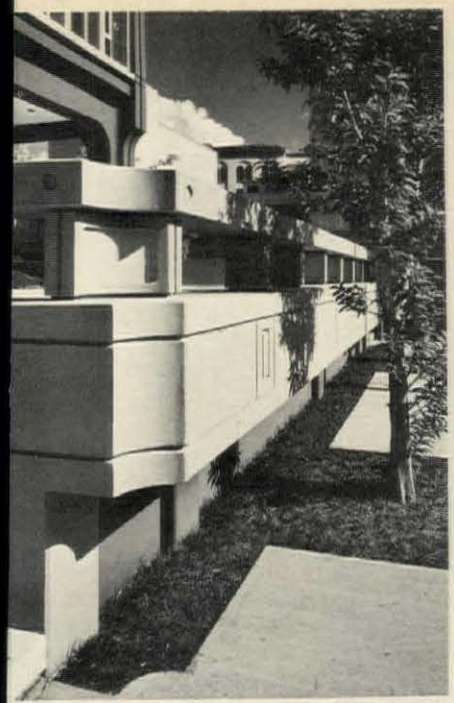
Also cited at the awards presentation banquet were the chapter officers and directors. Officers included: Edward Sullam, president; Donald D. Chapman, vice president; Herbert K. C. Luke, secretary; and Howard M. Y. Wong, treasurer. Directors are Gerald L. Allison, Gregory Tong and Ernest H. Hara.

Herbert Bauer

Honor Award: Great Things, speciality shop, Ala Moana. Architect: Thomas O. Wells.

James Y. Young

Honor Award: First National Bank of Hawaii, Pearl City Branch. Architect: Haydn H. Phillips.



Honor Award: City Bank of Honolulu. Architect: M. Takashi Anbe and Associates, Inc. and Walter M. Tagawa.

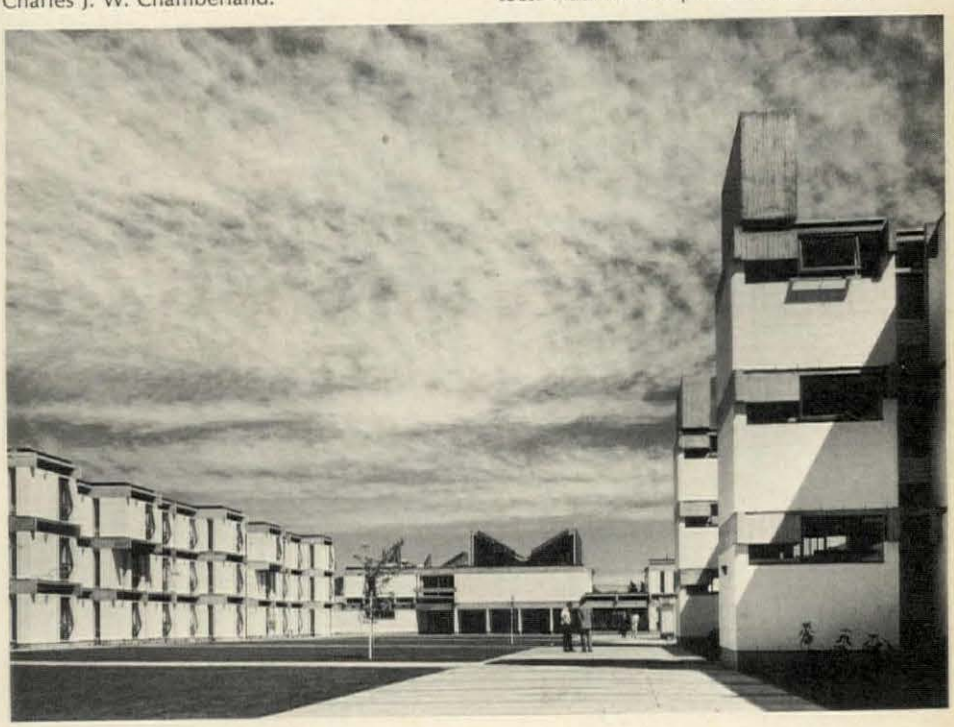
R. Wenkam

Honor Award: Charles G. Rolles residence, Waialai-Iki. Architect: Thomas O. Wells.

Honor Award: Residence of Mr. and Mrs. John Bolman, Chaminade Heights. Architect: Charles J. W. Chamberland.

Nelson/Zellers Photo

Honor Award: Marc Seastrom for Carol and Mary Jewelry Shop, Ala Moana Center. Architect: Vladimir Ossipoff and Associates.



Pan Pacific Architectural Citation of Hawaii Chapter, A.I.A.: to Warren and Mahoney, architects, of Christchurch, New Zealand "in recognition of singular individuality and excellence in design." Shown here is the winning firm's Christchurch College.

The Houston Natural Gas Building, designed by Lloyd, Morgan and Jones, will contain a gas-fired system which will produce all electricity, heating and air conditioning for the building. The 28-story tower, which will provide approximately 500,000 square feet of office space, will have steel frame construction with exterior facing of brick and limestone. An adjacent 10-level parking garage will accommodate 850 cars. The $13-million project is scheduled for completion late this summer. General contractor is H. A. Lott, Inc.

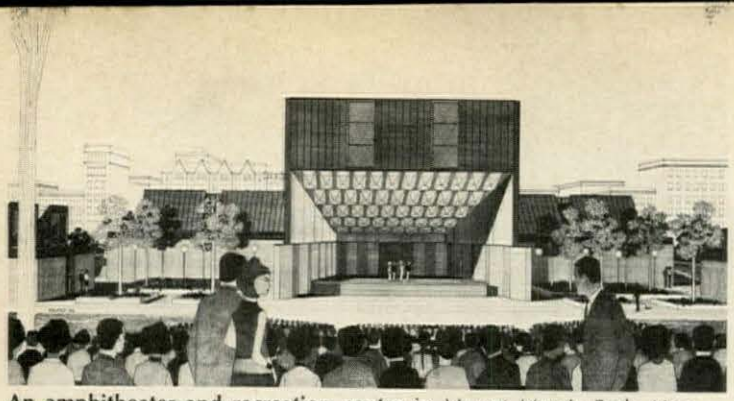
One New York Plaza, a 50-story office building in New York City, designed by William Lescaze & Associates with Nevio Maggiora, associate in charge, will have exposed air-conditioning shafts at the corners, doubling the number of corner offices. The building will have a 700-foot-high concrete core and composite floor construction, permitting unobstructed floor areas 50 feet deep, spanned with relatively shallow, economical beam sections. The facade will be composed of prefabricated sculptured panels, 10 by 12 feet, of aluminum and glass. The building will contain more than 2.5-million square feet. General contractor is the George A. Fuller Company.

A regional headquarters and office building for Eastern Airlines in San Juan, Puerto Rico, designed by Rene O. Ramirez, will be a 12-story structure with two underground parking levels. The exterior will contain alternating vertical concrete mullions and glass with a plastic finish on the exterior concrete. The building will cost approximately $3 million and will contain 80,500 square feet. General contractor is Edward J. Gerrits de Puerto Rico, Inc.

The Connecticut Mutual Life Insurance Company Building, Chicago, designed by Skidmore, Owings & Merrill, has been cited in the high-rise category of the 1966-67 Design in Steel Award Program sponsored by the American Iron and Steel Institute to recognize "imaginative use of steel." Fifteen projects in three building categories were honored in the program. The jury was composed of architects Morris Ketchum Jr., Walter B. Sanders and Philip Will Jr.; engineers Earle T. Andrews, James H. Harlow and Robert H. Roy; and industrial designers Donald D. McFarland, Joseph M. Parriott, and Arthur J. Pulos. The 25-story building (above) has a steel frame with an exterior of charcoal black granite and bronze-tinted glass.

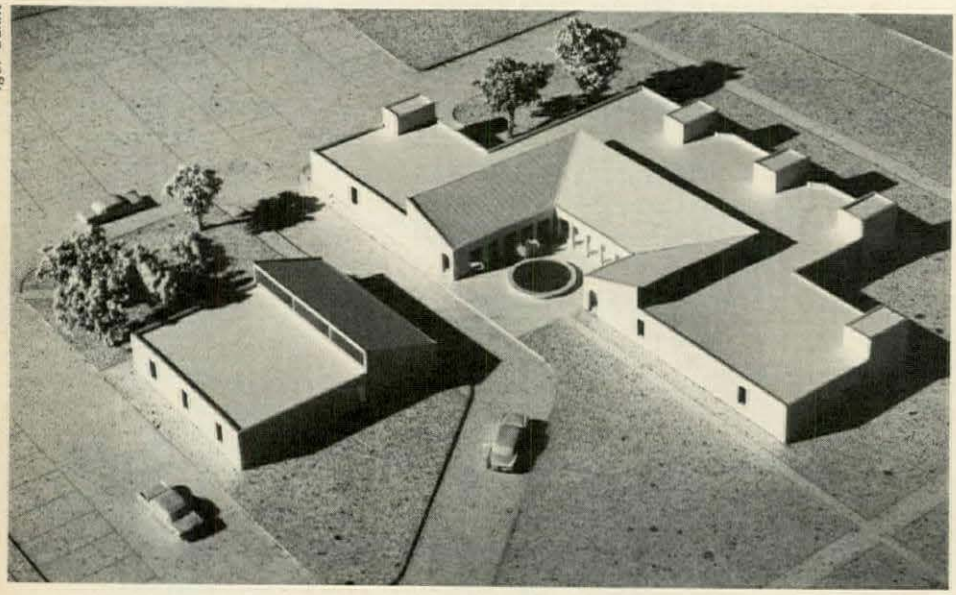
The First Federal Building, Detroit, designed by Smith, Hinchman & Grylls, is another citation winner in the high-rise category. The tri-towered structure has one tower housing vertical transportation and service facilities, and two towers housing unobstructed office space. The building has a welded steel structural system and is faced with dark granite veneer on precast panels.

The Health Sciences Instruction and Research Buildings at the University of California's San Francisco Medical Center, designed by Reid, Rockwell, Banwell & Tarics is also a winner in the high-rise category. Each of the identical 16-story buildings, which share an elevator tower, has a structural system consisting of 12 steel columns framing 90-foot squares, spanned both ways by 93-foot steel girders. Each floor has 8,100 square feet of column-free laboratory space.

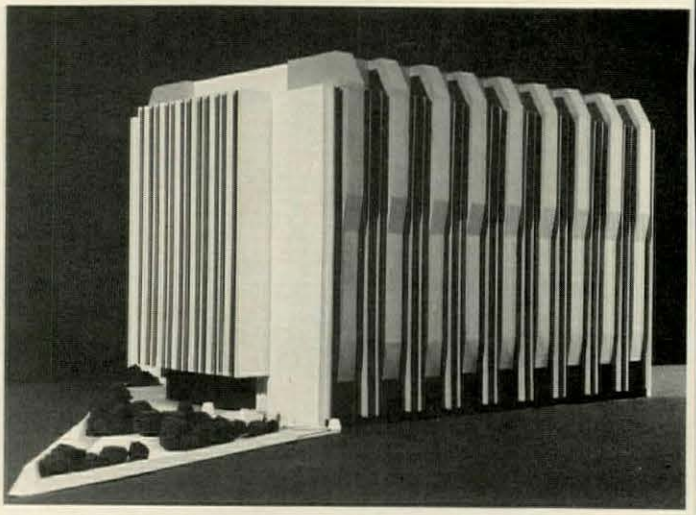


An amphitheater and recreation center in Mount Morris Park, New York City, designed by Lundquist and Stonehill, utilizes the three structures in the complex, as well as retaining walls, as a backdrop and acoustical baffle for the bandshell which has amphitheater seating for 1,600 built into a hillside. The one-story recreation building, raised to street level, will be lighted by skylights, and is connected to th bandshell. The recreation building includes a senior citizens area, art and crafts area, multi-purpose room, club room, dressing room an first aid room. The amphitheater area is flanked by one-story building for comfort station and concessions.

Igor Bakht



A doctor's office building in Rome, New York designed by Lewis, Prentice & Chan, will incorporate an electronically generated "white sound" system to assure privacy in the doctor-patient relationship despite relatively thin partition walls. The white sound system, recommended by Ranger Farrell & Associates, acoustical consultants, will generate a soft humming background noise, and will cost approximately $2,000. The $400,000, 11,500-square-foot building will serve the needs of 10 doctors in five specialties, and will house five reception areas, 12 consultation rooms, 20 examination rooms and facilities for minor surgery and radiology. The one-story building will be of concrete block cavity wall construction with brick facing. Landscape architect is Peter Rolland.



A research and quality control laboratory for Hoffman-La Roche, Inc., Nutley, New Jersey, designed by Smith, Haines, Lundberg & Waehler, expresses its laboratory function on the facade with vertical gray metal exhaust shafts. Between the exhaust shafts are a double set of windows divided by vertical metal fins. Floor levels in the nine-story structure are denoted by granite spandrels. On the first floor are research offices and service facilities. The eight floors above are laboratories on the periphery with other laboratories on the interior. At the south end is a projection for offices, while a northern projection provides special windowless laboratories. The building, which contains 303,000 square feet, is planned on a 10-foot, 9-inch module for maximum flexibility.

A gymnasium for Lake Forest College, Lake Forest, Illinois, designed by Edward D. Dart of the firm of Loebl, Schlossman, Bennett & Dart, will include health service facilities and a heating plant for the South Campus as well as athletic facilities. The building, which will cost $1.78 million, will include basketball courts with spectator seating for 1950; a 25-meter, six-lane swimming pool with seating for 400; two squash courts; handball courts with seating for 100; and classrooms. General contractor will be Chell & Anderson, Inc.

more buildings in the news on page 56

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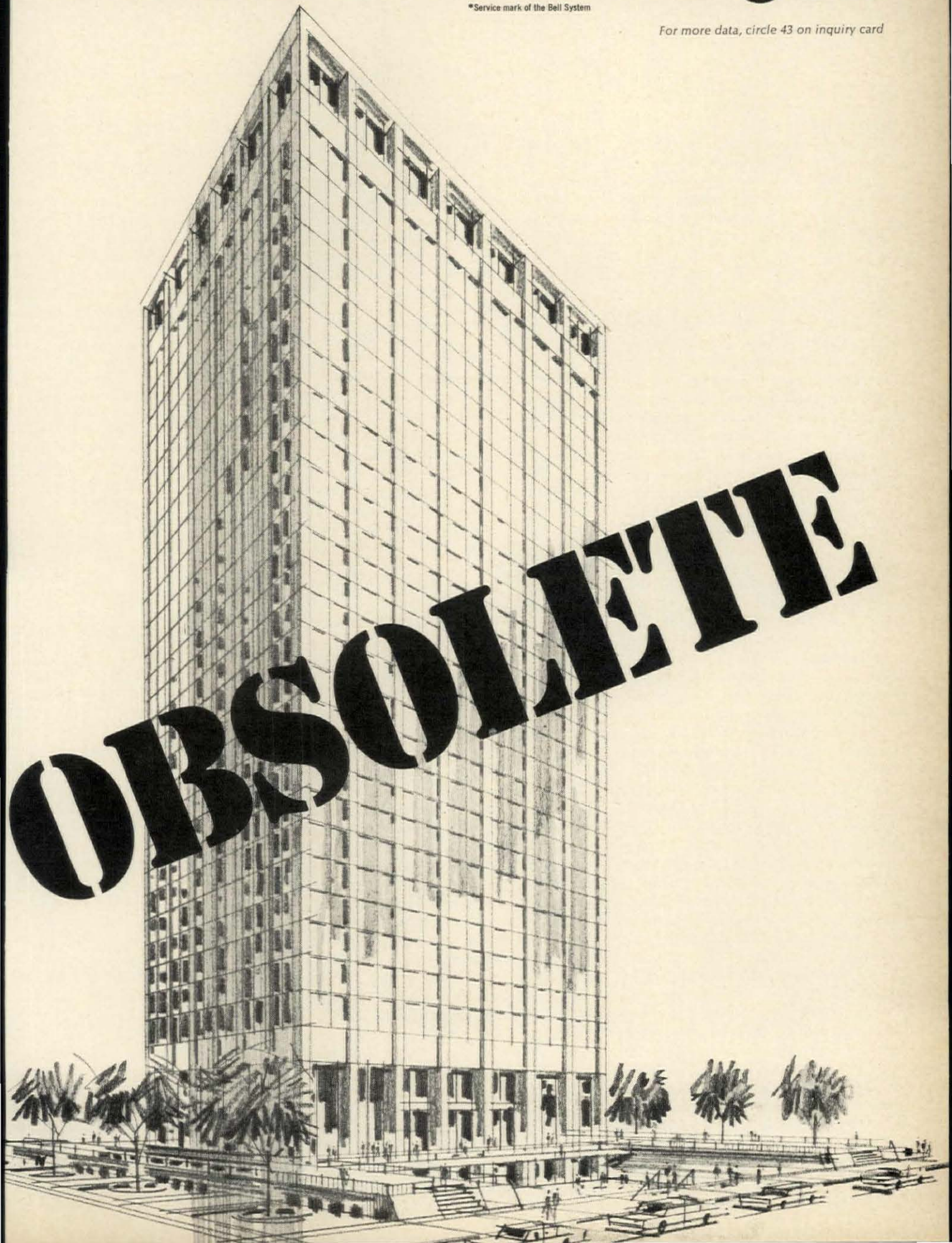

LETTERS

Underdeveloped areas

I, of course, was delighted with the coverage that you gave American Samoa. I am sure that it will invoke some careful thinking in some of the other undeveloped areas of the world and thus render a real public service.

H. Rex Lee
Governor, American Samoa

Educational architecture

I am principal of Leone High School which is featured in your December article, "The Far Pacific: A New Frontier For Architecture." This school, and indeed, the whole educational system of American Samoa has frequent visitors from all parts of the world who are interested in the educational program and its architecture. I should appreciate having copies of your article to give them.

Jack H. Stoltz
Pago Pago, Tutuila

Comprehending architects

In reference to February's editorial: Your colleague who asked the questions concerning the fancy phraseology used by architects is correct in his feeling that architects tend to surround their work with a kind of verbal mystique. But all professionals have command of certain mysteries. The engineer, for example, cannot always understand the esthetics of the architect, because the relationships of space, form, texture, are a mystery to him. The architect cannot always grapple with all the legalities of the law. It is natural for professionals to protect their own control over whatever mysteries they command as it insures their professional security to a great extent.

Getting to the statement that your colleague gave as an example of jargon, I do not believe that anyone in the profession of architecture would readily understand the statement: "The building is of itself." It seems that any meaning derived from such a statement has first been read into it. Architects have been conversing in mysterious language for such a long time that they cannot always understand themselves today. There has been such little research done in the perception of spaces and forms, a type of activity which really is scholarly, that architects cannot always answer their own questions. Interestingly enough, they still are ready to answer the questions in meaningless terms. What architects really are doing is developing their own mysteries common to no one but themselves, and in turn are making themselves professionally secure only in the eyes of other architects. I think this is what your colleague meant when he said that architects are hurting themselves.

Frank L. Elmer
B. Arch., Kent State Univ.
M. CP. candidate, Ohio State Univ.

Comments and questions

In your February editorial you state, "It seems odd . . . that a profession so deeply involved in graphics in the visual sense should be so insensitive to verbal graphics." Firstly, although I get your point, may I suggest that the expression "verbal graphics" is a contradiction in terms and just another example of the fancy use of language which gives point to your editorial question.

Secondly, may I offer the fairly simple answer that for the very reason that architects, like painters and sculptors, have the special endowments of seeing things with their "mind's eye" and being able to express these things graphically, they generally have a corresponding weakness of verbal expression. It takes a very special effort to become ambidextrous. Maybe the same thing is true of "ambi-expressiveness." Of course, the effort should be made.

Regarding the Jesse H. Jones Hall for the Performing Arts in the same issue: I first came across this design two or three years ago and was highly pleased to see that it has now been magnificently realized and been accorded high honors, including that of being described as "the most sophisticated building of its kind anywhere in the world." Why don't you tell us who was responsible for the quote? Was it the architects? the mechanical engineer? a public relations man? a representative of the donor's estate? a critic of The New York Times? a man in the street? It makes a difference, you know. Anyway, it is thrilling to observe the highly imaginative plan and tasteful decor complemented by brilliant mechanical control of shapes and volumes.

Finally, a word of criticism regarding the continental seating—an unavoidable consequence of the *parti*. As nearly as I can make out from the photographs, there are as many as 50 seats in an auditorium row. Consider poor Mrs. Smith, seated at one end, who does not wish to leave her seat during the intermission. It is bad enough when the curtain comes down and she must make way for as many as 24 people on their way to the foyer, more or less all at once. But how about when they come dribbling back in ones and twos?

David Marner, A.I.A.
Asbury Park, N.J.

The phrase "the most sophisticated building of its kind anywhere in the world" was used by several of the consultants on the building as we researched the article. We did not attribute it because it might have sounded as if the persons speaking were patting themselves on the back instead of in truth stating a technical fact. At any rate, the editors of ARCHITECTURAL RECORD feel that this is almost surely the most sophisticated building of its kind anywhere in the world.

Re the continental seating: poor Mrs. Smith would be less inconvenienced in the Jesse H. Jones Hall than in almost any other theater; there is much more than the normal space between her knees and the seat in front. The safety of this arrangement in the event of fire should be assured by fire codes. Note also that there is an exit for every few rows.

Leveling device for rehab floors

The article, "Instant Rehab Not So Instant," January, mentioned trouble with floor levels in the rehabilitation of New York City slum apartment buildings. This problem was anticipated jointly by the Federal Housing Administration, U.S. Forest Service, and the National Forest Products Association early in 1966, before the project got under way. It was at this juncture that the Timber Engineering Company (TECO) was requested to develop a device that could be used in installing level floors over existing floors. It had been determined that it would be best to leave the existing floor joists and

more letters on page 50

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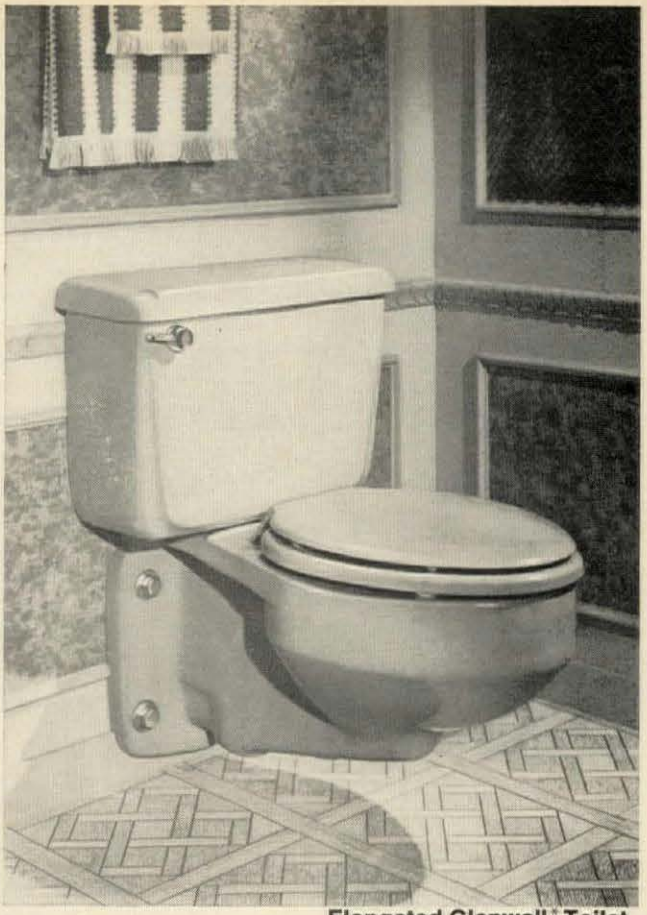

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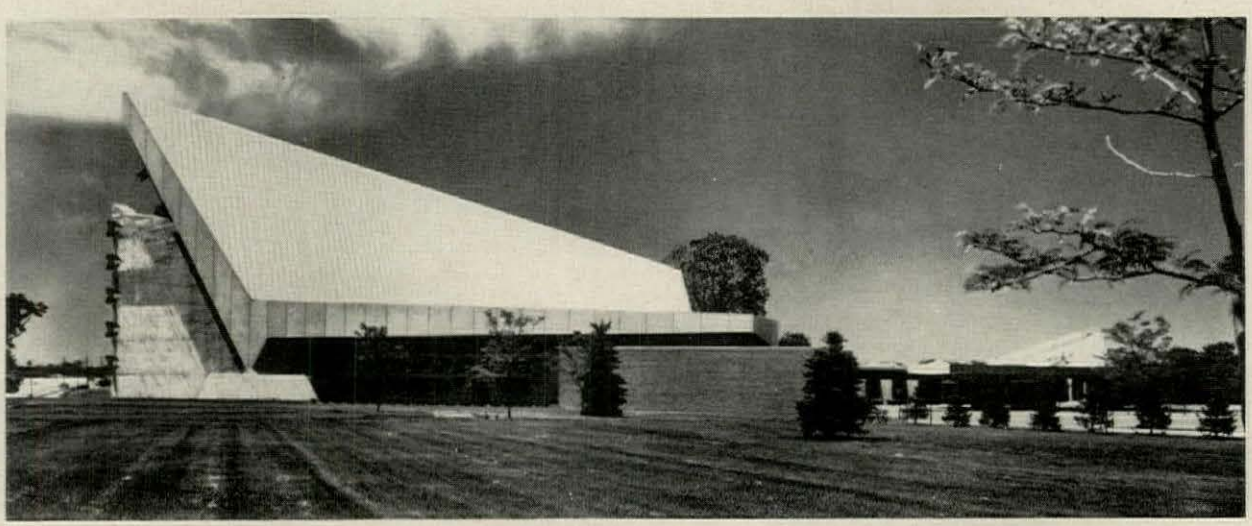
AN ARCHITECT LOOKS AT TERNE: Percival Goodman, one of the foremost living designers of ecclesiastical buildings, has this to say of the eighty thousand square feet of Terne metal roofing recently installed on Shaarey Zedek, the world's largest synagogue: "To be entirely frank, we had originally wanted to use a considerably more expensive material than Follansbee Terne. Now that the latter is in place, however, we are satisfied that no better choice could have been made. Terne not only afforded the widest possible latitude in form and color along with time-tested functional integrity, but it did all this at a figure well below preliminary estimates for a metal roof."



Congregation of Shaarey Zedek, Southfield (Detroit), Michigan
Architects & Engineers: Albert Kahn Associated Architects & Engineers, Inc., Detroit, Michigan
Associated Architect: Percival Goodman, F.A.I.A., New York, New York
Roofing Contractor: Firebaugh & Reynolds Roofing Company, Detroit, Michigan

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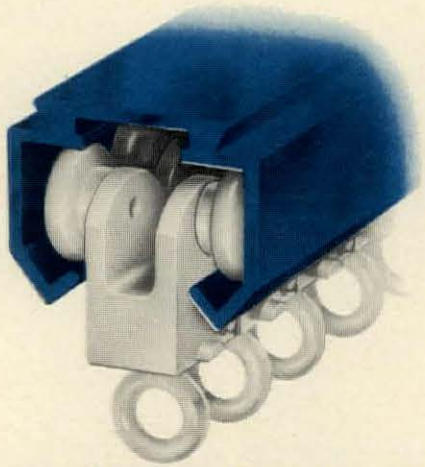

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continued from page

floors in place rather than to remo them and install completely new joi

A device meeting the requireme set forth by FHA and the U.S. For Service was developed by TECO March 1966. Load testing and time a motion studies were completed the f lowing month. Prototypes were the upon made available to the contract handling the New York City proje Later in the year, one room using t leveling device was completed and t met with the satisfaction of both t FHA and Forest Service. Subsequent the contractor decided against using a leveling system because of time consi erations. Thus floors were left unlevele

The TECO leveling device is "V formed and is manufactured from 2 gauge steel. Ribbing is incorporated the part for extra strength. Applicati procedures call for the device to nailed to 2 by 3 wood sleepers (screeds) every 36 inches. These sleepe are then placed 24 inches apart ov the existing floor. The angle of the "V is adjusted to accommodate the degr of sag in the floor. Two "tabs" or "fee extend from the bottom of the "V" ar are nailed to the existing floor. Aft the leveling device has been fully naile to the sleepers and floor, plywood su flooring is laid on top. The device designed to carry a live load of 40 lb/sq At the present time, only prototype san ples are available for experiment.

D. R. Norcross
Director, Products Division
Timber Engineering Compa

What do we publish?

I would like some information concern ing the publication of architectural pro ects. First, what information would yo require? Second, how do you determin what work is acceptable for publicatio

Leonard E. Beller, A.I.
Gretna, Louisiana

To consider a project for publication w must see drawings, presentation sketche or photographs (which at that early stag do not have to be suitable for reproduc tion). There is no single way that project reach publication. When the material submitted for consideration, several o our editors study it and decide whether fits the magazine's goals and our tenta tive schedule. We try to publish build ings that are important either becaus they suggest and encourage new forms or because they are good examples o current thinking. In any event, the mate rial we publish must be of broad interes

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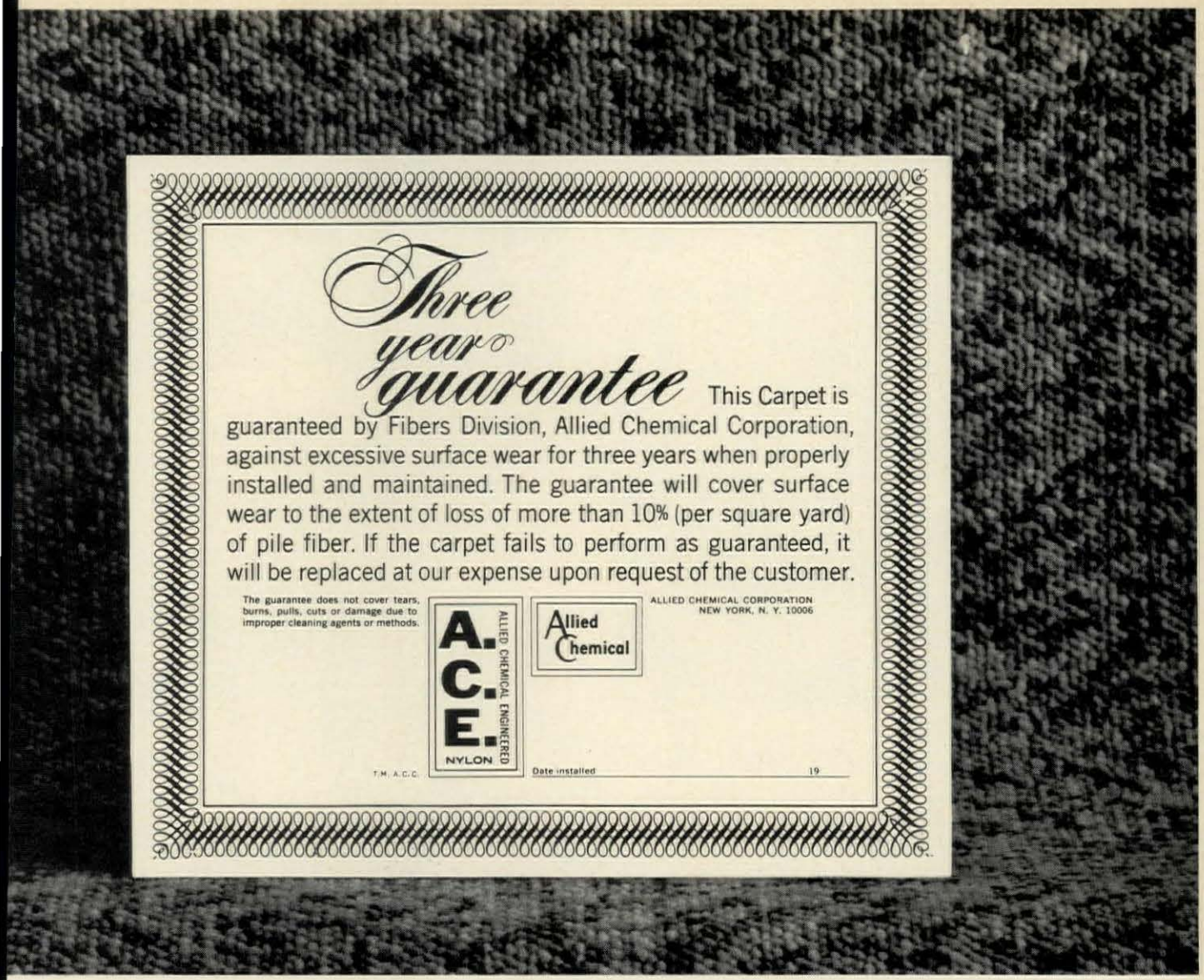

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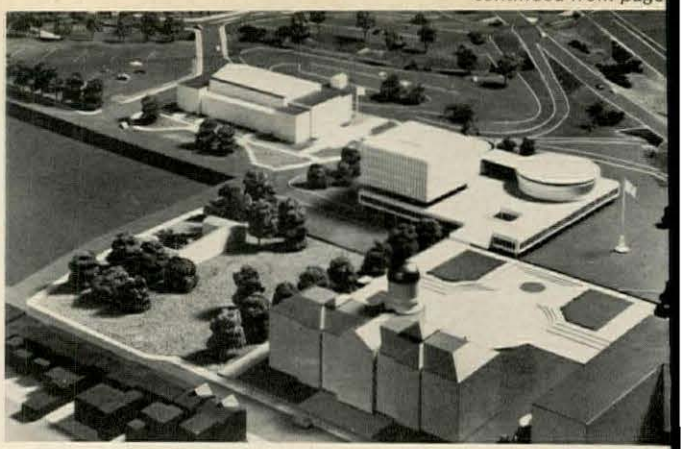
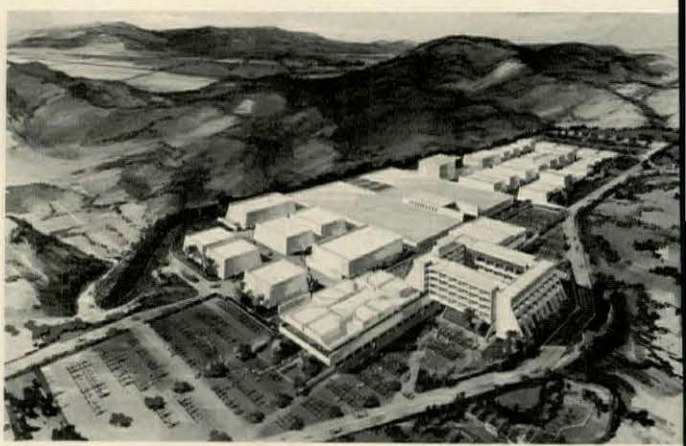
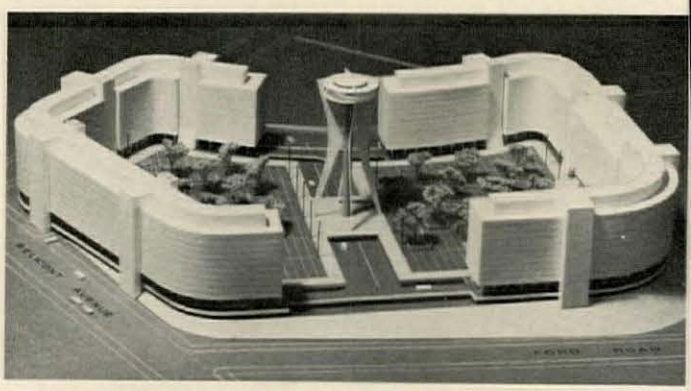


A new legislative building for the State of New Jersey in Trento designed by Frank Grad & Sons, will group four elements in a sing structure which will contain 150,000 square feet and will cost $10 million. Located on the raised 70,000-square-foot podium level wi be working levels for the 40-man Senate and 80-man Assembly, eac chamber being expressed as a conical shape above the podium. five-story rectangular office building will also rise from the podiu Below podium level are parking facilities for 550 cars.



A motion picture studio for Metro-Goldwyn-Mayer, Inc. in Ventur County, California, designed by Albert C. Martin and Associates, wil contain 14 sound stages of concrete battered-wall construction. Also provided will be an administration center, theater, laboratory, crafts center, commissary, and areas for outdoor sets. The complex wil cost $30 million and total 1.5 million square feet.



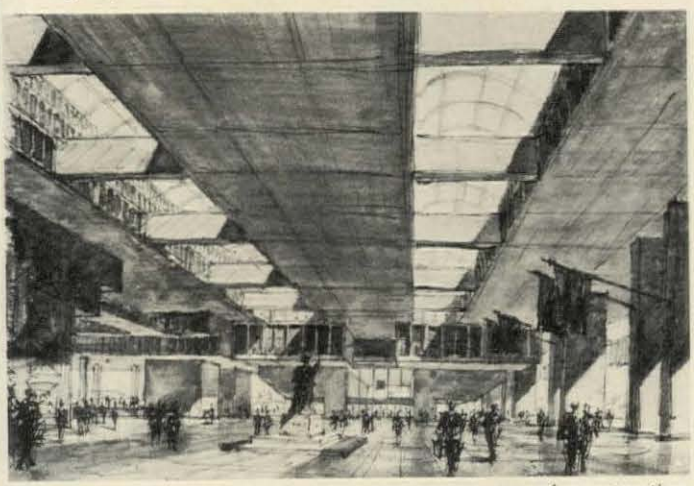
An office and residential complex, to be built on air rights above a 15-acre reservoir owned by the City of Philadelphia has been proposed and designed by the firm of Bellante and Clauss. The proposal would put twin decks over the water with parking for 1,500 cars under the top deck. Above would be two 10-story U-shaped buildings containing 1.6 million square feet, one for apartments and the other for offices. At center of the $60-million complex would be a 300-foot-high tower restaurant seating 400.

ncremental horizontal expansion proposed or Connecticut State Capitol complex

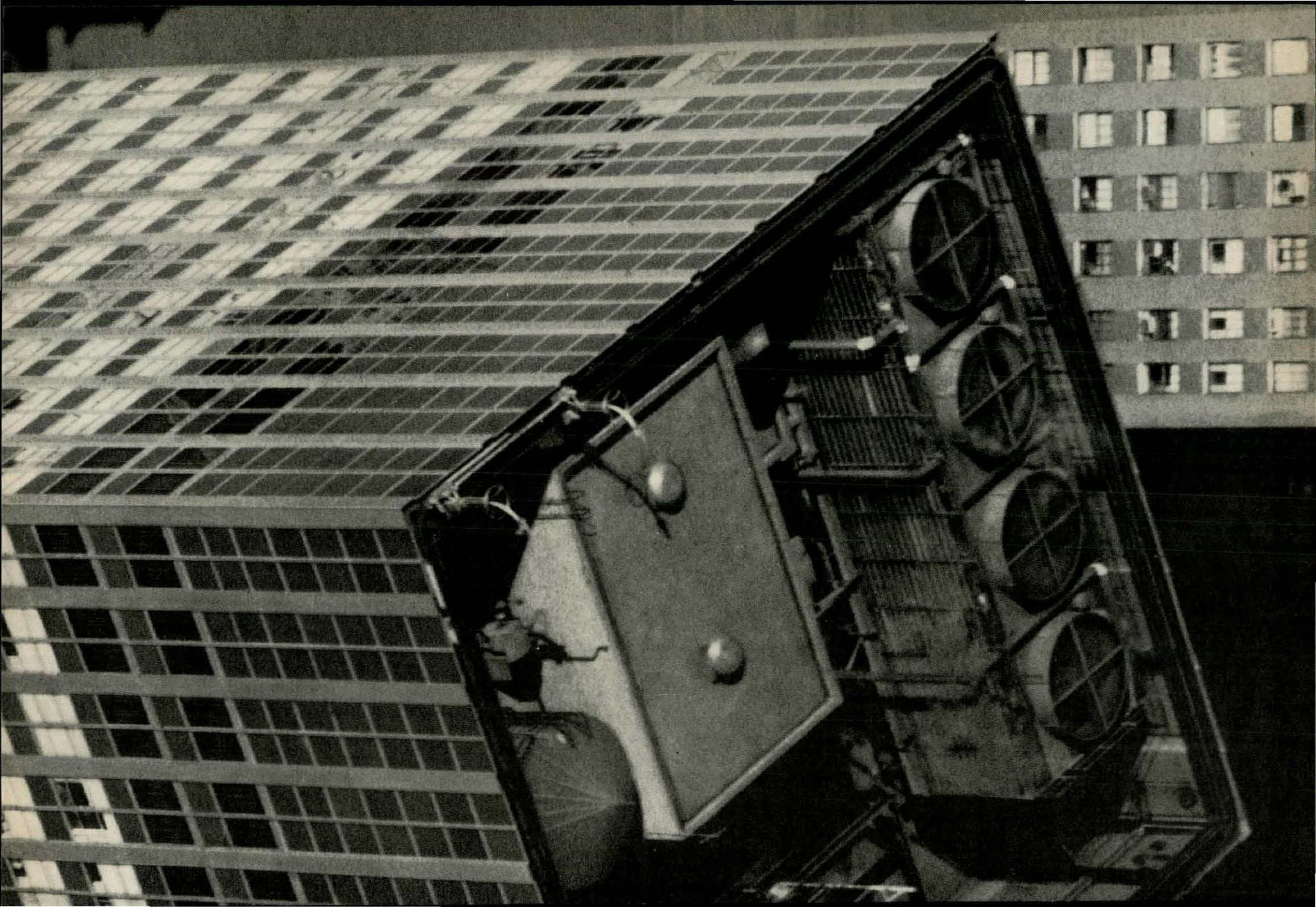
proposal that would centralize the governmental functions of the ate of Connecticut in Hartford, prepared for the state by the Balti- ore firm of Rogers, Taliaferro, Kostritsky, Lamb, calls for the con- ruction of 4.5 million square feet of office space on a 115-acre site the year 2000. Development of the complex would be horizontal five-year increments along a promenade above traffic and parking cilities. As each increment is added, the buildings would be con- ected by the enclosed promenade. The result, says architect George Kostritsky, would be "one totally integrated structure, a three- to even-story horizontal mass with high-rise vertical elements rising ut of it at strategic intervals." The first increment of construction, nown here, is Connecticut Square. The square is conceived as both n indoor and outdoor space surrounded by a series of intercon- ected buildings housing the General Assembly, offices for the gov- rnor and other elected officials, and executive branch offices.

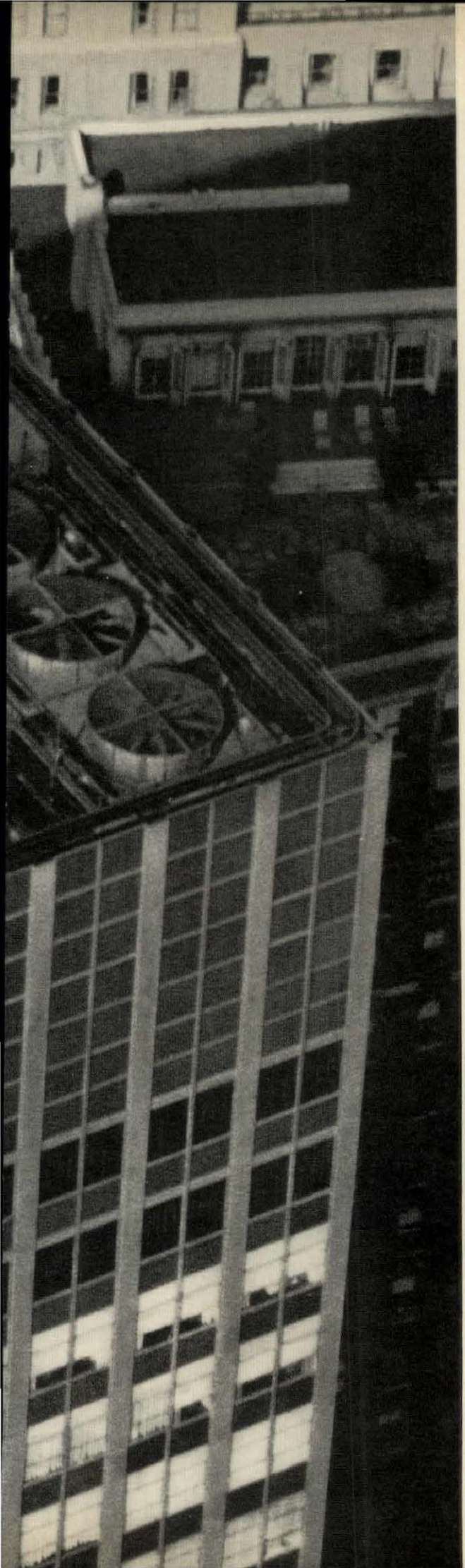
First increment of complex includes General Assembly facilities.

Existing Capitol, left, would be connected to complex by walkways.



Enclosed walkways would connect new increments of construction.





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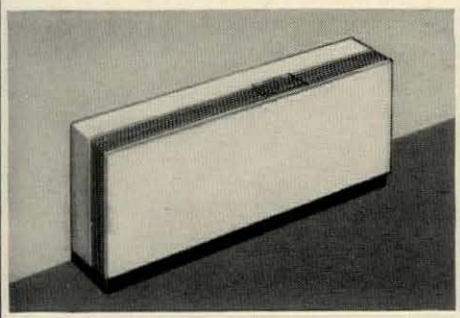

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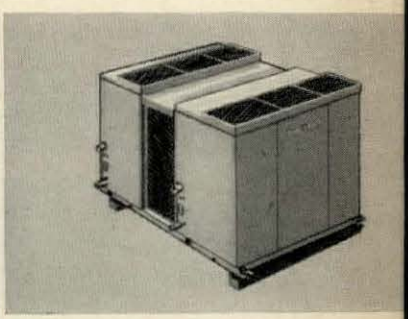

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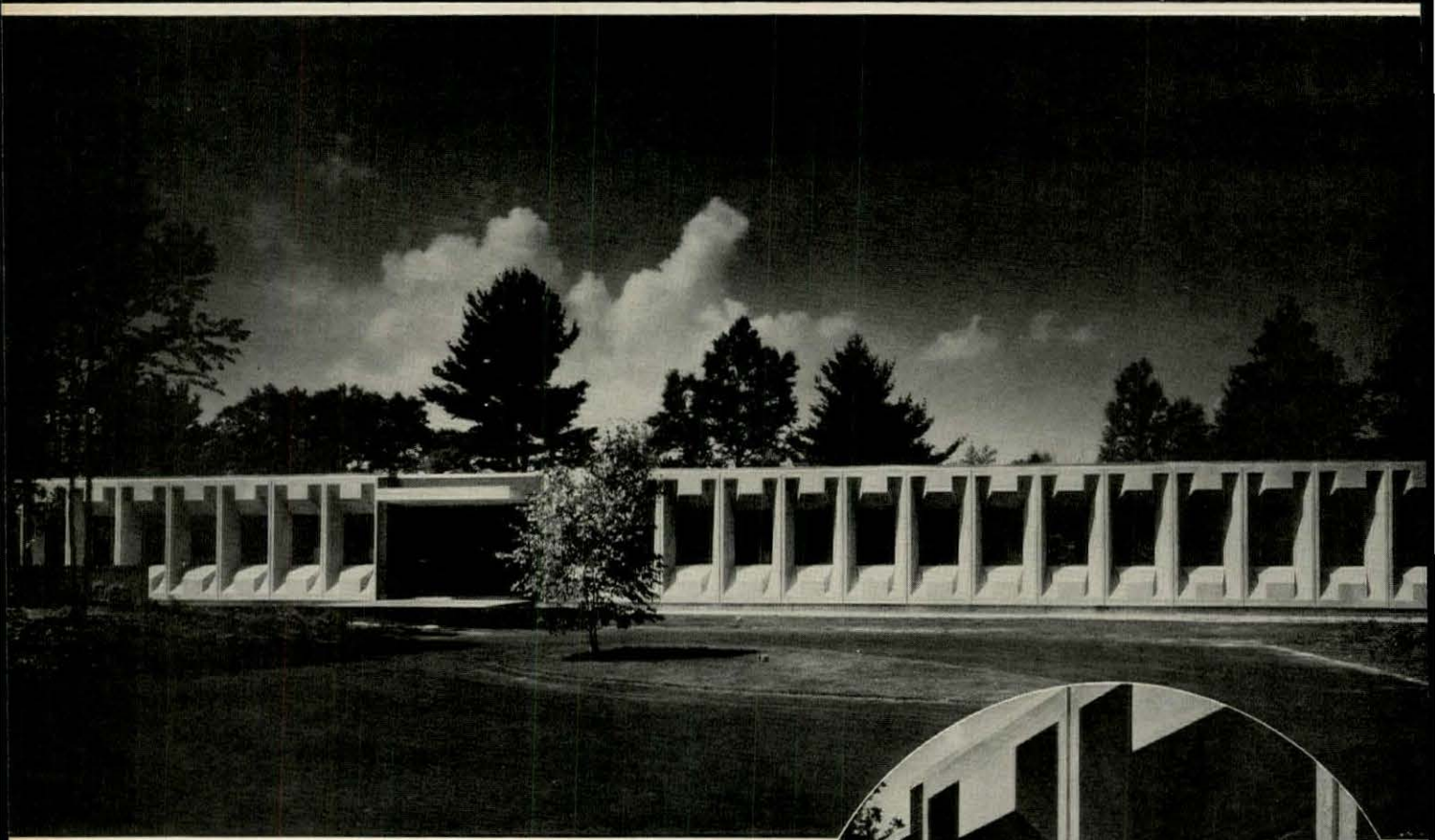

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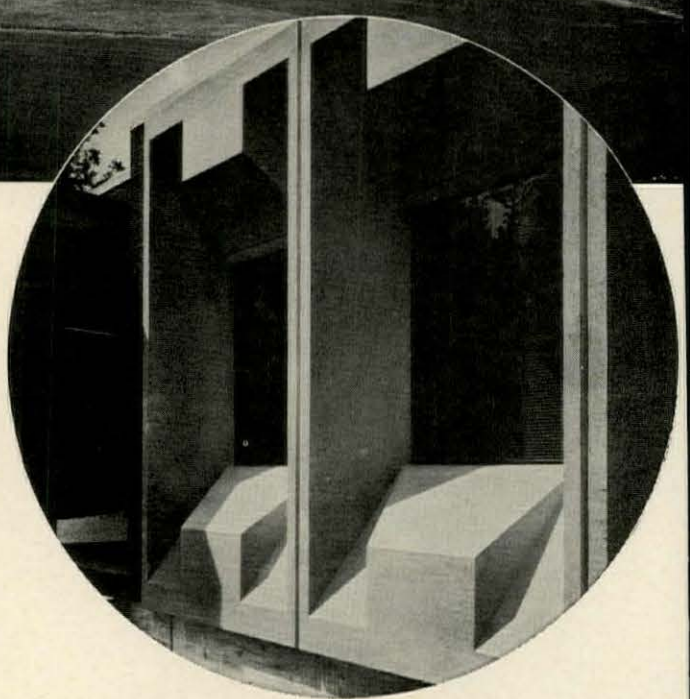

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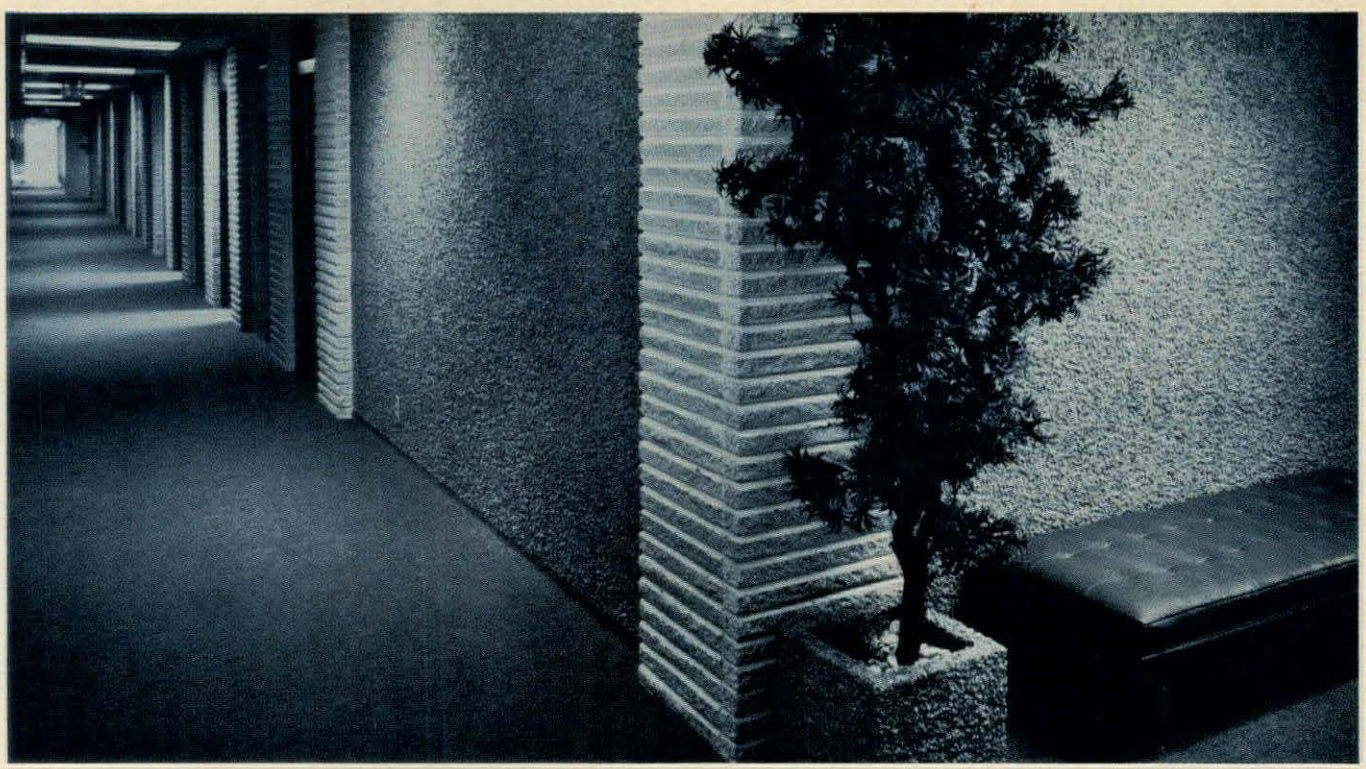

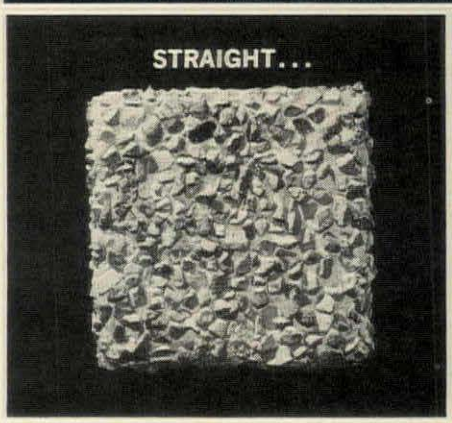

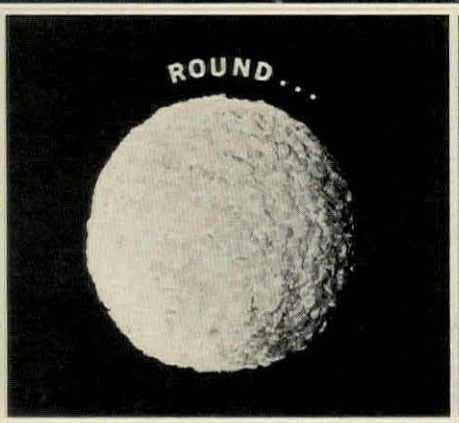

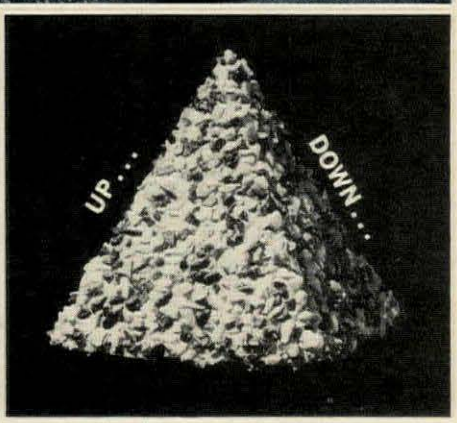

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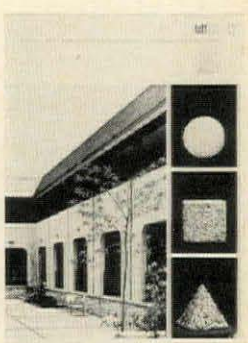

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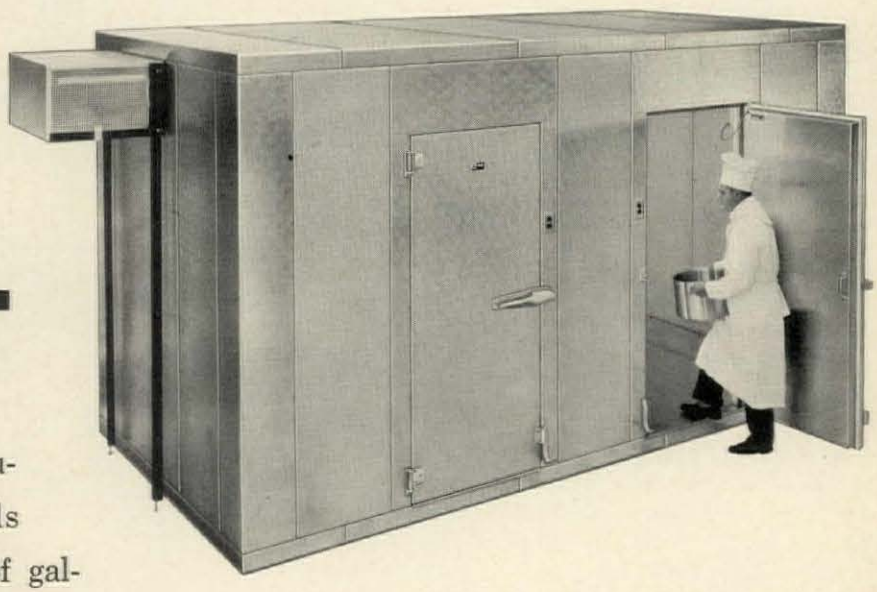

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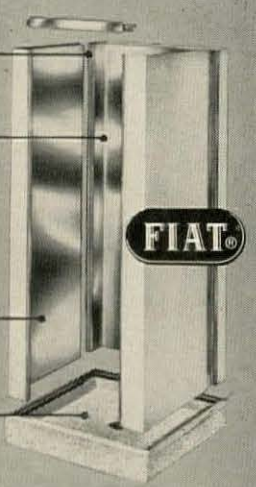

Three factory fabricated panels, plus headrail, complete the cabinet. Cuts installed cost. Combines with Dressing Enclosures, singly or in battery.

See Sweet's 26c/Fi or write for literature.

FIAT PRODUCTS DEPARTMENT
CYANAMID
MICHAEL COURT, PLAINVIEW, L. I., NEW YORK 11803

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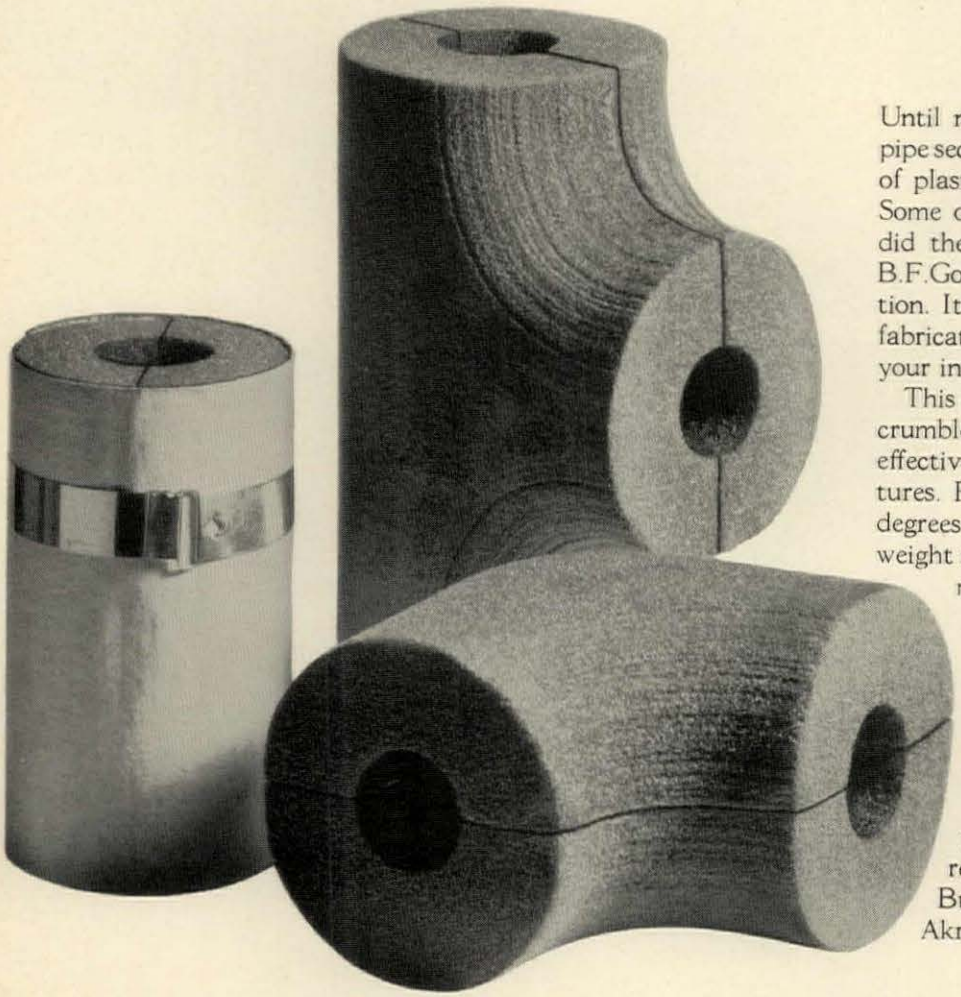
At last. A great way to cover up a fat, funny shape.



Until now, large-size, irregularly-shaped pipe sections were insulated with a variety of plastic foams. Some of them burned. Some of them crumbled. None of them did the whole job. Then we developed B.F.Goodrich Rigid Vinyl Foam insulation. It's an expanded PVC foam that's fabricated into finished shapes. Any shape your installation calls for.

This new insulation won't burn. Won't crumble. Resists chemical action. And it's effective over a wide range of temperatures. From minus 40 degrees F. to 200 degrees. Add to this a high strength-to-weight ratio and a low water vapor transmission rate, and what've you got? The perfect cover-up for pipe.

BFG Rigid Vinyl Foam pipe insulation is available in a wide range of thicknesses to suit your requirements. There's one just right for your pipe. No matter what shape it's in. We'd like to tell you more. Call your local BFG representative or write B.F.Goodrich Building Products, Dept. RE-20, Akron, Ohio 44318.

B.F.Goodrich
Rigid Vinyl Foam

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KALCOLOR was the first system to create architectural aluminum in a range of lightfast colors by using special alloys and a unique anodizing process. New advances continue to make KALCOLOR the most reliable system you can specify. Details? Ask our local sales office or 2137 Kaiser Center, Oakland, California 94604.

KAISER ALUMINUM

Durable Densylon®

works where tile wouldn't and carpet couldn't.

There's nothing like Densylon* for schools and colleges. Nothing that gives the hush, the cushioning, the atmosphere of carpet plus the hard wear of hard flooring. Nothing so conducive to concentration, student decorum, staff comfort. Nothing that so upgrades and updates the academic image. And for the lowest maintenance costs of any flooring material in the world — tile or carpet.

Now, in a full range of patterns. Even we can't improve the performance of our heavy-duty, heavy-traffic wonder. So, we made it in great new patterns and textures—especially designed for schools—to disguise even more any show of traffic. All at the same old price of our familiar Densylon tweeds.

Out-performs tile and carpet

Don't confuse Densylon with ordinary commercial carpeting. Densylon is unique. Especially engineered for student activities, it won't buckle, ripple, crush, pill, fuzz, lint, stain. Nowhere. No how.

Let the buyer beware

Densylon is difficult to make. Few even attempt it, though they may try to imitate its look. If you see a look-alike, look closer. And ask questions.

Ask about the fiber. Densylon's is exclusive. Round, dense, solid, continuous filament nylon, specially engineered to be the toughest, densest, soil- and stain-resistant fiber in the world.

Ask about the weave. Densylon's is exclusive. Twice as dense and tight as anything in the industry. A low, tough, compact surface, impervious to dirt, grime, spills, wear and tear.

Ask about the backing. Densylon's is exclusive. Super-tough, strong as steel. And it can't mildew. Or rot.

Ask about the cushioning. Densylon's is a thick, acoustical, resilient slab of B. F. Goodrich sponge rubber. Perma-Bonded® to Densylon's tough surface and guaranteed for life.

Finally, ask about the selection. Densylon is the one that comes in a full range of superb patterns, textures, and tweeds. At no extra cost!

Don't get us wrong. There's nothing wrong with commercial carpeting. We're the largest exclusive manufacturer of it ourselves. We have created Modu/Floors® to handle every kind of carpet need — in every kind of fiber, every type of construction; for every type of job. It's great for low to medium-high traffic jobs. But not in place of hard flooring. For that, you need Densylon.

See Densylon in action

Only CCC makes Densylon. And only Densylon has replaced hard flooring in hundreds of installations throughout the country... in hundreds of schools and colleges near *you*. This is not something you have to judge from a swatch. Let our man show you Densylon, installed, at work. See for yourself what Densylon does for schools. How it soaks up the sound of dropped objects, shuffling feet, reverberating voices. Yet how clearly teacher's voice carries to the back of the room. How it reduces skids and falls. How easily spills sponge off. How it cuts maintenance bills. Fuel bills. Breakage bills. Insurance bills.

Send coupon now. You have to see Densylon to believe it.

This is a photo of our Densylon installation at the G.E. Pavilion at the World's Fair, exactly as we yanked it off the floor. G.E. clocked it out at 15,697,000. 15,697,000 of everything from high spike heels to cowboy boots. 15,697,000 assorted strollers, baby carriages, tramped-on hot dogs, mustard, ice cream cones, Cokes, candy, popcorn, chewing gum. Downhill yet! It does need a washing. Otherwise, you could put it down on your floors now!

*CCC's trademark for its sponge-bonded, high-density nylon carpet

CCC
10 West 33rd Street
New York, New York 10001 Dept. AR-4

Attention: Mr. Walter Brooks

☐ Please have a CCC Field Engineer show me Densylon in action.
☐ Please send portfolio "Densylon for Schools and Colleges."
☐ Please send information on Modu/Floors.

Name_____

Title_____ Phone_____

Organization_____

Address_____

City_____ State_____ Zip_____

manufactured by
Densylon/CCC

Commercial Carpet Corporation offices in principal cities—(Los Angeles, San Francisco, **Pacific Commercial Carpet Corporation).**

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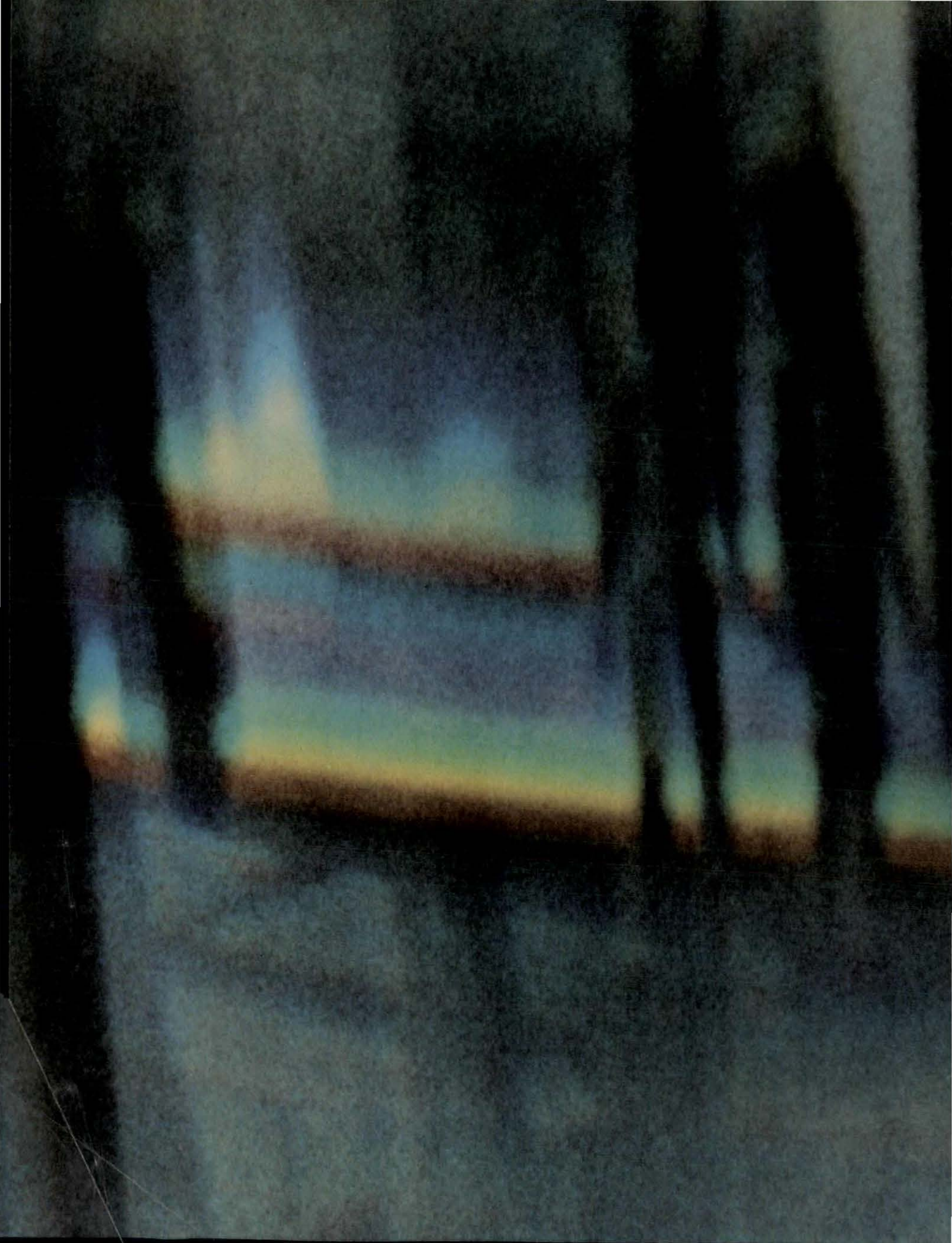

To see new ways for a building to say "welcome" to people through colors and forms and textures—this is the idea of KALCOLOR® aluminum. At Kaiser Aluminum, the idea is ideas.

5 ways to cool it

NEW SEMI-RECESSED

Cooler or fountain. Refrigeration package available separately in 8 or 12 gph capacity to serve from 96 to 144 people per hour. Order complete water cooler, or fountain and add cooling unit later. Good-looking design in Mocha Linen textured vinyl finish (shown), Desert Mist enamel or stainless steel.

FLOOR-MOUNTED FLUSH-TO-WALL

Exclusive trapezoid shape invites access from either side, or front, saving over a foot of aisle space. Seven models serve from 73 to 180 office workers per hour. Hot water accessory available.

WALL-MOUNTED SPACE-SAVER

At standard height, leaves floor clear for easy cleaning. Or unit may be mounted at floor level for children. Stylish decor, serves 73 to 180 office workers per hour. Hot water accessory available for instant hot beverages.

FREE-STANDING WATER COOLER

Streamlined, handsome appearance complements any location. Suitable for office or industrial applications—6 models serve from 48 to 240 people. Dual hand and full-width foot controls are standard on most models.

COMPACT WATER COOLER

Cool refreshment for small offices. Serves up to 36 people; requires just one square foot of floor space. Adjustable temperature control, automatic stream height regulator.

Progress Is Our Most Important Product

GENERAL ELECTRIC

FREE EIGHT-PAGE BULLETIN with attractive full color illustrations, plus all the technical data. Send for it! Simply clip out the coupon below before you turn the page.

Please send me your full line water cooler bulletin 67-1036.

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Chicago Heights, Illinois 60411

Name_____

Firm_____

Address_____

City_____ State_____ Zip_____

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General Contractor: Carl M. Geupel Construction Co. Inc.
Design: Geupel Architects, Inc., Indianapolis

How to cover eight acres economically and quickly

For the 345,000 square feet of fire-safe roof required for its new plant in Indianapolis, Bryant Manufacturing Company used Laclede Open Web Steel Joists.

Lightweight, high-strength Laclede joists are easy to handle and place. They go up quickly, without wasted time. Roofing crews can move in fast to finish the job. It's easier to meet or beat start-up schedules.

Specify Laclede joists in any length you need. They fit into all design plans, commercial or industrial, high-rise, low-rise or anywhere in between. And, of course, they're made to the standards and specifications of the Steel Joist Institute. 6649

LACLEDE STEEL COMPANY

St. Louis, Missouri 63101

Producers of Quality Steel for Industry and Construction

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Specify Beauty

MONOSAIC SEAMLESS FLOORING

See our Catalog in Sweet's Architectural File (11e/Ma)
Industrial Construction File (10d/Ma)
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Elegant . . . glossy . . . 3-dimensional . . . and offering you the opportunity for an infinite range of custom-blended colors . . . soft or brilliant.

MONOSAIC is seamless flooring at its finest. It's resilient, flexible, comfortable and quiet to walk on, yet highly resistant to heel and furniture indentation. It's the easiest-of-all floors to maintain. Common stains, acids and alkalis don't affect it. Dirt and germs can't penetrate. *It almost never needs waxing!*

You'll also like the low cost of MONOSAIC, and the fact that it will be installed by the industry's best-trained applicators.

You can specify MONOSAIC Seamless Flooring practically anywhere. It's ideal for homes . . . a favorite for institutions . . . a big cost-saver for commercial buildings.

Your local MONOSAIC representative will be pleased to show you local installations, samples or to quote. Call him *today* . . . or write

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MANKATO, MINNESOTA 56001 • PHONE (507) 387-3149
Experienced Applicators Throughout the Nation

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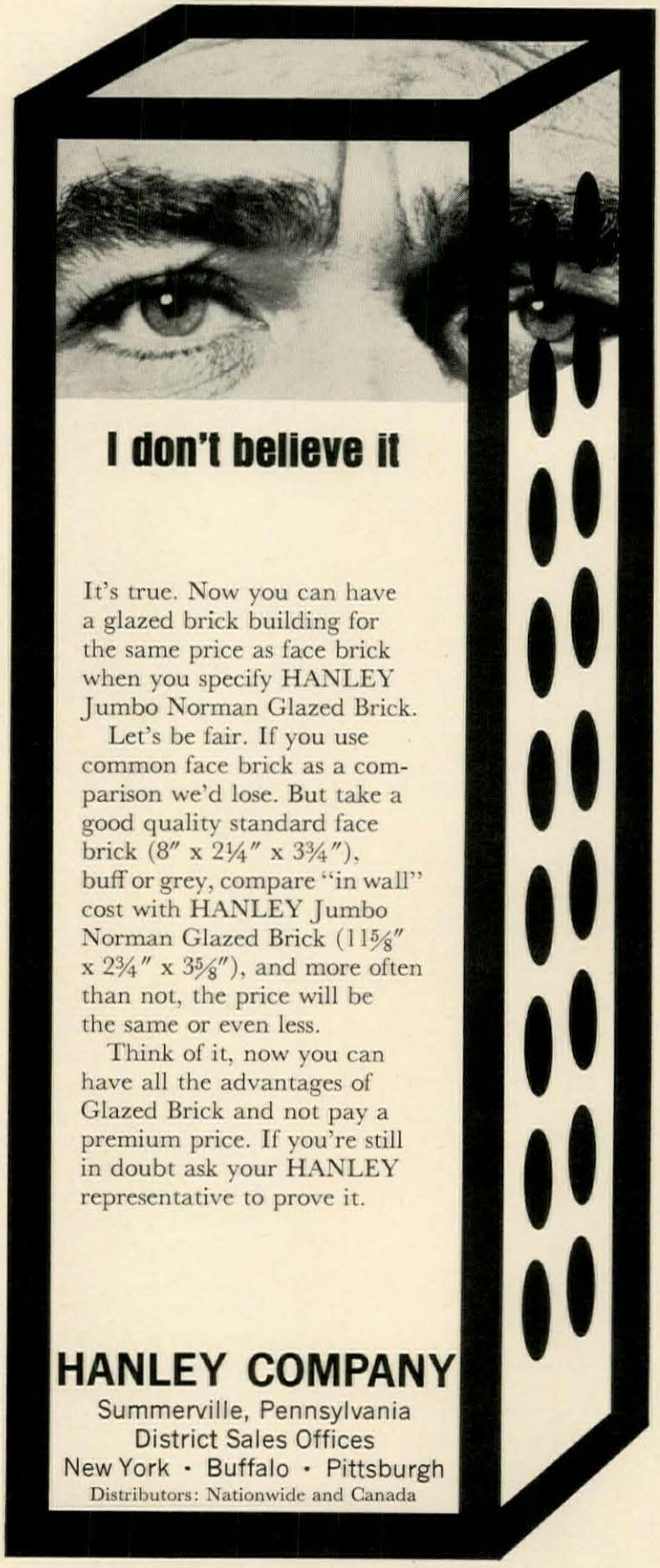
Glazed Brick for the price of Face Brick



I don't believe it

It's true. Now you can have a glazed brick building for the same price as face brick when you specify HANLEY Jumbo Norman Glazed Brick.

Let's be fair. If you use common face brick as a comparison we'd lose. But take a good quality standard face brick (8″ x 2¼″ x 3¾″), buff or grey, compare "in wall" cost with HANLEY Jumbo Norman Glazed Brick (11⅝″ x 2¾″ x 3⅝″), and more often than not, the price will be the same or even less.

Think of it, now you can have all the advantages of Glazed Brick and not pay a premium price. If you're still in doubt ask your HANLEY representative to prove it.

HANLEY COMPANY
Summerville, Pennsylvania
District Sales Offices
New York · Buffalo · Pittsburgh
Distributors: Nationwide and Canada

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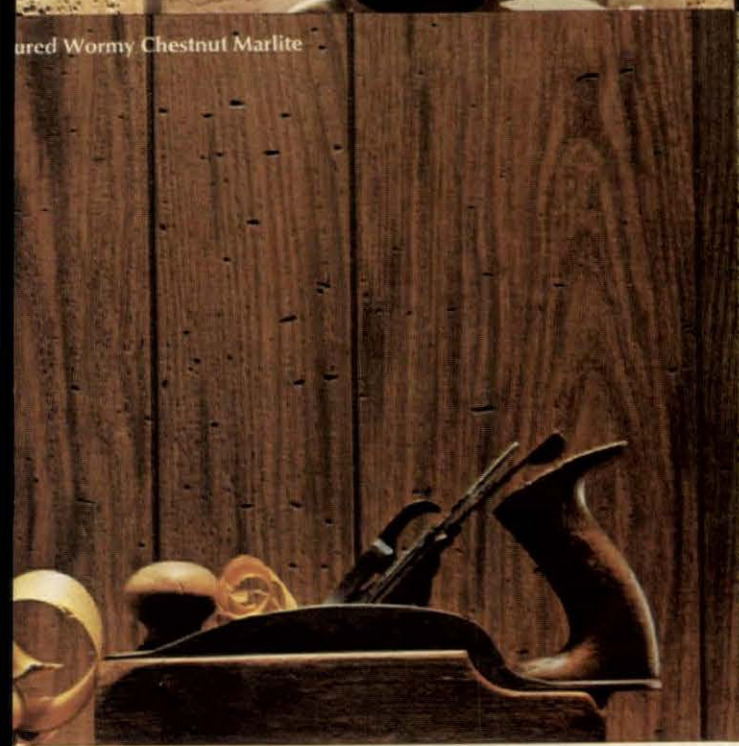
ured Travertine Marlite

Textured Leather Marlite



ured Wormy Chestnut Marlite

Textured Tapestry Marlite

6648

Want soilproof walls with beautiful texture?

Marlite has the touch.

Marlite Paneling goes up fast, cuts wall installation costs.

One touch tells you. Here is a building product with unlimited possibilities.

It's new Textured Marlite. A complete line of wall paneling with texture you can actually feel. And soilproof beauty you can wash.

These four distinctive designs add a new dimension to any interior. Textured Wormy Chestnut captures every surface detail of a rare and expensive wood. Textured Travertine duplicates a rich Italian limestone. Textured Leather: the masculine good looks of top-grain cowhide. And Textured Tapestry: the luxury of hand-woven fabrics.

All are exclusively Marlite, with a baked plastic finish that wipes clean with a damp cloth. Marlite is fast and easy to install—stays like new for years.

Add the beautiful touch of Marlite Textured Paneling to your next home or business interior. Consult Sweet's File or write Marlite Division of Masonite Corporation, Dover, Ohio 44622.

Marlite®
PLASTIC-FINISHED
Decorator Paneling
ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

RLITE BRANCH OFFICES AND WAREHOUSES: 1721 Marietta Blvd. N.W., Atlanta, Georgia 30318 • 57 Smith Place, Cambridge, Mass. 02138 • 4545 James Place, Melrose Park, Illinois 60160 • 39 Windsor Avenue, Mineola, L.I. (New York) 01 • 777 139th Avenue, San Leandro, California 94578 • 16222 Phoebe Ave., LaMirada (Los Angeles), Cal. 90638 • 2440 Sixth Avenue So., Seattle, Washington 98134 • 1199 Great Southwest Parkway, Grand Prairie (Dallas), Texas 75050

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Only FLOATING FLOORS systems have 100% free underfloor access

and these 14 other advantages for computer rooms.

1. Greater strength—.080" deflection under 1,000 lb. load.
2. Unique design eliminates stringer interference.
3. Precision-made to .005" tolerance.
4. Self-grounding—no mechanical devices needed.
5. Positive locking pedestal head assures stability.
6. All panels completely interchangeable.
7. Fireproof—all metal.
8. Plastic edge recessed into panel—eliminates overhang.
9. Easy to install.
10. Choice of two panel sizes —18¼" or 24".
11. One-piece tile covering, if desired.
12. 10-year guarantee on availability of replacement parts.
13. Local distribution assures reliable service.
14. Available throughout the world.

Floating Floors, Inc. is part of the worldwide National Lead Company, a leader in metals and metal products for the past 75 years.

We invite you to compare Floating Floors raised flooring with all others. For further information on Floating Floors write today for detailed brochure.

FLOATING FLOORS is a trademark of Floating Floors, Inc., 111 Broadway, New York, N.Y. 10006, for raised flooring systems.

FLOATING FLOORS
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ESIDEN

Want your name remembered? Set your client's in metal!

Architects and Decorators: Now that you've made "beautiful music"... building and interior, client and you, all in harmony... how about the **words?**

They might be mundane words: **Purchasing, Personnel, Production,** even **Please Enter.** They might be the most important words in the world. Like: **The Widget Company.** And: **Office of the President.** But how they look is up to you.

Knight will cast your letters in solid bronze, brass or aluminum. With anodized, polished or satin finish. To your design, or from our huge variety of styles. Cost, about the same as painted letters. But these will **last!**

And you'll be remembered, with appreciation. First step: Get Knight's FREE CATALOG, now.

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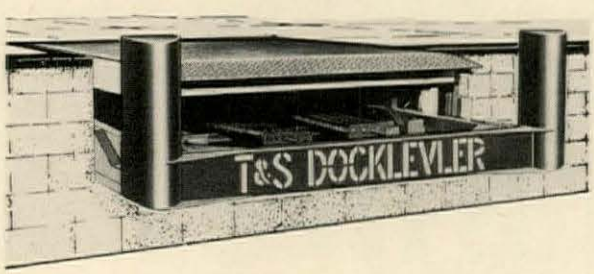
THE QUALITY STANDARD OF THE INDUSTRY FOR OVER 12 YEARS



The quality, the durability, the maintenance free operation . . . that's how the T & S Docklevler **actually saves money** at your shipping/receiving docks.

18 different automatic truck actuated, 12 electric-hydraulic models to solve your varied docking problems . . . All with exclusive T & S safety features.

Look to the best . . .

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For more data, circle 67 on inquiry car

When your design demands flexible styling... specify Eljer.

Eljer offers freedom of design on the drawing board.

Included in Eljer's complete line of fixtures are versatile products such as the high-style Brenda lavatory, which will fit into a counter space as small as 18 inches. Or the Triangle toilet, whose corner fit automatically provides up to 50 sq. inches of additional usable space.

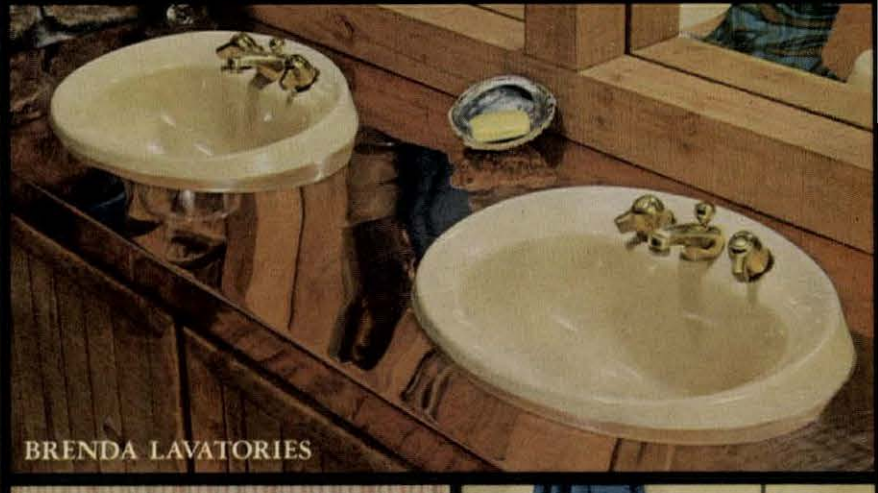
Other unique fixtures include the floor-mounted Orlando toilet with its wall outlet and the distinctive, award-winning Barcelona bidet.

Eljer's full-line availability, in white or pastels, assures your client on-schedule delivery.

For all the facts, call your Eljer representative. Or write: Eljer, Dept. AR7, P.O. Box 836, Pittsburgh, Pennsylvania 15230.

MASTER CRAFTED ELJER® SINCE 1904 FINE PLUMBING FIXTURES

TRIANGLE TOILET



BRENDA LAVATORIES

ORLANDO TOILET

BARCELONA BIDET

Eljer Plumbingware Division, Wallace-Murray Corporation

ONE OF A KIND

a new weapon against illegal entry

Every Sargent Maximum Security lockset is an original. Neither the key nor the lock cylinder is ever used again except by the rightful owner. Every installation is proprietary.

The key that operates this lock can't be copied at the corner store. The lock cylinder is highly pick-resistant. For the full details, see your Sargent distributor, or write: Sargent & Company, 100 Sargent Drive, New Haven, Conn. 06509
Peterborough, Ontario • Member Producers' Council

SARGENT® MAXIMUM SECURITY SYSTEM

PART OF A COMPLETE LINE OF ADVANCED ARCHITECTURAL HARDWARE

(Pat's. applied for)

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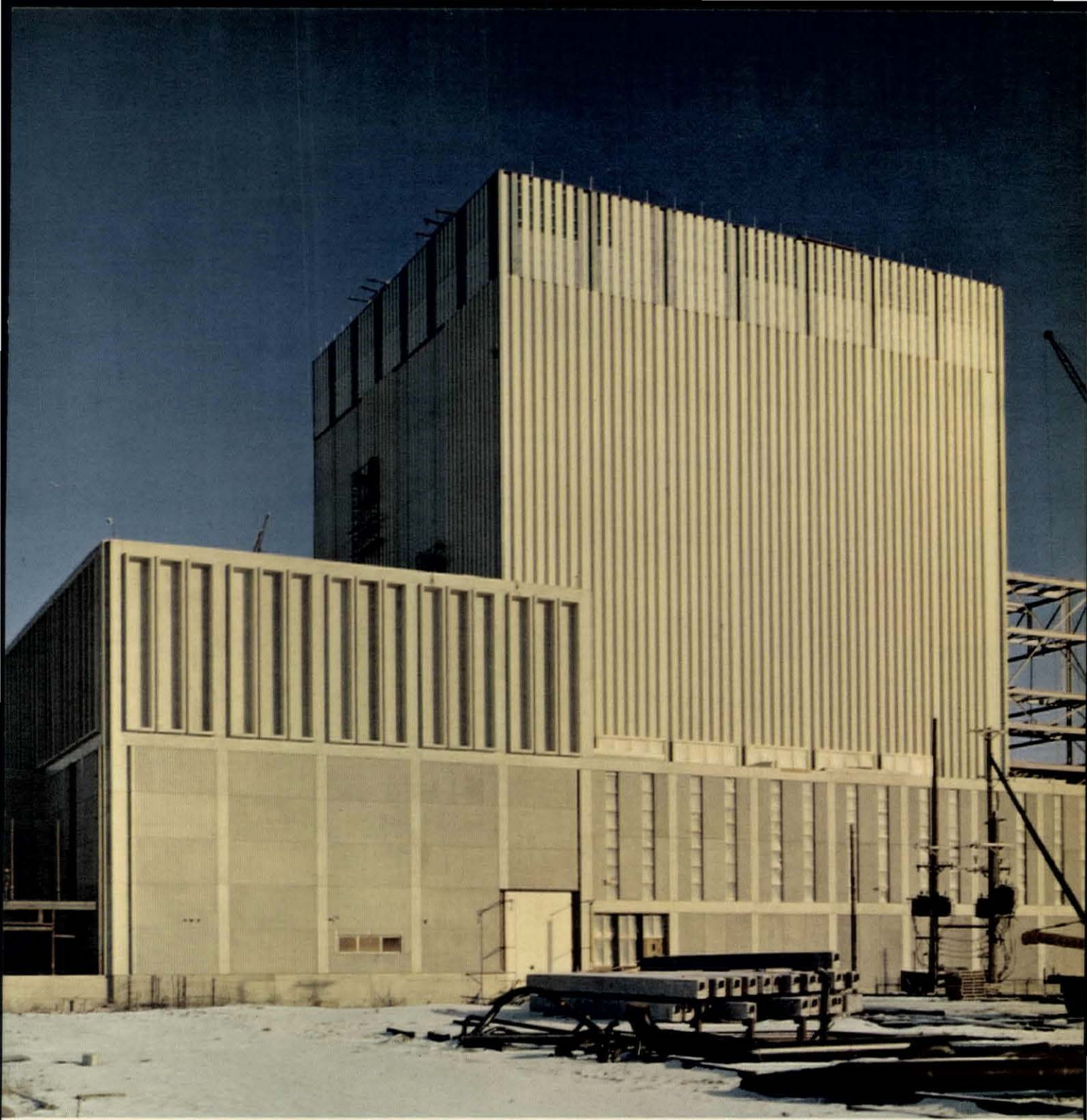

Northern States Power Company, Oak Park Heights, Minnesota

FLUROPON® By DeSoto

The Long-Life Architectural Metal Finish...a breakthrough in exterior metal surface protection with colorful fluorocarbon coatings.

DeSoto Chemical Coatings, Inc.
1700 S. Mt. Prospect Road, Des Plaines, Illinois 60018

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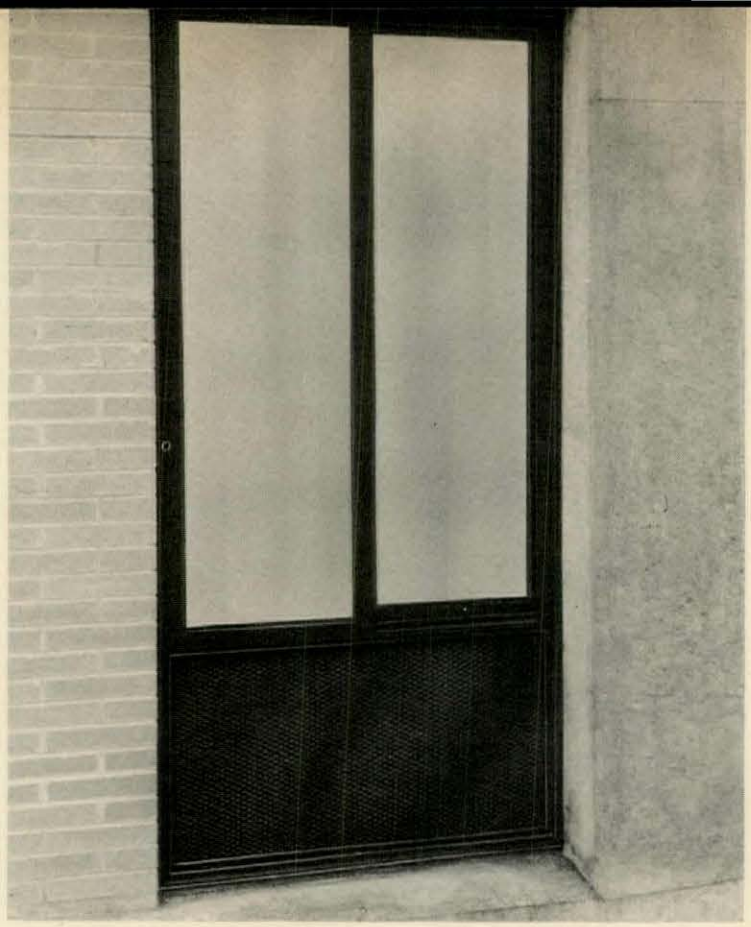
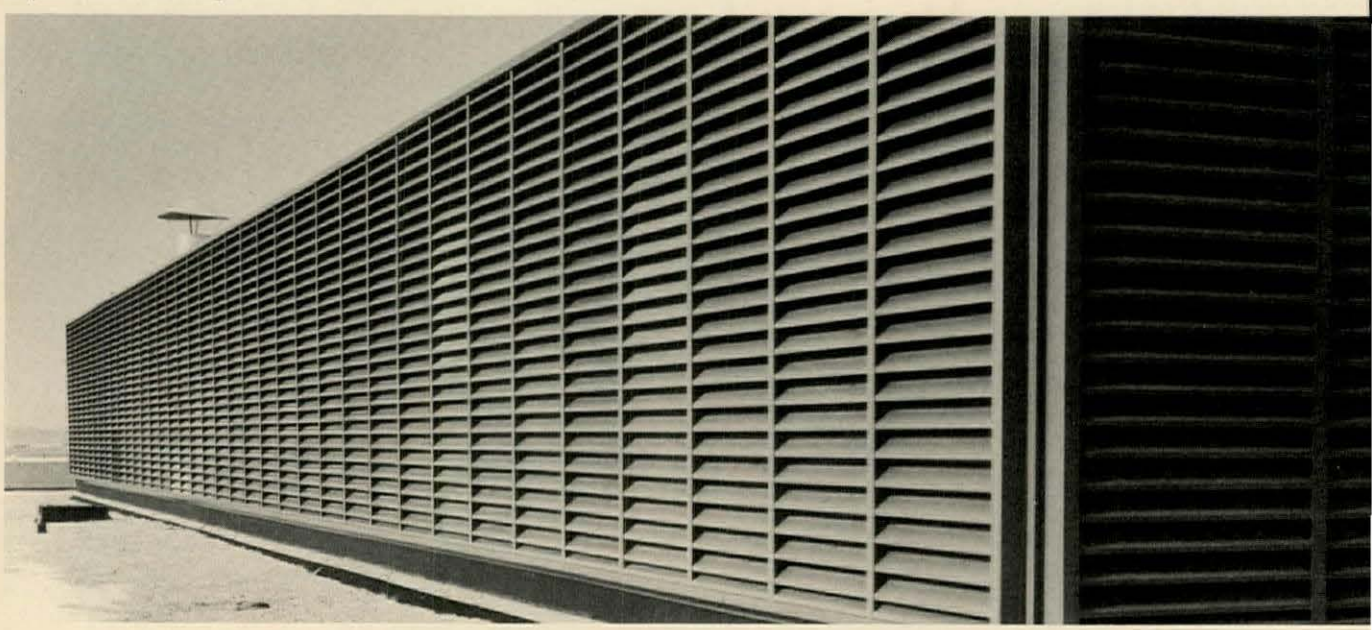


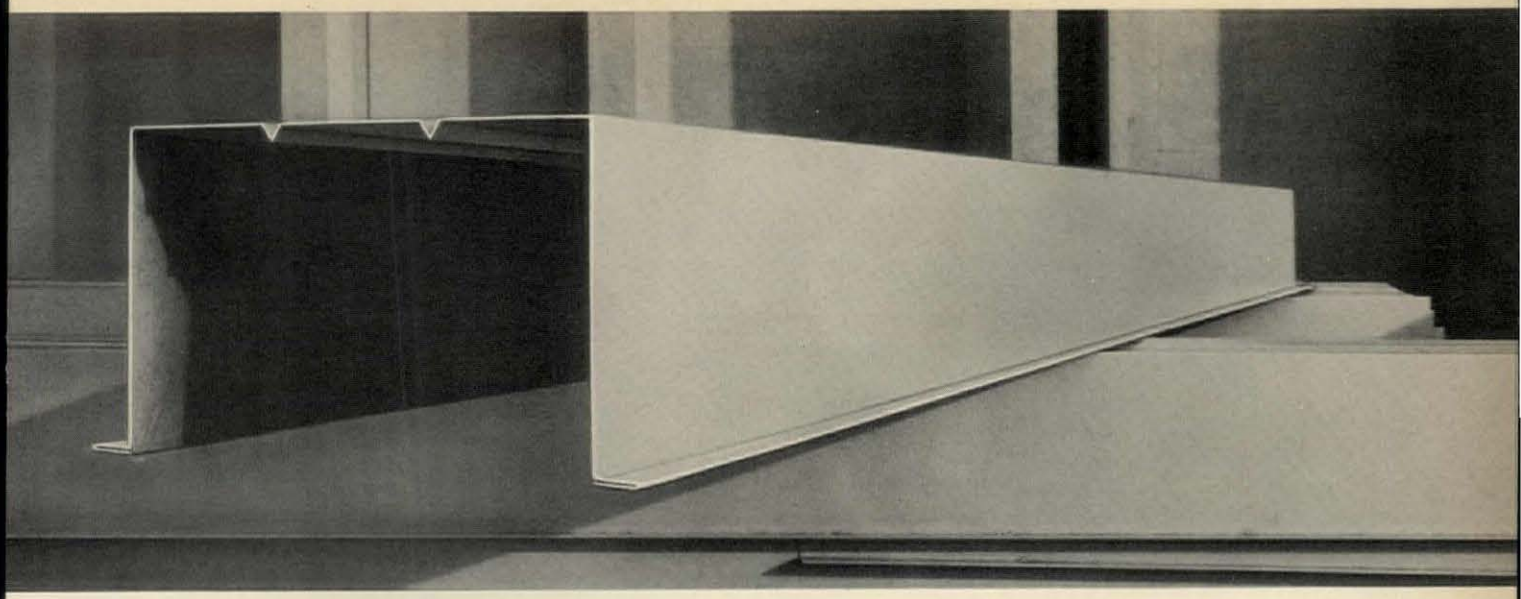
Window wall for an apartment or commercial building. Fluropon adds the dimension of long-lasting color to exterior designs. Roll coated or sprayed onto metal, Fluropon won't chip, shatter or delaminate.

Widen your design horizon with FLUROPON

Now . . . a wider scope of design flexibility in long-life colors is available with Fluropon. Create aesthetically imposing structures and protect their beauty for 20 years—and longer—with Fluropon. Only Fluropon provides a unique combination of beauty, durability and economy.

Louvers on air conditioning cooling tower stay beautiful.
Fluropon offers excellent chemical and solvent resistance, cleans like china, is impervious to detergents.





Unusual panel designs are possible with Fluropon. This newly developed fluorocarbon fusion system eliminates most problems of previous metal finishes. Has excellent resistance to most chemically corrosive atmospheres. Fluropon—for exterior metal beauty.

SPECIFICATIONS:

All exposed exterior metal (aluminum and/or HDG steel)—including panels, spandrels, columns, supports, mullions, leaders, facias, copings, louvers, battens, screens, flashing, jambs, sills, fenestration and hardware as applicable and as detailed—shall be chemically cleaned, pre-treated (primed in the case of HDG steel) and coated with Fluropon as manufactured by DeSoto Chemical Coatings, Inc. Fluropon must be applied by an experienced processor in accordance with Fluropon fusion process instructions printed by the manufacturer. Colors as selected by the architect. (Long-form specifications available on request).

Fluropon coated aluminum or hot dipped galvanized steel panels, louvers and window wall components are commercially available from:

BUILDINGS & BUILDING PANELS

Aluminum Company of America
Alply Products Division
1501 Alcoa Building
Pittsburgh, Pennsylvania 15219

Aluminum Company of Canada, Limited
P. O. Box 6090, Montreal 3, Quebec, Canada

The Binkley Company
Building Products Division
P. O. Box 70, Warrenton, Missouri

Inland Steel Products Co.
P. O. Box 393, Milwaukee, Wisconsin 53201

Kaiser Aluminum & Chemical Sales, Inc.
300 Lakeside Drive, Oakland, California

The R. C. Mahon Co.
Building Products Division
6565 East Eight Mile Road, Warren, Michigan 48091

Pasco Steel
1301 Lexington Avenue, Pomona, California 91766

Plasteel Products Corporation
McAdams Avenue, Washington, Pennsylvania

Rheem Dudley Buildings
A Division of Rheem Manufacturing Co.
14001 South Garfield Avenue, Paramount, California

H. H. Robertson Company
Architectural Products Division
Pittsburgh, Pennsylvania

Elwin G. Smith & Company, Inc.
100 Walls Street, Pittsburgh, Pennsylvania 15202

Soulé Steel Company
1750 Army Street, San Francisco, California 94119

Stran-Steel Corporation
P. O. Box 14205, Houston, Texas 77021

Walcon Corporation
4375 2nd Street, Ecorse 29, Detroit, Michigan

George D. Widman, Inc.
17823 Evelyn Avenue, Gardena, California 90247

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Construction Specialties
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725 Twin Oaks Valley Road, San Marcos, California
895 Thermal Road, Port Credit, Toronto, Canada

O. O. McKinley Company, Inc.
P. O. Box 55265, Indianapolis, Indiana 46205

Metal Trim, Inc.
Box 632, Jackson, Mississippi

Porce-Len Incorporated
31 Haig Street, Hamden, Connecticut 06514

CONTACT YOUR FLUROPON REPRESENTATIVE AT DESOTO CHEMICAL COATINGS, INC., OFFICES:

D. D. Wilkes
8600 River Road, Pennsauken, New Jersey 08110
Area Code: 609-665-6700

G. F. Bowes
1034 S. Kostner Avenue, Chicago, Illinois 60624
Area Code: 312-632-3700

R. D. Cox
Fourth & Cedar Streets, Berkeley, California 94710
Area Code: 415-526-1525

R. J. Rohr
Forest Lane and Shiloh Road, Garland, Texas 75041
Area Code: 214-276-5181

DeSoto Chemical Coatings, Inc.
1700 S. Mt. Prospect Road, Des Plaines, Illinois 60018

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Can a tight budget make enough room for taste?

Now it can. New Videne Total Wall Decor System covers everything beautifully within your budget.

The VIDENE Total Wall Decor System includes paneling, molding, and architectural grade doors—the plastic-surfaced doors that can be fit and morticed on the job. With VIDENE you get all the beauty of fine woods. Less than half the cost. Many times the abuse resistance. VIDENE won't crack, chip, peel or fade—is highly stain-resistant.

Order the system or its separate parts. Mix or match. There's a wide selection of 16 authentically textured woodgrains and 34 exciting decorator colors. No premium for solid colors.

VIDENE surface is available on a variety of base materials for store fixtures and decorative displays. Specify VIDENE f new construction or remodeling. For commercial building shopping centers, stores. Wherever you need durability as well drama. To learn more about the budget-priced beauty of VIDEN write: VIDENE Division, The Goodyear Tire & Rubber Co pany, Akron, Ohio 44316.

VIDENE by GOODYEAR

Videne—T. M. for panels, doors, molding, film, The Goodyear Tire & Rubber Company, Akron, Ohio

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The world's biggest client needs professional briefing

Both houses of Congress and every Federal department and agency involved in construction, either directly or through massive and multiplying support programs, will be called upon this year for judgments affecting basic concepts of the way in which architectural and engineering professions practice.

Several bills affecting the professions have already been referred to various committees of both Houses. So-called "systems engineering bills" (S.430, H.R. 20, and S.467) seek to mobilize technical manpower to apply systems analysis in solving a wide range of problems, including pollution, transportation, housing and land usage. Consideration of these bills will require the utmost, tactful guidance from the involved professions in the implications of the terms at issue.

An Intergovernmental Cooperation Act (S.698 and H.R.5524) proposes to improve operation of grants-in-aid programs by periodic review and, further, "to permit provision of reimbursable technical services to State and local governments." It is the latter provision that has prompted both the American Institute of Architects and the Consulting Engineers Council to urge Congressmen to remove competitive implications of the Act whereby Federal agencies with in-house professional capabilities could offer services competing with private architectural-engineering firms.

There are many other bills concerning highways, water resources, clean air and grants-in-aid for the support of various adjuncts of housing and urban renewal programs about which the professional organizations keep themselves informed and individual members are urged to make their positions known to legislators.

But the most sensitive and contentious area in which Congress will need guidance deals not with current bills in committee but with possible revisions and interpretations of existing statutes affecting the fee structure and selection processes applicable to architect-engineer contracts with Federal agencies.

GAO sees existing law as forcing 6 per cent maximum fees to be bid as part of architect-engineer proposals

At press time, it was virtually certain that Congress would soon be urged by the General Accounting Office to reexamine the compensation rules by which the Federal Government commissions the professional services of architects and engineers. GAO, in preparing a report to Congress at the request of Senate and House Committees on Science and Astronautics, could find no way in existing law to avoid the conclusion that architectural-engineering firms should include their estimated fees (within the 6 percent limit) as part of the negotiation process with Federal contracting officers prior to final selection of the design firm.

A.I.A., C.E.C. and other professional societies have vigorously protested this conclusion as contrary to professional ethics. A.I.A.'s Standards of Professional Practice specifically state: "An architect shall not enter into competitive bidding against another architect on the basis of compensation."

GAO was well aware of the architects' and engineers' professional codes that ban competitive bidding. However, GAO discovered a legal opinion (drawn for the American Institute of Certified Public Accountants) that declared such codes to be violations of antitrust law—professional restraint of bidding, even if never enforced, is restraint of trade.

Presence of the private opinion, although not expected to be spelled out in GAO's report, presented the watchdog agency with a dilemma of legalism in confrontation with the rule in the professional societies' codes of ethics.

Initially, GAO's study was welcomed as a chance to scrap the 6 per cent limit, which was first enacted in 1939 and has never been changed. GAO agrees that the 6 per cent limit ought to be wiped out; it bears no relationship to the amount or quality of professional services rendered. In doing so, however, GAO feels constrained to suggest some means of assuring the government that the price is right.

One method would be an adaptation of the so-called "Truth-in-Negotiation" Act (Public Law 87-653) whereby the selected A-E firm negotiates a fee based on some sort of defined expenses. This estimate of man-hours and materials is then checked against a post-completion audit; by this method the fee can be revised downward—it's never raised, according to GAO spokesmen.

Comptroller Staats explains position in talk to consulting engineers

Some idea of the degree of GAO's dilemma—and perhaps some hope for the meeting of reasonable and informed

ARCHITECTURAL BUSINESS THIS MONTH

minds—may be found in the following selections from the remarks of Elmer B. Staats, Comptroller General of the United States before the Legislative Conference of the Consulting Engineers Council of America on March 7, while the GAO report was still under review.

"The Congressional request for our study resulted from a rather recent audit we had made of an architect-engineer contract negotiated by the National Aeronautics and Space Administration. We found in that case that the fee payable to the architect-engineer substantially exceeded the statutory 6 per cent fee limitation applicable to the contract. Our report on this review generated a request to the (Congressional) committees by the National Aeronautics and Space Administration for legislative relief from the statutory fee limitation. Since the committees believed that it would not be proper to extend relief to NASA without regard to the similar problems faced by the other construction agencies, the committees deferred action on NASA's request pending the results of our Government-wide review. . . .

"I must admit that our interpretation of these statutes, if implemented and enforced by the Federal construction agencies, might seriously curtail the extent of architect-engineer services which may be contracted for by the Government within the limitation. For that reason and in view of the Congressional direction to us to review, report, and recommend, we are not insisting upon adherence to our views on this point pending consideration by the Congress of the problems presented. . . .

"I think we can all agree . . . that the continued use of the limitations is not conducive to sound business management . . . However, in reaching what I believe to be a consensus that the statutory provisions imposing the limitations should be repealed, we are left with a serious and difficult problem.

"We believe that in recommending to the Congress that it consider repealing the limitation statutes, we will be expected to advise the Congress of any alternative methods under which the Government might negotiate architect-engineer contracts with the reasonable assurance that the Government will receive such services at reasonable prices. In our opinion one such alternative already exists. I am referring to the so-called 'Truth-in-Negotiations' law (P.L. 87-653) which was enacted in 1962. . . .

"It is with reference to Public Law 87-653 that we have an issue not only with the professional societies but also with the Federal Procurement agencies. We have long recognized that negotiation is perhaps the only proper method to contract for professional services. We have always taken the position that, in view of the particular circumstances involved in the procurement of professional services, formal advertising procedures are not feasible. I believe for the first time we must face up directly to the question as to whether Public Law 87-653 imposes a mandate of competitive negotiation with respect to all contracts over $2,500 other than those specifically excepted by the statute which do not include A-E contracts.

"As you probably know, we have interpreted the competitive negotiation provisions of the law as applicable to contracts for professional services. At the same time, we are fully cognizant of the position of the professional societies that existing agency procedures, particularly those of the Department of Defense, fully conform to those provisions and to the intent of the Congress. In brief, the present procedures of the department are said to reflect the language of the statute that proposals shall be solicited from the maximum number of qualified source consistent with the nature and require ments of the services to be procured. I other words, it is contended that the ex pertise inherent in A-E services and th many imponderables involved in secu ing such services establish the "inconsis tency" of applying those provisions t A-E services. We cannot say with all can dor that such position and the curren procedures of the Defense Departmen are wholly without merit. And it is signifi cant to note that the current philosoph of noncompetition is based on well established traditional methods of doin business with A-E's. On the other hand we find no substantial basis for the GAO to recognize an exception to the statut which appears to be clear and unambigu ous. We are at this date carefully consid ering how the picture from all aspect may best be presented to the Congres for its consideration."

Professions fear Federal uncertainty may precipitate hasty state acts

Privately, executives of the professiona societies are more worried about the echo-effects of GAO's report than wha might happen in Congress. They're afraid GAO's report will be used at the state and local level to justify contract awards sole ly on the basis of price. They feel Federa contracting officials are usually sophisti cated enough to know that quality of the design team, not their price, is much more significant for the overall cost o the project.

Congress isn't expected to act thi year on the report; the principles in volved are too fundamental to be passed quickly. However, there's much more to the problem than just Congressional ac tion. Even before GAO made its report at least one Federal construction agency decided informally to ask for fee quota tions in soliciting design contracts.

Systems engineering is urged as part of urban design

Overwhelmed by the complexity of socio-economic factors required for adequate urban planning, Congress is showing a marked interest in "systems analysis" as an approach to environmental problems.

There are several bills in Congress designed to stimulate systems engineering as the management method to combat urban ills such as pollution, crime, transportation problems, housing, waste disposal and land usage. While none of the bills will become law overnight, hearings on the subject will focus attention on the potential role of systems engineering in the solution of urban problems.

One bill (S.430, introduced by Senator Gaylord Nelson of Wisconsin) proposes a grants-in-aid program to apply systems techniques to public problems. It has met little enthusiasm so far. Another bill (H.R. 20, introduced by Congressman F. B. Morse of Massachusetts) would establish a National Commission on Public Management composed of government and private members to stimulate private investment to support systems methods in meeting major problems. The Morse proposal is generally favored by the architectural and engineering professional societies.

Top policy planners within the Department of Housing and Urban Development also want to explore this approach. HUD's experts have drafted an "urban systems engineering grants program" to encourage investigation.

Policymakers at the local level should view public facility programs through "such recognized management planning and control techniques as operations analysis and research, econometrics, mathematical programing and modeling, simulation, project management and procedures for program control," assert HUD officials.

CURRENT TRENDS IN CONSTRUCTION

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

A long look ahead to megalopolis

Curious about what things will be like by the time the 21st Century gets here? The Census Bureau is—at least enough to update its projections of the population through the year 2000. So is the Urban Land Institute, as indicated by its just-released analysis of the size and structure of our cities of the future. And so, too, should be architects, since these trends are bound to shape the future course of their profession.

Census' brand new projections show that our population will grow from its present total of just under 200 million to nearly 250 million by 1980. Then, sometime in 1993 the big population clock in Washington will turn over to 300 million. And by the year 2000, we'll have about 335-million residents—some 70 per cent more than at present.

For the historical-minded, it took well over 100 years (it depends on when you start counting, since our first census wasn't taken until 1790) to bring the population up to the 100-million level, and another 53 years to reach the 200-million mark. We'll be picking up our third million in only 25 more years.

From an architectural point of view, we should be able to translate this total of 335-million people into a need for buildings — homes, offices, factories, schools, hospitals, churches. As a very rough guide, today's 200-million consumers require about $75 billion of annual construction work. If this relationship continues to hold, they'll need more than two-thirds again as much in annual *physical volume* of construction by 2000. And if present cost trends persist, the bill for this work will come to something like $300 billion!

U.S. Total Population
Past, Present, and Future

Year	Millions of Persons	Index (1966=100)
1790	3.9	2
1915	100.5	51
1966	196.8	100
1970	207.3	105
1980	243.3	123
1990	286.5	146
2000	335.0	171

U.S. Bureau of the Census

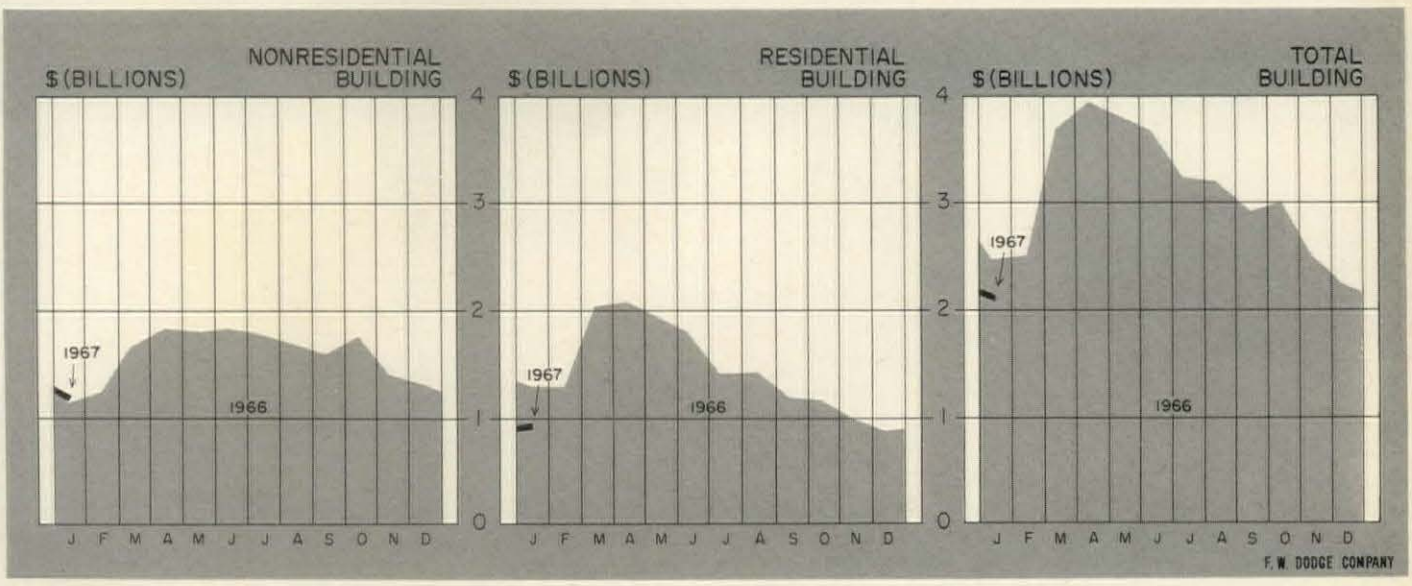
Yet large as these numbers may look, they are probably too conservative. In view of the increasing emphasis of renewal projects, we might expect the total volume of construction—both new and replacement—to increase a bit faster than population growth. Architects had better plan on seeing their workload *double* by the end of the century.

Using these same populations projections as input for their analysis, the Urban Land Institute has come to some revealing conclusions about where all these people are going to locate themselves. In the year 2000, says the Institute, three-quarters of the population will be concentrated within a handful of regions which together will cover only about a tenth of all our land area.

For the most part, they'll be packed sardine-tight in three primary urban zones. These three areas—the Metropolitan Belt, the California Region, and the Floridian Region—will hold some 187 million, *or almost the equivalent of today's national total.* In addition, there will be 13 outlying urban regions and six free-standing metropolitan areas of one million or more persons each. The total for those 19 outlying regions and metropolises will be about 52 million.

Over the next generation or so, we're headed not only for a big expansion in the total construction market, but for a greater concentration of it as well.

Building activity: monthly contract tabulations



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BORDEN DECOR PANEL AS BUILDING FACADES

Shown above is Deca-Grid style Borden Decor Panel used as a facade for the Pargas, Inc. building in Waldorf, Maryland. Set off by piers of white precast stone, the sturdy aluminum Deca-Grid panels are finished in blue HINAC, Pennsalt's new finish for metals.

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RENDS AND ANALYSIS

awrence C. Jaquith, Economist
IcKee-Berger-Mansueto Inc.
onstruction Consultants

Budget shifts reflect need for new design approach

One of the most significant trends in modern building design is the immense shift of emphasis toward mechanical and electrical systems, which are consuming a larger and larger portion of the total building dollar. This situation has created formidable problems for the architect.

First, he must himself acquire a broader, more critical understanding—if not a working knowledge—of the increasingly complex technologies involved. He needs that knowledge to make judgments on cost vs. performance that only he can make—no matter how much faith he may have in his engineers' recommendations—because only he has the final responsibility.

Second, his early approaches to design must be broader in scope as his options in adjustment to the budget spread from traditional alternates in structure, materials, and finishes to new integrated environmental systems that do not lend themselves to piecemeal paring once the preliminary design is fairly launched.

Technology and specialized labor accelerate shift in budget dollar

Examples of the change that first come to mind are usually associated with modern heating, ventilating and air-conditioning systems. Yet even plumbing systems, quite standardized in terms of building codes and A.S.A. recommended practice, and traditionally subject to little innovation, have changed significantly in technology and cost.

Laboratory equipment too is usually associated with the mechanical systems and controlled environment problems, as is other built-in equipment relating to refrigeration, processing, etc. All of these, plus the use of sophisticated electronic controls over heating, air conditioning, and elevator banks—and the fact that many of the highest paid tradesmen are involved in the installation of mechanical and electrical equipment—contribute to this increasing percentage of total cost.

The situation today is illustrated by the accompanying table of cost distribution of some typical modern buildings. Quite evidently, systems that used to account for 35 per cent of the total building cost now often amount to 50 per cent or more. It has been pointed out that this situation is not a new phenomenon, but is really just a continuation of a trend going back to the 30's and 40's.

Integrated systems call for early budget allocations

Architects understand, of course, the fact that progressively more of the building dollar is consumed in mechanical and electrical systems, but it would appear that many have not understood the full impact on their own procedures. The extent of the shift itself implies an integration of these systems with building design that simply must get early attention in preliminary phases if the architect is to remain in control of his budget.

An intelligent program of cost control must consider the following:

1) In the conceptual phase of design, the choice of mechanical and electrical systems is flexible, but the choice for a given project must be firmly established very early in the preliminary design phase. If the client cannot afford (or does not need) the ultimate refinement in multi-zone air conditioning, he must be made to realize this before actual work on design commences and a system he can afford must be found that is compatible with program requirements.

2) When estimated costs exceed the budget, architects have traditionally sought to cut costs in general construction, especially in the architectural treatment of finishes. Yet, with engineer-designed systems consuming so much of the over-all building cost, even moderate budget overruns cannot be corrected by cutting back on the quality of the architectural finishes.

Breakdown of Major Contracts as a Per Cent of Total Building Cost

Type of project and approximate cost (not including sitework)	General Construction	HVAC	Electrical	Plumbing	Vertical Transportation	Equipment	Total Mechanicals
Junior High School Delaware $3.8 million	51	21	10	12	—	6	49%
High School Arizona $2.9 million	62	16	11	7	—	4	38%
Hospital Tennessee $8.5 million	43	19	13	10	4	11	57%
Hospital Unit California $2.9 million	58	12	11	5	3	11	42%
Medical School Pennsylvania $4 million	50	12	9	5	4	20	50%
University Physics Laboratory, New York $5.3 million	51	18	8	9	—	12	49%
College Dormitory Arizona $1.8 million	50	15	11	12	2	12	50%
College Library New York $1.4 million	65	18	12	4	1	—	35%

Savings in alternate materials are a small per cent of budget

Generally, the maximum savings that can be expected through the substitution of materials is between 2 and 4 per cent of total building cost. Even this could be accomplished only if the most austere materials were used. In most cases, the savings gained are small, especially when compared to the esthetic loss. In fact, if all interior finishes were to be eliminated entirely, only an additional 5 to 7 per cent savings would be realized. The architect must turn to his engineers for assistance in any program of significant cost reduction.

3) Mechanical and electrical systems do not lend themselves to continuous or progressive alteration once the design has been established. After working drawings have been started, significant reductions in cost cannot be introduced without substantial re-engineering and re-drafting. Most engineers feel that re-design at this stage will destroy the hope of profits for their operations. This makes it doubly important that the architect establish realistic budget limits within which the engineer can work from the outset.

The architect more than ever must be able to balance performance with cost in establishing design criteria for his engineers. If the responsibility for on-budget design is his, then he must face the task of assigning budget goals to his engineers that account for the rapidly changing role of the mechanical and electrical trades.

Construction census may be an aid to cost comparisons

At the end of this year, the Bureau of Census will include a detailed examination of the construction industry in its Census of Business. Inexplicably, this has not been done since 1939, despite the enormous impact the industry has on the American economy. Other industries, much smaller in size, have been receiving the benefits of this census for many years.

The architect cannot expect that this will replace all other sources of statistical information that he requires. It will, nevertheless, contain much new data and will provide a comprehensive background for that which is already available.

As one of the major benefits, the survey will act as a basis for improved inter-regional cost comparisons. It may also greatly assist in determining at what point a regional construction market becomes saturated and costs escalate.

On a much larger scale it should enable more accurate inclusion of the construction industry in the national input-output table. This system measures the GNP by determining inter-industry relationships. It is a valuable instrument for forecasting and can determine, for example, what impact a decision by a major industry to invest in new buildings will have on the construction industry in terms of employment.

Interestingly, when this study was first introduced, it was resisted by some businesses on the assumption that it would lead to government planning. Some years later, after its value became apparent, it was re-introduced and industries clamored for the results. Some interests in the construction industry have expressed reservations about the Census of Business, fearing that information might be revealed on individual firms. The experience of other industries in the census does not substantiate this.

Hopefully, this major undertaking will elicit full cooperation from architects, engineers and contractors: it will only be to their benefit.

Costs will rise as labor seeks job security

Although a certain degree of job mobility is necessary to fully utilize the labor force in a growing economy characterized by rapid technological change, to the architect, builder and contractor mobility has come to mean soaring wage costs. Determining precisely how much mobility is needed is at best an interesting theoretical exercise. Without making value judgments, suffice it to say that construction employment is "mobile," based on the comparatively short job tenure of the average worker (2.4 years with one employer). For the construction worker, lack of job security has justified demands for high wage packages to offset off-season unemployment.

Too much mobility means instability and high costs

During peak periods of construction activity, it is difficult to see the elements of instability that face the worker. At the end of last summer, wages had risen about 6 or 7 per cent and the average hourly earnings for constructions workers was $3.80. In contrast, the average for all manufacturing workers was $2.70 an hour, or some 30 per cent lower. The unemployment rate in construction was 4.9 per cent, while for manufacturing it was 3.5 per cent. Yet a few months earlier, approximately one out of every five construction workers was seeking work elsewhere.

From the point of view of the architect, contractor, builder or construction worker, too great a degree of mobility in the labor force means unnecessary costs and wasted resources.

Too much security costs more and stultifies enterprise

At the other end of the scale—in those industries that are characterized by too little labor mobility—there are equivalent wastes. Sufficient adjustments to technological change are not made in the structure of the labor force: the condition of "featherbedding". This situation is commonly associated with the railroad industry. By way of illustration, construction craftsmen over 45 average 5.2 years with the same employer; the average job tenure for skilled railroad workers is 22.5 years per man.

Obviously, a balance must be struck between the two extremes of mobility and immobility in the structure of the labor force. The construction industry must either continue to face rising wage costs to compensate for seasonal unemployment or seek a viable alternative.

To the auto industry, the alternative has already been made clear. The U.A.W. will place a strong demand for a guaranteed annual wage in forthcoming negotiations. If successful, this would be a significant step for labor and may well be a stimulus to construction trades.

In any event, the trend toward job stability has already begun. Construction workers have been placing greater emphasis on fringe benefits and deferred wage increases. If this trend is to prove mutually beneficial to the industry one major condition must be met: in receiving the benefits of greater job *stability*, the unions must not seek to create a situation of job *rigidity* and impede adjustments to technological progress.

NDEXES AND INDICATORS

illiam H. Edgerton
anager-Editor, Dow Building Cost Calculator,
n F. W. Dodge service

PRIL 1967 BUILDING COST INDEXES

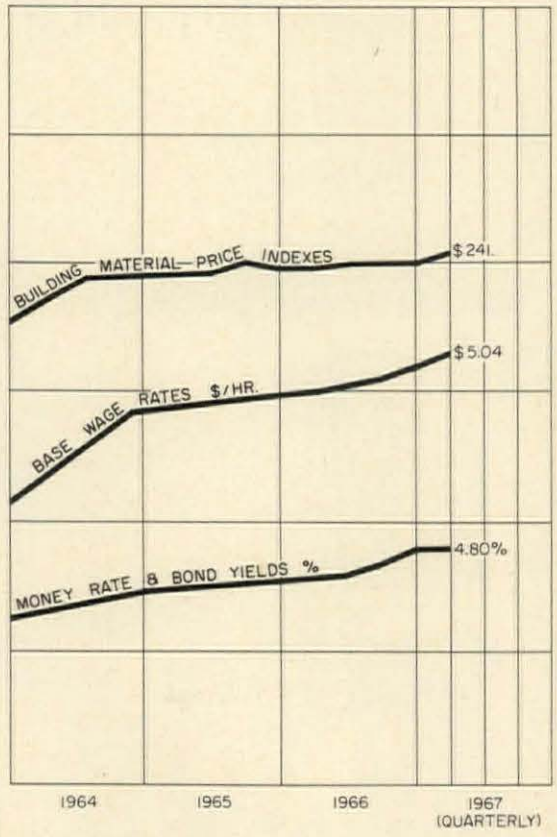
1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index residential	Current Dow Index non-res.	% change year ago res. & non-res.
U.S. Average	8.5	278.7	297.3	+2.19
Atlanta	7.2	317.4	336.7	+3.16
Baltimore	7.7	277.9	295.6	+0.62
Birmingham	7.5	257.3	276.7	+2.17
Boston	8.5	251.8	266.5	+1.70
Chicago	8.9	309.2	325.2	+2.49
Cincinnati	8.8	265.8	282.6	+1.46
Cleveland	9.2	286.5	304.5	+2.39
Dallas	7.7	261.7	270.3	+2.25
Denver	8.3	283.3	301.2	+1.02
Detroit	8.9	287.3	301.6	+4.38
Kansas City	8.3	249.8	264.4	+1.36
Los Angeles	8.3	283.9	310.6	+1.88
Miami	8.4	273.5	287.1	+1.79
Minneapolis	8.8	278.0	295.5	+2.20
New Orleans	7.8	251.0	266.0	+2.02
New York	10.0	294.5	316.8	+3.89
Philadelphia	8.7	276.8	290.5	+1.92
Pittsburgh	9.1	259.1	275.5	+1.23
St. Louis	9.1	277.8	294.4	+2.87
San Francisco	8.5	362.9	397.0	+3.16
Seattle	8.4	254.1	284.0	+1.99

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0÷10.00=80%) or they are 20% lower in the second city.

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

ECONOMIC INDICATORS



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

1941 average for each city = 100.00

Metropolitan area	1952	1960	1961	1962	1963	1964	1965	1966 (Quarterly) 1st	2nd	3rd	4th	1967 (Quarterly) 1st	2nd	3rd	4th
U.S. Average	213.5	259.2	264.6	266.8	273.4	279.3	284.9	286.3	287.3	290.4	286.6	292.7	—	—	—
Atlanta	223.5	289.0	294.7	298.2	305.7	313.7	321.5	322.2	323.3	328.5	329.8	332.4	—	—	—
Baltimore	213.3	272.6	269.9	271.8	275.5	280.6	285.7	288.6	289.6	289.4	290.9	290.4	—	—	—
Birmingham	208.1	240.2	249.9	250.0	256.3	260.9	265.6	267.1	268.1	269.7	270.7	272.9	—	—	—
Boston	199.0	232.8	237.5	239.8	244.1	252.1	257.8	258.5	259.6	260.9	262.0	262.9	—	—	—
Chicago	231.2	284.2	289.9	292.0	301.0	306.6	311.7	312.6	313.7	318.9	320.4	320.4	—	—	—
Cincinnati	207.7	255.0	257.6	258.8	263.9	269.5	274.0	274.7	275.7	277.2	278.3	278.7	—	—	—
Cleveland	220.7	263.1	265.7	268.5	275.8	283.0	292.3	293.0	294.1	299.2	300.7	300.0	—	—	—
Dallas	221.9	239.9	244.7	246.9	253.0	256.4	260.8	261.7	262.6	265.8	266.9	267.6	—	—	—
Denver	211.8	257.9	270.9	274.9	282.5	287.3	294.0	294.6	295.5	296.6	297.5	297.6	—	—	—
Detroit	197.8	259.5	264.7	265.9	272.2	277.7	284.7	285.5	286.5	295.7	296.9	298.0	—	—	—
Kansas City	213.3	237.1	237.1	240.1	247.8	250.5	256.4	257.3	258.2	260.0	261.0	260.8	—	—	—
Los Angeles	210.3	263.6	274.3	276.3	282.5	288.2	297.1	298.0	298.6	301.6	302.7	303.6	—	—	—
Miami	199.4	256.5	259.1	260.3	269.3	274.4	277.5	278.4	279.2	282.9	284.0	283.4	—	—	—
Minneapolis	213.5	260.0	267.9	269.0	275.3	282.4	285.0	285.7	286.6	288.3	289.4	292.0	—	—	—
New Orleans	207.1	242.3	244.7	245.1	248.3	249.9	256.3	257.1	258.0	258.8	259.8	262.3	—	—	—
New York	207.4	265.4	270.8	276.0	282.3	289.4	297.1	297.8	298.7	302.8	304.0	309.4	—	—	—
Philadelphia	228.3	262.8	265.4	265.2	271.2	275.2	280.8	281.7	282.6	285.3	286.6	287.1	—	—	—
Pittsburgh	204.0	243.5	250.9	251.8	258.2	263.8	267.0	268.9	270.1	270.7	271.7	272.2	—	—	—
St. Louis	213.1	251.9	256.9	255.4	263.4	272.1	280.9	282.2	283.2	287.0	288.3	290.3	—	—	—
San Francisco	266.4	327.5	337.4	343.3	352.4	365.4	368.6	376.2	377.7	384.7	386.0	388.1	—	—	—
Seattle	191.8	237.4	247.0	252.5	260.6	266.6	268.9	271.1	272.1	273.9	275.0	276.5	—	—	—

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

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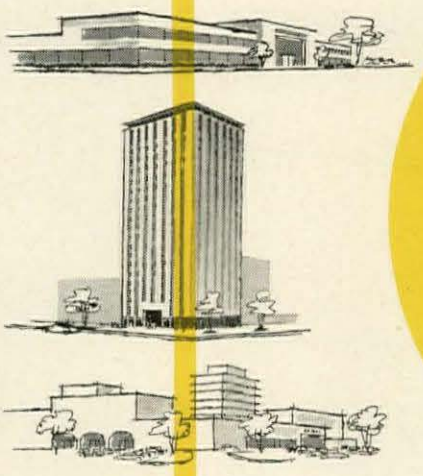

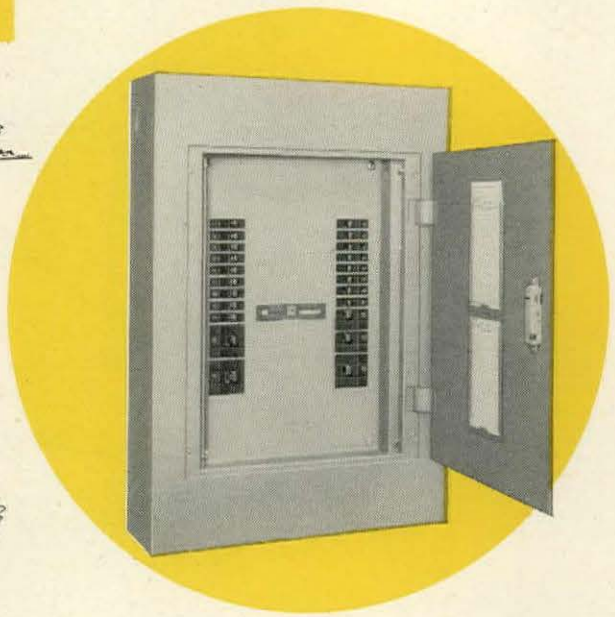

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Builder and Applicator NEWS

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B/AN-7

CONTRACTOR EMPLOYS DEEP FREEZE AND URETHANE FOAM BLANKET TO STABILIZE EARTH WALLS IN DEEP SHAFT EXCAVATION PROJECT

A unique method for stabilizing soil walls while making deep-shaft excavations through loose dirt and rock might have important significance in general construction, such as commercial structures, bridge footings, dams and similar projects.

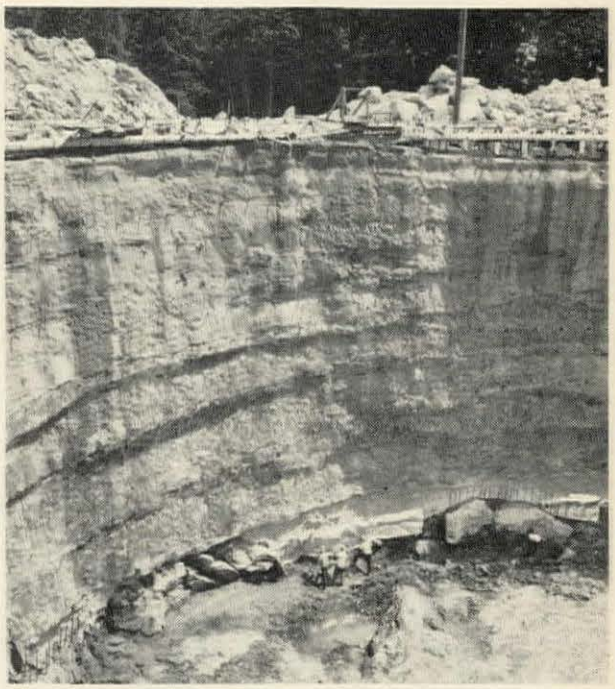
The Cryomethane Co., has the general contract to construct two shafts 135′ dia. by 175′ deep for the Tennessee Gas Pipeline Co.,* as reservoirs to store liquefied natural gas at a constant −260°F near Hopkinton, Mass. The Perini Corp., of Framingham, Mass., had the sub-contract for the excavation through glacial till and rock.

To prepare the site, Cryomethane installed piping to freeze the ground to a depth of 195 ft. around the perimeter of the intended shafts, using a two-stage ammonia refrigeration plant that was set up nearby. Circulating pipelines were laid and connected to a manifold system of 6- to 10-inch pipe supplying the freeze wells. Sub-zero calcium chloride brine was then circulated, deep-freezing the ground and making possible the excavation of sheer vertical cuts without shoring or bracing.

In the first excavation, materials used to insulate the frozen ground consisted of 2-inch thick glass fiber mats covered by 90-lb. roofing paper held in place with wire mesh and rock bolts. During work on the second shaft, it became evident that this insulation system was inadequate. Sections of thawing earth broke loose, and dirt began sloughing into both excavations. Had this condition been allowed to continue, refrigerant pipelines and freeze wells might have been exposed.

The Mine Safety Appliances Co., Pittsburgh, Pa., was contacted to see if application of rigid urethane foam would be practical. After a short period of experimentation proved the effectiveness of this approach, two applicator crews began spray-foaming the first shaft and 20 feet of exposed wall in the partially dug second hole, completing the job in about 5 work days.

About 35,000 sq. ft. of surface was covered with urethane foam to blanket the dirt wall down to solid rock, 27 ft. down in one shaft, 41 ft. down in the other. The foam was applied to a thickness of about 3 inches (equivalent in insulating value to 6 inches of glass fiber) directly over the installed fiber mats in the first hole as it would have been too costly to remove the material.



Rigid urethane foam was spray-applied to insulate frozen soil and permit wall excavation without protective shoring.

As work progressed in the second shaft, applicator crews returned at 3-day intervals to apply urethane foam over wire mesh to the newly excavated wall areas.

An 18-inch-thick reinforced concrete lining was then poured directly against the rigid foam surface to serve as the permanent wall lining.

In this project, the reservoirs will be dome-covered, sealed gastight and freeze wells closed off. Over a period of 10 months, liquid gas will be pumped into the reservoirs to gradually lower the earth temperature to the necessary −260°F, extending the freeze line many feet in all directions.

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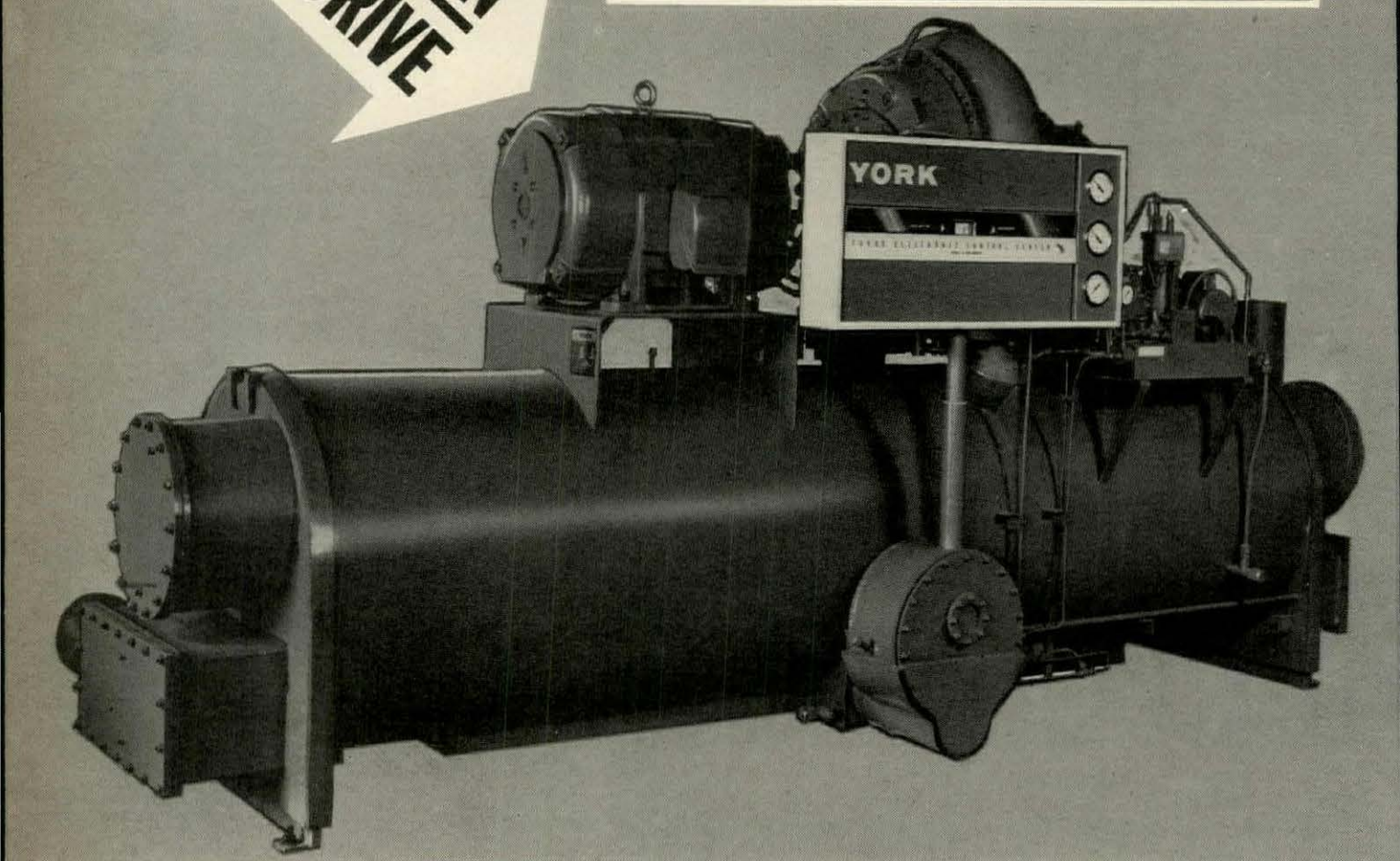

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OFFICE MANAGEMENT

'Orsey Hurst
'anagement consultant
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Seven common errors in architectural office management

ome of the most pressing problems with hich we have had to deal during many ears of management consultation with ozens of architectural firms are seven ommon costly errors of omission. The llowing observations about them, while ot intended as a prescription for cure, ay afford opportunities for self-examiation by firm management.

. Failure to keep in touch with past clients and prospects

his is an almost universal error and is erhaps the most serious of all, because he citation of past work is the most imortant, if not the only medium for prohoting firm growth. Many architects onsider a formal program of follow-up ith past clients to be an unwarranted, nnecessary, and frequently distasteful ct of aggression. Three reasons for the mission are usually advanced. First, the artners are too busy with current work o worry about indirect or long-range romotion. Second, it is taken for ranted that past clients will remember our good work and refer to their files or the brochure you left with them. hird, during the past work, the client earned and will remember the full ange of your firm's services.

All of these assumptions are completely in error. When all the principals f a firm are too "busy" to keep in cultiation the very foundations of the firm's growth, that growth will surely stop. Furher, past clients, however pleased with n architect's performance on one job, elate the firm's performance to the haracter of that particular job. Clients' roblems change. The individuals who make decisions in solving those probems change. If you do not cultivate knowledgeability about your clients' roblems and personnel, don't be surrised when the next commission goes o one who does.

How keep in touch? Use the telephone. Have lunch. Write a letter. But tailor these approaches to the particular needs of your client. Don't put him on a general prospect list to receive form letters or brochures that may be part of your new business solicitation. Tell him what you are doing that may apply to his present or future plans. Keep in touch with *his* problems.

2. Failure to control internal costs by relating each project budget to successive phases of the work

Hopeful ignorance as to whether a little more time spent on design refinements or optional changes or reworked detailing will throw a particular project from profit into loss is another amazingly common error. No architect will compromise the excellence of his design merely because some arbitrary point of bookkeeping has been reached in the allocations of time versus budget. There is no suggestion that he should. But for every project the design phase must somewhere come to an end if the building is to be built. Every experienced architect knows that the time allotted for design, as a per cent of elapsed time from commission to completion, must vary rather widely with size and type of building and many other factors. But it is a finite time to which he can, if pressed, apply a number—to which, of course, he is never quite inwardly committed. But he had better commit himself verbally and firmly if only as a datum point from which to take alarm.

The elapsed time from beginning to end of a project is usually a fixed total. The total fee for its accomplishment is also usually fixed. The over-all job is accomplished in well defined phases, each of which consumes some portion of the fee. By the simple expedient of allotting definite percentages of total time and fee to the accomplishment of each phase, and then setting up a means for keeping informed as to whether the job is proceeding within that framework, an architect can determine whether or not he is operating profitably at every phase. (See "How One Large Office Uses Construction Cost Estimates", May, 1964.)

3. Violation of basic principles of organization and administration

A prevalent and dangerous error in architectural offices is the failure to organize and administer the work along simple lines of business discipline. The failure to delegate responsibilities and the bypassing of organization lines precipitate a situation in which senior partners are found playing the role of one-man fire departments. This situation grows, perhaps naturally, out of the inability of men who started the firm to break established habit patterns of doing everything themselves.

There are two lines of approach to correction. One involves the sincere conversion of the older partners to at least the wish for an effective system of organization. The second is the simple application of a system.

Elementary principles of management require that authority must go along with delegated responsibility, and that the number of people reporting to any one man must be limited. Organization plans should be written and strictly followed. Performance should be measured periodically. Each man should be assigned to do what he does best, and should know what is expected of him. Duplicate functions should be sorted out and corrected.

There are some helpful indicators of the business performance of architectural offices. While they may vary over fairly broad ranges from one successful office to another, and therefore should not be applied in any absolute or rigid sense, they may provide useful in-house signals of conditions that may need correction or at least attention. One such indicator is the ratio of overhead to direct technical labor. In many successful offices this ratio runs from 65 per cent to no more than one-to-one. If it falls much below that range, it could mean that the firm is not spending enough on some essential overhead item such as promotion of future business.

Another indicator may be the gross profit before taxes. Bankers seem to look favorably on pretax earnings of 15 to 20 per cent of net fees (i.e. gross fees less consultant fees).

A third indicator is unallocated total technical time. In general, this should not exceed 4 to 5 per cent in conventional architectural and engineering work. Some research-oriented firms, however, may run 10 to 12 per cent. If there is no unallocated technical time at all, someone is padding the reports.

The indicator of sales costs as a per cent of revenue is a difficult one to assess although it is well worth watching. It is particularly clouded when the time of partners and principals is included. There are many good business

reasons for considerable variation in this ratio. A special effort to qualify for an unusually large commission, for example, or a determined effort to overcome some accidental lag in business, or to spur the growth of the firm past some critical point are some of these reasons.

4. Failure to recognize and separate operational activities

Design and manufacture are two classically separated functions. But design itself is the basic product of an architectural office, and design is so intricately enmeshed with procedures for its execution that the separation of organizational from operating activities is not always readily apparent. Nevertheless, if the separation is not clearly established in the patterns of an architectural firm's procedures, there may be very serious consequences.

Two symptoms which reveal the lack of separation between the design and operating functions are: inability to control design costs and inability to adapt the firm's procedures to developing technology in methods of production and management.

The inability to control design costs may simply represent laxity in definition of what the design process comprises. Architects tend to consider the design process as the total reason for being. And so it is, in the sense that design is the necessary prelude to execution. But if there is no execution, design falls upon sterile ground. Dilletantes and geniuses may enjoy the privilege of purely theoretical design without the constraints of budget or the purpose of construction. But the architect who would survive in practice must see his buildings built—and make money in the process so that he can design some more. Like it or not, the architect must set up to stay in business; and to do that he simply must define—not compromise—the finite compass of design and the proportionate role of production.

5. Failure to understand the aims and motivations of employees

Failure to understand employees as people is one of the most costly on our list of omissions. And it is one of the most difficult to remedy. High turnover and low productivity are the insidious results of it, causing an attrition on the capabilities and profits of a firm virtually impossible to measure. Further, the state of mind at the executive and partnership level wherein this blind spot of management resides is not likely to be suddenly enlightened by lectures or books on psychology. Lack of understanding is ingrained in the habitual stance of executives wherever it occurs.

All people at work want the answers to two questions: How am I doing? What can I do to advance? One of the devices for answering these questions is a performance review of each employee by his superior on a regular basis—say every six months. But the review must be implemented by evidence within the firm that, first, the review is a fair one and second, that the road ahead is not blocked by deadwood or ill-defined policy. Well-fed mediocrity rarely moves. And if it is a policy of the firm to grant authority solely on the basis of seniority, not only are the reports of performance of ambitious and capable younger aspirants likely to be colored but the decision of the capable younger person to stay with the firm or not is likely to be based on what he can see ahead for a firm where only age has merit.

Similarly, lack of an orderly retirement and transition program can result in an excessive number of old-timers hanging on as their capacities diminish, blocking the way for new blood.

Job satisfaction is seldom exclusively dependent on the paycheck, although money is one of the appreciated rewards of merit. More important is the sense of doing a job well and seeing the pathway to development open ahead.

6. Failure to set up internal communications procedures

The sixth most common failure in architectural firms is the lack of in-house communications. This breakdown becomes especially severe as the volume of work increases.

The first step to correct a block in communications is to establish a job-function within the firm in which a person will be responsible for handling all information coordination. Some of the techniques which this person may use may include: periodic job meetings (although one firm has a sign which goes up at such meetings saying "this conference is costing $12 per minute"); a firm policy of periodic memoranda summarizing current activities at various job levels; a monthly progress report; a house organ or news letter distributed regularly to all employees.

When a firm is dispersed in various offices throughout the country, principals must devise means of keeping in touch with one another. They will, of course, do this in their own way; but again, communication through a central individual seems logical. This is especially important where business acquisition activities can overlap or where a central facility for information retrieval (on materials, costs, job histories, codes, etc.) is part of the responsibility of the communications department—as usually it should be.

7. Failure to plan ahead rigorously f both near and remote future

The seventh serious omission—and or most difficult to overcome by organiz tional fiat—is failure to plan ahead both short-range and long-range goal The difficulty is not in recognizing th merit of planning. It is in putting to gether and judiciously acting upon th myriad small steps and bits of informa tion (internal and external to the firm that comprise and guide the goal-plan ning process.

One does not sit down one day an say: "Now we shall have planning." Pa terns of growth and activity do no evolve on giant immutable sheets at th conference table. Viable plans evolve i small, and above all flexible, extensior toward effecting a primary decision: t grow or not to grow.

Growth is a magic word in busines but in professional offices it has n sacred connotations. Many small archi tectural offices elect to stay small an happily succeed in doing so. Like th Red Queen, however, they learn to ru fast in order to stand still. They plan th steady flow and competent handling o such business as they may elect to do

Similarly, unplanned growth ca generate the odd phenomenon by whic the income of principals is mysteriousl reduced.

Although planning to grow—or no to grow—will always be based o unique combinations of goals and per sonalities for each firm, there are som generalizations about planning that ma be useful: 1) Try a rolling, five-year plan updated and pushed forward yearly o at shorter intervals; 2) Implement such a plan by watching various segments o the construction economy as they are affected by government support, re cession, etc.; 3) Translate growth rate to dollar amounts and numbers o people so that percentage rates do no obscure genuine progress.

Decisions about goals and growth will have to be made with full cogni zance of emerging technologies and the changing climate and scope of practice But it is important to remember that al of these—and all other aspects of archi tectural office management—will submit to two overriding urgencies: 1) the archi tectural competence of the firm's prod uct, design; and 2) the aims and desires of clients.

With regard to the latter, there may be comfort for all architectural offices, large and small, in the results of a recent survey of clients as to the criteria they considered in selection of an architect. In descending order of importance, the first four criteria were: 1) design ability, 2) cost consciousness, 3) availability of a principal, and 4) personal service.

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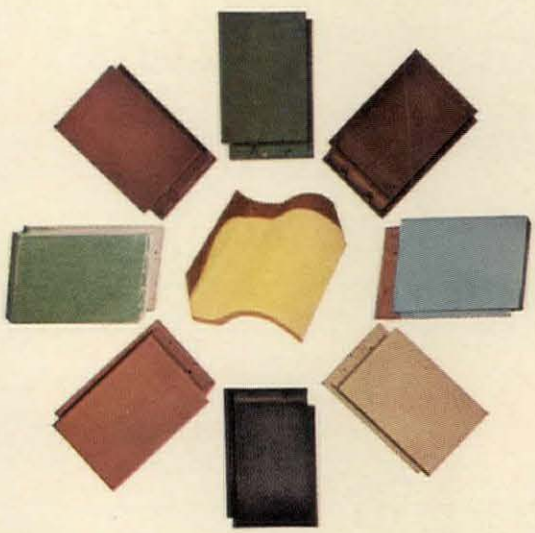

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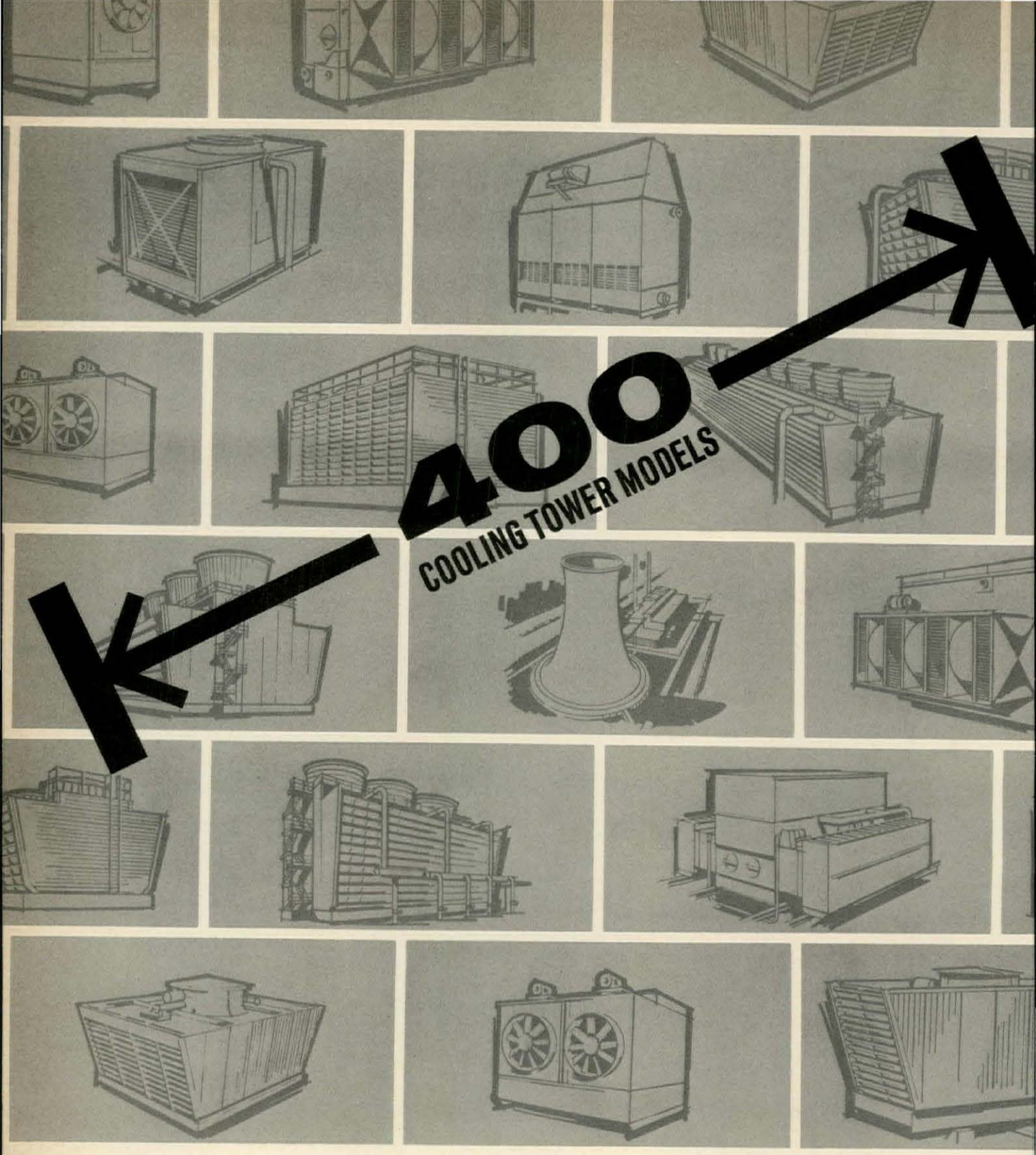

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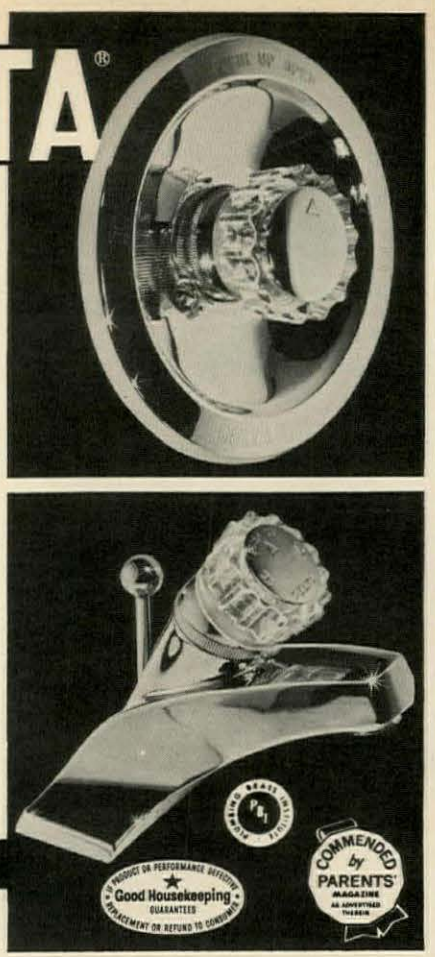

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At GF, we pay so much attention to the little things that the big things take care of themselves; like smoothly gliding drawers, flawless finishes, rugged and rattleproof construction. And we take the same care with chairs, file cabinets and every other GF product.

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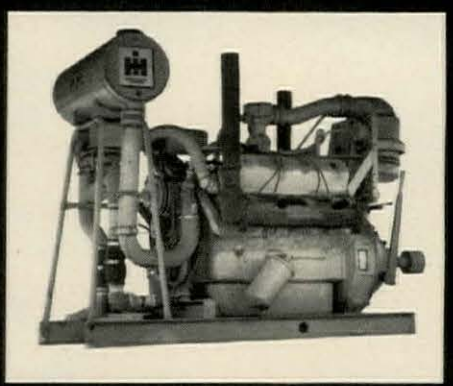

Here's the power leader.

In cost studies on a variety of gas-powered installations, one engine stands out as the leader in the field. It's the International UV-549, rated at 190 maximum horsepower. On-the-job reports from schools, churches, factories, hotels, stores, etc. show this heavy-duty V-8 operating for less than half the cost of other types of power on comparably sized systems.

Here's why . . .

The UV-549 is economical. It has machined combustion chambers and domed pistons with a high 9:1 compression ratio for lowest fuel consumption. Fuel is burned completely and evenly for optimum power. Large valves, full pressure lubrication and an oil temperature stabilizer assure operating efficiency in all conditions.

Flexible power of the UV-549 permits economical operation throughout a wide speed range, up to 2,600 rpm. And it's smooth power. The UV-549 has a heavy-duty 100% counter-balanced crankshaft with vibration damper. It responds instantly, with speed changes to match the load, at no sacrifice in engine performance.

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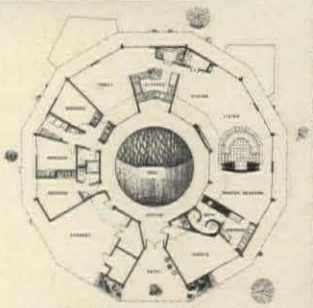
Ceramic tile lends carefree warmth to an unusual circular home by John Nyberg.

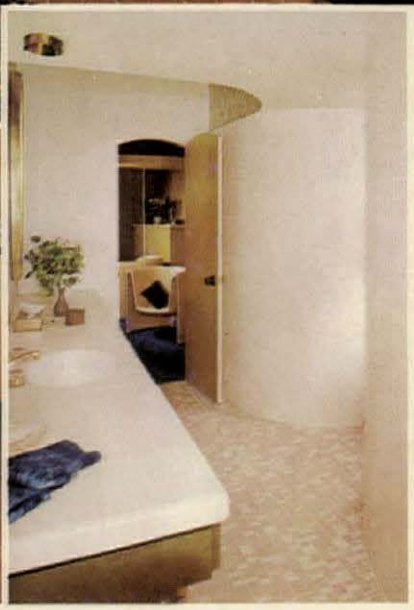


Located in Pasadena, California, this circular home has an atrium as its focal point. All rooms of the masonry and tile structure open off the atrium with its circular pool.

Designed by the firm of Nyberg and Bissner as Mr. Nyberg's home, ceramic tile is used both decoratively and functionally. Quarry tile floors are found in the living room dining, area, kitchen and den. It is also used for kitchen counter tops and back splashes.

Scored glazed tile is used for bathroom counter tops and walls including a unique circular treatment of the walls of the master bath.

In keeping with the contemporary Spanish feeling sought for, extensive use of tile is made throughout other areas of this five bedroom home. Tile contractor for the home was C&D Tile Company of San Gabriel.



If you're looking for a material with limitless possibilities in combined decorative and functional use, look for ceramic tile made in the U.S.A. and Quality Certified by the Tile Council of America. The triangular seal at right is your assurance of glazed wall tile, ceramic mosaic tile and quarry tile that is tested to meet the most rigid government specifications. For more information about Certified Quality Tile, a material that can be used with confidence indoors and out, write: Tile Council of America, Inc., 800 Second Avenue, New York, N.Y. 10017. Or, see the current Sweets Architectural File.

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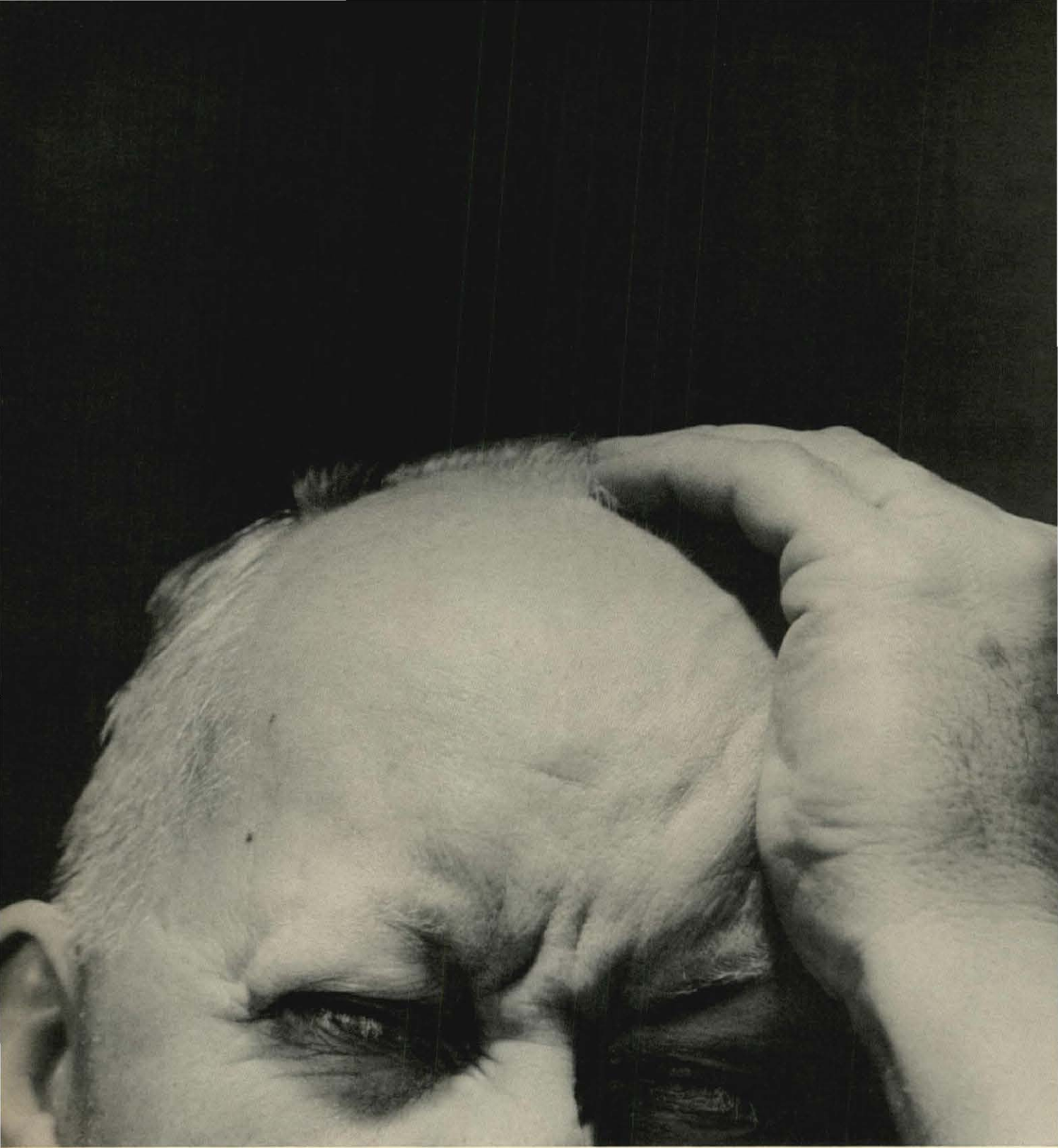

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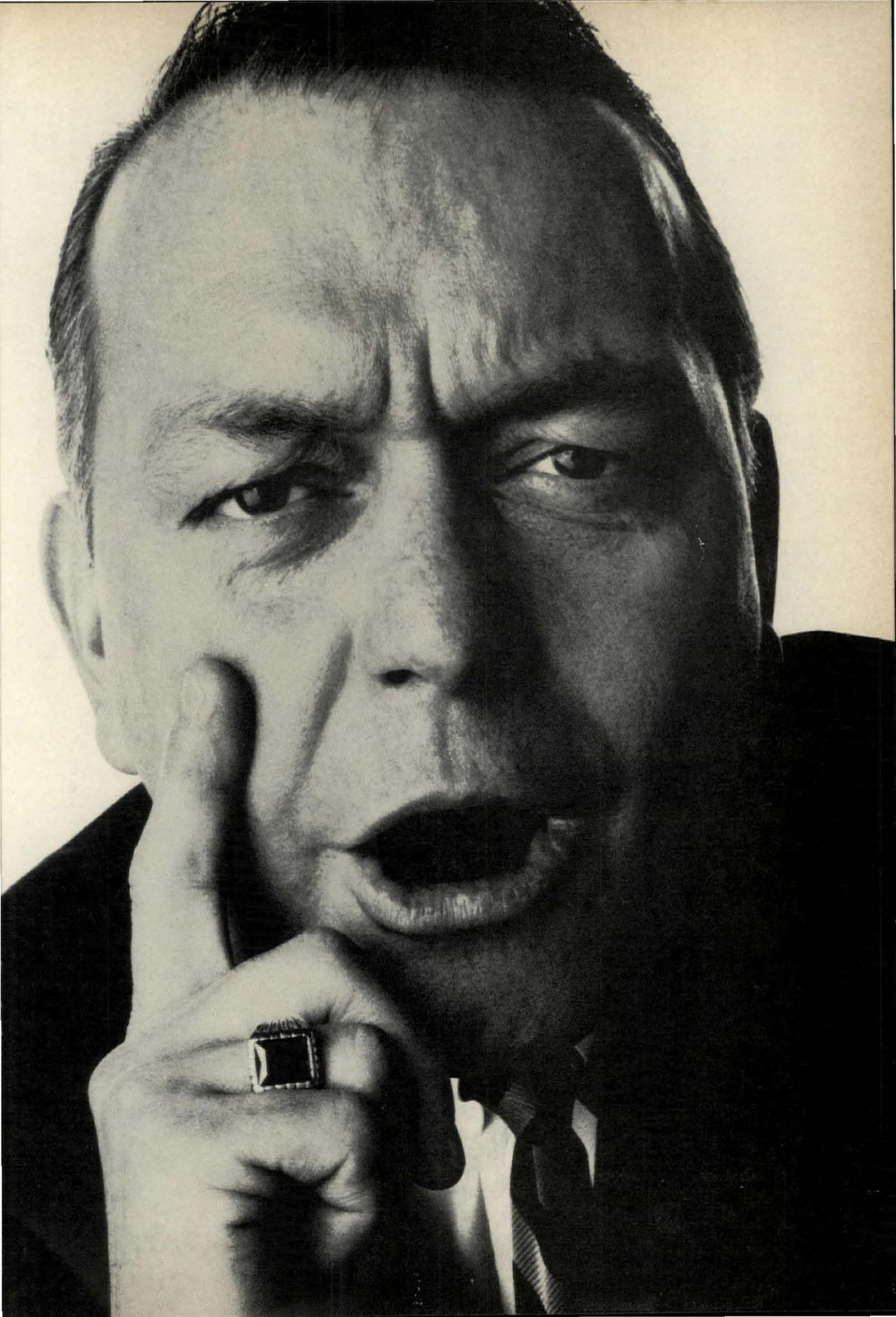

A clerestory formed with laminated arches and beams of Western Wood brings even daylight into a school gymnasium at little extra cost.

The roof structure is glue-laminated arches spanning 72-feet on 16-foot centers. Borrowing a design idea from industrial buildings, the architect used 12-foot tapered laminated wood beams bolted to the arch crowns to form the clerestory. The "outrigger" beams are supported at the outer edge by structural mullions. The system cost little more than a conventional roof.

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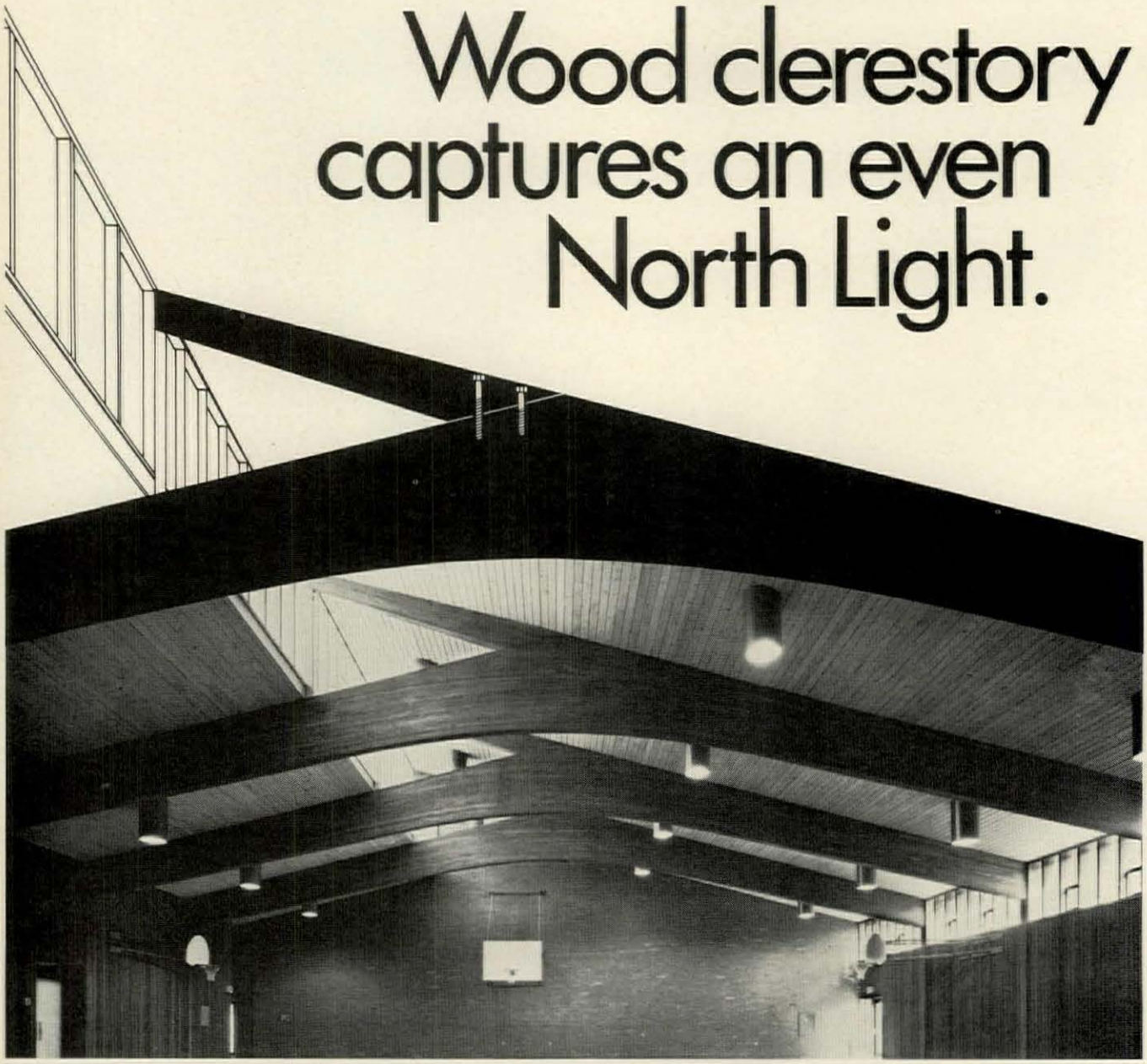
Western Wood clerestory captures an even North Light.



The Charles Wright Academy Gymnasium, Tacoma, Washington. Architect: Alan Liddle, A.I.A., Liddle & Jones. Contractor: McDonald Building Company. Structural Engineers: Sitts & Hill

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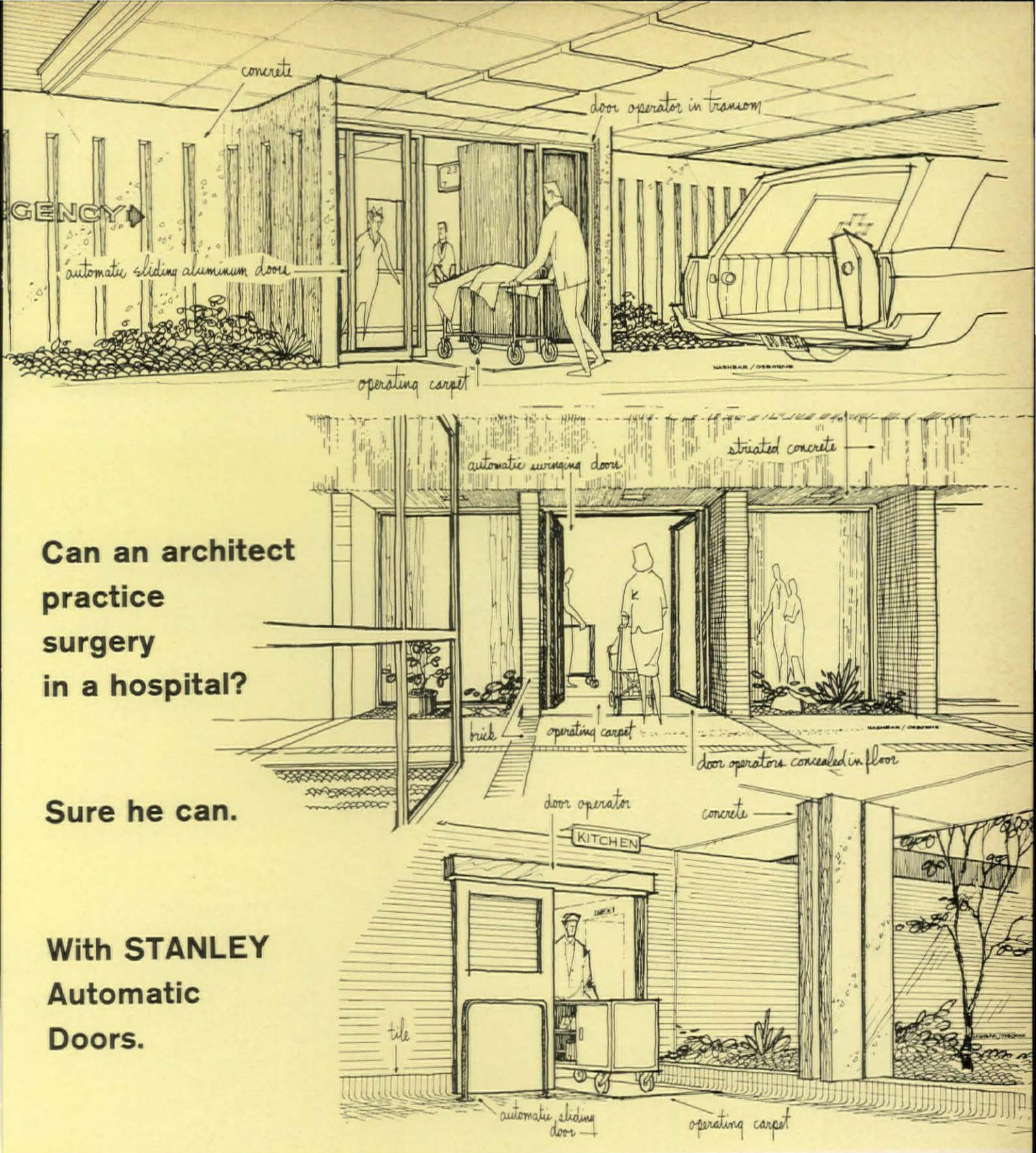

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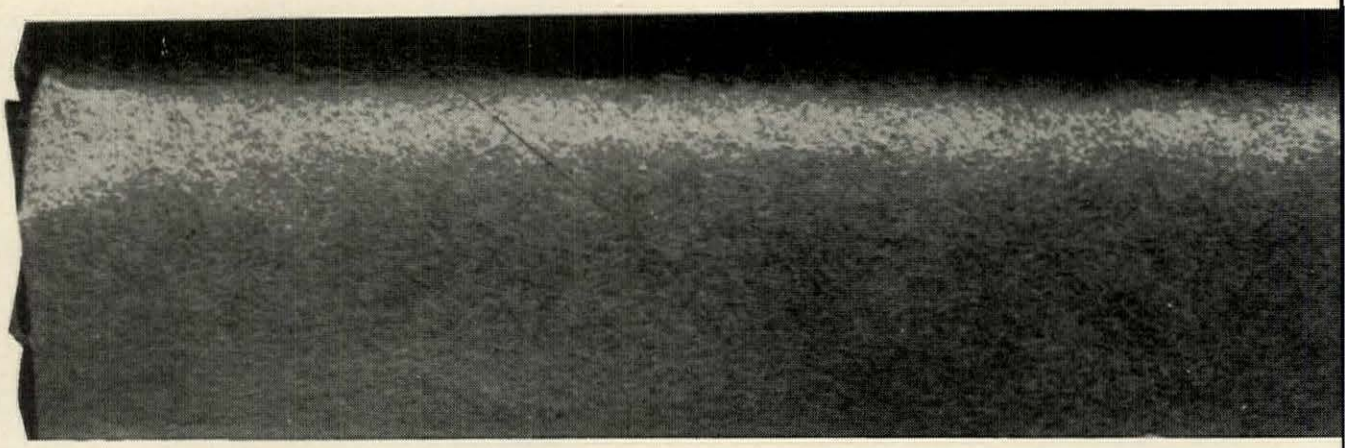

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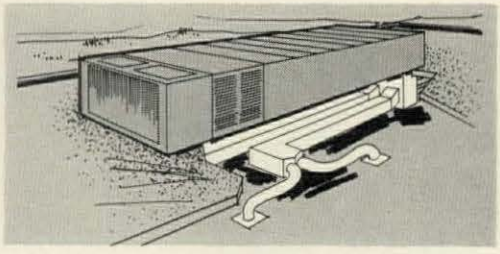
For more information see Sweet's, or write Lennox Industries Inc., 102 S. 12th Avenue, Marshalltown, Iowa.



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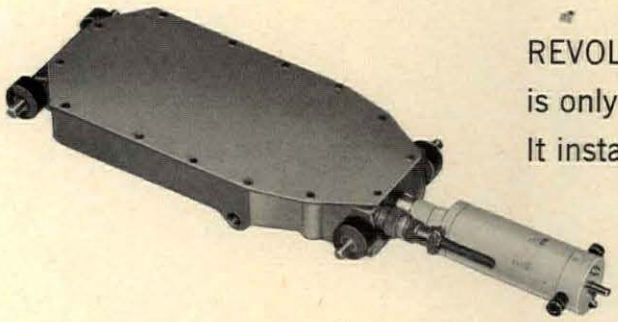
makes International Revolving Doors brainy as well as beautiful



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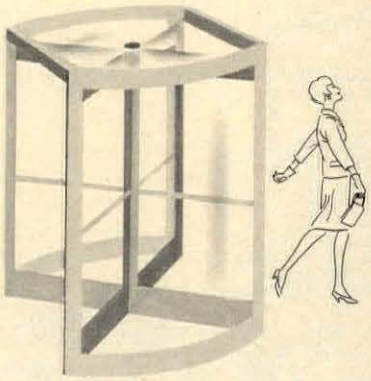

Door automatically returns to quarterline position

WORKS SO SMOOTHLY THAT PEOPLE HARDLY REALIZE THE DOOR TURNS UNDER ITS OWN POWER

Your buildings now can have easy entry and clean-line entrance design PLUS the insulating and draft control advantages that only revolving doors can give.

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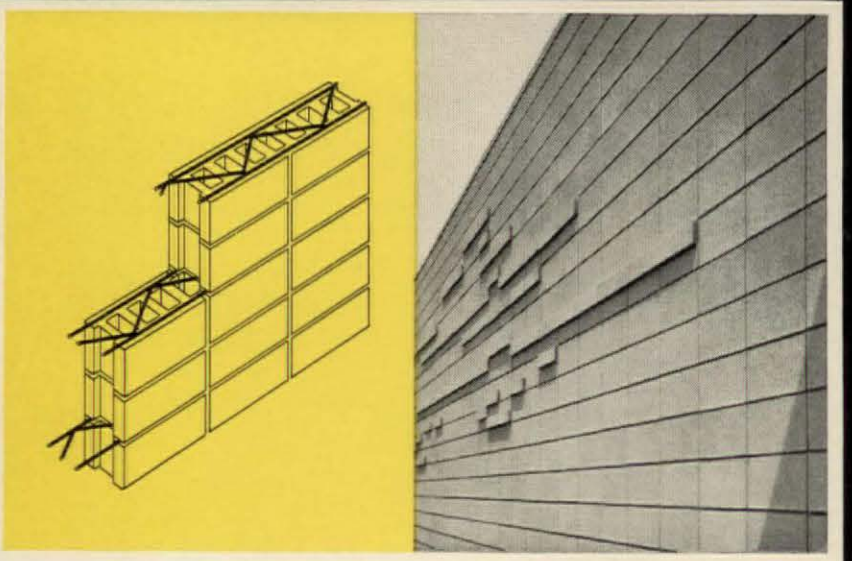

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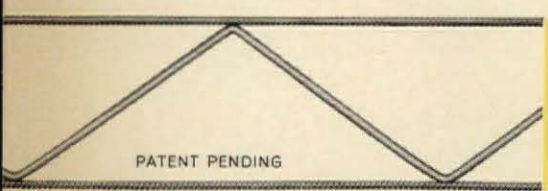

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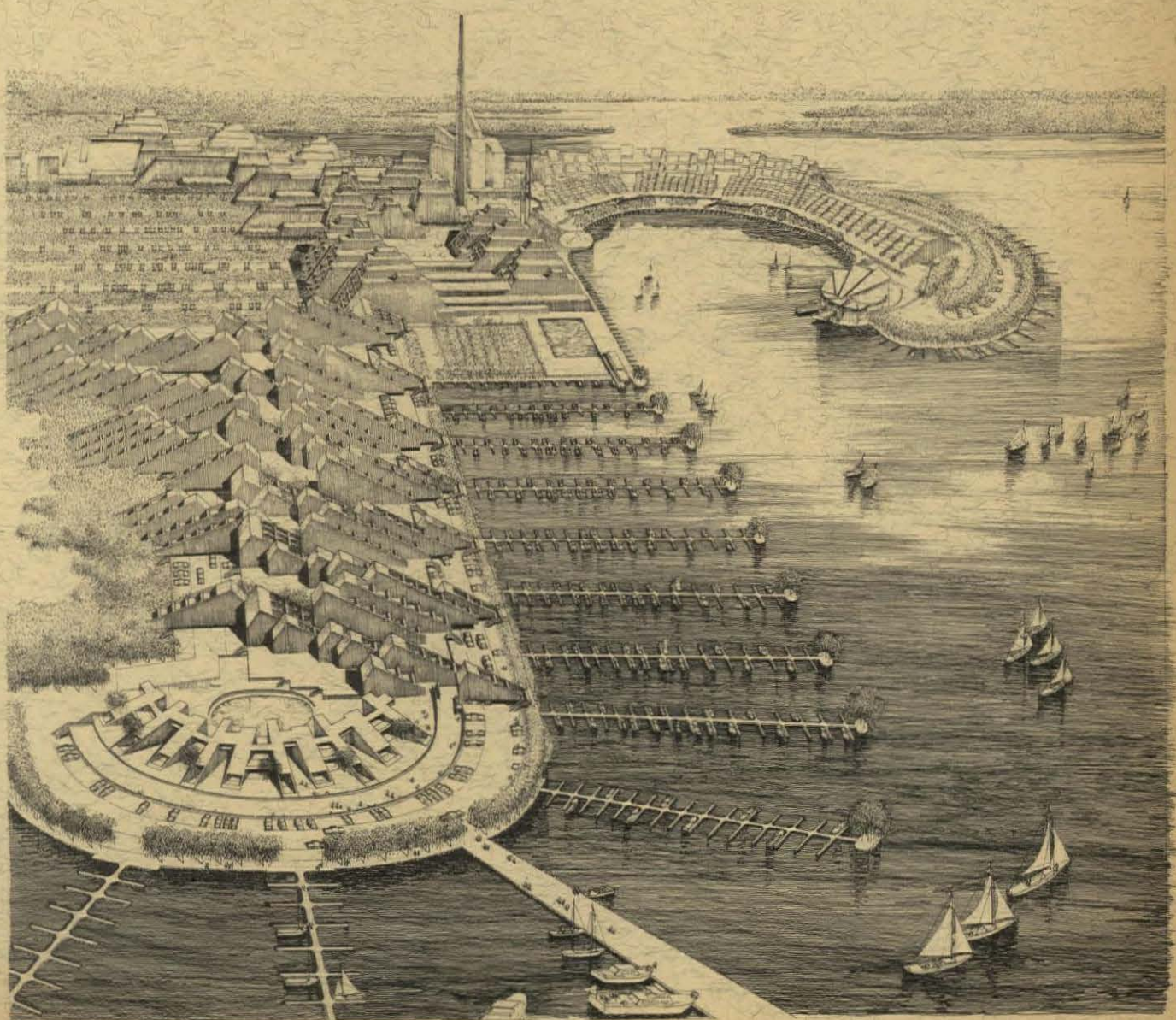
ARCHITECTURAL RECORD
APRIL 1967

Paul Rudolph's design for Stafford Harbor, Virginia, a new town that will be located on the Potomac about 38 miles south of Washington, D.C., reinforces the natural topography by placing the major groups of buildings along the ridges and harbor, leaving the intervening valleys free.

A new town that conserves the landscape



Model photograph illustrates R dolph's concept for the development the whole first stage, which represen about one-fifth of the available acreag Clusters of housing units follow the to of the hills and ridges, where they c have views of the water while leavi the forest on the slopes unspoile Bridges across the access roads conta nursery schools and similar facilitie while schools and recreation areas o cupy the valleys. The town center for t first stage is at the marina; and there is golf course and extensive provision f horseback riding.

The form of the landscape—rather than the geometry of building construction—has been the major influence on the design of Stafford Harbor. Except for the marina, with its clearly artificial shoreline and piers, the configuration of the town is based upon the irregular topography, with most of the housing arranged to follow the ridges that run across the site. Each cluster of housing is in itself a little hill, made up of row houses that are backed up against a parking garage, with an apartment tower above. Sloping roofs relate these elements in such a way as to get the architect out of what Rudolph calls the "pigmy-giant problem," that is to say, the problem created by dividing a site up into a combination of high- and low-rise buildings. The valleys between the ridges are to be devoted to schools and recreation areas; and the hill and valley motif has been brought down into the marina area as well—with the housing along the water built up into a triangular section, and the administrative center placed over a podium containing various recreation facilities.

The story of how Rudolph came to design such a strong architectural image for a whole town is an interesting one in itself. The developers purchased the land—a peninsula of some 4,684 wooded acres on the west bank of the Potomac, about 38 miles south of Washington, D.C.—and then retained a firm of land planners to prepare an outline of future development. The tract's riverfront location, and central position in the urban area between Philadelphia and Richmond, made the creation of a resort the logical first choice. Although the area is farther from Washington than the average present-day suburb, there are already good highway connections and a near-by railway line. The possible use of hydrofoils or hovercraft on the Potomac could bring Washington even closer, thus giving the area a future as suburb and retirement community as well as resort.

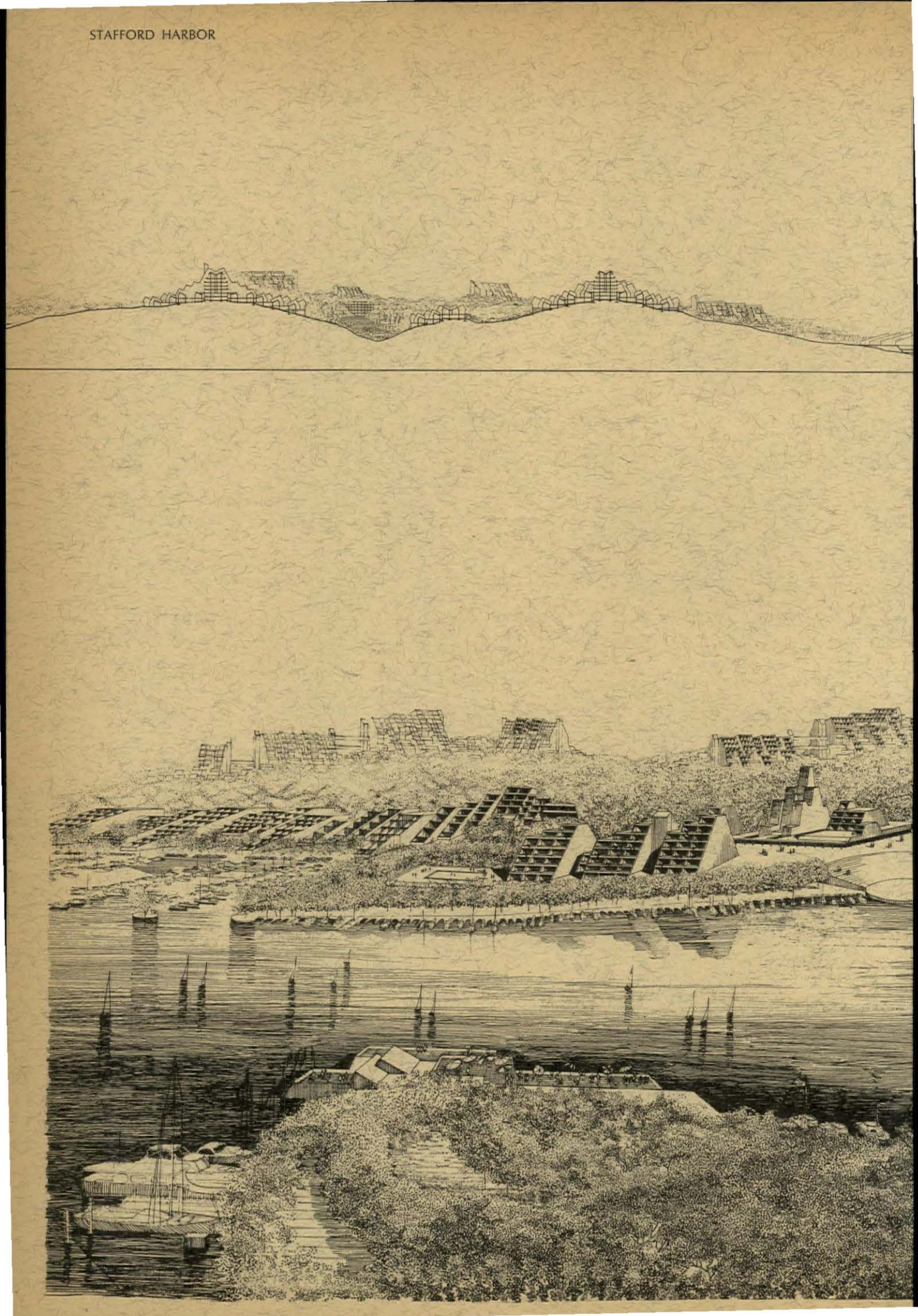
The land planners' report, after setting up a road system and a density pattern for the whole site, therefore postulated a first development phase that would consist of a resort complex along the shore, containing a marina, a "boatel" and high-rise condominiums. The rest of the land in the first phase w divided among single family houses, garden apartments, occ sional towers, and a golf course, with most of the densest d velopment nearer the marina.

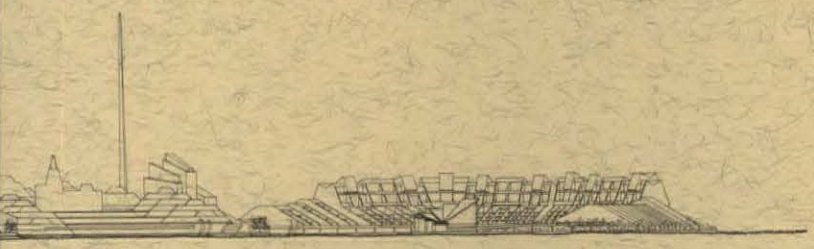
The architectural character, according to a prelimina brochure, was to be achieved by having each complex "nam after an international seaport, and built in the architectur tradition of that particular country. The community of Amste dam would be of Dutch architecture, Londontowne would b Ye Olde English, and Marseille, of course, would be Fren Provincial. There would also be an Italian port, a Polynesi port, and so on around the world."

However, somewhere along the line, Jervy Slagle, t president of the development company, spotted Paul R dolph's project for a mountainside motel in the March 19 issue of the RECORD. In Slagle's words: "It seemed to me th this might be the kind of architecture that would go with t ravines, valleys and virgin timber of the land we owned Slagle went to the local library and looked Rudolph up *Who's Who;* and, having found his address by this mean called him up and asked him if he were interested in desig ing a city. Not surprisingly, Rudolph ended by taking the co mission; and, again in Slagle's words: "Rudolph has grasp the thing we were shooting for."

Rudolph's design covers approximately one-fifth of t total acreage at Stafford Harbor, and it is difficult to tell at th point how many of his buildings will actually be built. Staffo Harbor is being considered as the site for a permanent tec nological exposition, which could mean considerable modi cations in the plan. In addition, market conditions and publ acceptance always have an effect on the housing mix in development of this kind. Nevertheless, Rudolph has clear established a basic concept that is capable of guiding the cour of future development, and serving as one of the possib prototypes for the new kind of higher-density living that seem inevitable in the face of continued population growth.

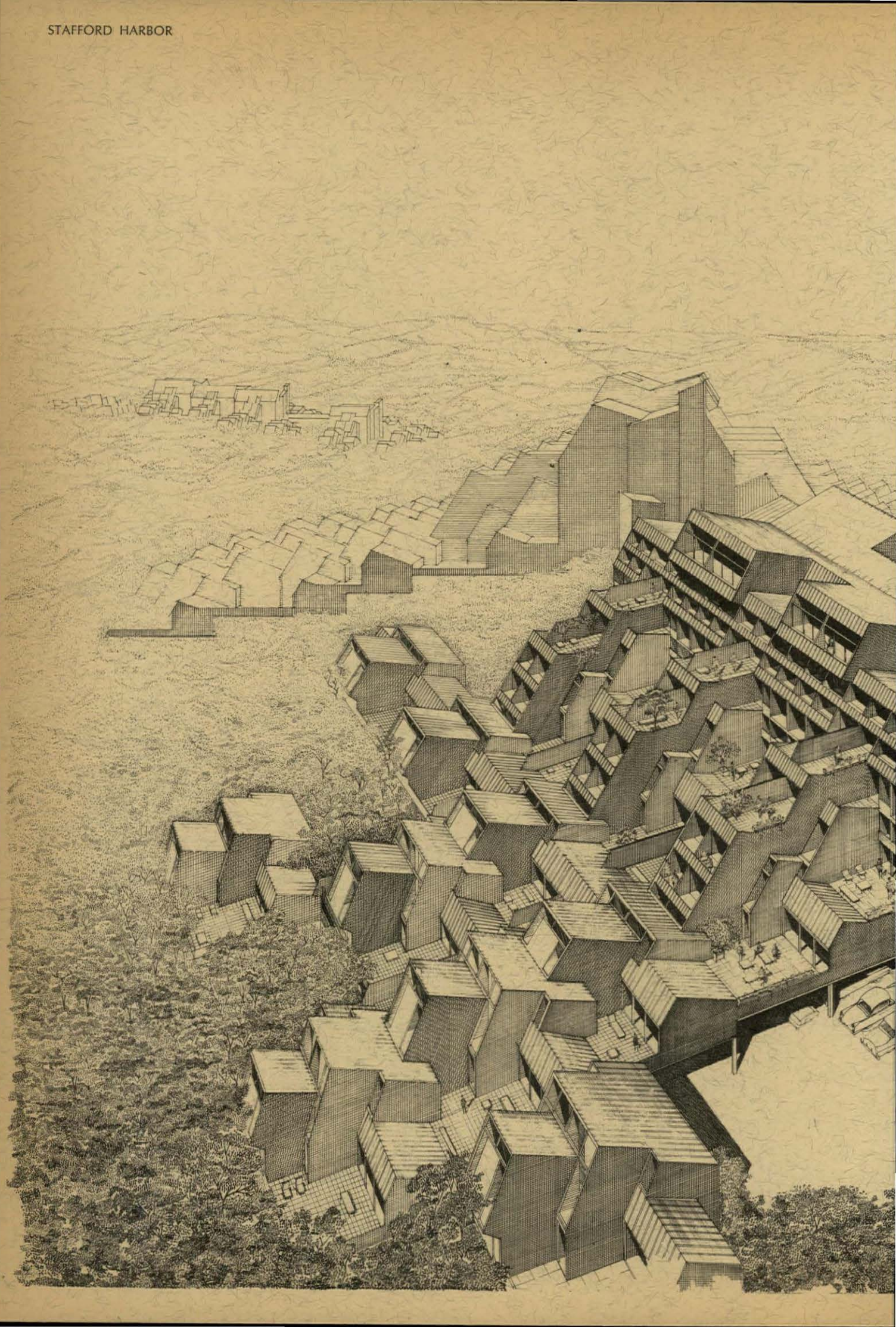
STAFFORD HARBOR

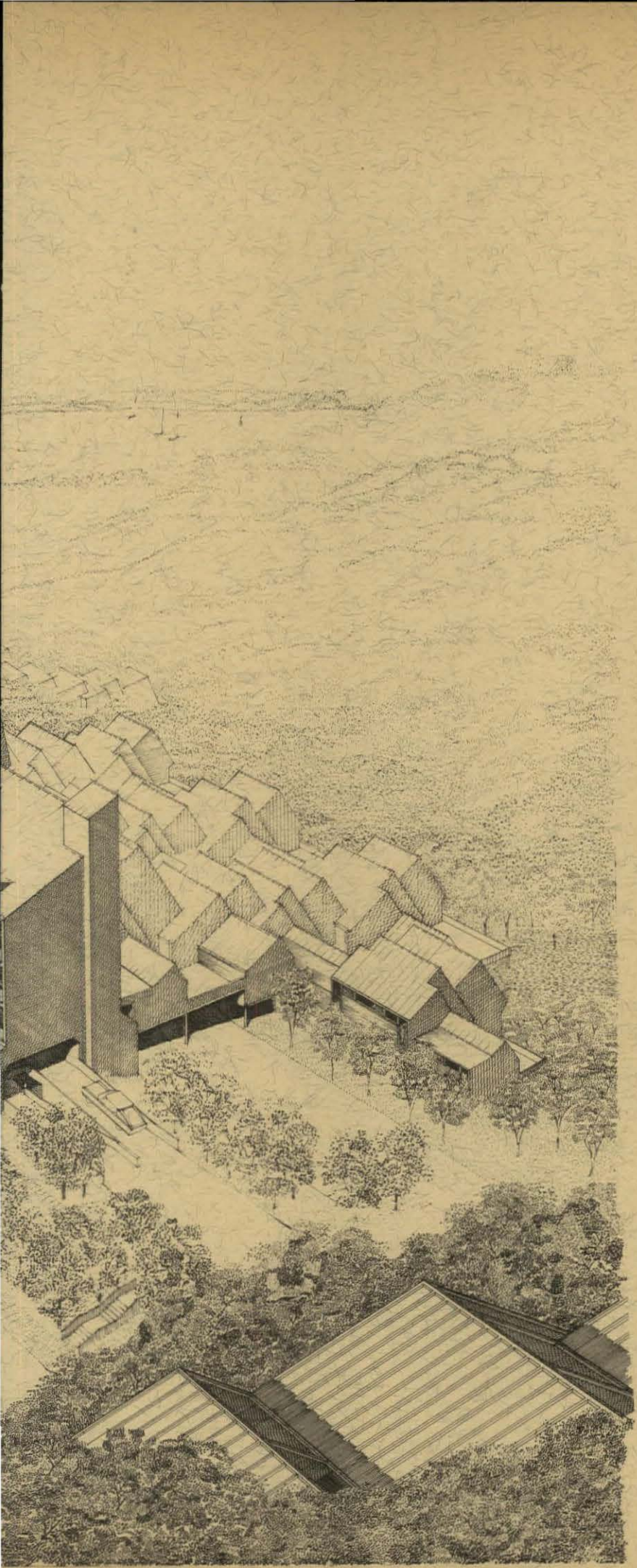




Perspective of the marina shows the protected harbor formed by elongating a natural projection of the land. The regular rows of docks and slips reflect Rudolph's feeling that construction of this type should be very obviously man-made. The amphitheater and obelisk mark the town center for the first stage of development. Apartments along the shore have a stepped-back configuration, which gives each unit what should be a well protected terrace, and echoes the shape of the housing clusters in the hills beyond. All parking at the marina will be exterior and at grade.

STAFFORD HARBOR

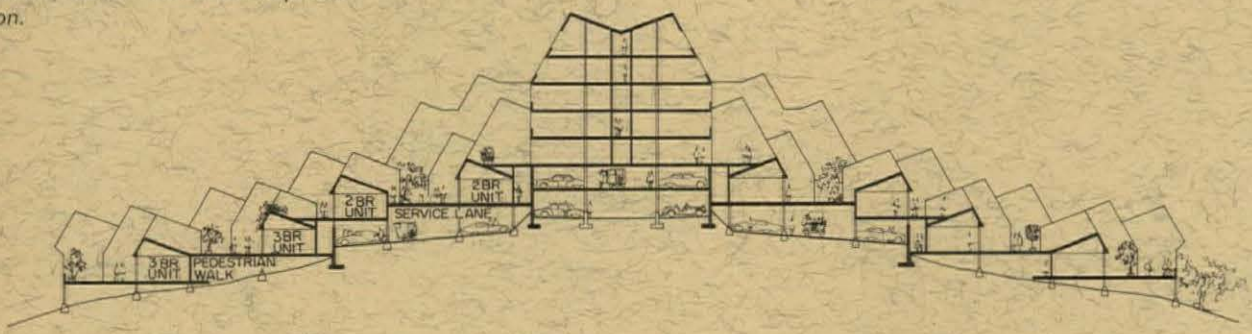


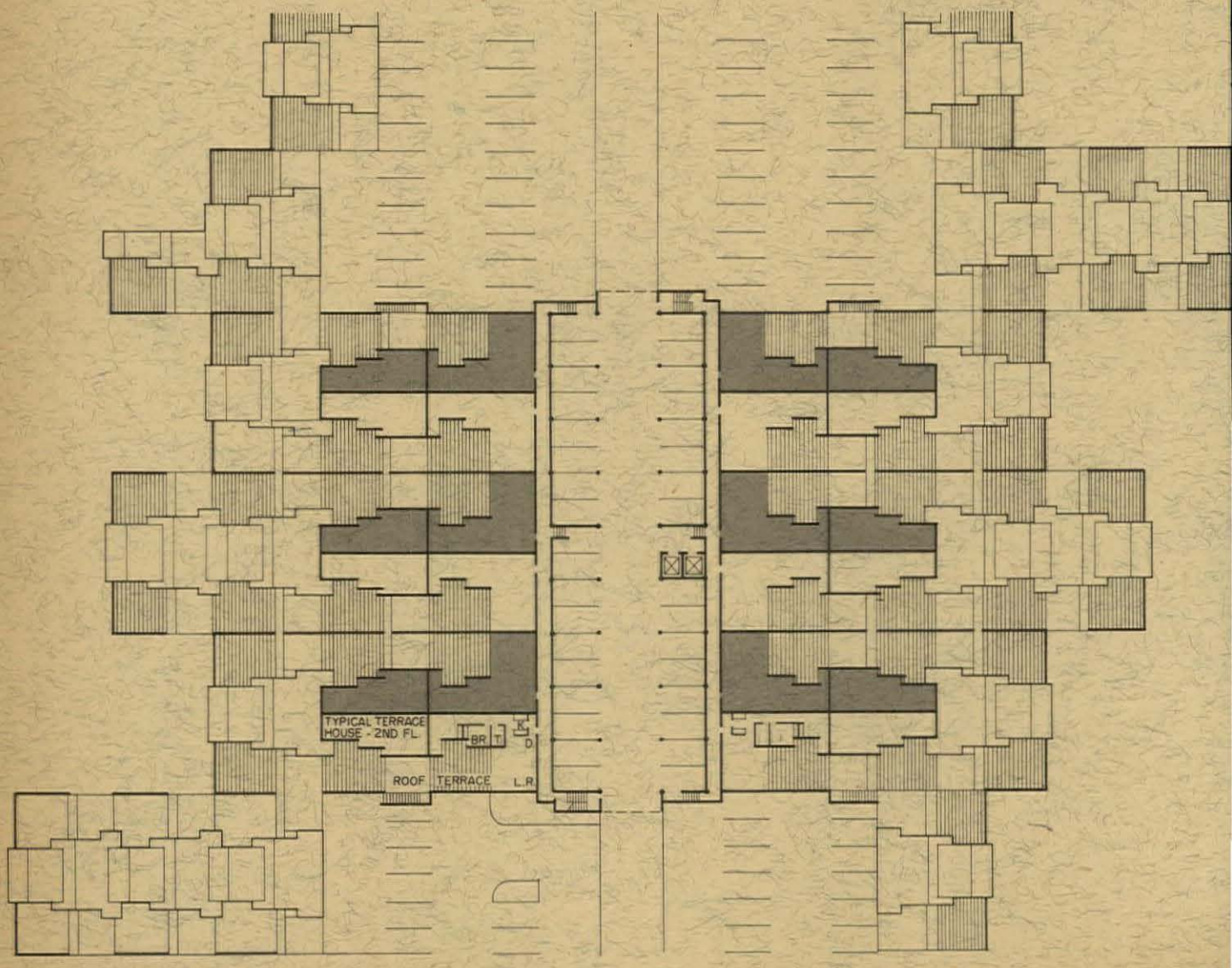


View of a housing cluster shows how sloping roofs, terraces, and a stepped-back section integrate both high- and low-rise elements into a single composition, eliminating what Rudolph calls "the pigmy-giant problem." The core between the step-back sections is a two-level parking garage. Two parking places are provided for every housing unit, and two-thirds of these are in garages. The access roads run through the garages linking the clusters together. This arrangement offers a wide range of adjustments to the landscape.

Plan and section of a housing cluster show how high- and low-rise units relate to each other and to the garage and access roads. The party walls form chases for utilities; construction will be of a special concrete block split in half—and laid with the split edge exposed—to form a rough, corrugated surface.

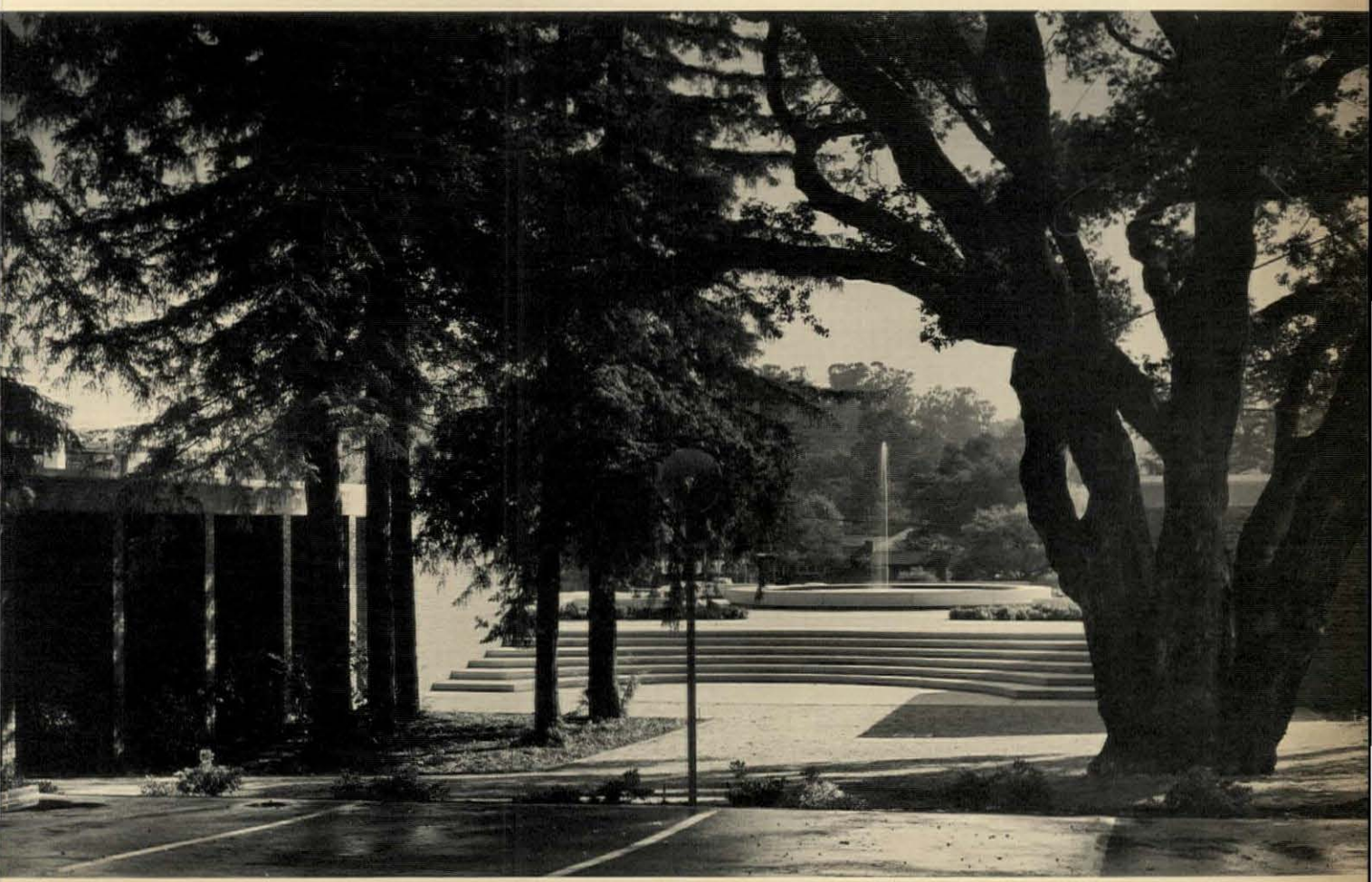
STAFFORD HARBOR, VIRGINIA. Architect-planner: *Paul Rudolph;* chief assistant on drawings: *Makoto Miki;* land planner: *Chambers & Conrad, Inc.;* mechanical engineer: *Calvin B. Burns;* owner: *Chord Development Corporation.*

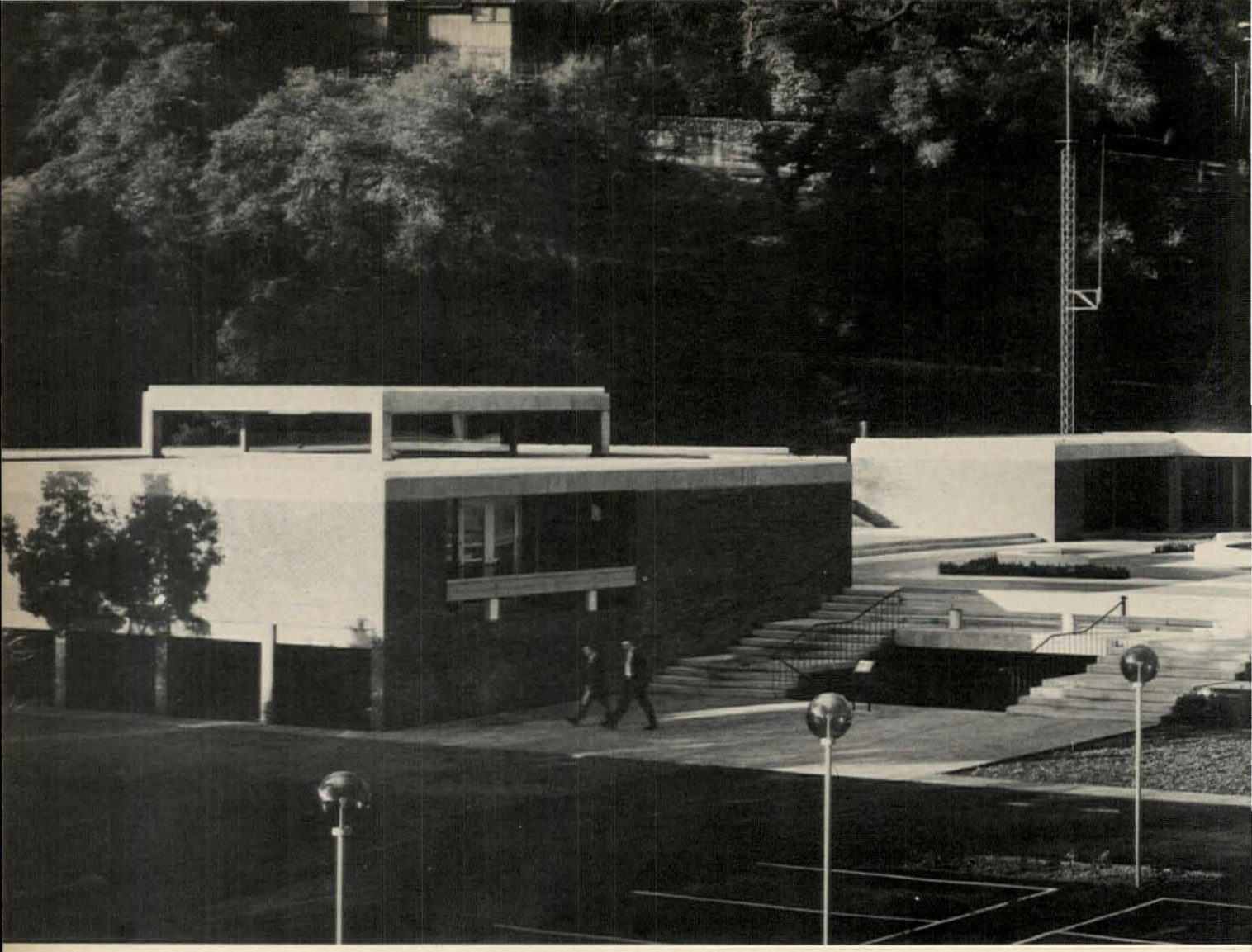


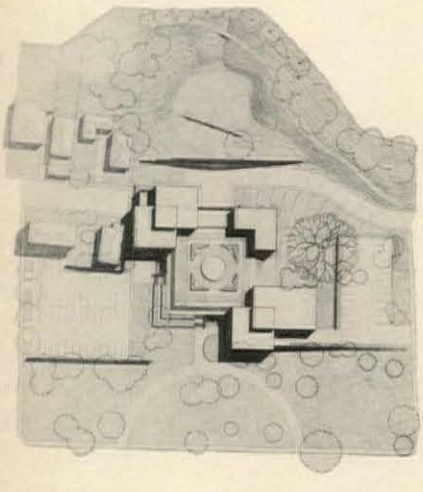


A Distinguished Civic Center For A Small Town

The new civic center for Los Gatos, California, a community of 15,000 residents at the southern end of the San Francisco peninsula, demonstrates what a small town can do—if it has the will—to have fine civic architecture. In the spring of 1963, Los Gatos held a competition among registered architects in 12 northern California counties. The winners were two young architects employed in a large Bay Area architectural office, who subsequently established an office to execute the center. The jury which picked their design called it "timeless and classic, quiet and unassertive, a simple but very strong concept of civic center development in scale with the Town of Los Gatos." The competition's happy result is bright evidence that such a means of selecting an architect for public work can produce architecture of a high order.

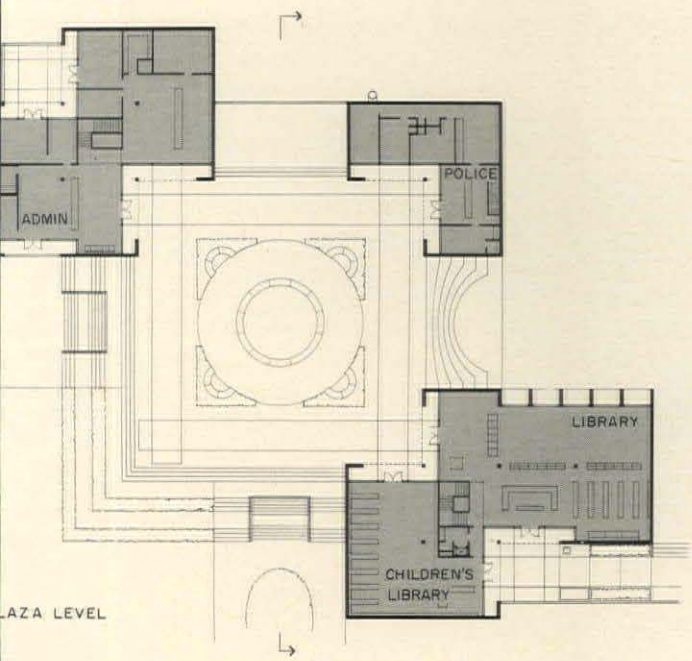




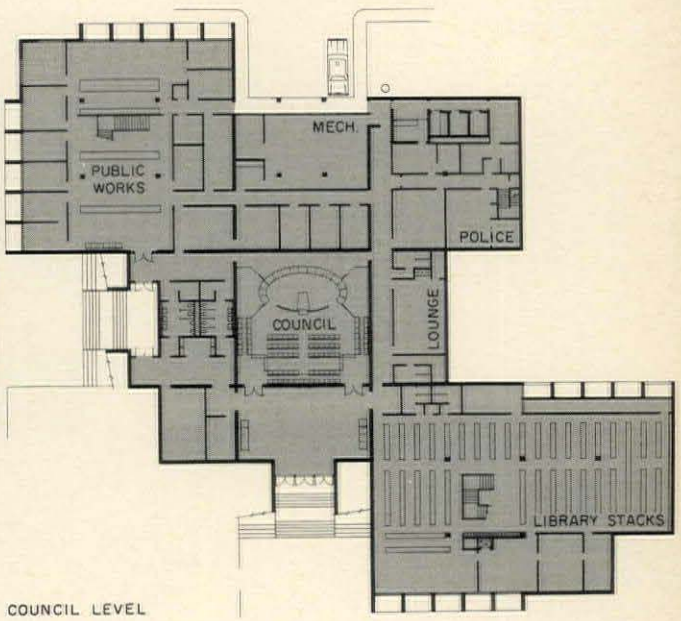


The scale and simplicity of the Los Gatos civic center should dispel any lingering notions that civic buildings need to be monumental. The three pavilion-like buildings, placed at the corners of a raised public plaza, reflect the size and character of Los Gatos and the informal ways of a small town—yet in their classic restraint, precise details, and separation of public and staff functions maintain the necessary dignity of public offices. The completed complex is the first phase of the center; as the town grows to its expected ultimate population of 50,000, expansion is ingeniously provided for by the plan, which is designed to permit addition of 25-foot-square structural modules to each of the buildings. As built, the center differs little from its initial concept; the decisions made for the competition solution proved sound and even inevitable in the actual execution. The center's design recognizes and makes full use of the natural assets of the site: 13 acres of slightly rolling land with a 500-foot frontage on Main Street, a backdrop of wooded hills, and existing side streets to facilitate access to the areas most naturally suitable for parking. By placing the buildings for the various d partments—administration, police a library—at the corners of the plaza, t view to the hills and the magnifice trees is preserved, an important part the charm of the complex. A depress service road behind the police and a ministration buildings maintains the v ual continuity of the land. The buildin are concrete framed, with brick fill walls. Brick walks set into the concre plaza define the access for each depa ment, and serve to unify the buildings the plaza level. On the lower level, which each department has its own a cess stairway, a corridor around the ce trally located council chamber ties t gether all of the city departments a makes a single building of the comple The raised plaza makes possible a spl level scheme, with the plaza half a flig of steps up from the natural ground lev and the council chamber (and lower flo offices for administration and police, a stacks for the library) half a flight dow A large lobby serves as anteroom for t council chamber, common services—re rooms, employee lounge and stora space—are on the lower level.

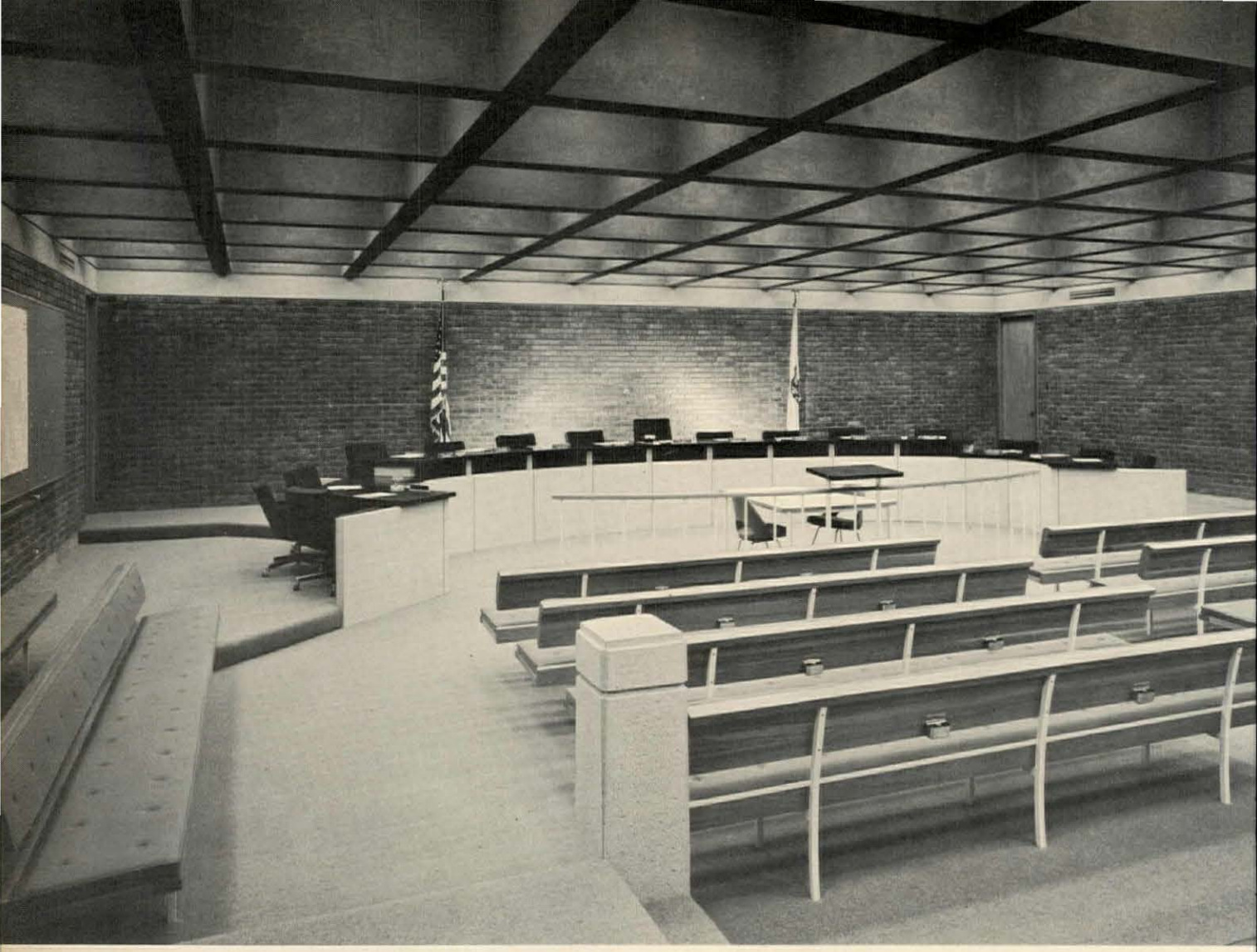
photos by Morley Baer

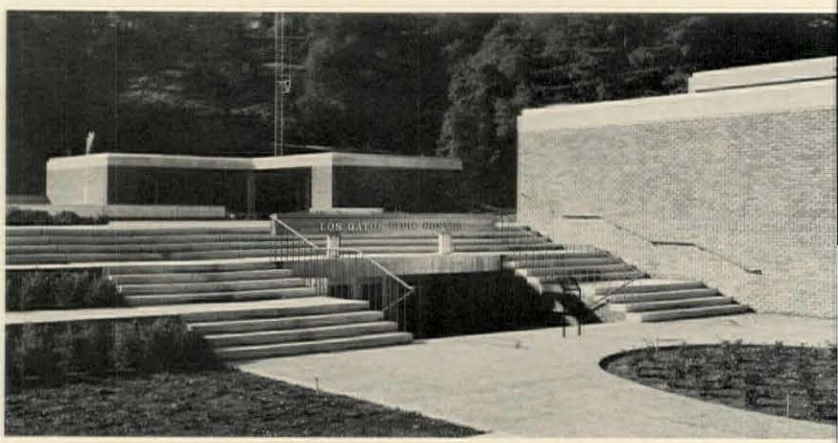


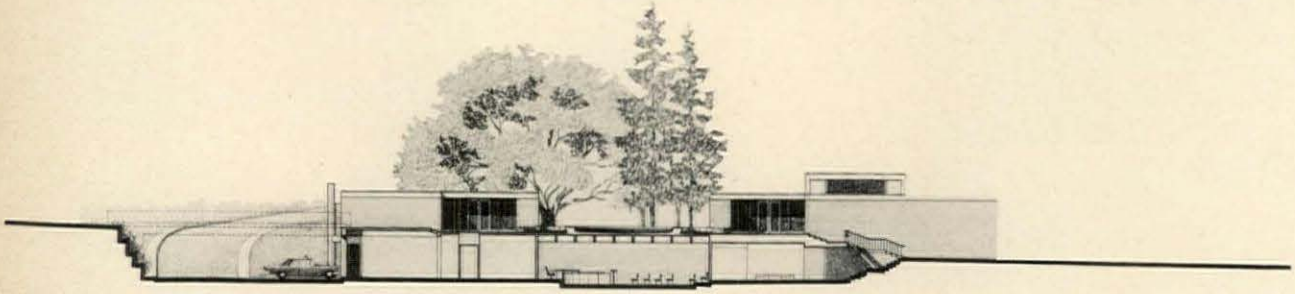
PLAZA LEVEL



COUNCIL LEVEL







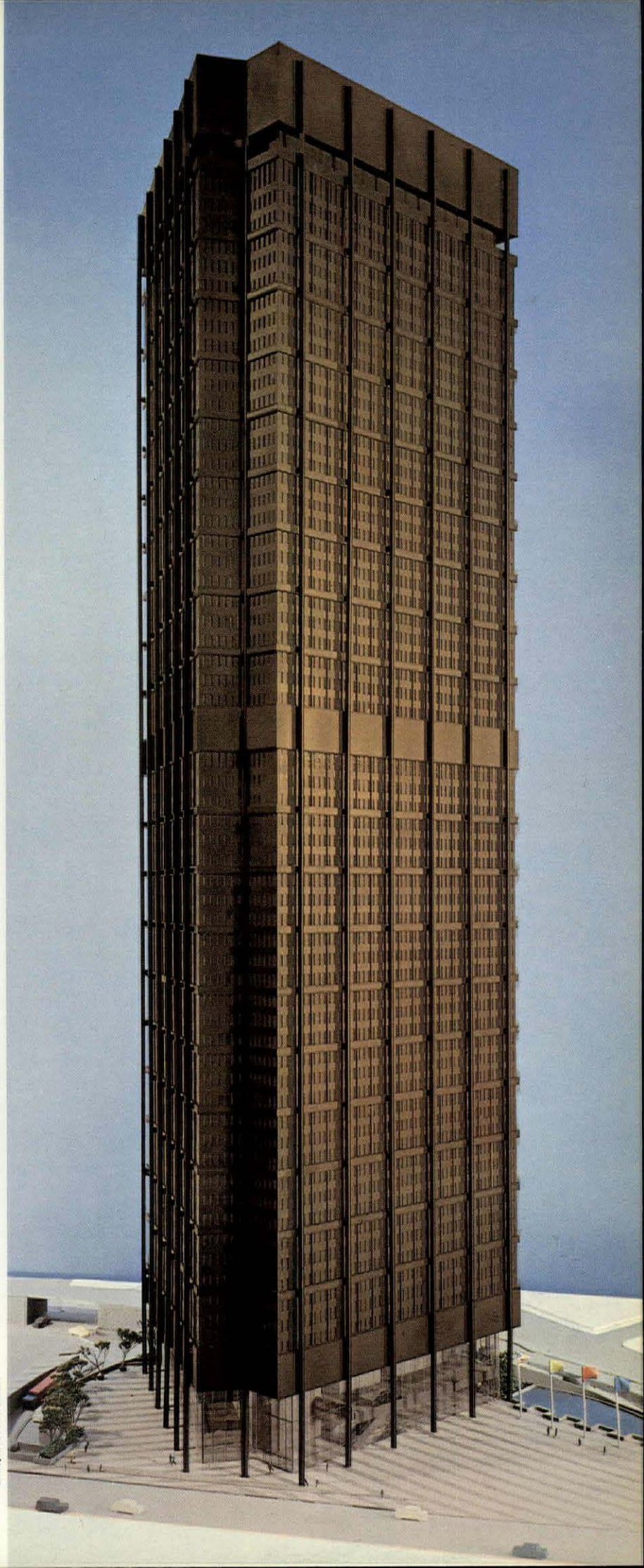
The advantages of a split-level scheme are obvious: the Council chamber (above), used only for public functions, could be placed under the plaza and yet have its own important entrance (above, right), and staff offices to which the public would seldom go, and services common to all departments, could be unobtrusively located on the same level. At the plaza level, raised above parking areas and entrance walk, are the offices to which the public comes—administration, with the unusually pleasant offices for the mayor, city manager (far right) and city clerk; police; and the main library. The administration and library buildings have centrally located stairways, daylighted from monitor windows above the room (near right). Heat and air for all parts of the center are distributed through ducts in the first floor ceiling space, making possible the handsome but simple exposed concrete coffer ceiling used throughout plaza level areas. Each 5-foot-square coffer contains a fluorescent lighting fixture, shielded from notice by the depth of the coffer. The mechanical system is designed for the addition of air conditioning.

Although the square plaza makes for equally pleasant building locations, and democratically makes each equally prominent, the library has, perhaps, the choice location. It is so placed to permit access —from three directions: the plaza, the parking area and the walk from Main Street. The main reading room (right) overlooks, on one side, both the curved steps with the handsome oak tree shown on the first page, and a paved terrace overhung by redwood trees on the other. The children's room, child-scaled and of restful proportions, is entered from both the terrace and the plaza. Some of the stacks are on the plaza level; others are on the lower level, reached by a stairway daylighted by monitor windows directly above. Contract cost of the center, exclusive of casework and landscaping, was $806,755, or $23 per square foot.

CIVIC CENTER, Los Gatos, California. Architects: *Charles D. Stickney and William R. Hull;* structural engineers: *Frank E. McClure and David L. Messinger;* mechanical and electrical engineers: *Chamberlain and Painter;* landscape architects: *Sasaki, Walker, Lackey Associates, Inc.;* general contractors: *E. A. Hathaway & Company.*

PITTSBURGH SKYSCRAPER ACHIEVES BREAKTHROUGH IN STEEL FIREPROOFING

The new Pittsburgh headquarters of the United States Steel Corporation, designed by architects Harrison & Abramovitz and Abbe, will consist of a triangular tower rising 841 feet (64 stories) above its plaza to dominate the city's skyline. It will provide more office area than any building except Pan Am; will have a unique structural system centering on a braced core wearing a rigidly joined "hat" restrained by peripheral columns; and will have an exterior of steel that rusts to form a protective finish coating. But the most significant feature of the design is the outer columns, which will be self-fire-protected, since they will stand clear of the curtain wall and will be filled with circulating water. Here, for the first time, uncovered steel will serve as fireproofed structure and as finish.



Joseph W. Molitor

The site—nearly three acres in area—is located in the heart of downtown Pittsburgh's Golden Triangle, and forms the pivot point between the business core of the city and the Civic Arena to the east. It lies next to a sunken interstate highway and the terminus of Bigelow Boulevard, and spans a railroad tunnel. The tunnel will be physically separated from the new structure and its foundation—and completely isolated structurally—so will not affect the design of the building, except that space must be allotted for it, and vibration control provided. The water table lies about 30 feet below grade and is a design factor, since there will be underground parking on three levels for about 650 cars. The prismatic tower will have a triangular base about 41,000 square feet in area, which will cover about 36 per cent of the plot. The office building will have a gross area of 2.9 million square feet, the parking area about 180,000 square feet, for a total of about 73 acres of building area.

The tower will push skyward from a paved plaza covering the plot. The spread of its paving will reach into the lobby and will be relieved outdoors by planting yet to be designed. The plaza will have changes in level in conformity with the slope of the plot, but entrance to the building will be gained from Grant Street, at the lower level.

The two-story lobby will be enclosed by glass set back 9 feet from the plane of the curtain wall above—and will provide electric stairways leading down to the concourse level or up to the second lobby level, or mezzanine. Since the railroad tunnel passes under four of the six elevator banks, entrance to these is on the second floor of the lobby, served by four electric stairways. This arrangement also acts to disperse the heavy traffic during rush hours.

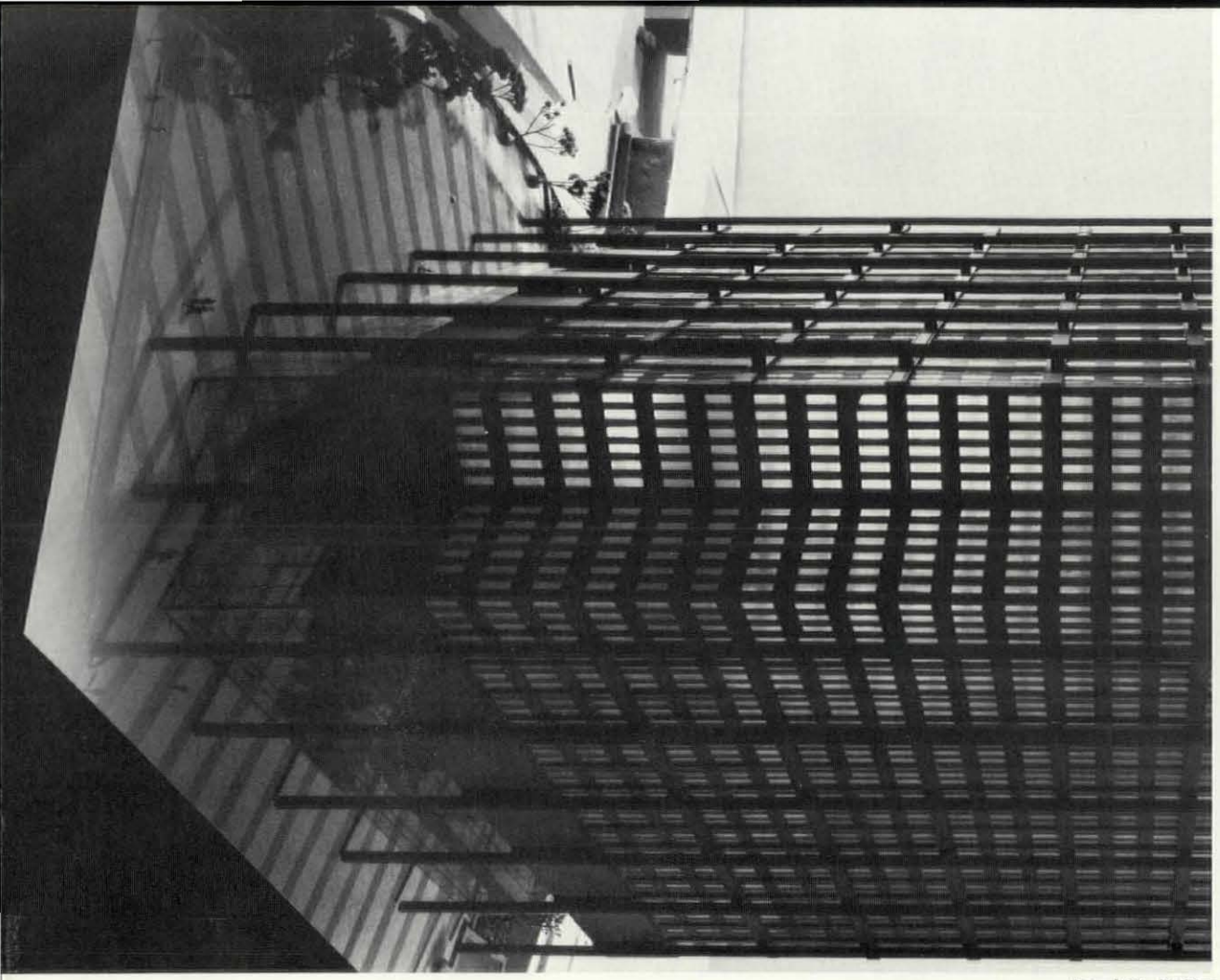
The concourse, immediately below the lobby, will be devoted to a 350-seat auditorium and exhibit area, as well as a commercial cafeteria. The building truck loading area and turntable will also be located at this level.

There will be four mechanical areas serving the tower: the concourse, the 3rd, the 34th, and the two-story space at the top of the 64-story structure. The 62nd floor will be devoted to a commercial restaurant, and to several private dining rooms. The glass wall at this level will provide a spectacular view of the city, rivers, and hills. The 61st floor will house the board room and executive offices; will provide also a visitor's suite. Present plans call for a heliport on the roof. USS plans to occupy about 60 per cent of the building on moving-in day, early in 1970.

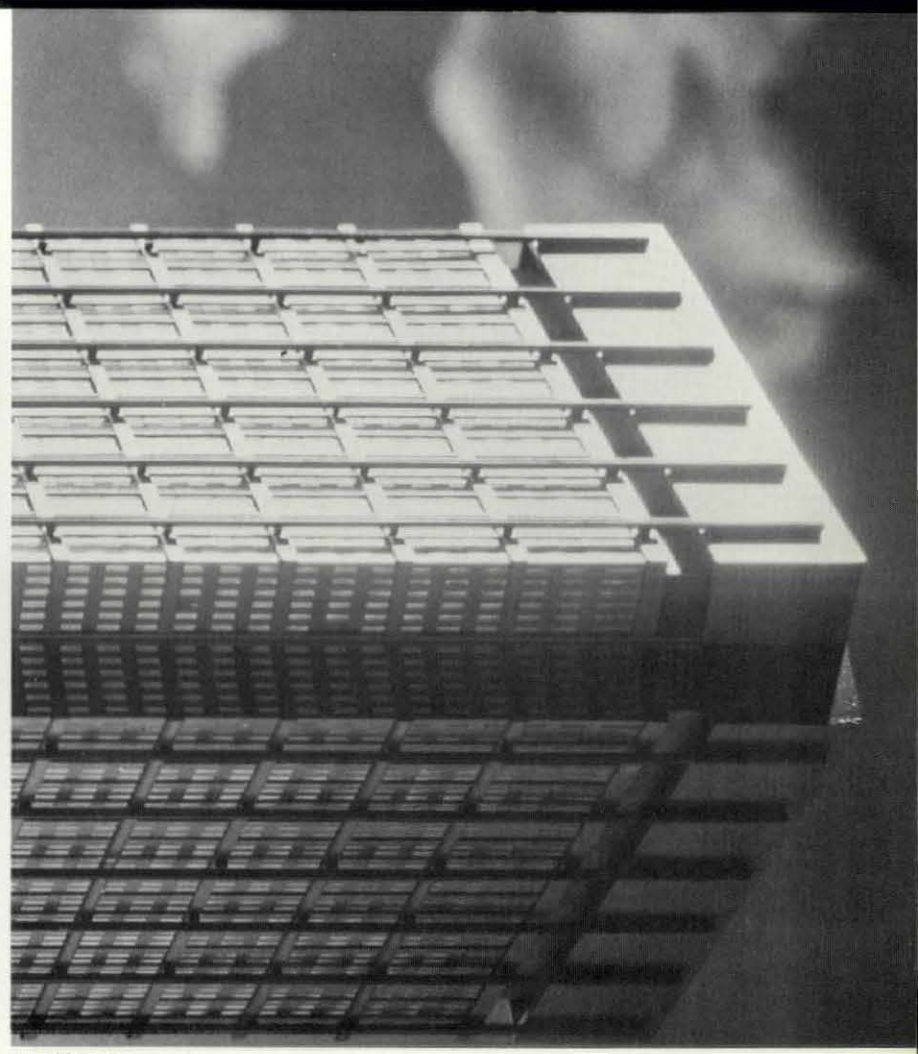
The triangular form for the building was arrived at only after the architects—in collaboration with the engineers—considered, studied, and analyzed all the familiar developed shapes; then reviewed many new and unfamiliar ones. They considered the square, the circle, the triangle, the rectangle of various proportions and with a variety of appendages, the square with cut-out-corners (Roman style), interlocking squares, and so on. Following comparative analyses involving such factors as structure, area efficiency, site, and costs, the triangular plan was settled upon as efficient struc turally, and as the form most appropriat for handling the owner's requirements i a pleasing and economical fashion.

Actually, the plan is an equilatera triangle with cut-out corners, a forn which neatly packages a compact ar rangement of three office areas—each 4 feet, 6 inches deep by 221 feet long— about a central triangular core measurin 162 feet on a side. Each of the three area provides 10,000 square feet of column free space, planned on a modular gri pattern of 4-foot, 4-inch squares; a sys tem that carries through the entire struc ture, including the exterior columns an curtain walls.

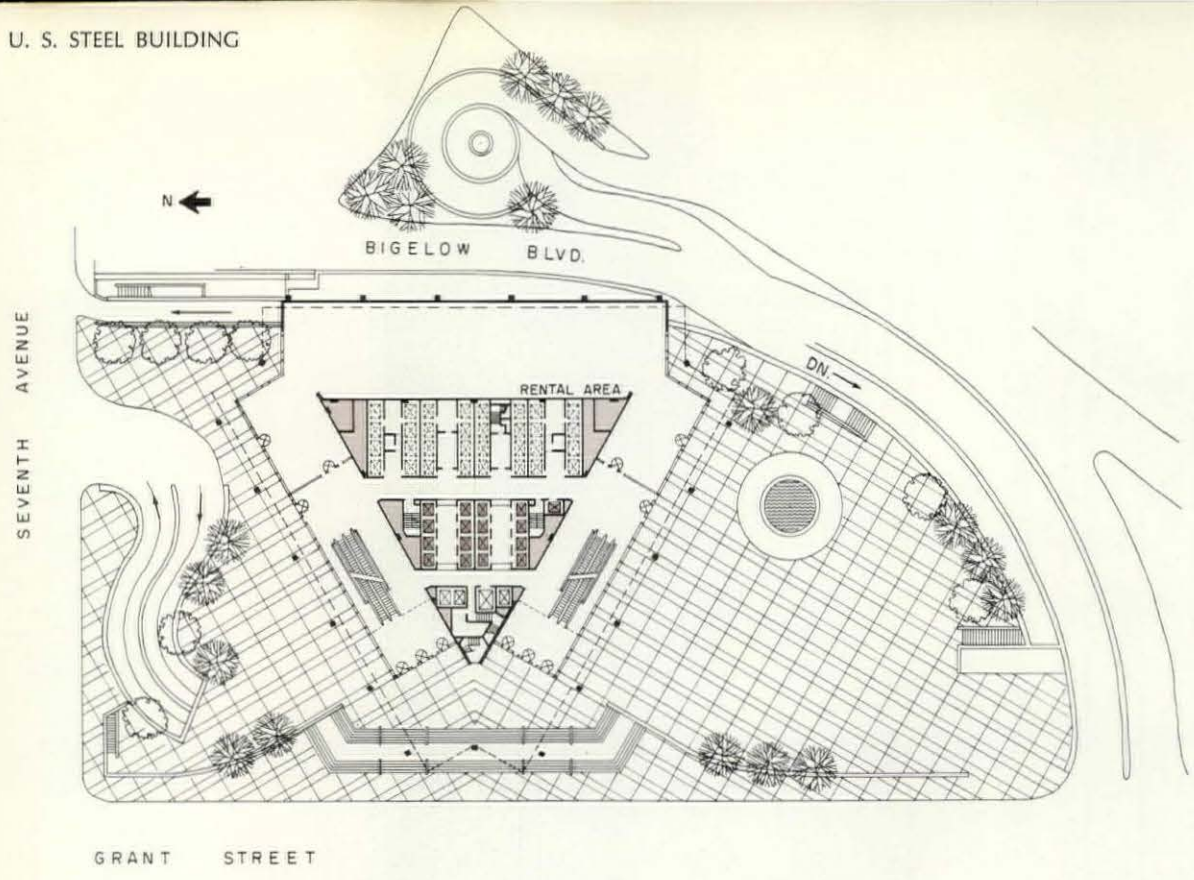
In accordance with the owner's re quest, the suspended acoustical ceiling will be flush, with no beam drops. Th inner face of the exterior wall will als be smooth. Metal partitions can thus b placed on any desired modular line, fo maximum flexibility. The idea at presen is to provide a lighting troffer in alternat panels, although this arrangement may b modified. Linear air-conditioning suppl diffusers will be located on modular line running perpendicular to the core wa and spaced 13 feet apart. They can b individually controlled, or controlled i blocks, or split where partitions occur— refer to detail, page 171. Temperatur will be controlled by varying the volum of constant temperature air, rather tha by varying the air temperature. In addi tion to the inner-zone air-conditionin system, there will be a perimetral syster to serve the outer offices. Finished ceilin heights in office areas will be 8 feet,

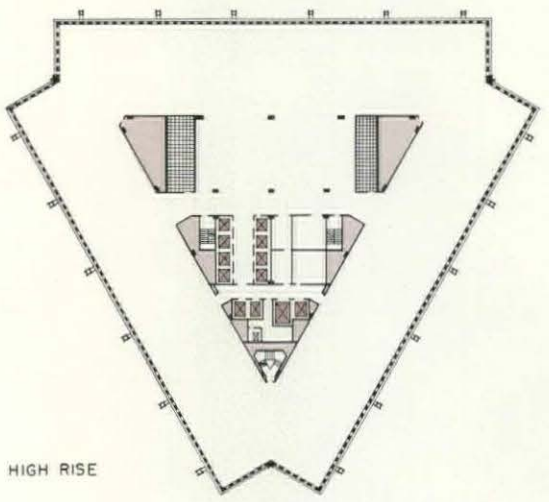


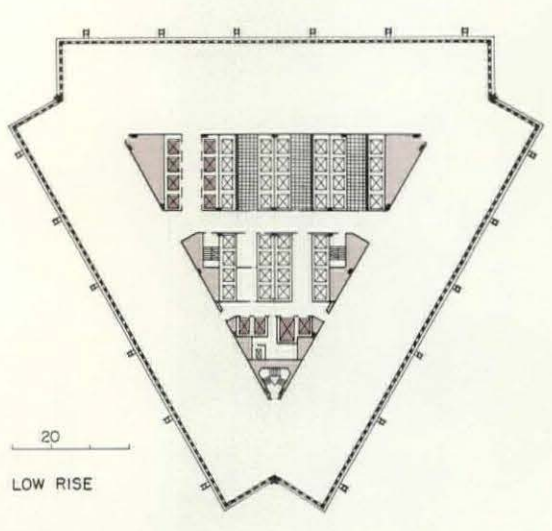
Joseph W. Molitor



Harold Corsini







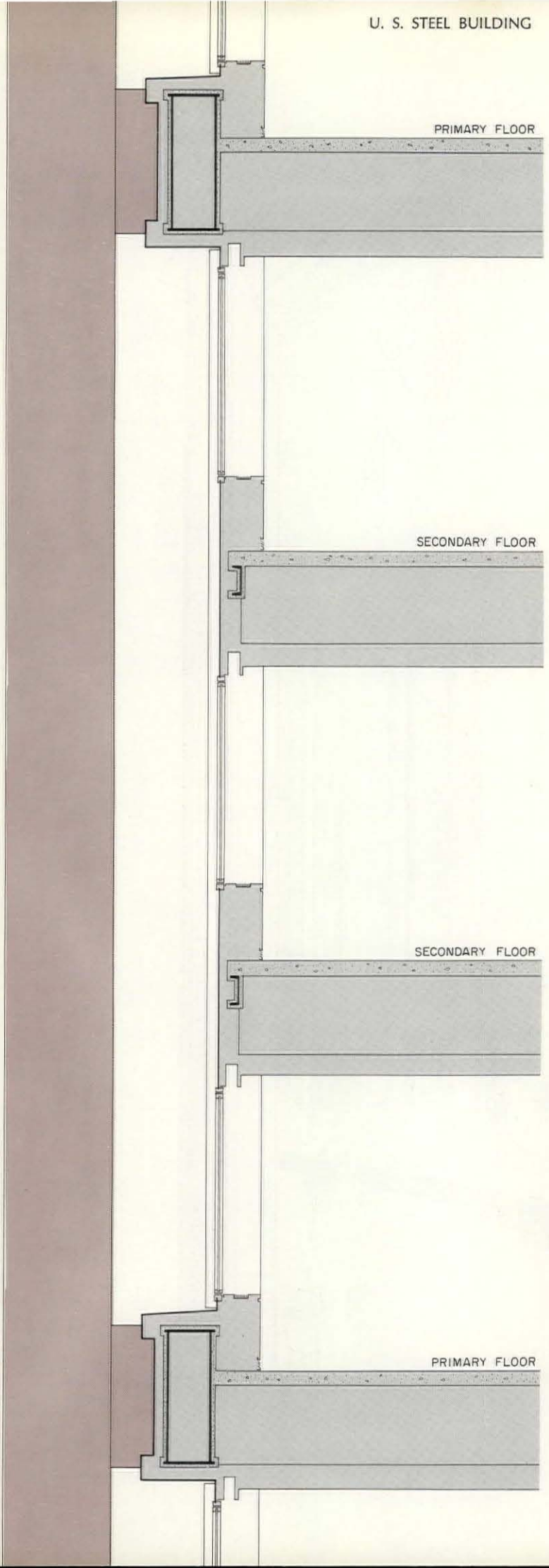
. . . inches on all floors; the floor-to-floo height throughout the building will be 1 feet, 10 inches.

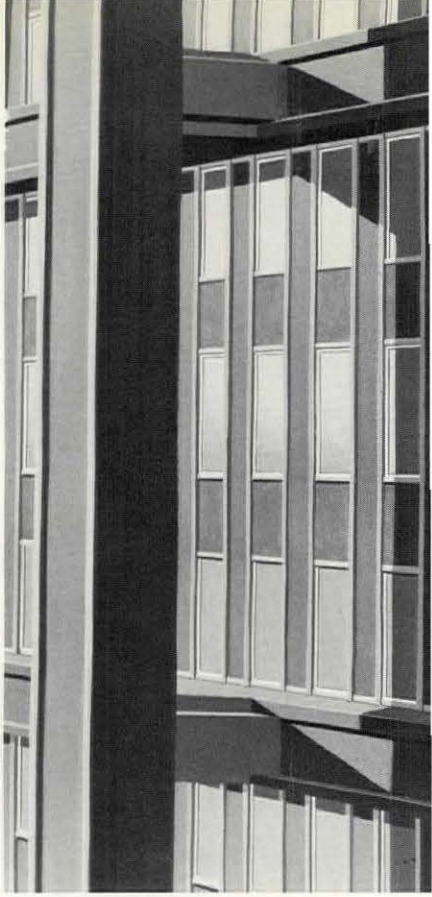
All light, receptacles, and misce laneous power will be distribute through trench header ducts and th cellular floor system, serving outlets o the floor and lighting fixtures for the cei ing below. For maximum flexibility in us wiring will be kept out of partitions an placed in service fittings on the floo with lighting control from a central poin

The exterior of the tower—whic will also follow the modular pattern— will be made of USS Cor-Ten, a steel tha forms a permanent protective coating a it oxidizes, turning to a rich, dark, purple brown color as it ages. The curtain wa will be an adaptation in Cor-Ten of standard stainless steel system develope by USS; the glass will be bronze-tinted the sash will be stainless steel.

The exterior columns will be welded hollow box sections, set three feet ou side the curtain wall. They will be fille with water which will—if the column exposed to excessive heat—circulate b convection currents. Each column will b divided into four zones to reduce th head of pressure. The circulating wate will serve as fireproofing, eliminating th need for conventional covering and per mitting the structural steel to speak fo itself. Potassium carbonate will be adde to the column water as anti-freeze.

At every third floor, the freestandin columns will support spandrel girder and will be laterally braced by the floo construction, acting as a diaphragm These primary floors—every third one—

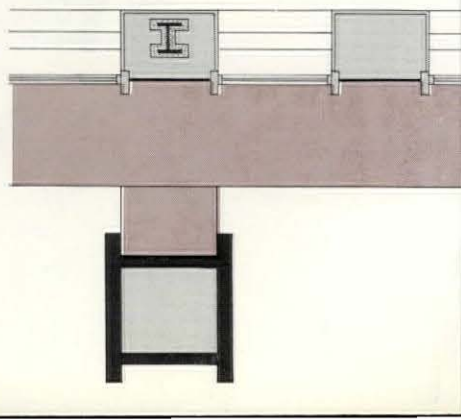


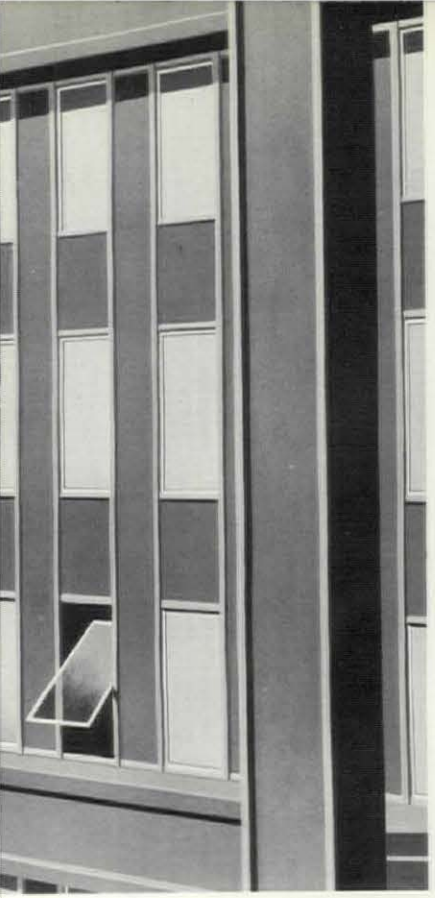


. . . will support the intervening ones, so tha the building becomes, in effect, a stac of three-story structures. The desig makes this fact visually evident, and b clearly articulating the structural and cu tain wall elements, creates a lively three dimensional pattern expressive of th construction.

Worthington, Skilling, Helle & Jack son began the structural design by con ducting an extensive study of variou types of high-rise constructions, and con cluded that any solution arrived at mus avoid a cost penalty, would have to tak care of expansion and contraction, an would result from applying present cri teria—which may conceivably change a knowledge increases. These considera tions become more intense as the heigh of a given building increases, in the ratio of the square of the difference.

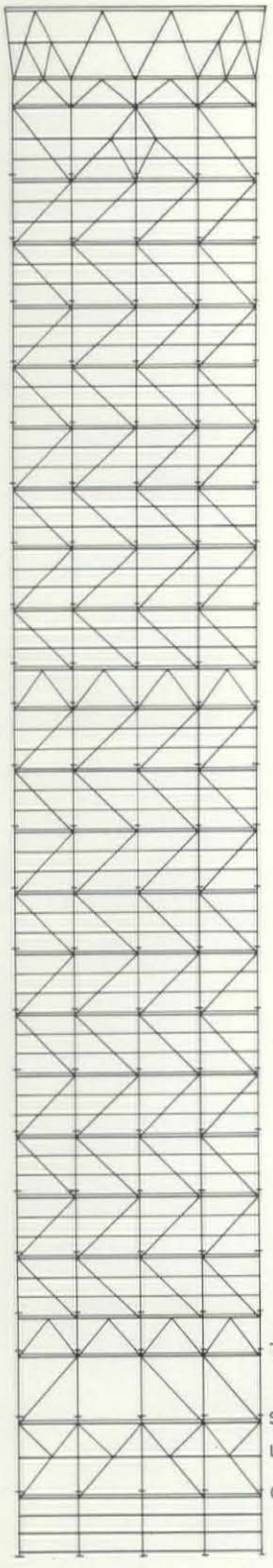
Engineer Leslie E. Robertson o WSH&J explains that the structure for th USS building consists of a braced centra core made rigid at the top by a hori zontal space frame or "hat" that extend

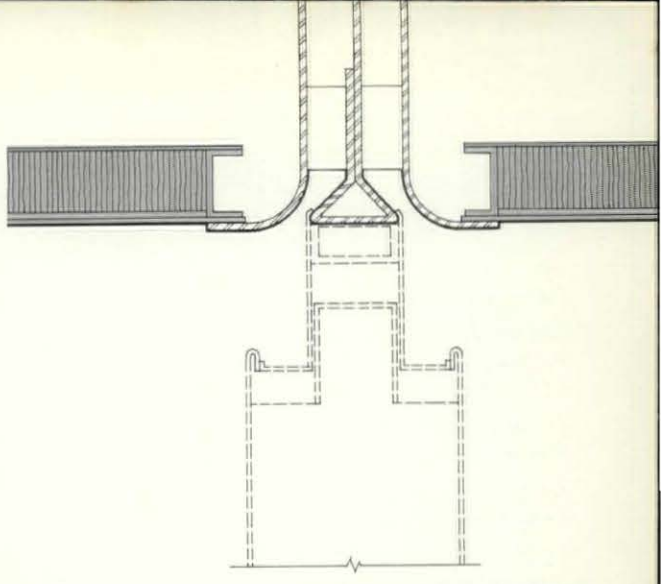




terally to the outer perimeter of the ower. This basic T-form is held in equi-brium by the outer columns, and takes are of temperature differential and wind rift, in part. The outer columns are laced in almost pure tension and com-ression; bending stresses are secondary, nd not a critical factor. These columns re tied, every third floor, to the spandrel irder and floor construction to provide tability and keep them in alignment. his fact, and the welding on of girder tubs to facilitate erection, led to the sys-em of primary and secondary floors, and o the three-story core bracing pattern. his type of outer wall structure allows—vithin its larger framework—any wall reatment the architect desires.

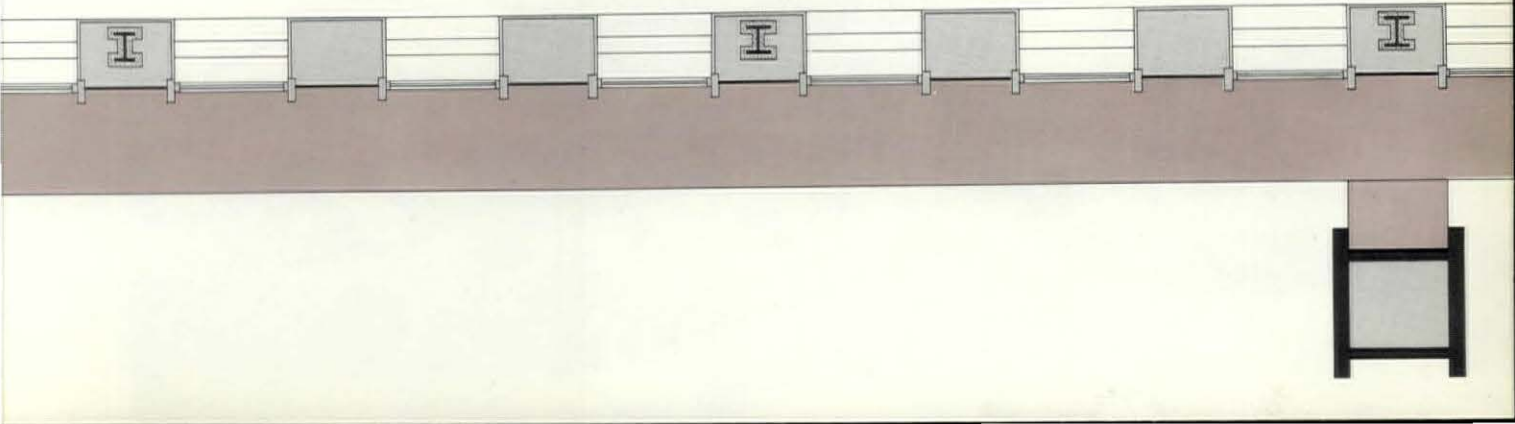
The shape of the building is expedi-ous for wind; in modifying the pure riangular form by cutting out the cor-ers, the response of the structure to vind was substantially reduced. A full ange of structural steel will be used, with llowable tensile strengths ranging from 6,000 to 100,000 psi.





The air-conditioning supply will come from linear ceiling diffusers, located on modular lines and spaced three squares, or 13 feet, apart. Over partitions, a diffuser unit with double controls—shown in section above—will be used.

The diagram immediately to the left shows an elevation of the core bracing, laid out on the basis of three-floor intervals.



UNITED STATES STEEL OFFICE BUILDING
Pittsburgh, Pennsylvania

OWNER:
United States Steel Corporation

OWNER'S CONSULTANT FOR SITE ASSEMBLY, CONSTRUCTION SUPERVISION, AND BUILDING MANAGEMENT:
John W. Galbreath

ARCHITECTS:
Harrison & Abramovitz and Abbe

STRUCTURAL ENGINEERS:
Worthington, Skilling, Helle & Jackson and Edwards & Hjorth

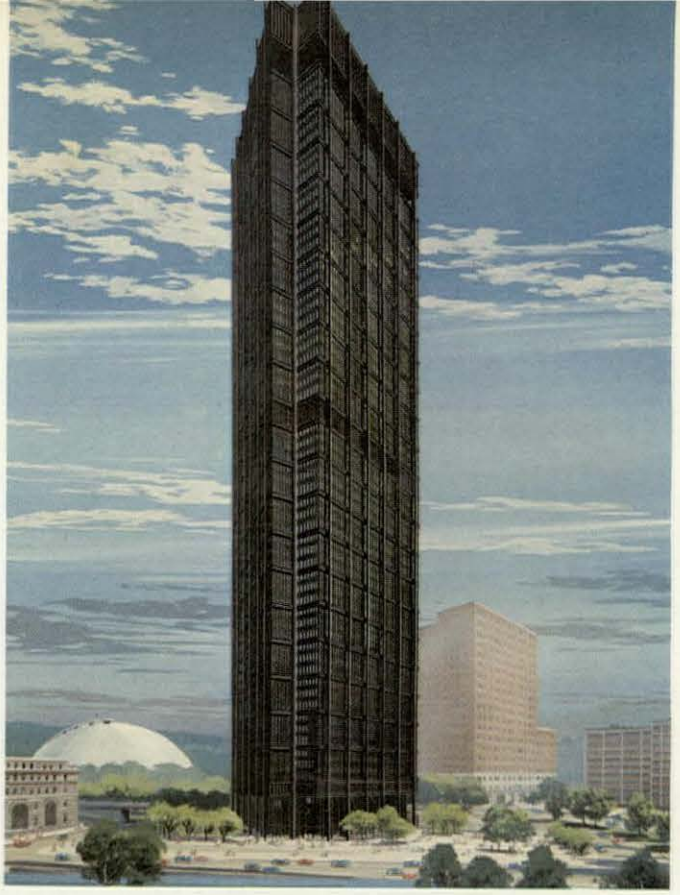
FOUNDATION ENGINEERS:
Mueser, Rutledge, Wentworth & Johnston

MECHANICAL ENGINEERS:
Jaros, Baum & Bolles

ELECTRICAL ENGINEERS:
Ebner-Schmidt Associates

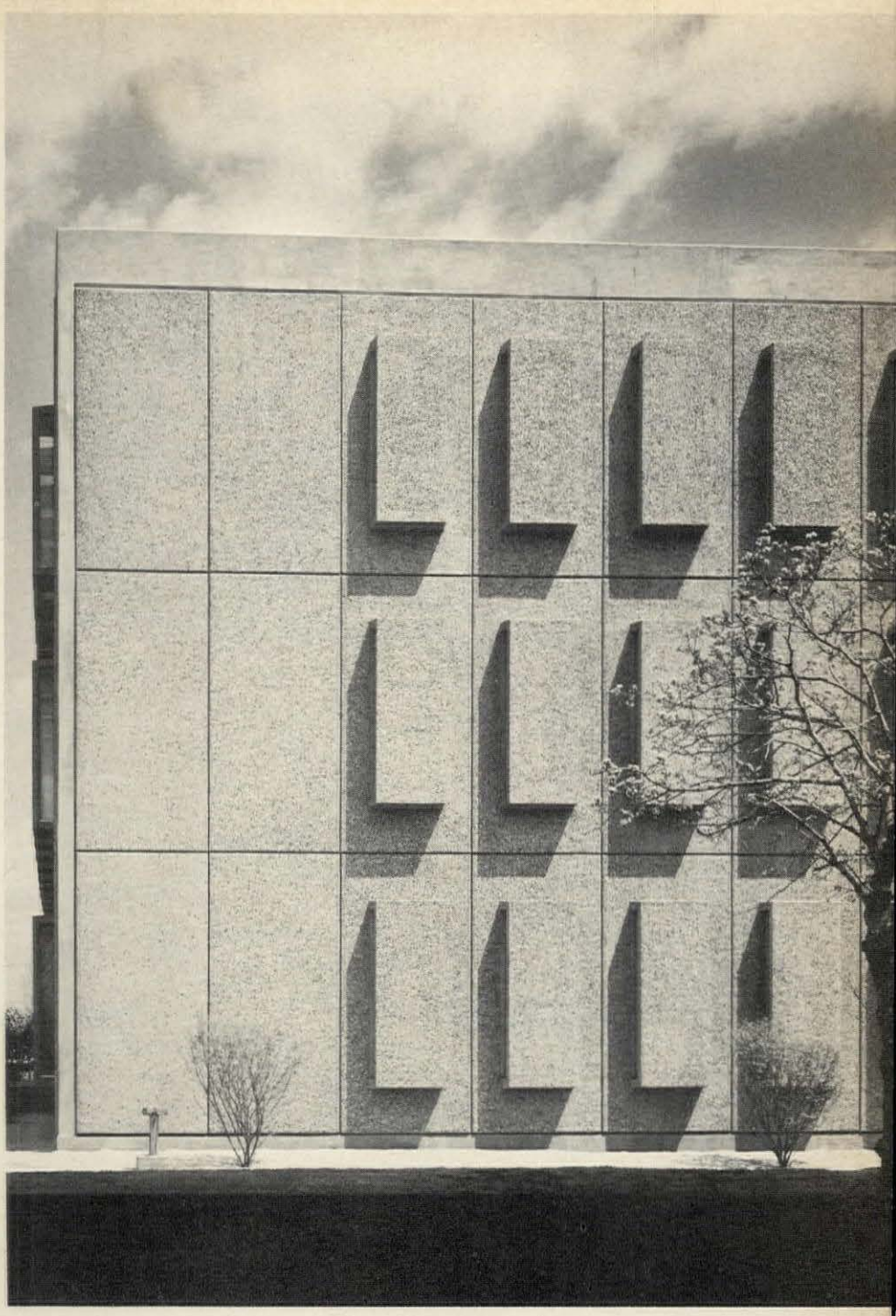
CONTRACTOR:
Turner Construction Company

A rendering of the final design is pictured at right; an aerial view of the model which shows how the new tower will relate to downtown Pittsburgh is reproduced below.



Joseph W. Molitor

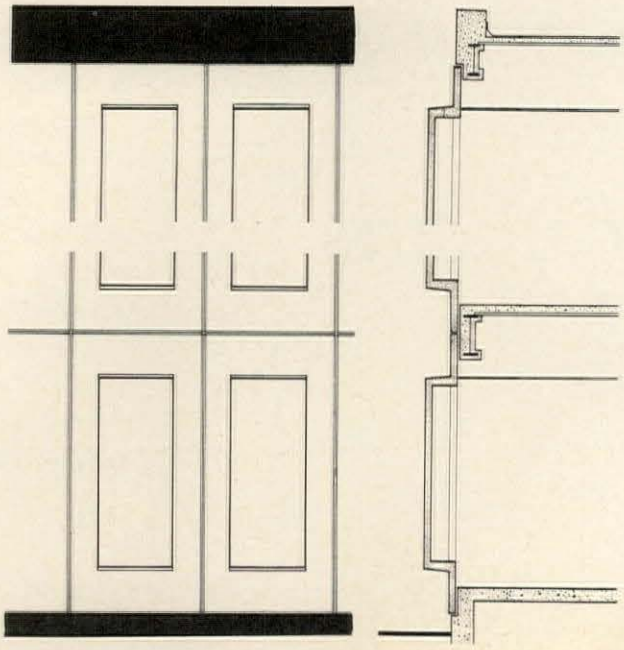
A CONTINUING STUDY OF THE WINDOW WALL BY ELIOT NOYES

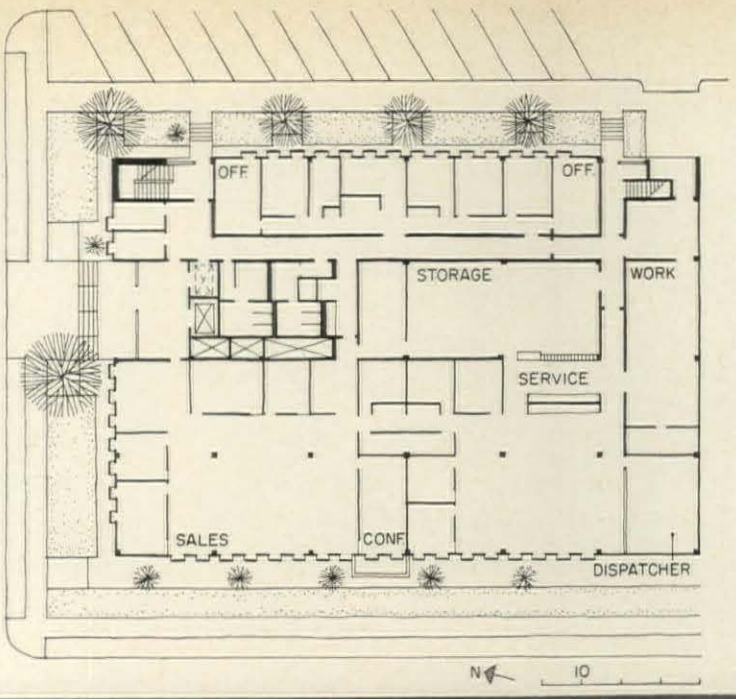


The design of the three office buildings that follow centered on the architect's search for a more functional and economical window wall. In this search, Eliot Noyes was concerned with the control of light, heat, glare, sound, and vision; and with the effort to provide attractive interiors of architectural character, free of blinds and curtains—all at a cost in line with that of a standard curtain wall. His studies led him to developments in the "assembled wall"—composed of modular precast concrete panels—which have indeed yielded significant economies in construction cost and in construction time.

Joseph W. Molitor photos

The two photographs at left show the interior effect the panels creat the picture above, the manner in which they are glazed. The parti elevation and typical section below indicate the way in which t building face was assembled. This particular window wall was furnish and installed, the architect says, at a total in-place cost no greater th a standard curtain wall. The next building by Noyes—now under co struction near Pittsburgh—will have glazing strips and panels similar these, except that they will be recessed rather than projected.





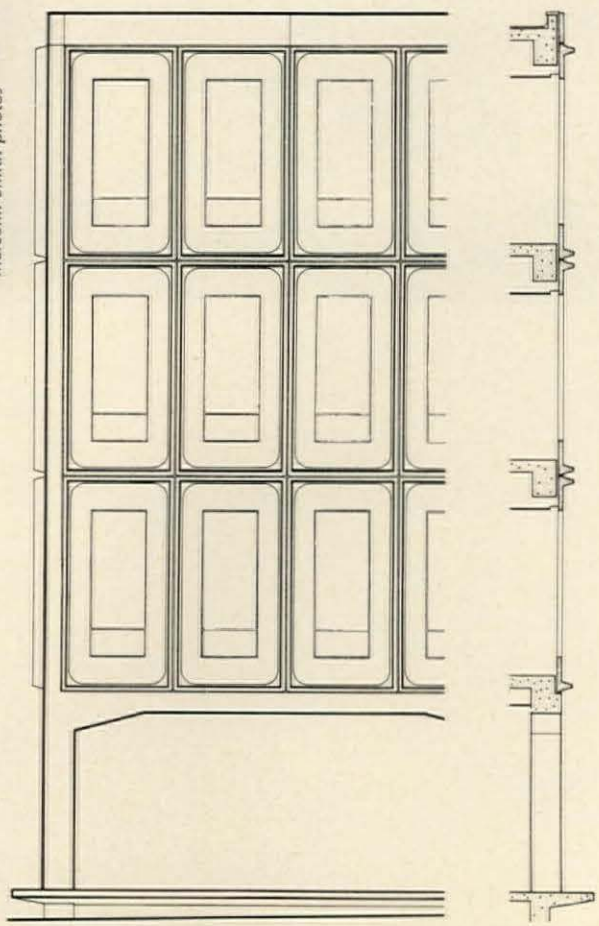
GLASS PANELS PERPENDICULAR TO WALL SURFACE

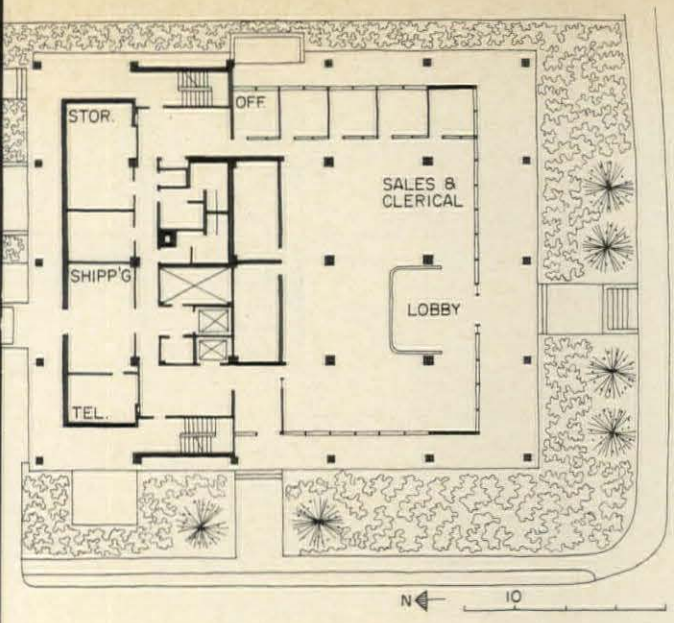
This recently completed office building on Long Island—newest of the three in this group—achieves most of the objectives Noyes was seeking, and does so economically. The precast modular units —6 feet wide and 12 feet high—were of a size and weight easy to handle, had a built-in exterior and interior finish, and were slotted for direct field glazing without window frames. Turning the two narrow glazing strips perpendicular to the wall permits only a controlled amount of daylight to enter, yet allows diagonal views and sun control. The need for blinds or curtains is thus eliminated. The situation of the building—a busy street—called for a wall that would block off sound and full vision. The interior effect is attractive, functional, and architectural in character. The exterior is of a brownish, coarse textured aggregate; the interior is smooth concrete, ready for painting. The entrance is located on the north facade shown in the photo at left.

IBM BRANCH OFFICE BUILDING, Garden City, New York. Architects: *Eliot Noyes & Associates;* structural engineers: *Werner-Jensen & Korst;* mechanical and electrical engineers: *Currier, Andersen & Geda;* general contractor: *L. A. Wenger.*

Malcolm Smith photos

The precast modular wall panels—6 feet wide and 11 feet, 6 inches high —are of two types; one with a window, the other blank. Their design was developed to make the units as strong, rigid, and light in weight as possible; also to make them of a size easy to transport and erect. Joints between the panels occur in the deep recesses formed by adjacent projecting flanges. The actual windows, with anodized aluminum frames, were installed and glazed after the precast panels were set in place. The partial elevation and typical wall section below explain how the building wall was put together. Note how the concrete slab at ground level becomes, in effect, a platform for the entire building.





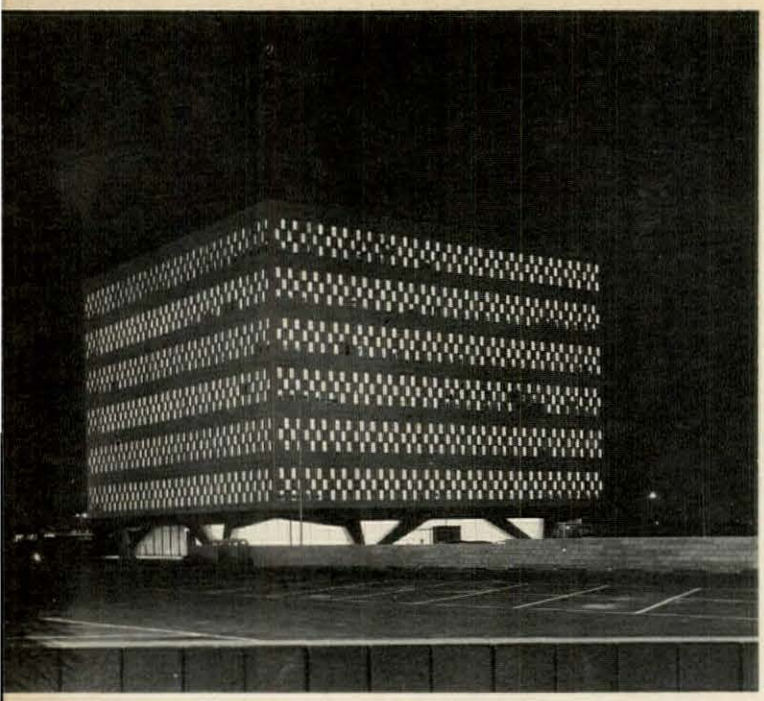
WINDOW WALL ASSEMBLED OF PRECAST PANELS

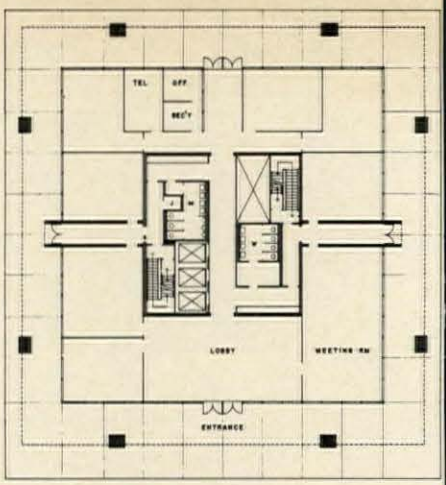
In designing this office building—earliest of the three in point of time—Noyes was concerned, first, with reducing the area of glazing as compared with that in most glass curtain walls; and second, with providing a precast modular unit that could become, in repetition, the outer wall of the building. The resulting four-story building is a handsome one that was economically built, but hardly revolutionary as far as fenestration was concerned. Vertical blinds did have to be installed as protection against sunlight, glare, and unfavorable view, and they are closed most of the time.

However, progress was made, especially in constructing the wall, to the effect that the next step—studying patterns, sizes, and arrangements of glazing panels—became clear, and was the architect's principal concern in succeeding buildings. The decisive reveals of this particular window wall serve to create a lively light and shade pattern, and are skillfully applied so the building's structure becomes visually evident.

IBM BRANCH OFFICE BUILDING, Arlington, Virginia. Architects: *Eliot Noyes & Associates;* engineers: *Werner-Jensen & Korst;* general contractors: *Altimont Brothers.*

FENESTRATION STUDY BY ELIOT NOYES

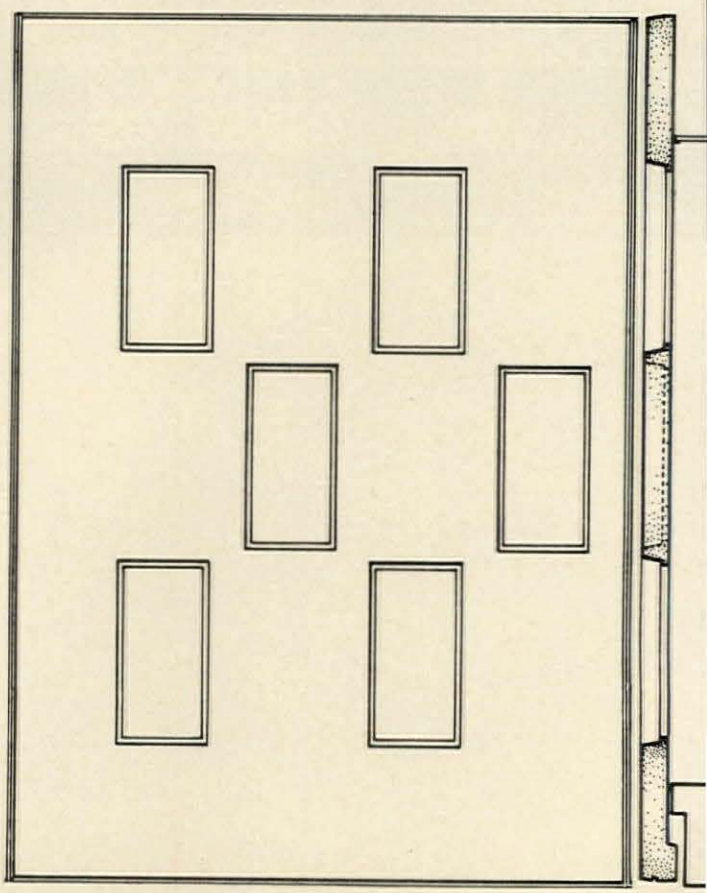


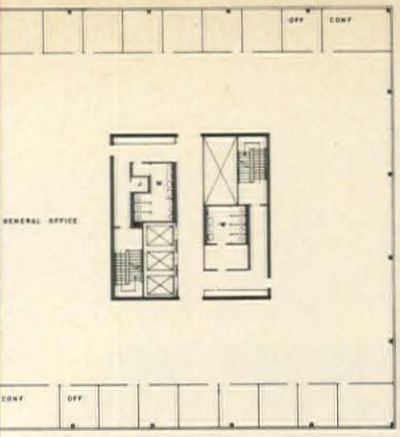


GROUND FLOOR

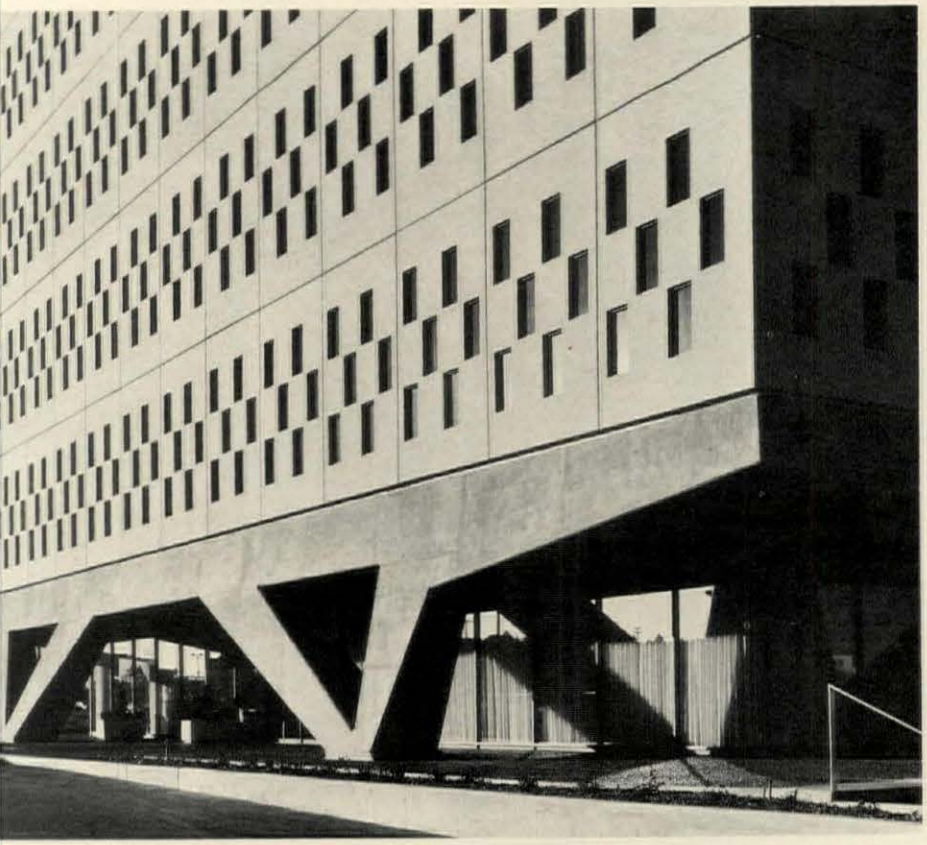
The precast panels, of white quartz aggregate in a white cement matrix, are 8 feet wide, 12 feet high, and 5½ inches thick; again, a size, weight, and shape efficient for casting and easy to transport and handle.

The massive concrete structure that supports the structural steel frame above second floor level derives its shape from analysis of various methods of achieving maximum openness at ground level. It has eight points of support, while a more conventional structural system would require 20. The interior surfaces of the panels are smooth; the joints are filled with neoprene gaskets and sealed with white caulking. The small windows are set in anodized aluminum snap-in frames.





YPICAL FLOOR 10



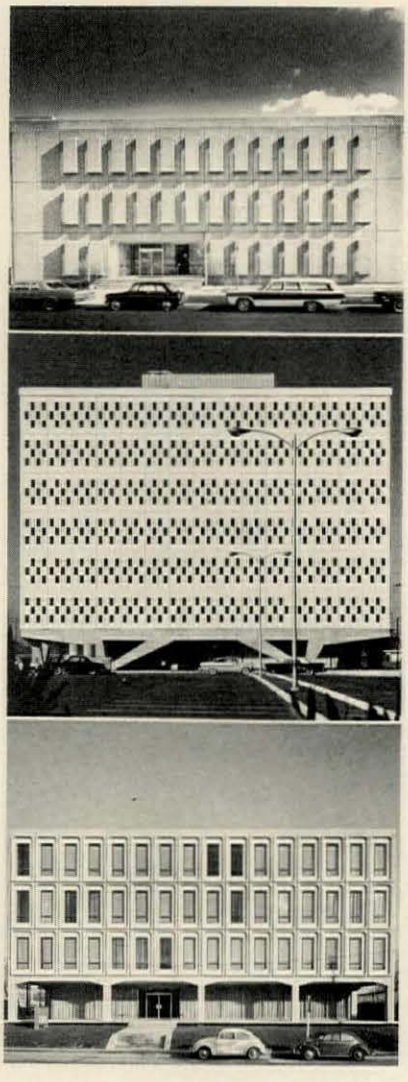
"...BOTH WALL AND WINDOW AT ONCE"

Located near the Los Angeles airport, this office building—second of the three to be built—is situated so there is free space on all sides. Thus, it seemed desirable to give the window wall an open character, yet guard against excessive sunlight and glare. To these ends, the glass area was broken up into a pattern of small windows of gray glass, variations of which were studied in mock-up form to determine the effect upon vision when seated or standing, and to determine whether or not any claustrophobic feeling was set up. Noyes says, "It felt very good, and reminded me of the kind of window wall one encounters in India, so perforated that it is indeed both wall and window at once. It also had some of the quality of an old-fashioned back porch, enclosed in wooden latticework."

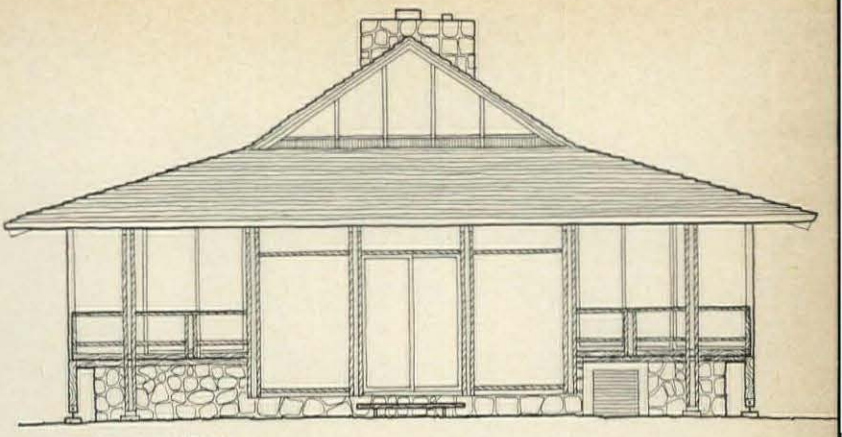
This window wall appears, then, to succeed in providing the usual area of glass while eliminating the need for blinds or curtains, a savings in both construction and maintenance.

IBM AEROSPACE HEADQUARTERS, Los Angeles. Architects: *Eliot Noyes & Associates;* associated architects: *A. Quincy Jones and Frederick E. Emmons;* engineers: *Werner-Jensen & Korst;* general contractor: *George A. Fuller Company.*

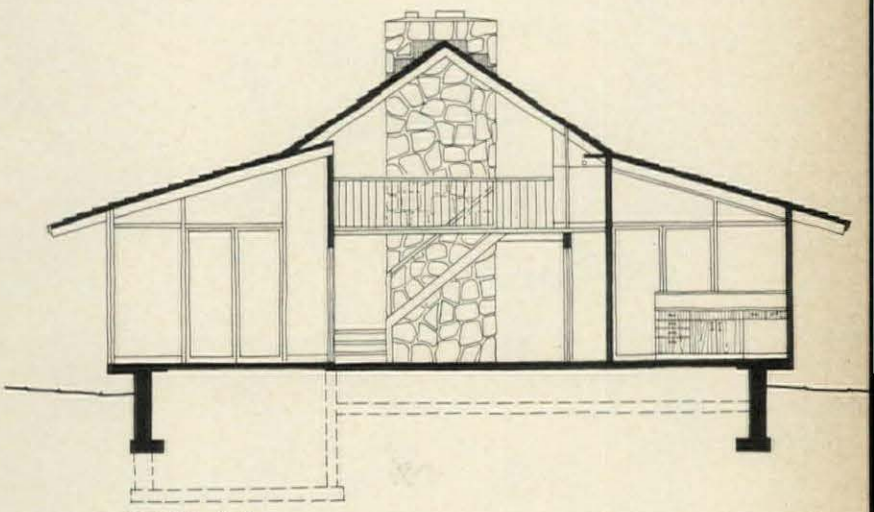
Amir Farr photos



The pleasant interior effect can be seen in the large photo above; the wall has almost the look of a screen. The scheme seems to achieve a satisfactory balance of openess and closure—of inside and outside light —even during late afternoons, when the sun is low in the sky. Although, for safety's sake, the architect did design a simple, clip-in shading device for the small windows, no one has requested them for his office. The three photos at right, reproduced at corresponding scale, show the interesting variety of pattern the three buildings produce.



REAR ELEVATION



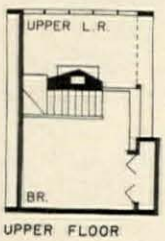
SECTION A-A

A small wood-and-stone house relates well to a mountain site

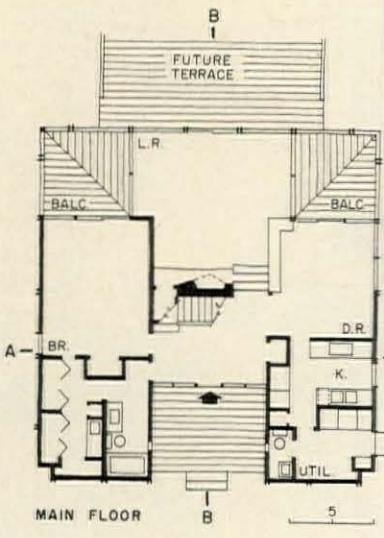
Wood, stone and the outdoors were the most powerful factors in determining the design of this house, which started with the tremendous advantage of a magnificent site on the front range of the Rockies near Boulder. Since the clients had deliberately moved out of the city to find seclusion in the mountains, they were naturally anxious to retain all the original features of the land, particularly the pine trees. Openings in several parts of the roof overhang allow the trees near the house to grow undisturbed, and are a very direct expression of the close relationship between house and site.

Architect Hobart Wagener rejected any temptation to compete with the surroundings and concentrated—most successfully—on designing a simple, logical structure "which would try to become an integral part of the site." For this purpose, cedar beveled siding and cedar shake roof were a good choice because of their attractive weathering quality. A bleaching oil finish was used on the walls to accelerate the natural process.

The sense of shelter and security needed in a fairly rugged setting is provided by placing the main seating area in a "well" between a raised terrace on one side and a raised dining area on the other, by the use of warm-colored brick for the floors, segmentation of the large glass areas, and the protective roof overhang all around the house.



UPPER FLOOR



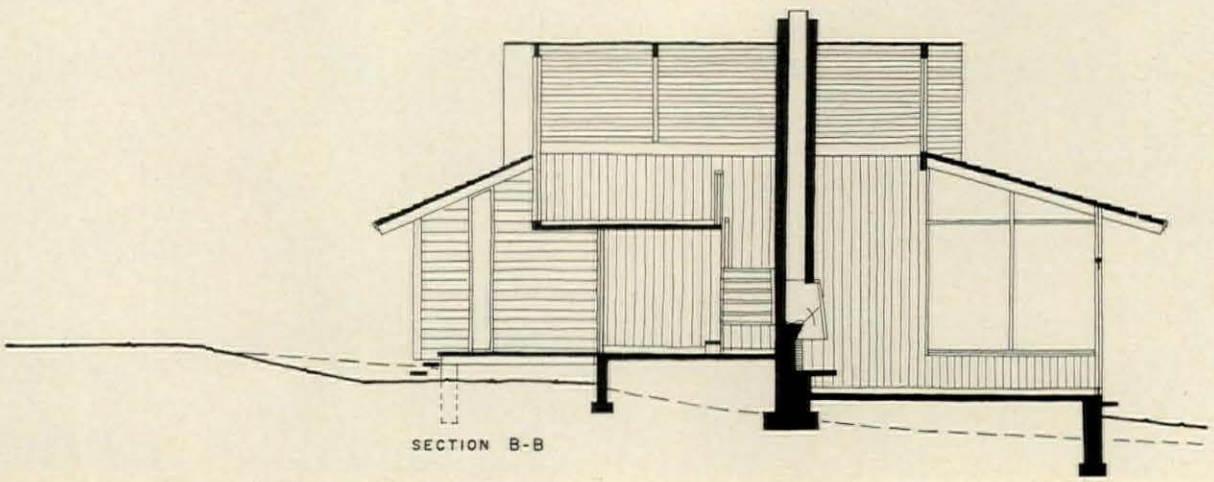
The interior is dominated by an enormous stone fireplace, an exposed ceiling structure and a dramatic view of the valley. Strategically placed clerestory windows highlight the effect of the ceiling formation and also point up the detailing of the fireplace stonework.

The house is small—with only one full bedroom on the first floor and a guest balcony behind the fireplace—but outdoor decks, the added height in the center of the house, and of course the view, extend the experience of space beyond its walls.

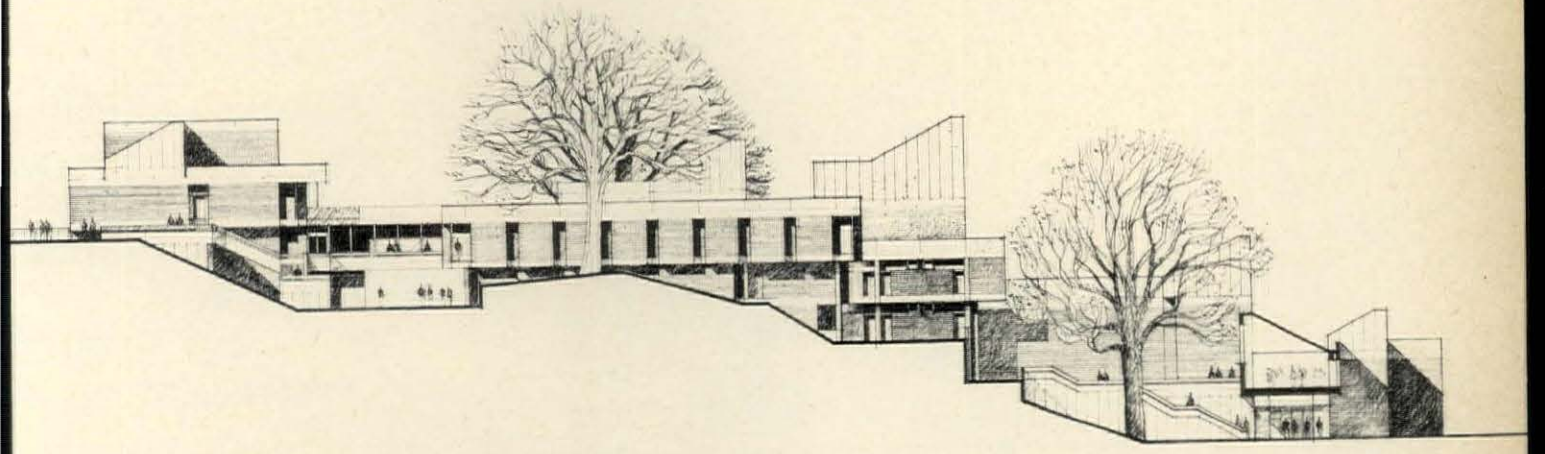
In addition to space and freedom, an exposed site of this kind demands warmth, shelter and a sense of permanence. This was fully recognized by the architect in the careful balance of openness and enclosure and in his sensitive exploitation of the strong, textural quality of natural materials.

RESIDENCE for Mr. and Mrs. A. J. Bartkus, Boulder, Colorado. Architects: *Hobart D. Wagener Associates—associate on job: Robert E. Carlson;* contractor: *Warren R. Slattendale.*

Cedar is the dominant material—in the form of siding and roof shingles on the exterior, and tongue-and-groove boards and decking on the interior walls and ceilings. A baseboard hot water heating system is included in the $30,000 construction cost. Good through ventilation takes advantage of summer mountain breezes.



SECTION B-B



Campus architecture shaped by master plans

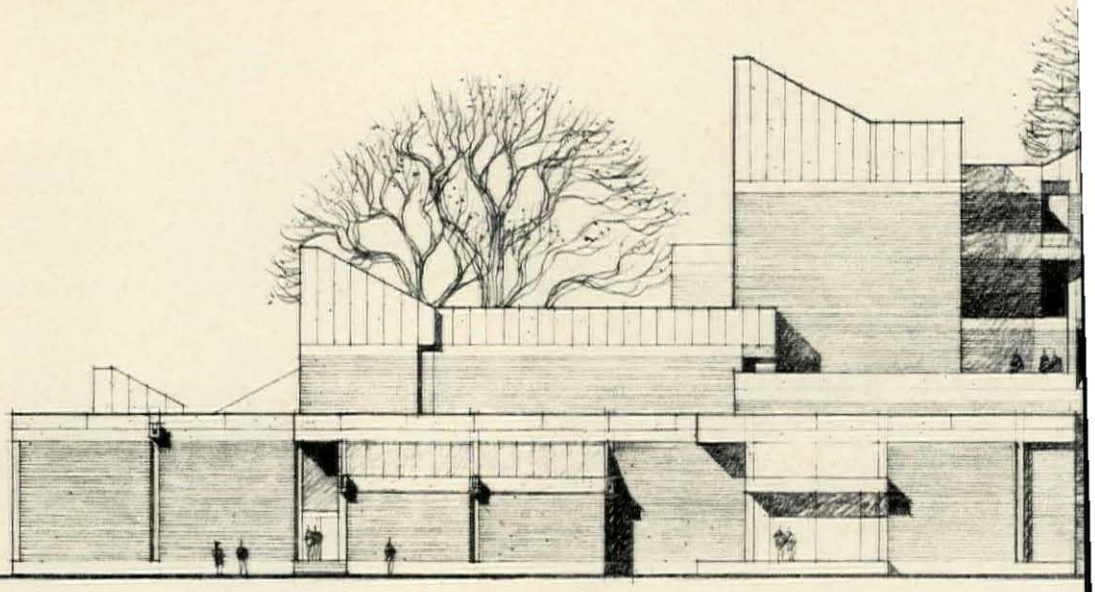
The best college buildings are those which are being designed within the framework of carefully formulated long-term campus development plans. Opportunities to design major structures go to architects who are already at work on a general plan, often with good results. Among the first consultants on the scene, they help clarify at the outset the physical problems posed by expansion, and from the beginning grapple with problems of circulation and land use. After they have established basic siting, massing and functional interrelationships it is a logical next step to refine the plans and determine the structure and materials—in short, to design the buildings. More often than not the master-plan architects are then commissioned to do one or two key campus structures and perhaps more.

By adding architects as partners, a few landscape architecture and planning firms are expanding their services to include architecture and are also beginning to receive important building commissions, some of which are shown on the pages which follow.

All the buildings in this study have been chosen to demonstrate that the insights of the master-planning process greatly enhance architectural quality. Examples shown include current work at four major universities and one college. Two of the universities, Virginia and Stanford, demand an architecture which defers to strong architectural traditions; the University of Rochester poses the problem of expansion in an urban context; the new University of California at Santa Cruz offers the challenge of a magnificent, unexploited 2,000-acre site; and tiny Barrington College in Rhode Island presents design problems which are typical for schools of its size.

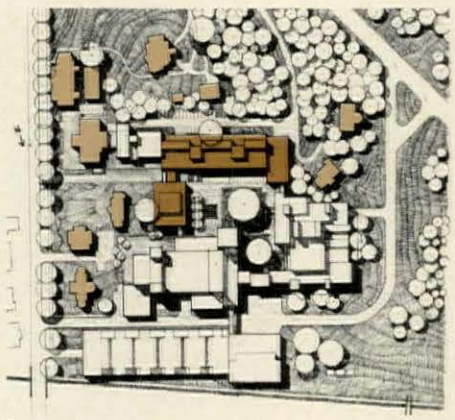
Mildred F. Schmertz

Designed in deference to Mr. Jefferson:
A Fine Arts Center for the University of Virginia



Pietro Belluschi and Kenneth DeMay, design architects for a new fine arts complex about to be constructed at the University of Virginia, have not compromised their design in any obvious stylistic sense to conform to the architectural traditions of this distinguished campus. Their scheme for the Fine Arts Center has indeed been shaped to an important degree by their desire to conserve existing campus values, but these considerations are reflected in subtleties of site planning, density and scale.

The great campus at Charlottesville was laid out by Thomas Jefferson and at its heart is one of his most noble buildings, the Rotunda. The latter commands the famous Lawn, flanked by the architect's modestly scaled pavilions, still predominantly residential, which open directly upon it. Beyond the pavilions, to the east and west, are broad uninterrupted spaces called Ranges. Jefferson's early pattern has been most marked in the subsequent development of the area known as the Central Grounds. The University of Virginia development plan prepared by Sasaki, Dawson, DeMay Associates recommended that the Fine Arts Center be located within the Central Grounds to promote the kind of compact development which encourages pedestrian movement. Since the plan also urged that open space be preserved and the close relationship between dormitory and play fields be maintained, buildable land is scarce. Therefore, the best site available is steeply sloping and small enough to require very dense development. Belluschi and DeMay, making the most of these circumstances, have produced a notable design.



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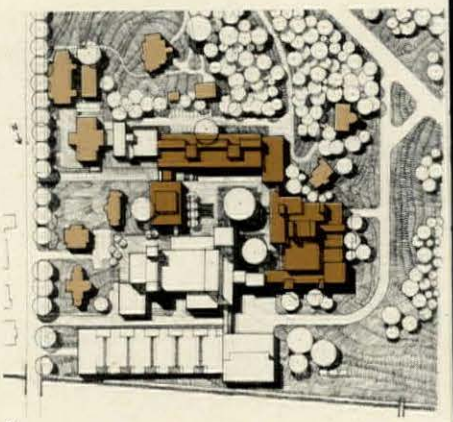

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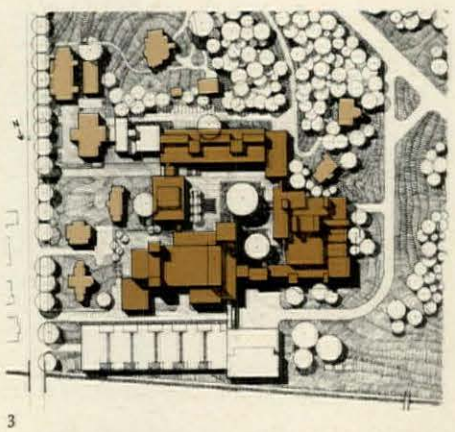

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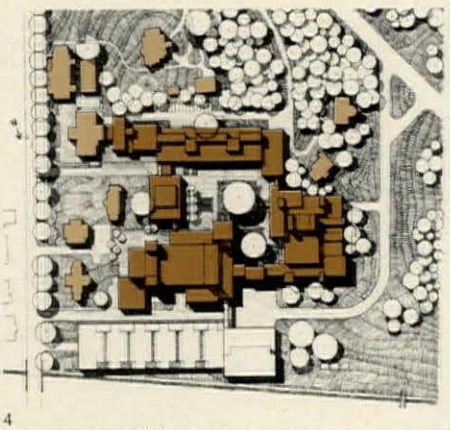

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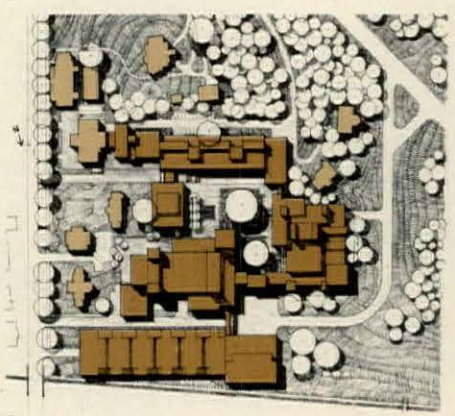
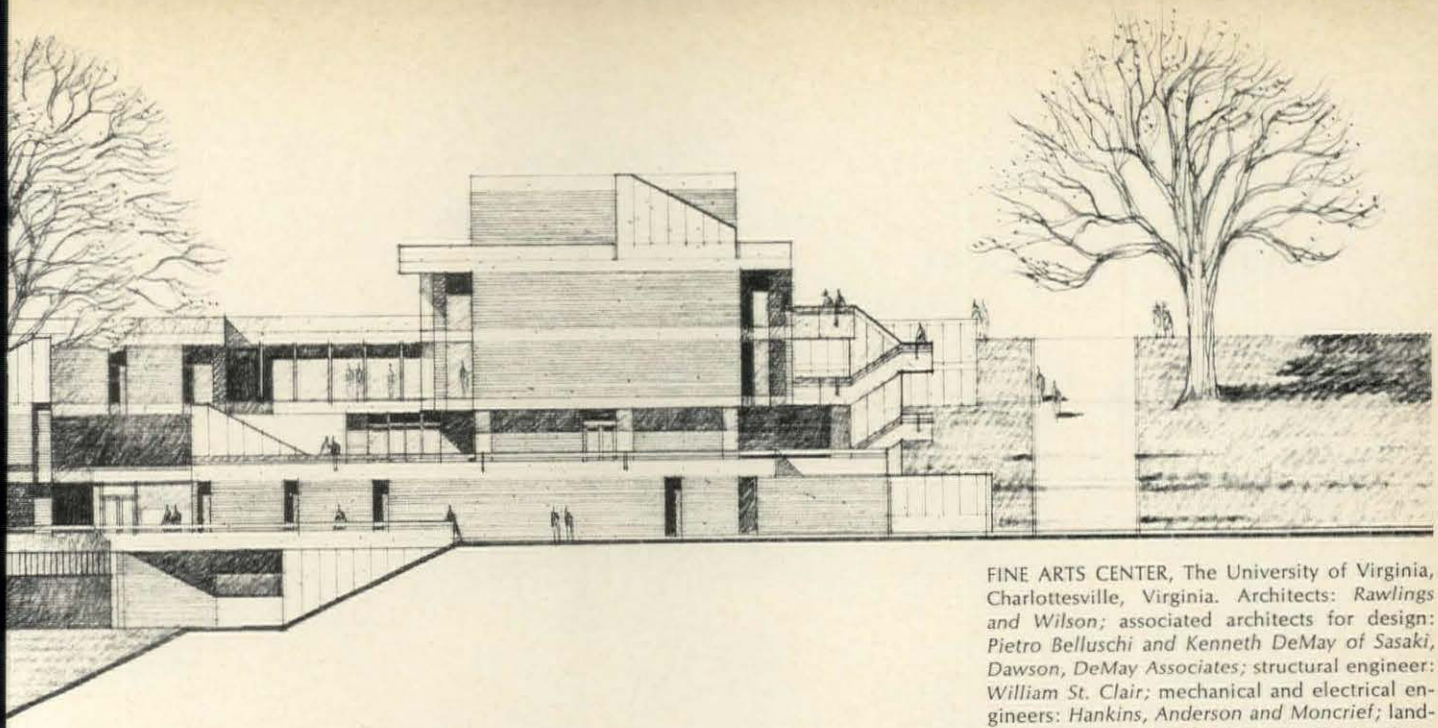
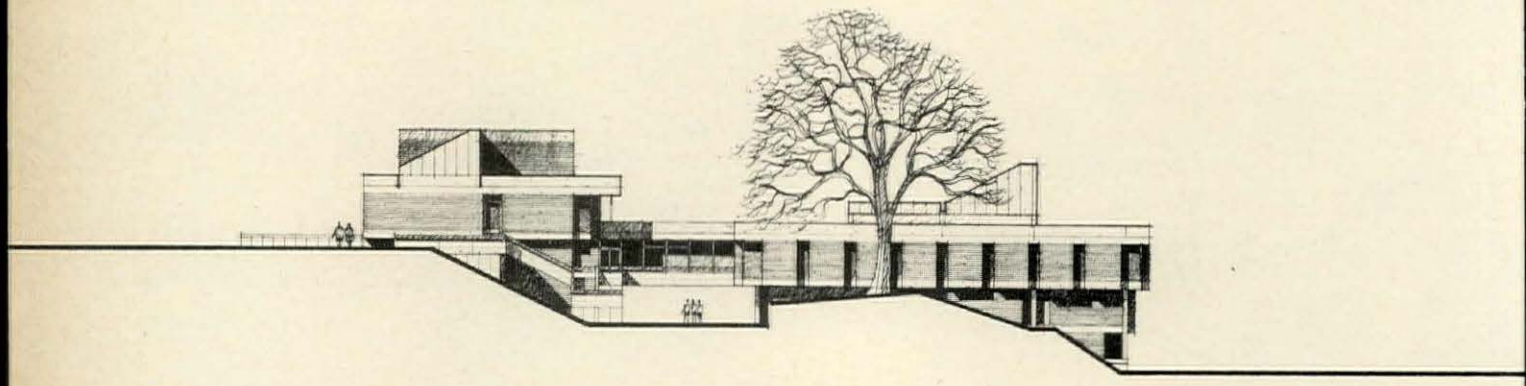


5

The Center will be built in phases in a period of over ten years, but each element when finished has been designed to appear and function as a complete entity rather than as a raw segment in a continuing construction process. Phasing is shown in the series of plot plans. Existing buildings to remain are indicated by the lighter brown. Construction will soon begin on the school of architecture and the fine arts library (1), the drama and speech building is next (2), the music, TV and radio facility will follow (3), then the art studios will fill the void between the existing Bayly Museum and the school of architecture (4) and finally a 500 car parking garage will be added (5).

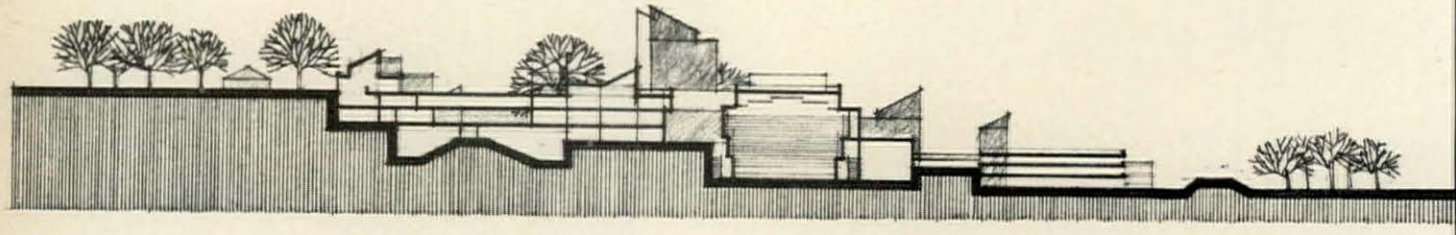


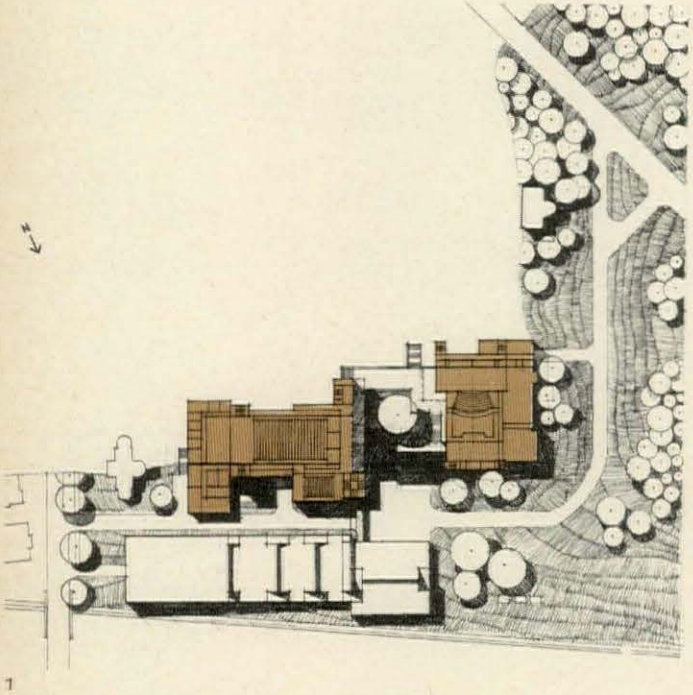
FINE ARTS CENTER, The University of Virginia, Charlottesville, Virginia. Architects: *Rawlings and Wilson;* associated architects for design: *Pietro Belluschi and Kenneth DeMay of Sasaki, Dawson, DeMay Associates;* structural engineer: *William St. Clair;* mechanical and electrical engineers: *Hankins, Anderson and Moncrief;* landscape architects: *Sasaki, Dawson, DeMay Associates, Inc.;* acoustical consultants: *Bolt, Beranek & Newman.*



The use of modest materials to express modest ideas produces a barren architecture, according to Kenneth DeMay. "At any major university the last of the great buildings were done before the Depression. We can no longer afford to match their rich materials and costly workmanship. But even if our materials must be modest, our ideas can be rich, and if they are, we will build well." The vocabulary of materials to be used in the new Center is a simple one consisting of structural frames of reinforced concrete with brick infill. The forms themselves, on the other hand, are quite complicated. The building silhouettes, enlivened by the frequent use of metal-covered pitched roofs, are made even more plastic by the intricately related volumes which the walls enclose.

The elevations and sections convey the large scale and high density of the project. The drawing below shows in section (reading from left to right) the school of architecture, the library, concert and recital halls, a campus road to the northwest, the parking garage and the railroad right of way. The sections in the drawing on the opposite page show the railroad, the garage, the campus road, a common





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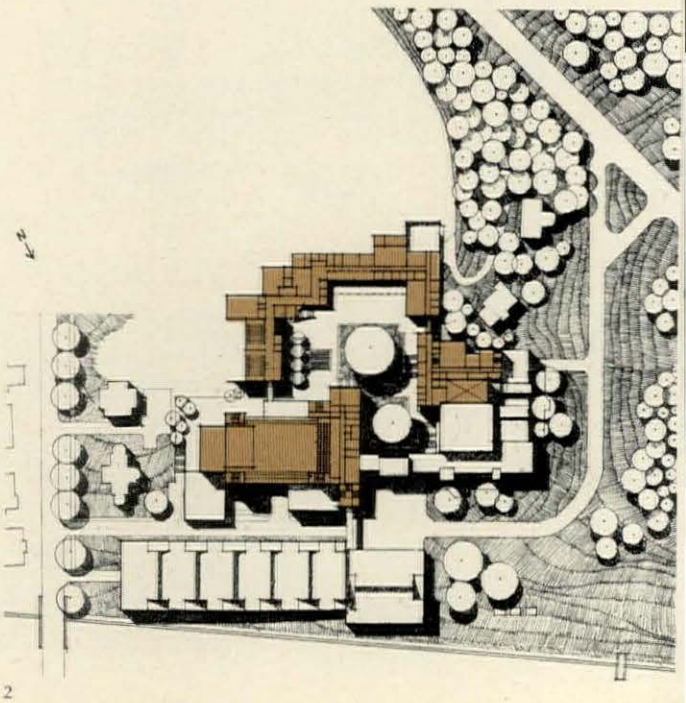

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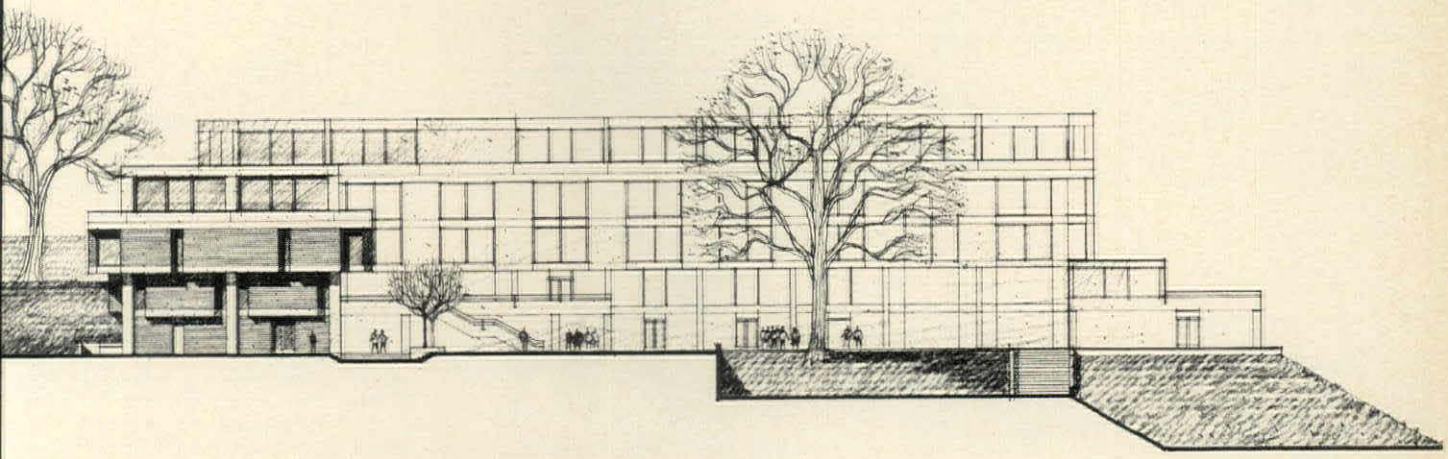
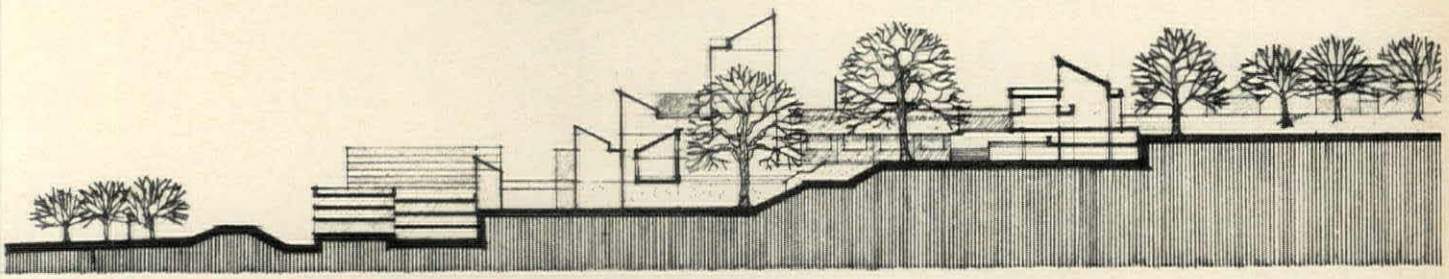
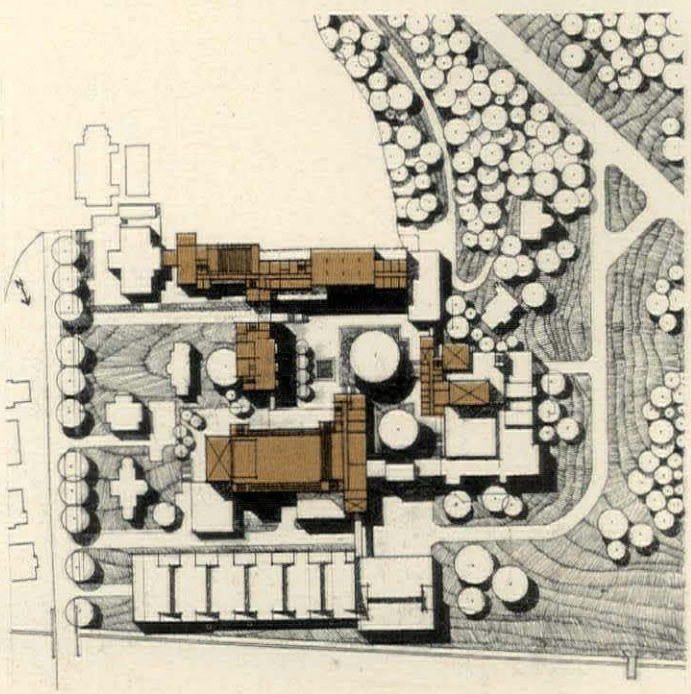


lobby and underpass, and the architecture building. The elevations above and on the opposite page show the school of architecture and the fine arts library as they will appear when the first phase of construction is completed, and before the music building and art studios are added. The underpass in the elevation on the opposite page is a major entrance to the complex.

The floor plans below show the center as it will be when it is completed. The drawing (1) which shows the music school auditorium and the drama school theater has been made at an elevation somewhat higher than the garage roof. The next plan (2) has been drawn at an elevation 30 feet above the first and shows the upper portion of the auditorium, the roof of the theater, additional drama and speech facilities farther up the hill and the entrance floors of the library and school of architecture, at the top of the slope. At a point 12 feet higher (3) the art studios appear at the lobby level and 24 feet higher still (4) the plan shows the main floor of the existing Bayly Museum, the art studios, the upper-level drafting rooms of the school of architecture, and lofty studios for the music school.





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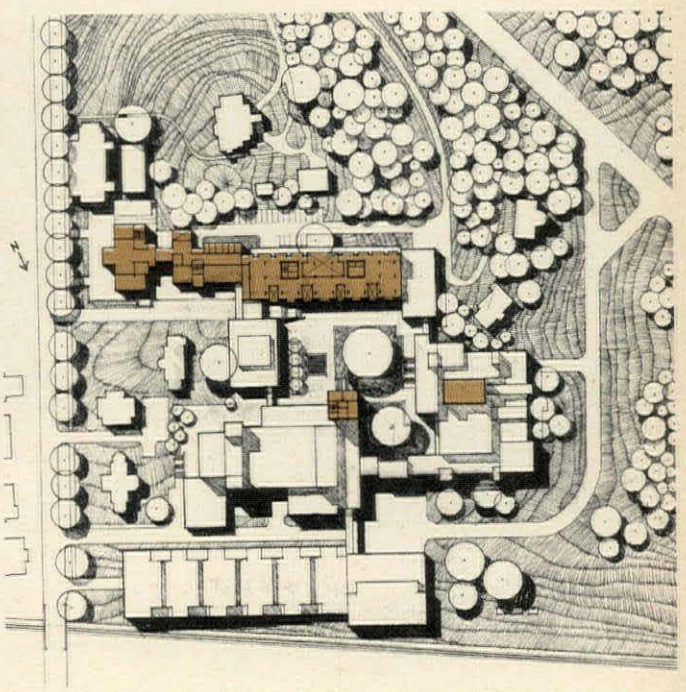
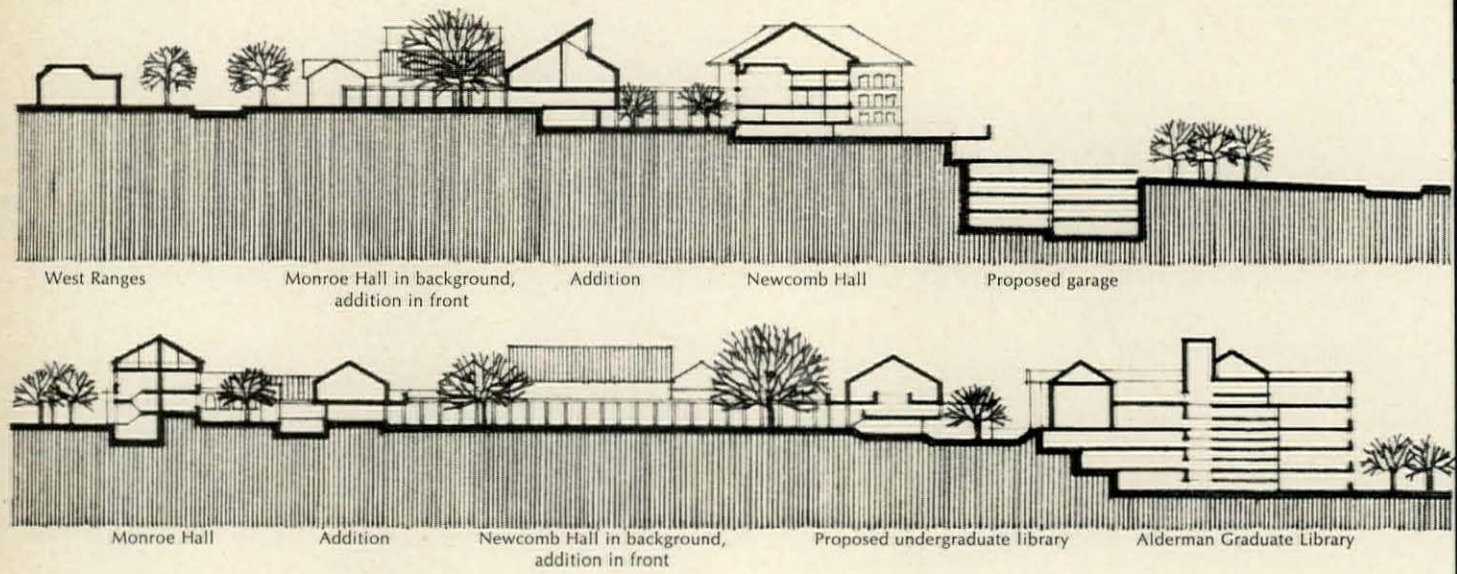
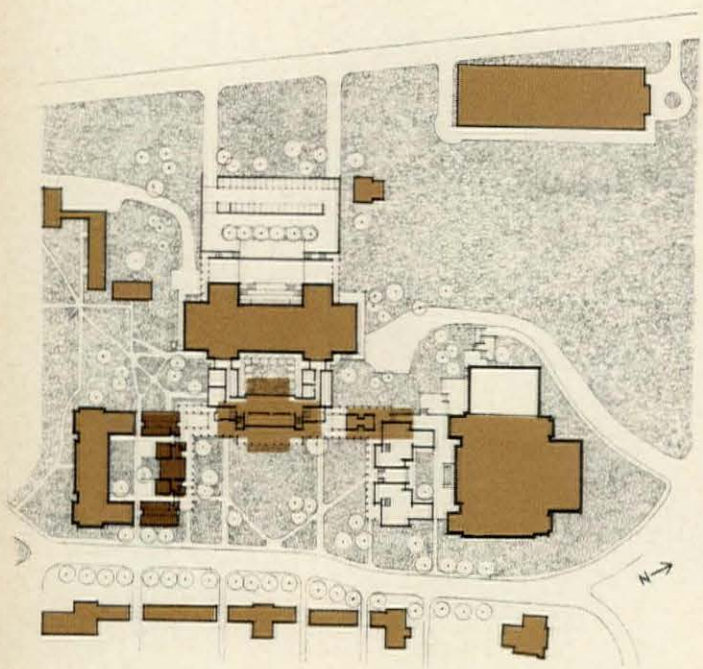


4

A contemporary solution, sympathetic to tradition:
Proposals for a University Center at the University of Virginia.



Thomas Jefferson's principles of order, visual clarity, interest and human scale are reflected in the design by Sasaki, Dawson, DeMay Associates for the development of the Newcomb Hall Student Center and Alderman Graduate Library area near the core of the Central Grounds. This area at present is a fairly typical college quadrangle arrangement characterized by a loosely organized group of five individual buildings (shown in light brown on the plan below) sited in a "U" around a central space. Newcomb Hall is the large building on the northwest side of the quadrangle and the Alderman Library is to the northeast. To the southeast are Jefferson's West Ranges beyond which lie his great Lawn and Rotunda. The Newcomb-Alderman quadrangle is now ambiguous and undefined because of its large size, unstudied breaks in grade and the mixed architectural character of the buildings. On the other hand, as the planners point out, the Lawn and Ranges are unique among college spaces. They have order and a sense of unified repose that the Newcomb-Alderman area lacks. Only the existing arcade of Monroe Hall on the southwest side of the quadrangle carries a semblance of the scale and character of the Ranges directly across the road. In the rest of this building group, circulation paths are not articulated as they are in Jefferson's work. Each building reads as an isolated, axially sited volume. By contrast, Jefferson's Lawn is defined by a continuous colonnade punctuated by the higher volumes of his pavilions, and dominated by the Rotunda. Consistent building materials, the play of sunlight and shadow, a scale which responds to the size of the human figure, and the continuous thread of the colonnade unite all the elements of the Lawns and Ranges into an overall order. The Newcomb-Alderman scheme will enhance the University's "sense of place."



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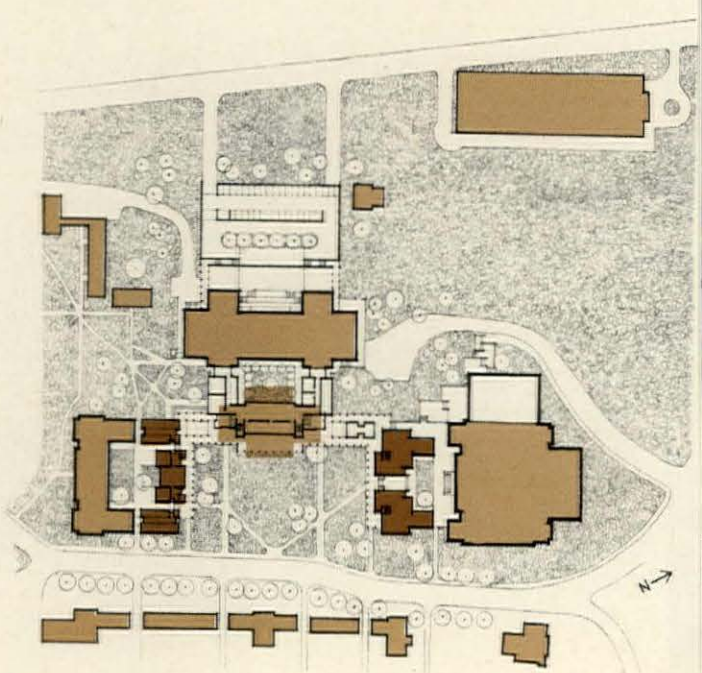

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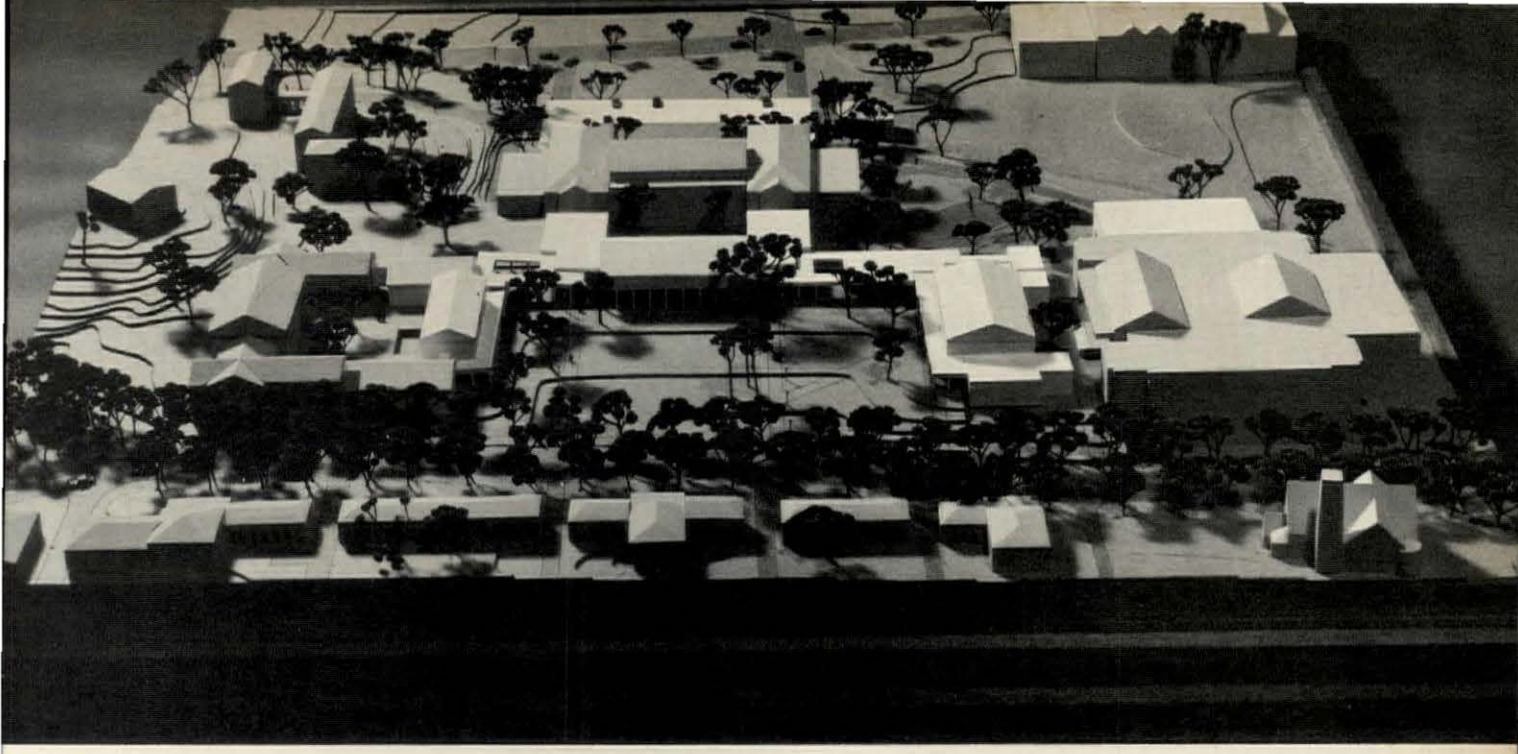
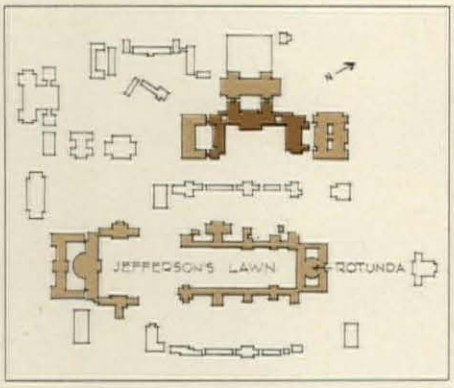
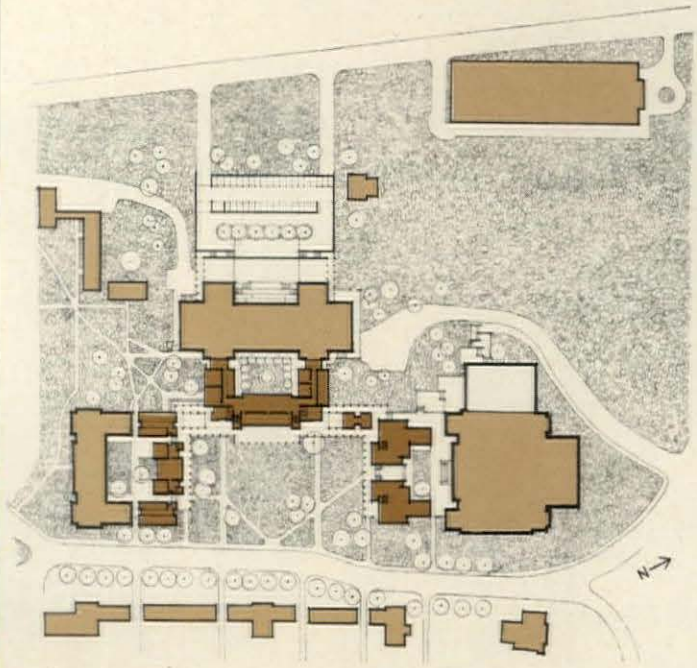


The major design feature for the development of the university center consists of an articulated and continuous first floor element expressed as a colonnade on the quadrangle facades which connects the buildings which are to remain. This element will define the circulation and recall the scale of Jefferson's buildings.

As can be seen in the sections and model photograph above, portions of this element extend above the colonnade and are covered with pitched roofs which are related in shape and position to the pitched roofs on the buildings which they adjoin.



The phasing of construction shown in the plans below will begin with the addition to the school of business in Monroe Hall (1); the removal of an obsolete structure and the construction of an undergraduate library annex to the Alderman Graduate Library (2); the removal of a second obsolete structure and the expansion of the Newcomb Hall Student Center and connecting links; (3) and the creation of a terrace and parking structure to the northwest of Newcomb Hall (4). The final stage, not shown, will be the addition of a rare books wing to the northwest of the Alderman Graduate Library.



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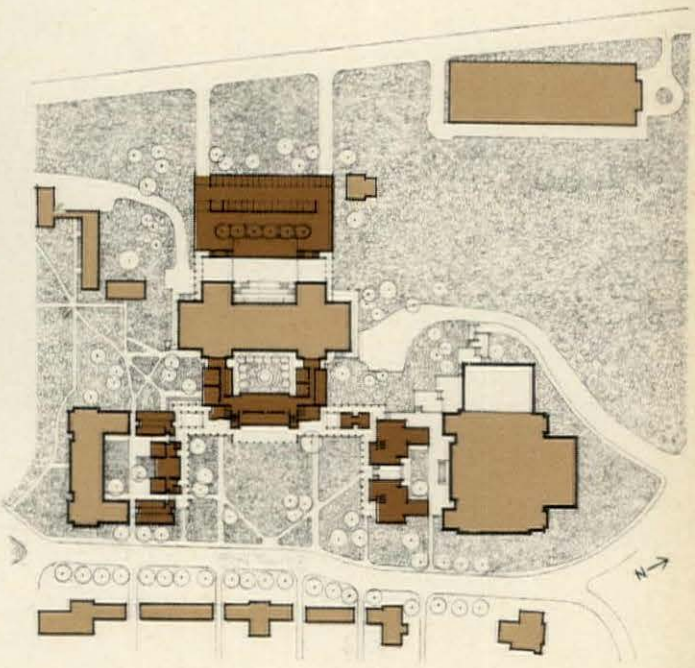
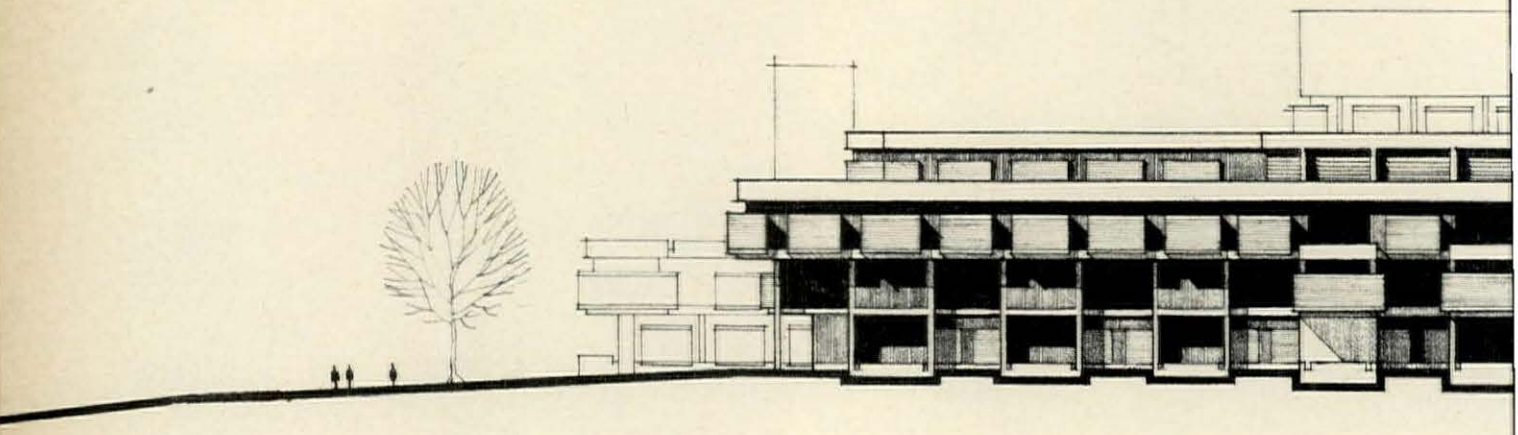


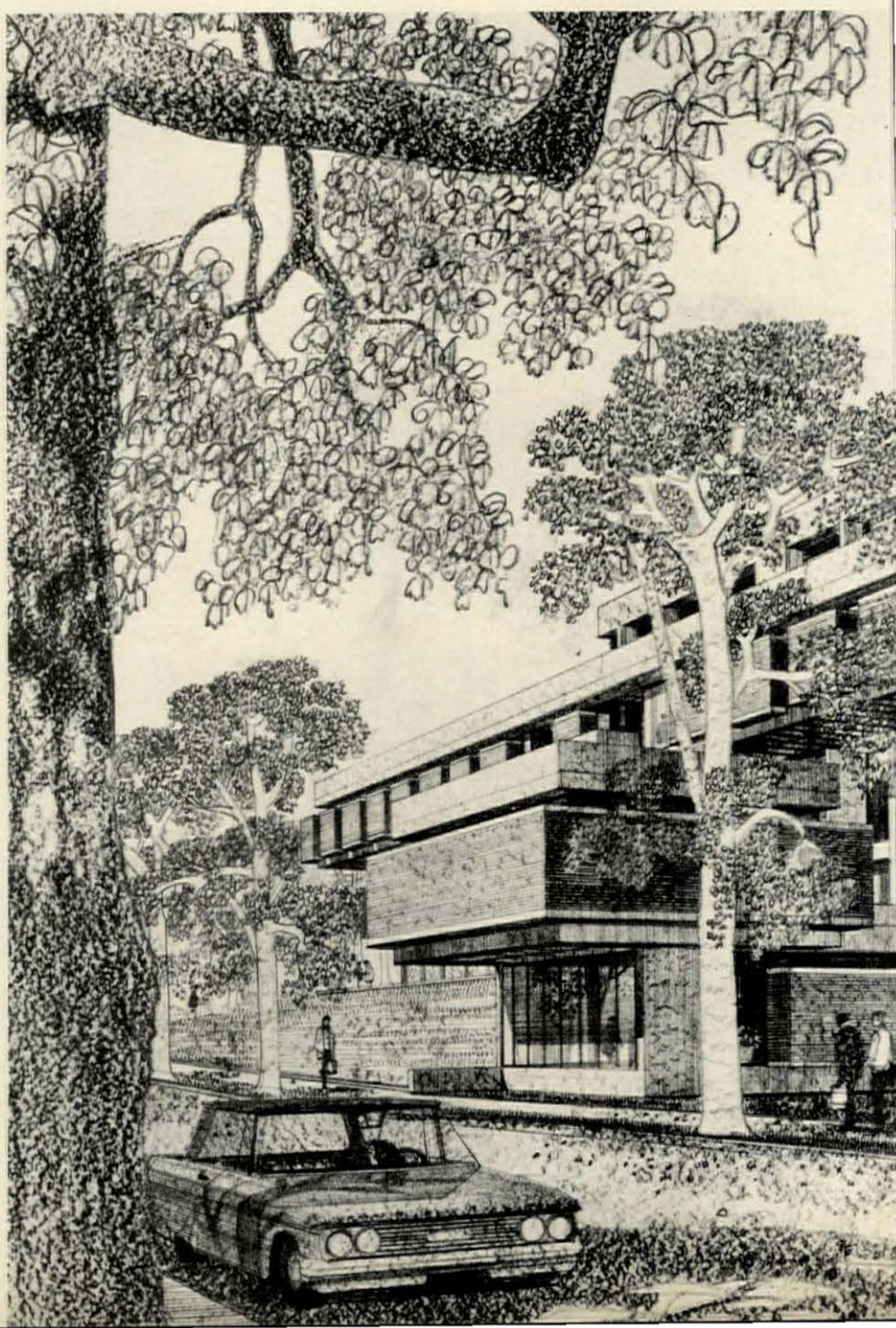
4

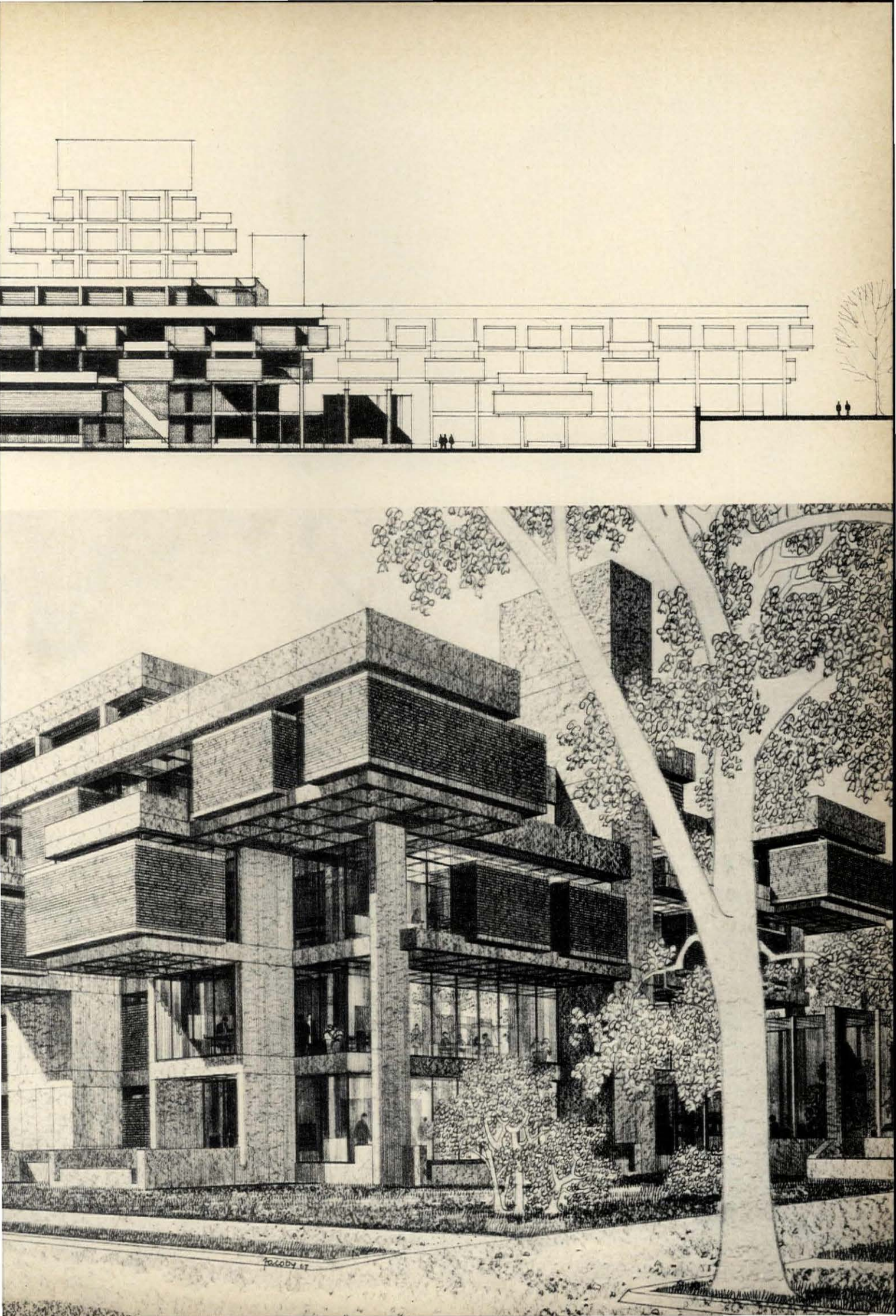
Bold scale for a restricted site: a Science Complex for the University of Rochester

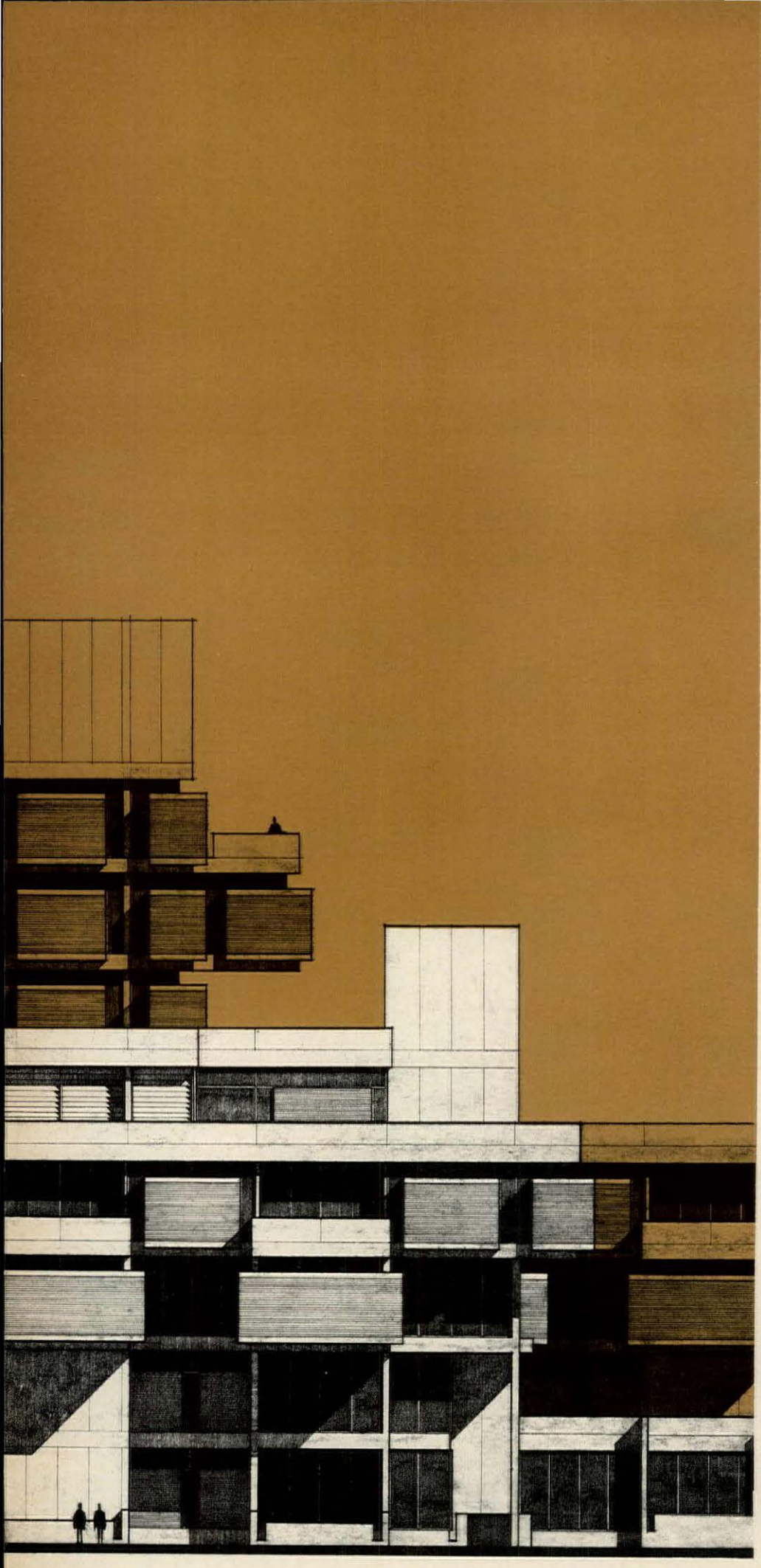


The chemistry and biology wing shown in the fully rendered portion of the elevation above and in the perspective at right comprises 296,000 square feet of dense, tightly integrated space. The scale figures indicate that the structure will be huge—yet it is only the first element to be constructed in a science center which will eventually provide approximately 685,000 gross square feet of space.

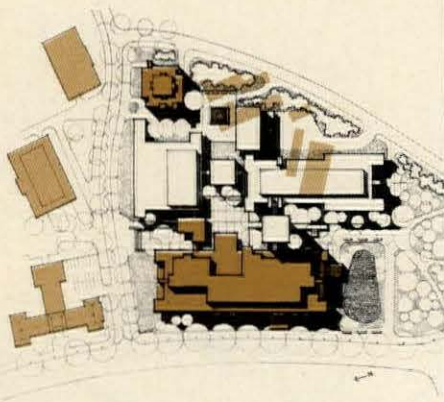
As in the new work at the University of Virginia, the scale, massing and densities are an outgrowth of the University of Rochester campus development plan, part of a continuing series of long-range studies prepared by the University's own Office of Planning and Institutional Research and Sasaki, Dawson, DeMay Associates, Inc. A principal development goal for Rochester is to further the growth of a compact pedestrian-oriented campus. With this in view, the science complex has been located within the boundaries of the main campus, rather than on an outlying site. The land selected is the only suitable portion left on a built-up main campus which cannot expand in any direction as it shares its boundaries with the Genesee River to the north and west, a public park to the south and a cemetery to the east. The site chosen for the sciences has two great advantages. It is adjacent to the School of Engineering; and it can be linked to the University Medical Center—a vast establishment beyond the main campus to the southeast—by means of a footbridge which will span railroad tracks and a traffic artery. The site is too small, however, for development at normally accepted campus densities. Challenged by the master plan, the architects have created highly concentrated forms.



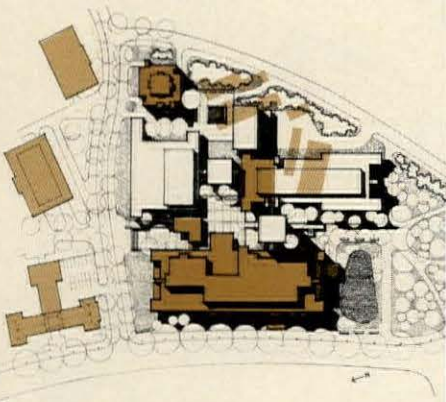




In resolving the difficulties and intricacies o the program requirements, the architect managed to break down the enormous mas of the building into smaller parts better re lated to the scale and character of the sur rounding buildings. The laboratories of th chemistry-biology wing are arranged in a sim ple block with a central service core. The offices, lounges, seminar and classroom spaces are arranged to give an interestin scale and silhouette to the building. Existin engineering and administration building which are to remain, and the science build ings within the site which are to be phased out gradually, are shown in light tan. The chemistry-biology wing to the west and the space science center to the east (architects *Waasdorp, Northrup and Kaelber)* are soon to be built (1). A particle physics wing will fol low (2). A science and engineering library and computer center, well located in relation to the School of Engineering, will be next (3) and additional portions of the complex will be added gradually—statistics and mathemat ics (4), physics and astronomy (5) and geology and geography (6).



1



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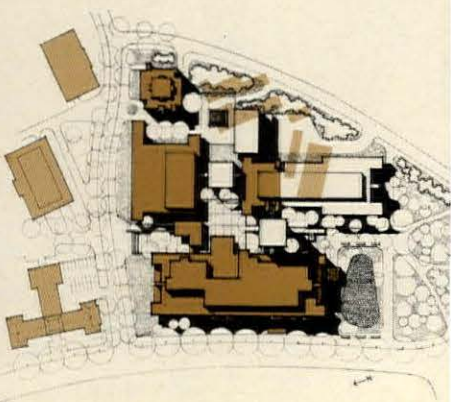

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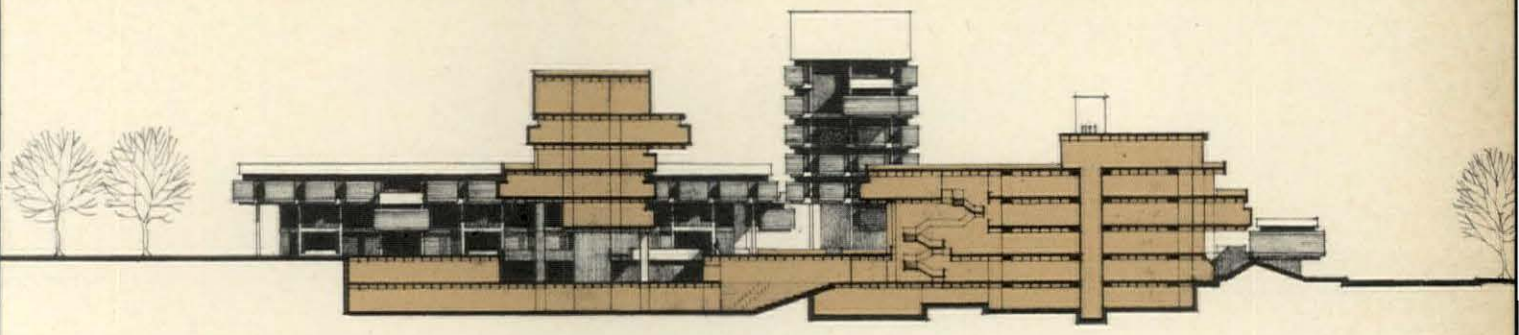
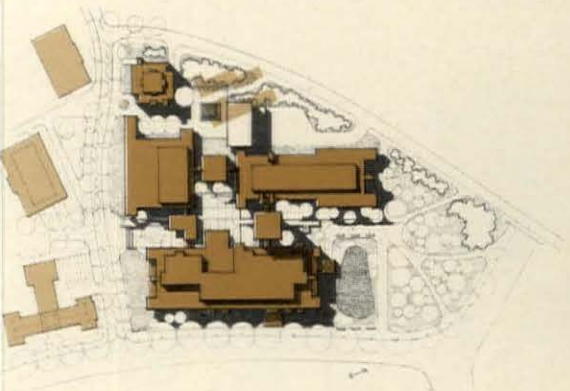
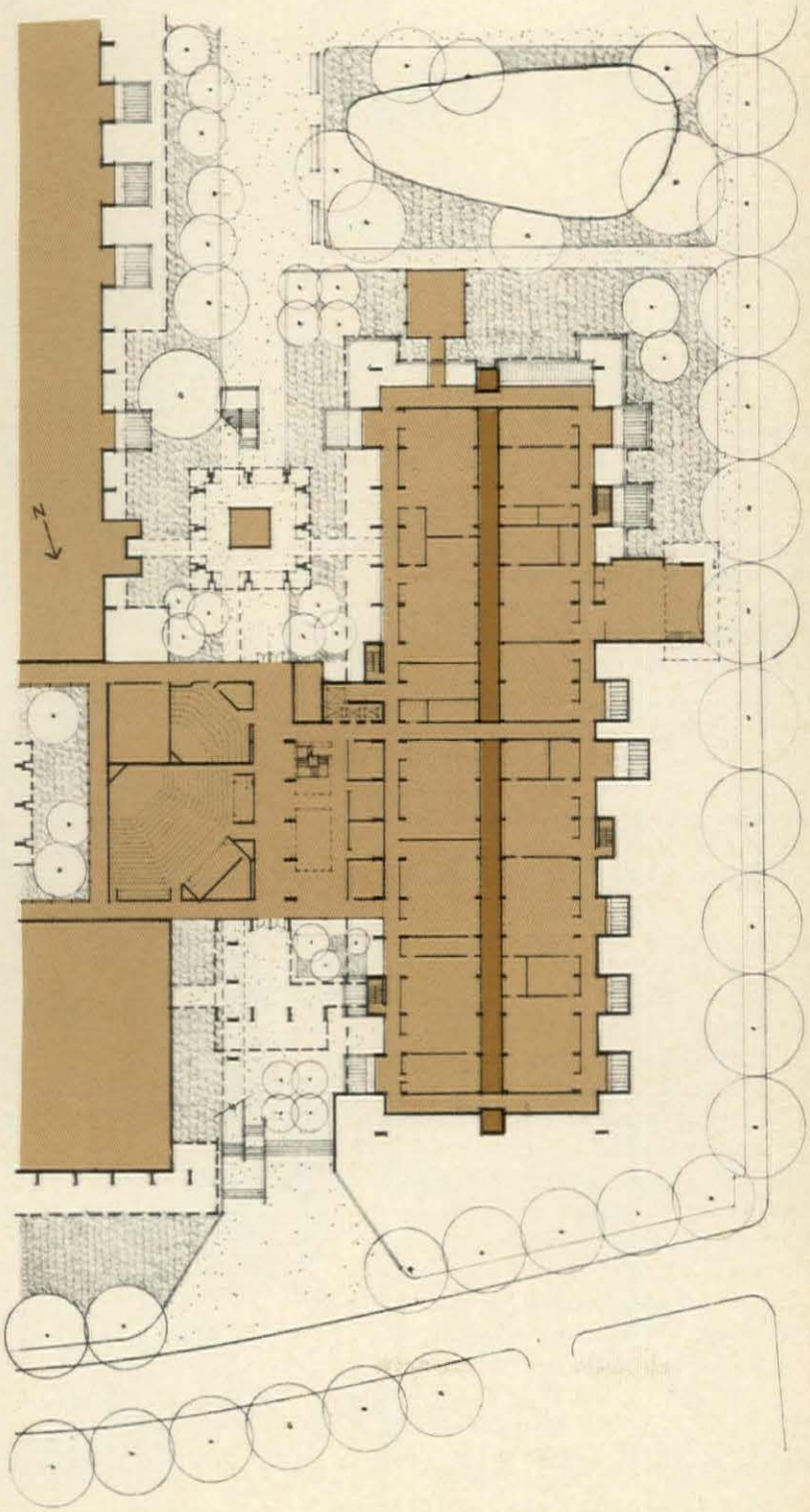
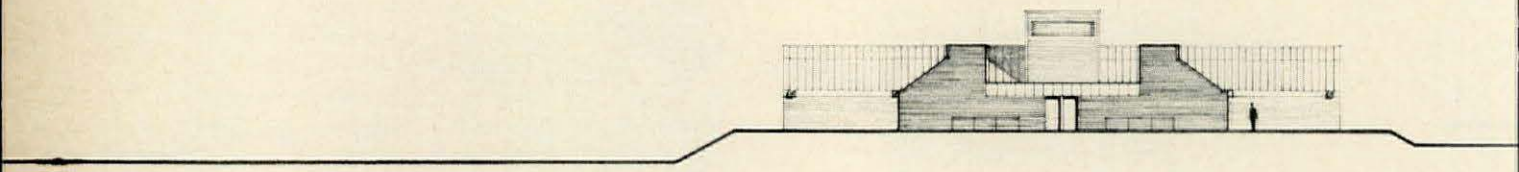


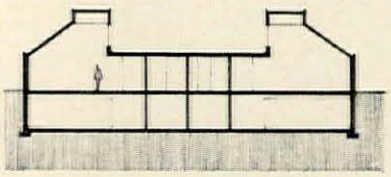
CIENCE COMPLEX, University of Rochester, Rochester, New York. Architect: *Kenneth DeMay of Sasaki, Dawson, DeMay Associates;* associated architects: *Anderson Beckwith and Haible;* structural engineers: *Severud-Perrone-Fischer-Sturm-Conlin-Bandel;* mechanical and electrical engineers: *Hankins, Anderson and Moncrief;* landscape architect: *Hideo Sasaki of Sasaki, Dawson, DeMay Associates;* interior design: *William Bagnall Associates.*

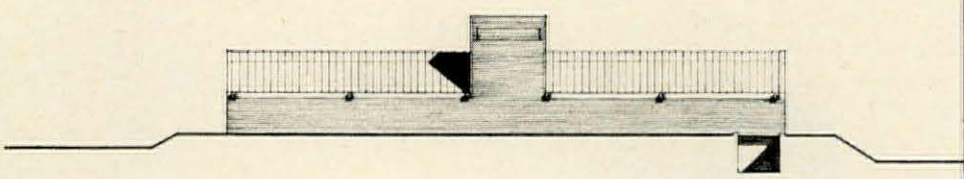




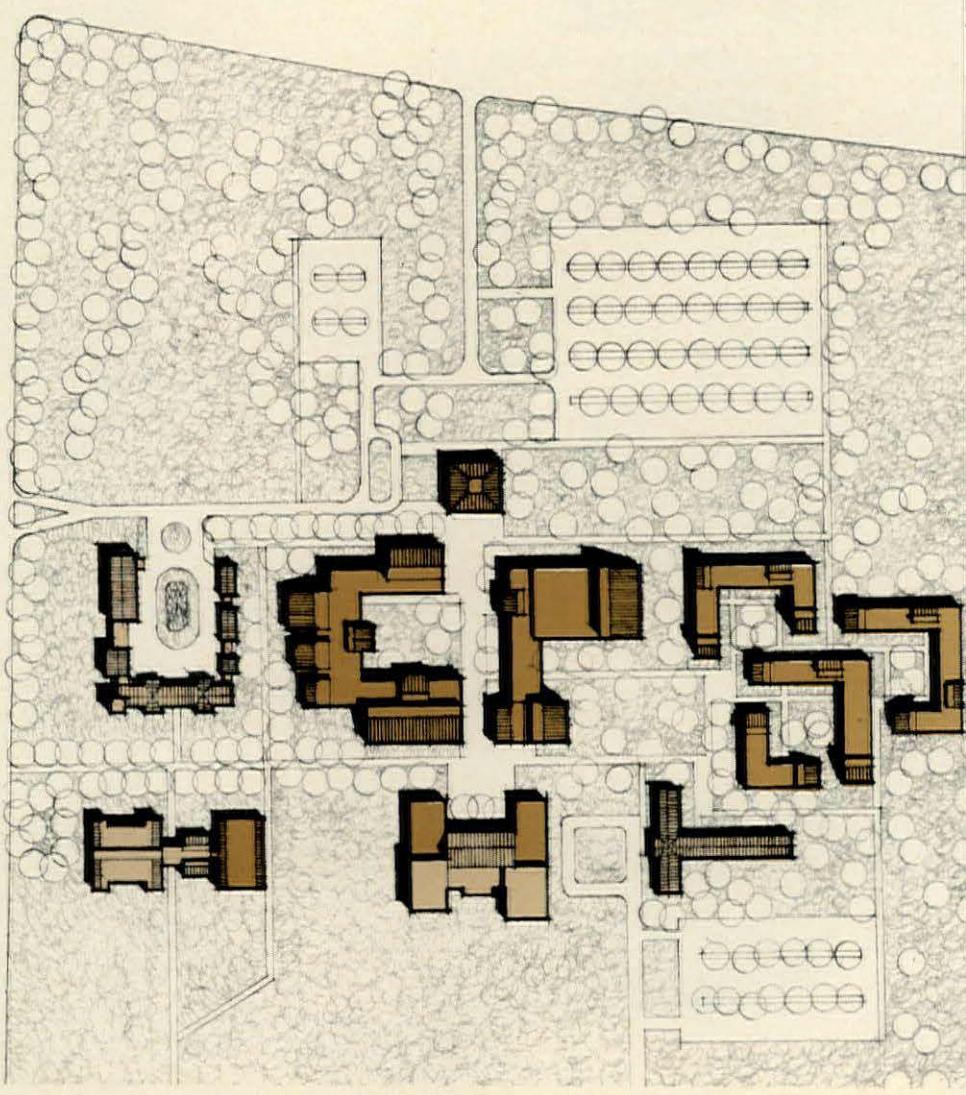
Quiet design for a small, rural school:
Master Plan and Physical Education Building for Barrington College

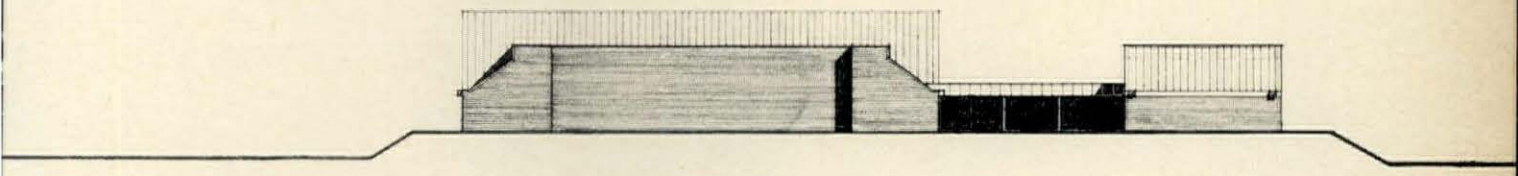




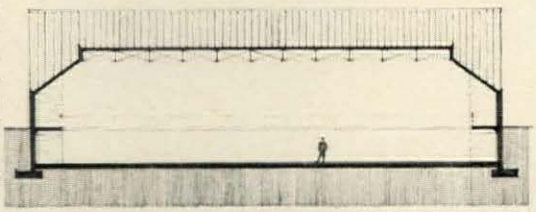


Barrington, located in the Rhode Island countryside, was never very large, but is now beginning a modest growth. The guidance of its campus development is the responsibility of Sasaki, Dawson, DeMay Associates, the same firm now planning for the steady expansion of the great universities at Charlottesville and Rochester. The problems are essentially alike at all three schools, but at Barrington they are infinitely simpler. Local architectural traditions, for example, are more easily followed at Barrington than at Charlottesville. It is not too difficult to establish the design character of new campus structures, if local Rhode Island barns are chosen to influence shapes and materials: it is a challenge of quite another order to create a new architecture in the spirit of Thomas Jefferson. Similarly, it is not too hard to devise building elements for Barrington which are human in scale with attractive spaces between—for the campus, though small, has ample room for its projected growth, and it has not yet been built upon to any significant degree; but it is an immense challenge, to achieve these qualities at Rochester—for the opposite reasons. This is not to say that the Barrington campus plan and the physical education building which will serve as a design prototype for other structures, are not up to the general standard of the Sasaki, Dawson, DeMay work. On the contrary, the three campuses are contrasted to indicate the firm's range and flexibility of approach. Barrington is noteworthy—not because it is a complex solution to a difficult problem, for it is not, but because it is the simple and straightforward solution which Barrington's problems require.

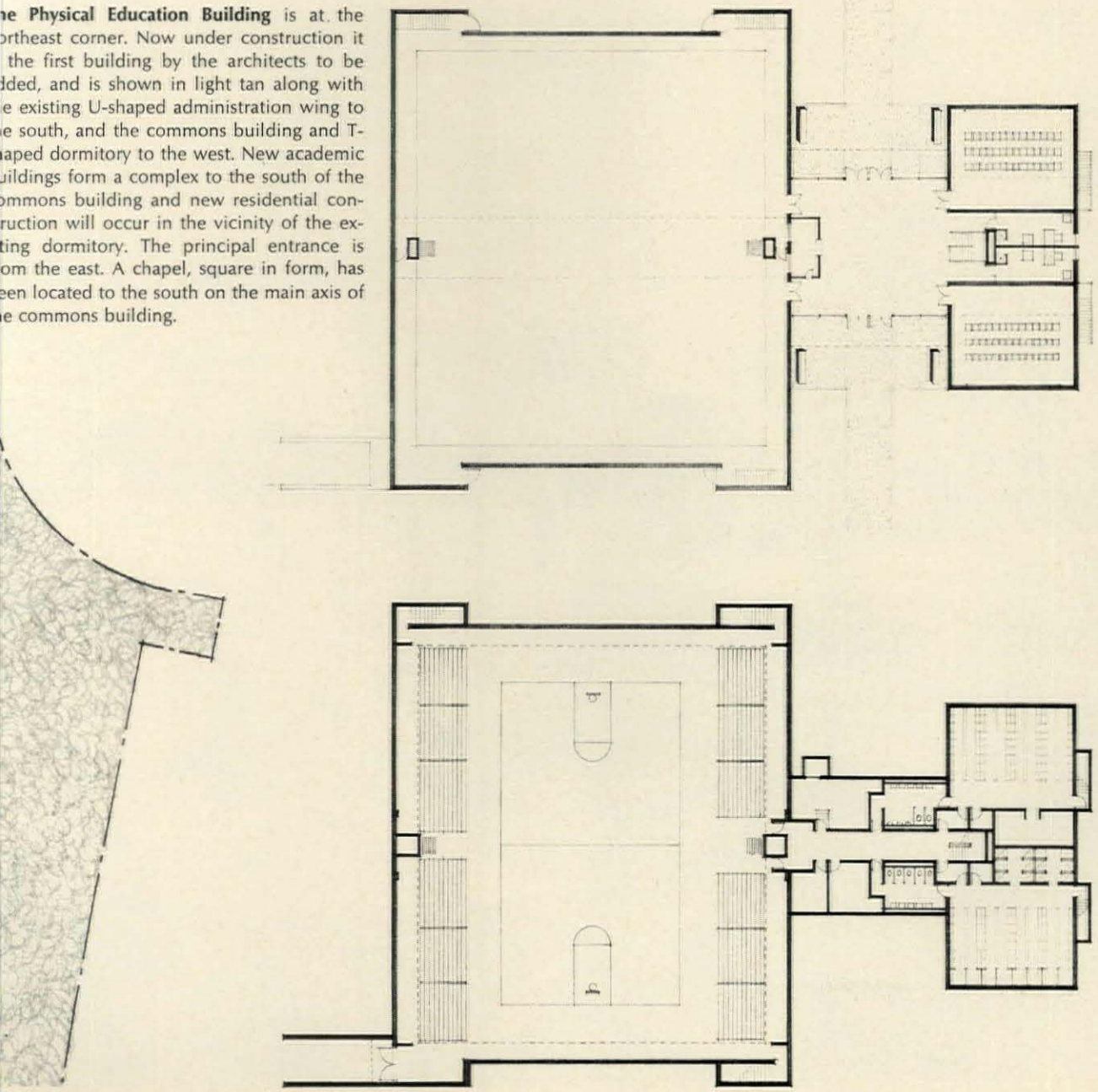




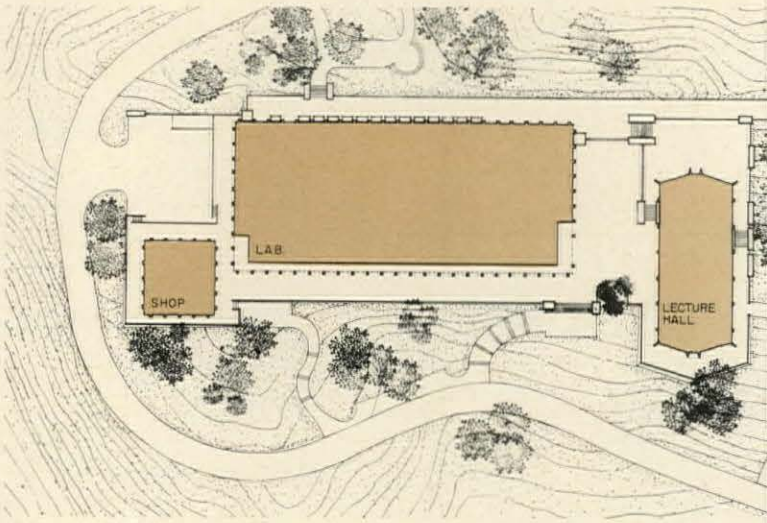
HYSICAL EDUCATION BUILDING, Barrington ollege, Barrington, Rhode Island. Architect: enneth DeMay of Sasaki, Dawson, DeMay Asciates; consulting engineers: LeMessurier Asciates and Greenleaf Associates; mechanical d electrical engineers: Hankins, Anderson and oncrief; landscape architects: Sasaki, Dawson, eMay Associates, Inc.; acoustical consultants: olt, Beranek & Newman.



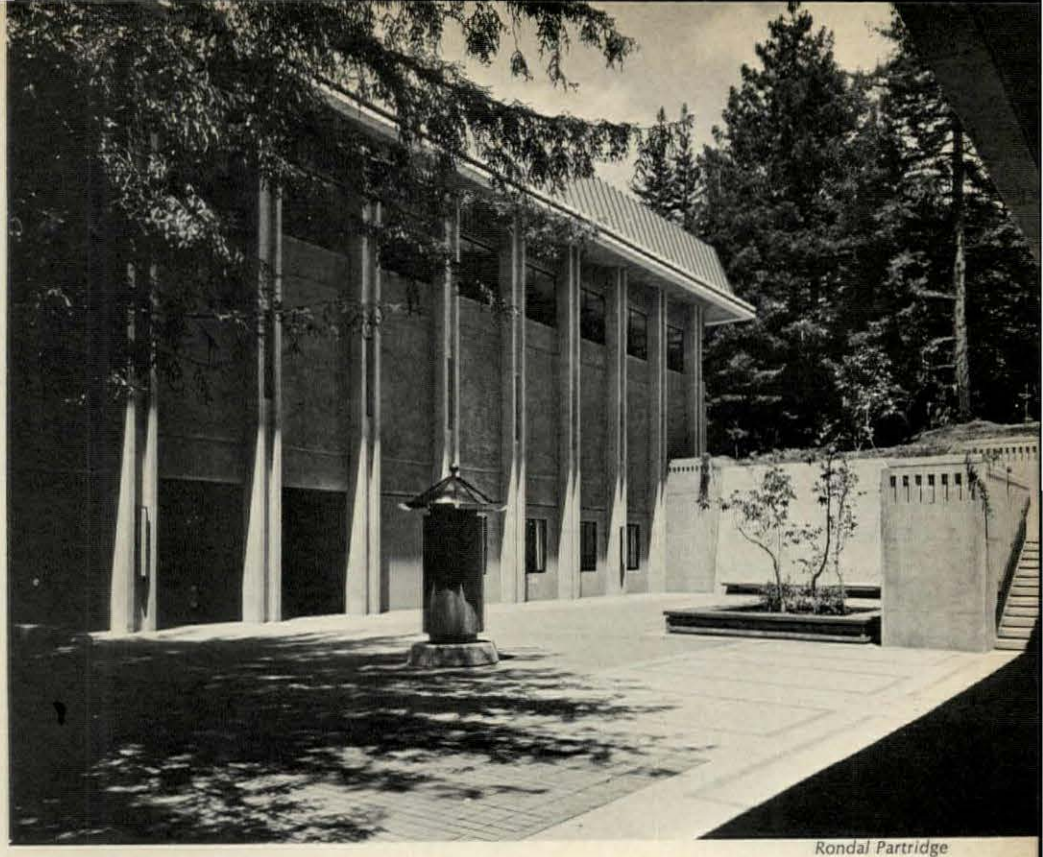
he Physical Education Building is at the ortheast corner. Now under construction it the first building by the architects to be dded, and is shown in light tan along with e existing U-shaped administration wing to e south, and the commons building and T-aped dormitory to the west. New academic uildings form a complex to the south of the ommons building and new residential conruction will occur in the vicinity of the exting dormitory. The principal entrance is om the east. A chapel, square in form, has een located to the south on the main axis of e commons building.



A new and spacious campus inspires a fresh approach:
Recently completed Natural Sciences Unit,
Central Services Building and Library for the University of California at Santa Cruz



Vester Dick



Rondal Partridge

n the report by John Carl Warnecke and Associates describing the long ange development plan for Santa Cruz ampus, and prepared in consultation ith architects Anshen and Allen, Theo- ore C. Bernardi, Ernest J. Kump and ndscape architect Thomas P. Church, ne planners praise the new concepts of ducation which will shape this branch f the University, and speak eloquently f the architectural opportunities offered y the magnificent 2,000-acre tract of anchland. In their own words, "The pro- ram, as well as the site, with their un- aralleled opportunity to start from cratch, both argue against the use of any tandard, tired building types, either tra- itional or modern. . . . The campus will row from unspoiled land, with no exist- ng buildings to mark the direction it hould take—land that offers a setting of nusual beauty, both a challenge and a estraint." The most articulate advocate f architectural restraint among the con- ributors to the report was landscape onsultant Church. He said: "To a greater xtent than any of us have faced hereto- ore, the buildings are less important in ne visual composition than the trees . . . hese towers of trees are 'outscale' and nore related to the rugged knolls and eep ravines than they are to an aca- emic landscape. They are therefore to e thought of less as trees to enhance, creen and shelter buildings (although ney do so), than as great vertical ele- nents of the topography with form, mass nd density against which to compose ne architecture. . . . It would be foolish o think that a new, startling architecture vill appear here. Any design attempt to

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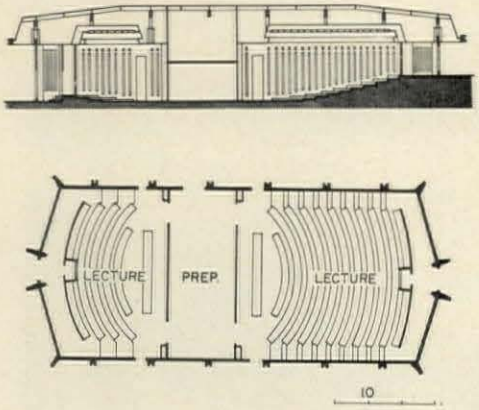
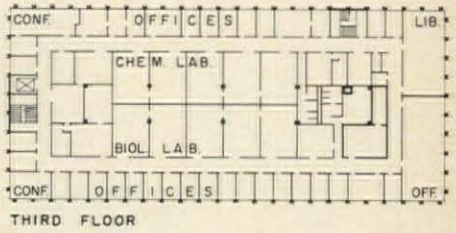
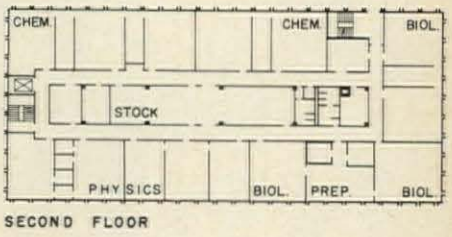
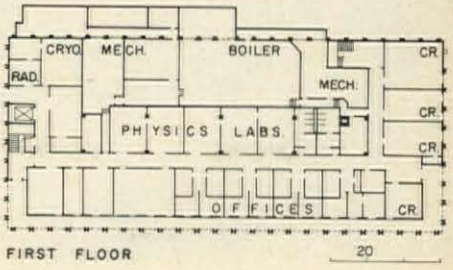
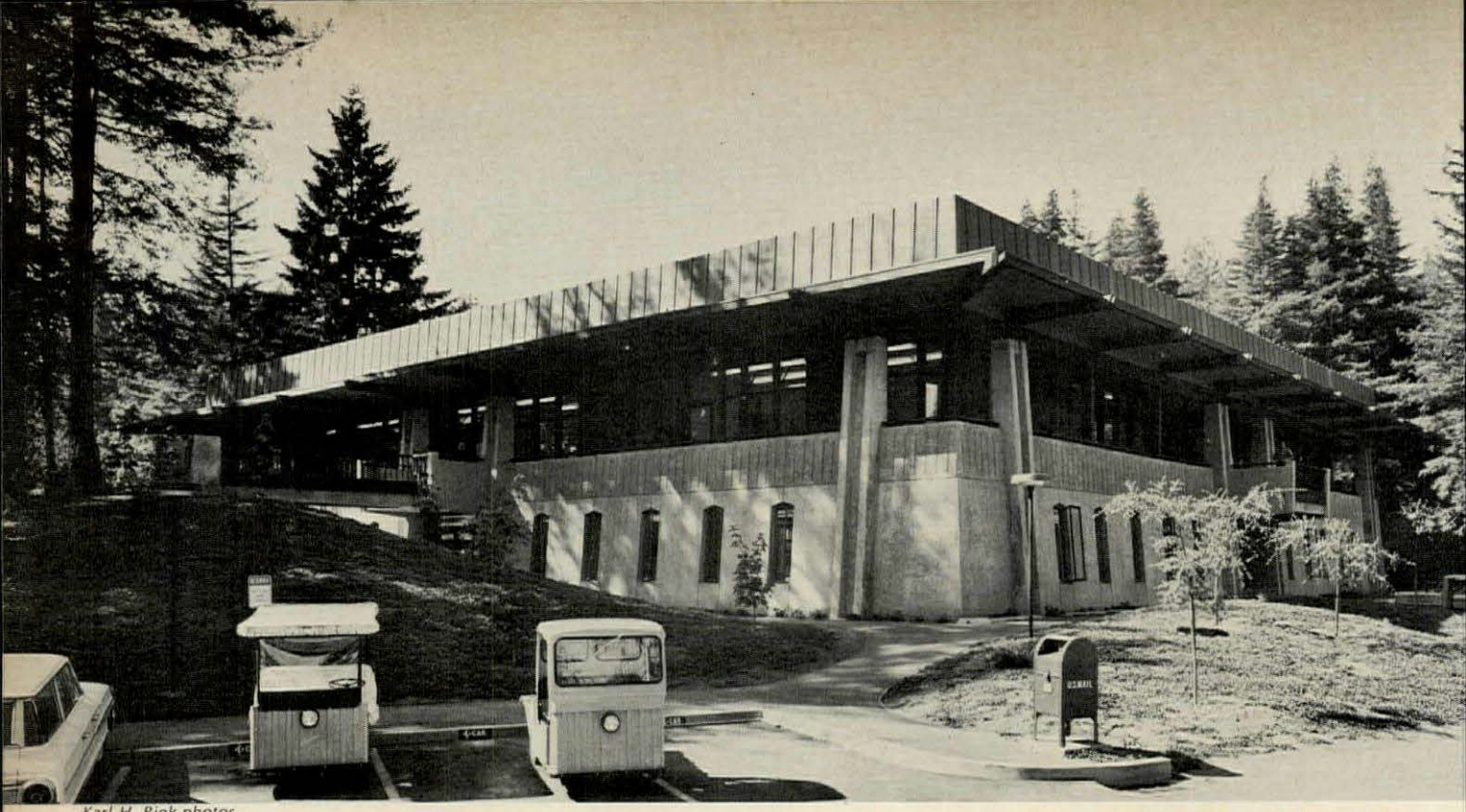




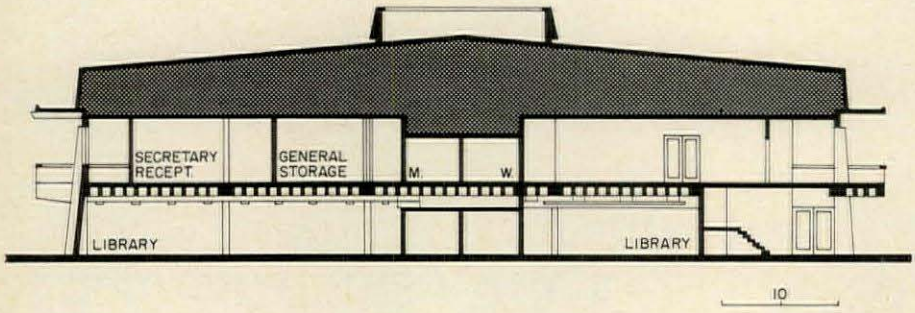




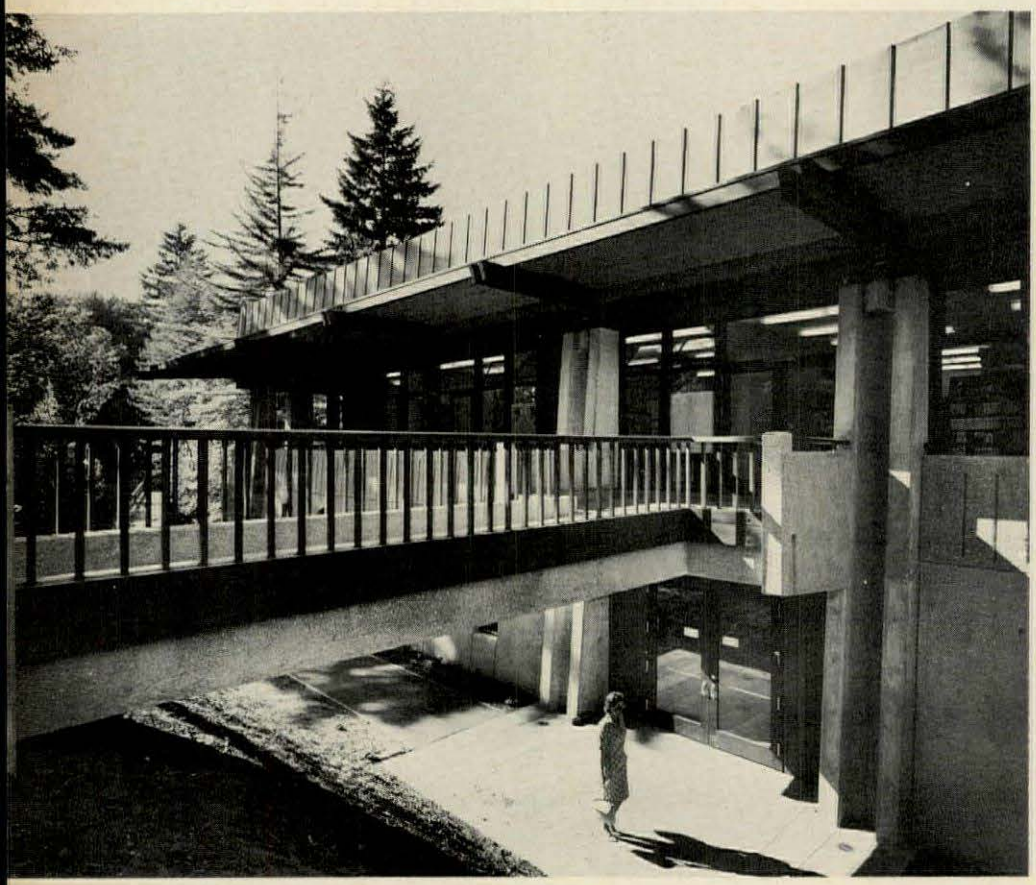
Natural Sciences, Unit I by Anshen and Allen includes, as the plot plan indicates, a university teaching and research laboratory, lecture halls and a shop building. It is surrounded by major redwood clusters which the siting has preserved, and accommodates itself to a rugged topography which is bounded on the east and west by steep, heavily wooded ravines. The 8-foot-high roof parapet screens rooftop experimental areas from wind, and conceals green houses, fans and other equipment from view. The building columns are of precast concrete and are a light gray-white color. Spandrel panels are of light brown sand-blasted precast concrete. Floor slabs are poured-in-place concrete, post-tensioned. Parapets and roofs are surfaced with copper.

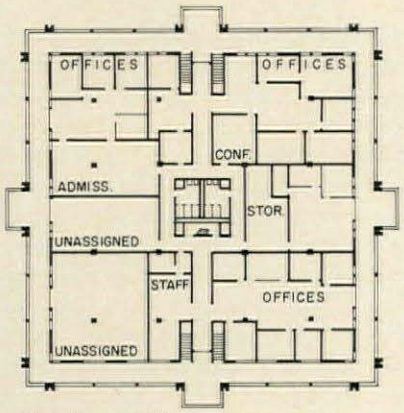


Karl H. Riek photos

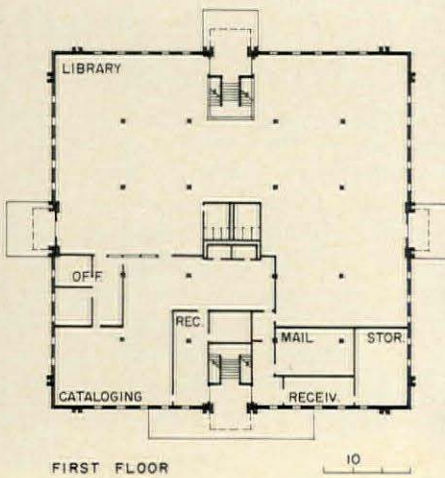


The Central Services Building by Ernest J Kump Associates conforms to the campus wide vocabulary of materials. The foundation and columns are of poured concrete. The upper level floor structure is a two-way concrete waffle slab. Lower level walls are tilt-up concrete slabs. The roof is supported by a grid of glue-laminated wood beams above the roof deck. The deep attic accommodates fans, gas-fired duct furnaces and ductwork zoned and modulated to adapt to a variety of partition locations.

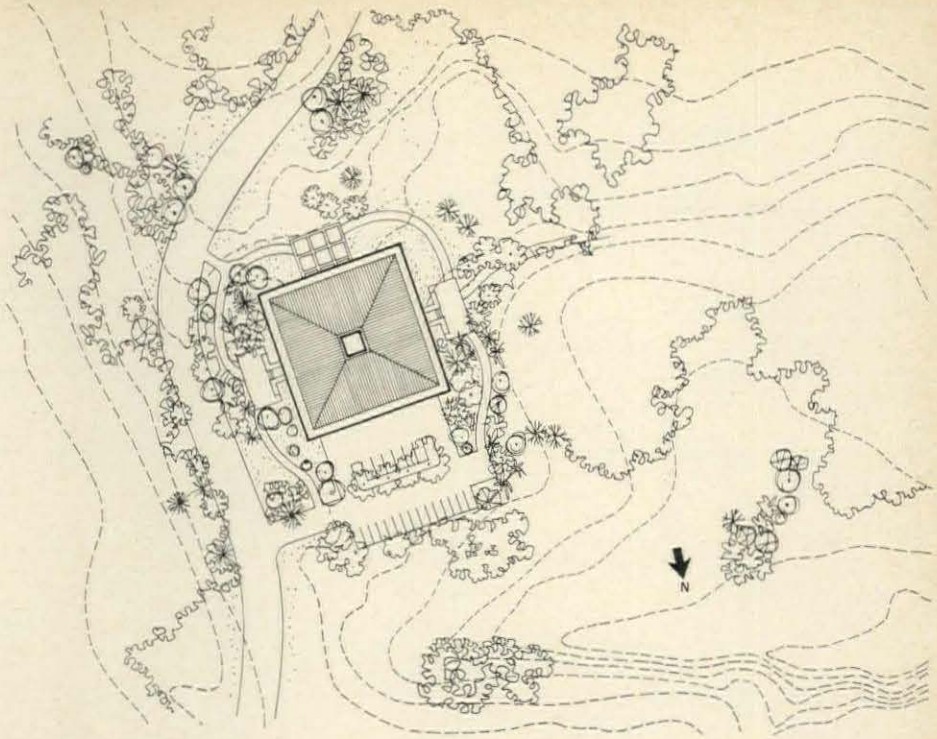




SECOND FLOOR



FIRST FLOOR



ompete in grandeur with this site is oomed to failure. . . ."

Now, only three-and-one-half years fter the long-range development plan as prepared, enough actual building as been done by the architects of the lan to permit beginning the testing of eir convictions. Warnecke has comleted the first unit of the University Lirary, Anshen and Allen have finished latural Sciences, Unit 1, which is approxmately one-tenth of the science complex ventually to be built; and Kump has excuted the Central Services Building. All re part of the campus core, at the georaphic center of the site.

The architects, not surprisingly, have ollowed the spirit of the general guidenes of the master plan and have eneavored to meet their own challenges. heir buildings possess a modesty in reation to trees which must satisfy Church, ut no one of their structures could be alled standard or tired.

Since visual coherence underlies the eauty which makes a campus memorale, the new buildings are shaped by aditional master plan directives, more spefific than those just cited, which apply to e entire campus. There are four of these irectives: first, the basic material to be isibly expressed in columns, wall panels nd all major structural elements is to be oncrete; second, roofs must have a cerain consistency in design and materials sed, be handsomely formed and preferbly of copper; third, bases of buildings hould be treated as unifying elements, trongly expressing by means of terraces nd flat areas the transitions from buildng to ground; fourth, a color palette of

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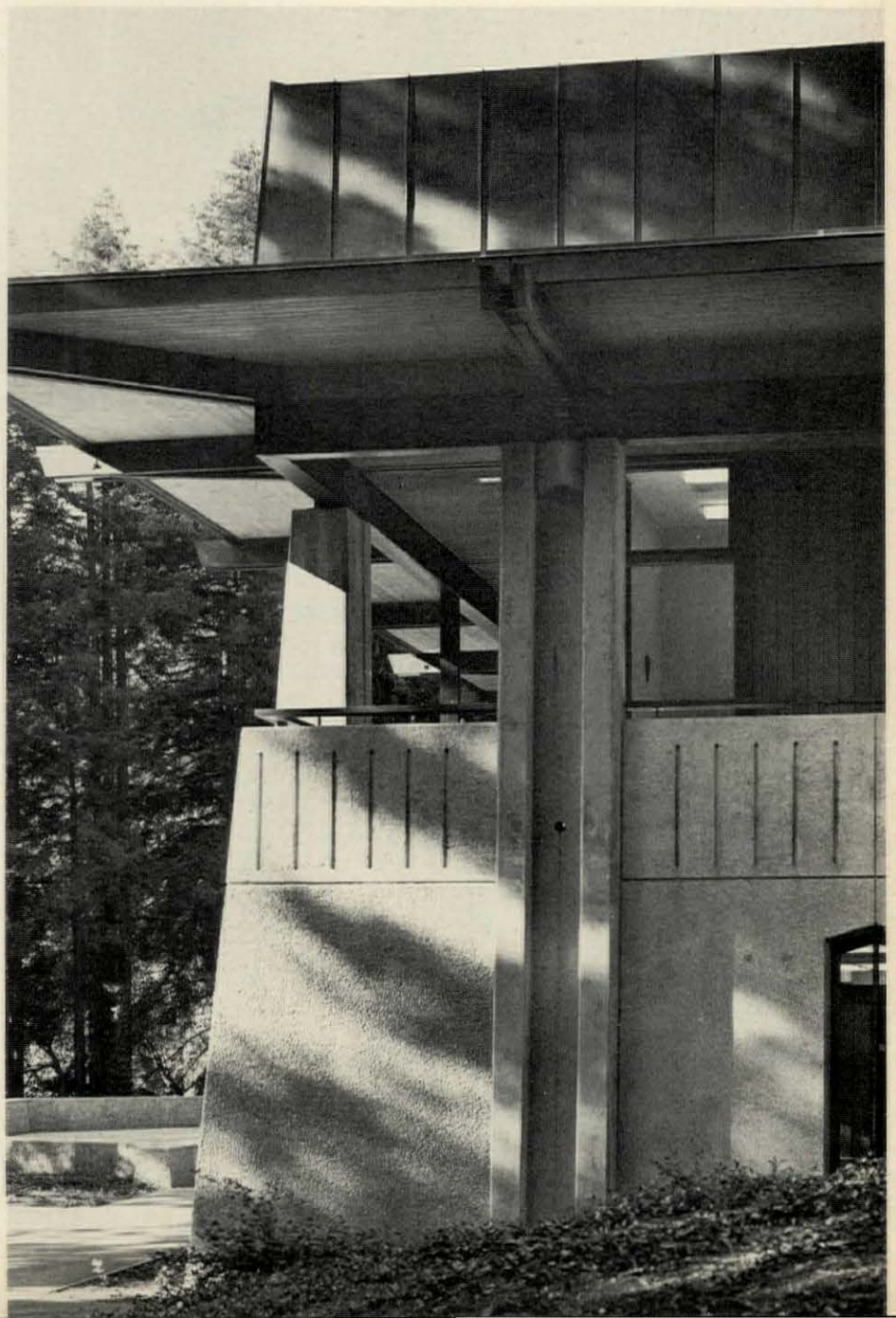
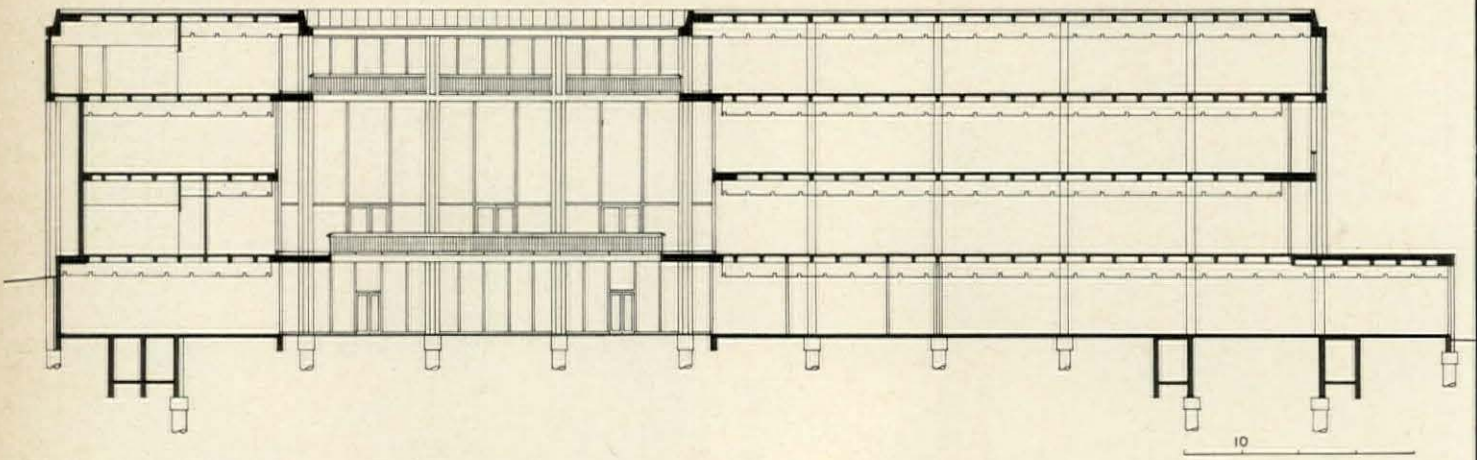
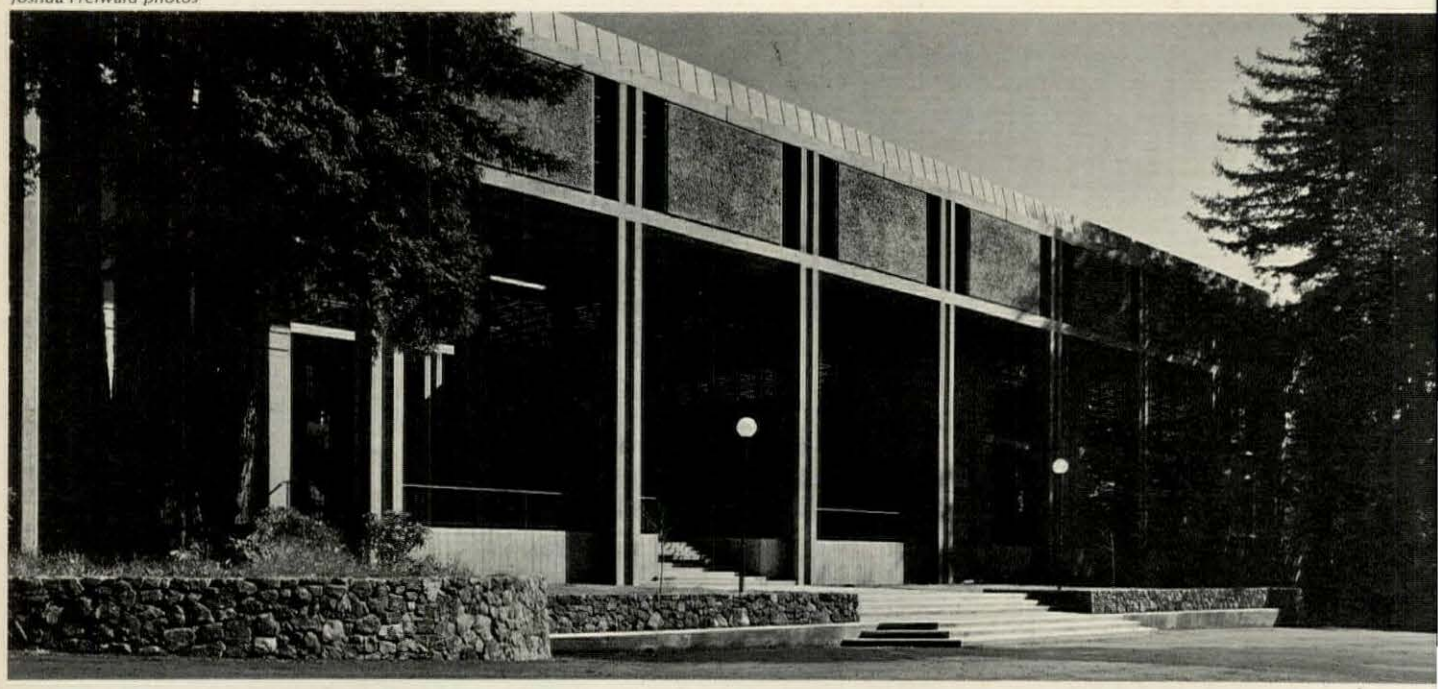
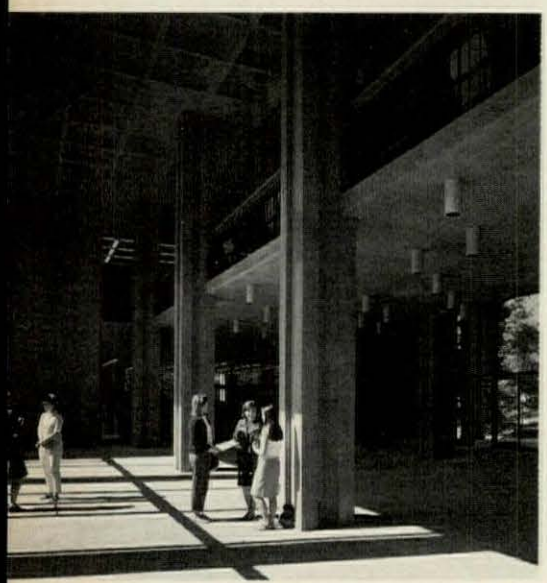


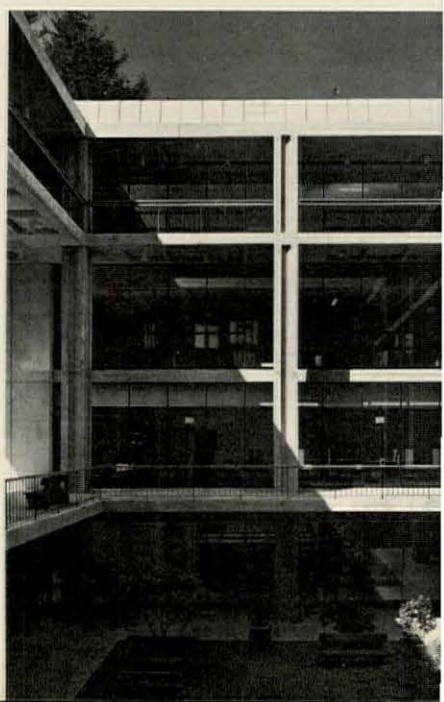


Joshua Freiwald photos





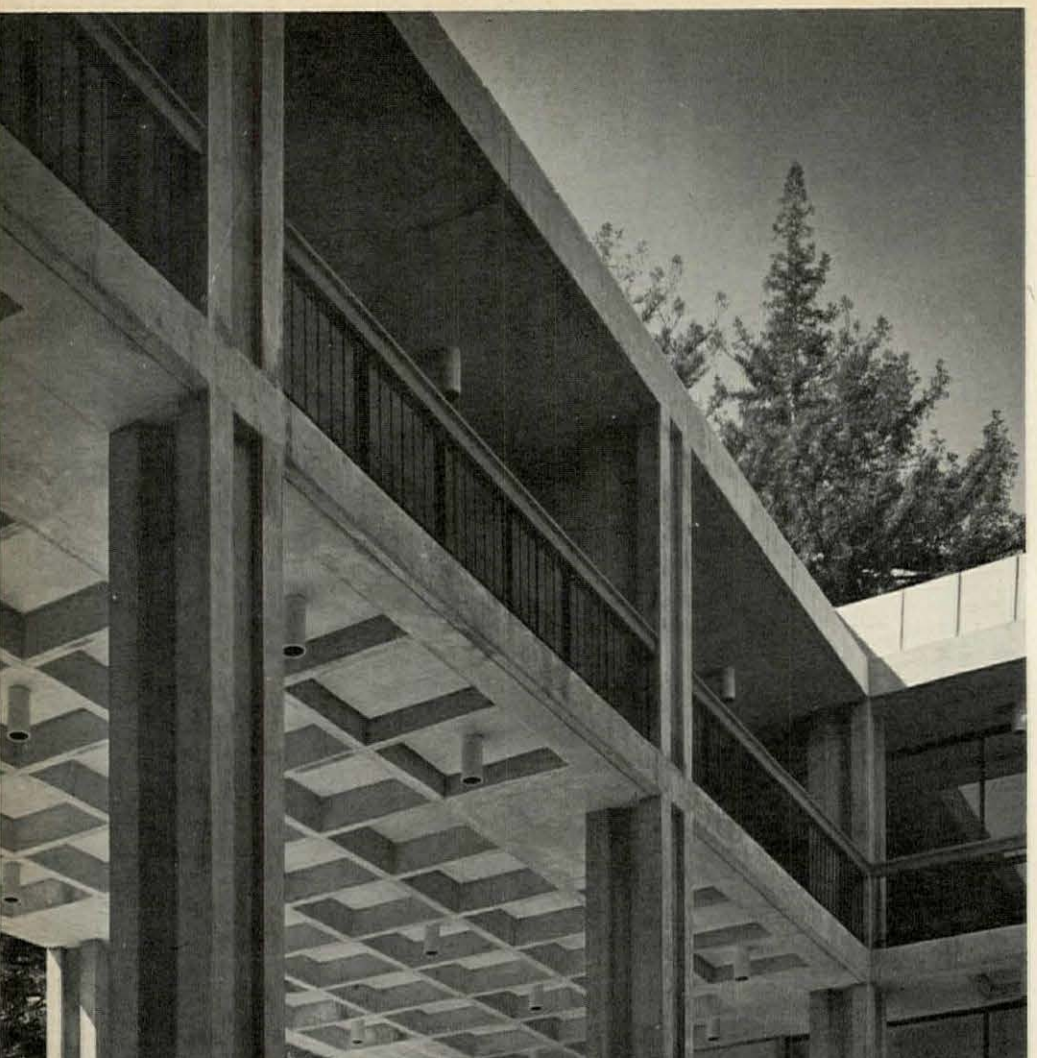
The University Library, Unit I, by John Carl Warnecke and Associates, is located in the midst of redwood trees which are among the finest on the campus. The photograph on the opposite page suggests that Warnecke took quite seriously landscape architect Thomas Church's urging that the trees be considered "great elements of the topography having form, mass and density against which to compose the architecture." The design of the library is more formal than that of the other two buildings which have been constructed in the campus core, as befits the dignity and ceremony of its role in the life of the University. The photograph to the right shows the sunken outdoor reading court. The structure is of reinforced concrete, poured-in place and exposed. Wall panels are precast exposed aggregate concrete. As the section and photograph above show, the building entrance is on the second level.



arth tones, with bright accents, should e used as a unifying influence. The mas-er plan spells it out: "Lighter colors and ff-whites should be used within the ensely wooded forest areas, where the un will not penetrate strongly. On the lopes and knolls, often in full sunlight, he warmer earth colors can add richness. extures will vary from smooth to rugged. n general the more formal buildings night use smoother finishes, and the less ormal ones can find rough textures and ven woods and stones appropriate."

At present, approximately 15 differ-nt projects have been commissioned by he University at Santa Cruz, and four colleges are now functioning. Warnecke sserts that already a lack of design con-istency has appeared, in his opinion due o the hiring of too many different archi-ects with conflicting approaches or tyles. Fortunately, as he points out, at anta Cruz the groves of trees act as a trong unifying element.

The presence of too many architects, t work within a too short span of time n a single campus, Warnecke describes s "the Yale approach" and he deplores t. He says: "The basic idea behind this pproach is to seek out the most success-ul architects of the moment, and ask ach one to design a building as he sees it. He is left alone to preserve and exer-ise his creativity so far as style is con-erned, so that the campus will receive a masterpiece'. To the detriment of con-inuity in campus design each architect ttempts to outdo those who have pre-eded him. One need only to project the ale approach to its ultimate to visualize combination of decades of world fairs one astray."

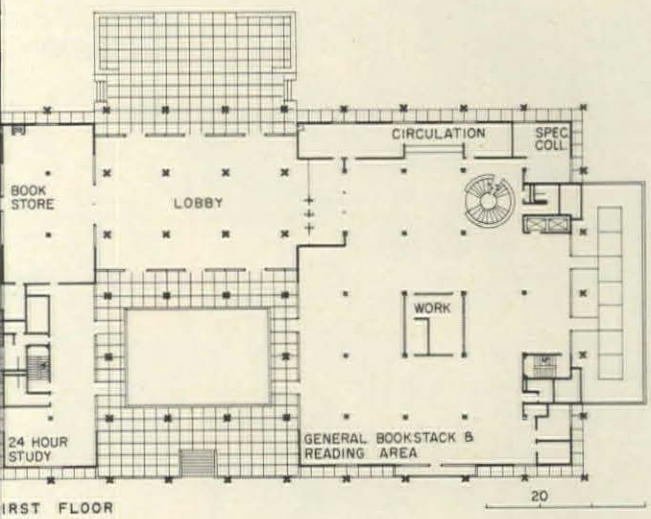


The building has 72,000 usable square fee and an eventual capacity of 350,000 volume when the total building is occupied by th library. Major additions are planned for th 1970's which will increase the total capacit to about 1,000,000 volumes. The librar shared honors with the Natural Sciences Uni I building in the 1966 Design Award Progra of the American Institute of Architects an the Educational Facilities Laboratories in col laboration with the Bureau of Higher Educa tion. Both were Federally funded in part un der the provisions of Title I of the Highe Education Facilities Act of 1963. Under th Title, the University Library Unit I receive $923,098 of a total $2,320,000 cost; and th Natural Sciences Unit I building was grante $1,000,000 of its total $2,580,000 cost.

NATURAL SCIENCES, UNIT I, University of Cali fornia, Santa Cruz. Architects: *Anshen & Allen* structural engineers: *T. Y. Lin & Associates In ternational;* mechanical and electrical engineers *Gaynor Engineers;* landscape architect: *Dougla Baylis;* contractor: *Nomellini Construction Co.*

CENTRAL SERVICES BUILDING, University o California, Santa Cruz. Architects: *Ernest Kump Associates;* structural engineers: *Creega and D'Angelo;* mechanical engineers: *Yanov and Bauer;* electrical engineers: *Smith & Ga thorne;* landscape architects: *Lawrence Halpri & Associates;* contractor: *King-Hannan Corp.*

UNIVERSITY LIBRARY, UNIT I, University o California, Santa Cruz. Architects: *John Ca Warnecke and Associates;* structural engineers *Isadore Thompson;* mechanical and electrica engineers: *Keller & Gannon;* landscape archi tect: *Thomas D. Church;* contractor: *Roth schild, Raffin & Weirick, Inc.*



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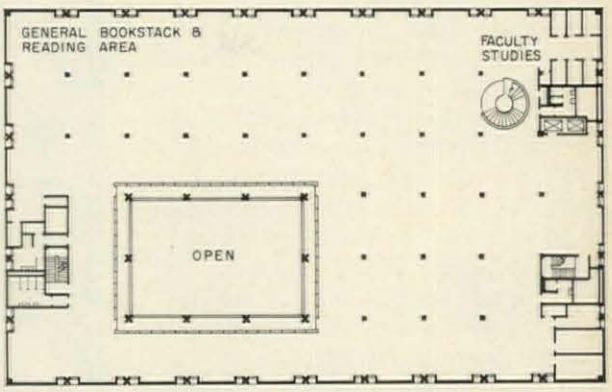
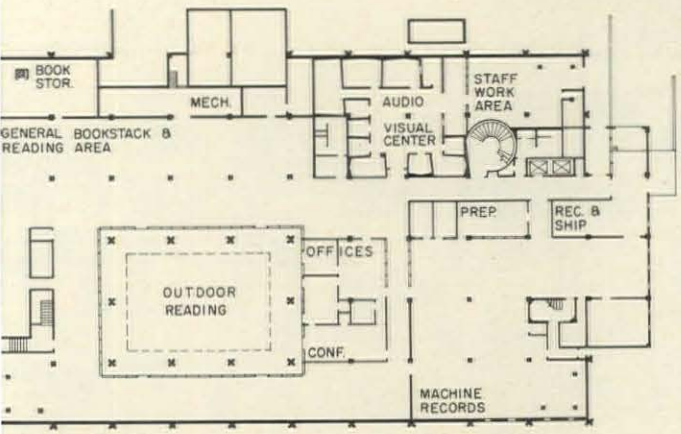
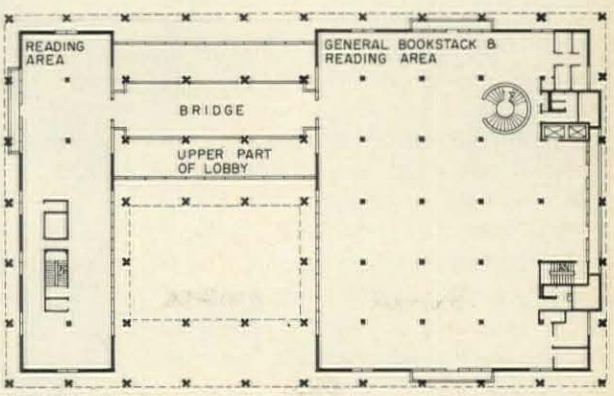


THIRD FLOOR



ROUND FLOOR



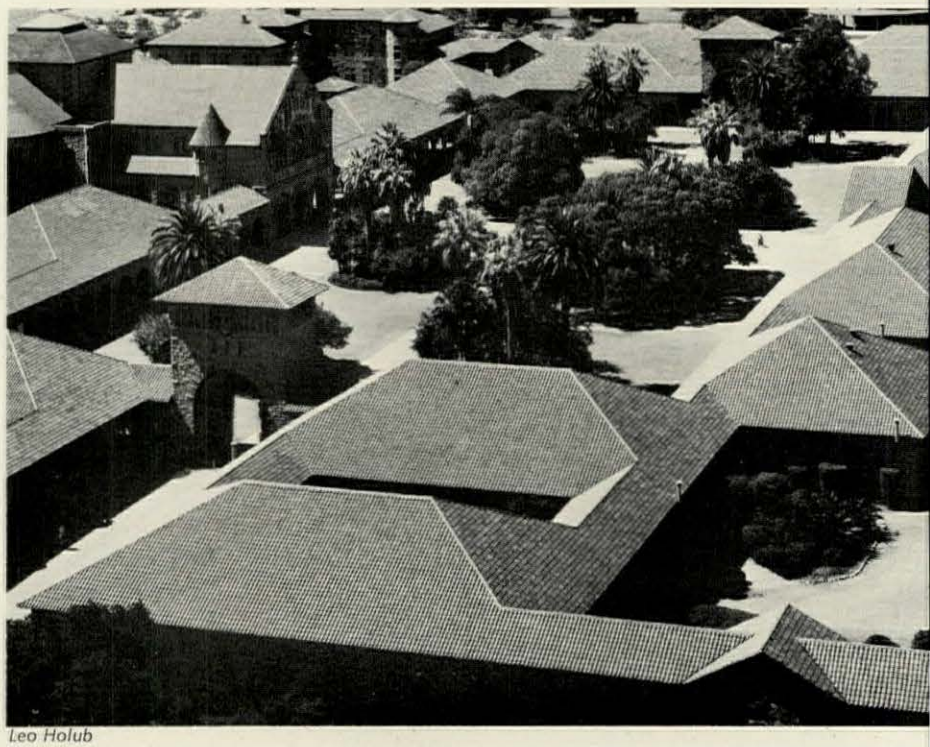
SECOND FLOOR

A library which affirms an old style, and dormitories which establish a newer one: The J. Henry Myer Memorial Undergraduate Library, and Student Housing Clusters at Stanford University

Architect John Carl Warnecke has had a long association with Stanford University, first as an undergraduate, then as an All-American, and in recent years as the architect of some of the best buildings to be constructed at the heart, and in outlying areas, of its splendid 8000-acre campus. Here, in his words, are the influences which have shaped his work there: "The purpose of collegiate architecture is to inspire excellence. The student at Stanford, as he walks the Quadrangle for four years, senses from the very beginning the grand plan, space leading to other spaces, the beauty and details of the construction work, the expansive corridors which seem to lead to infinity—space to sense the harmony, to observe the nobility of the architecture.

"Stanford is blessed with a unique inheritance bequeathed by the great landscape architect Frederick Law Olmstead, who wisely placed the University in the heart of its beautiful acreage with all structures separated by at least a mile from any campus border. From the time of the University's inception in 1891 and the construction of the original Stanford Quadrangle, a handsome design by Shepley, Rutan and Coolidge, to the period immediately following World War II, nearly all buildings maintained the spirit of the Quadrangle design.

"Another force for continuity is Stanford's policy of awarding an architect who does a good job for the University with the opportunity to build again in the general geographic area of his first building. The architect will struggle to make his new buildings harmonize with his 'own' older work and to surpass it if he can."



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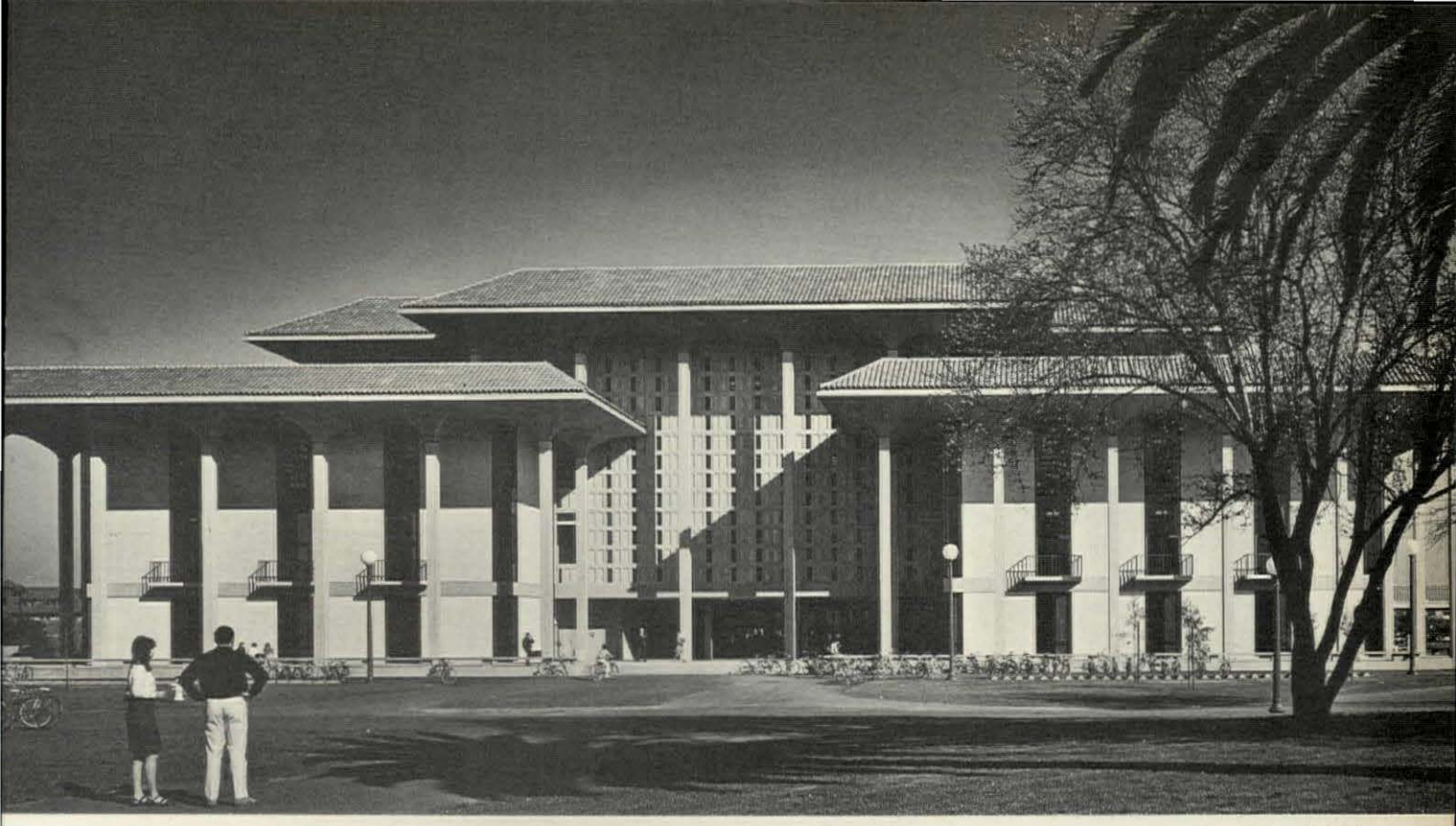


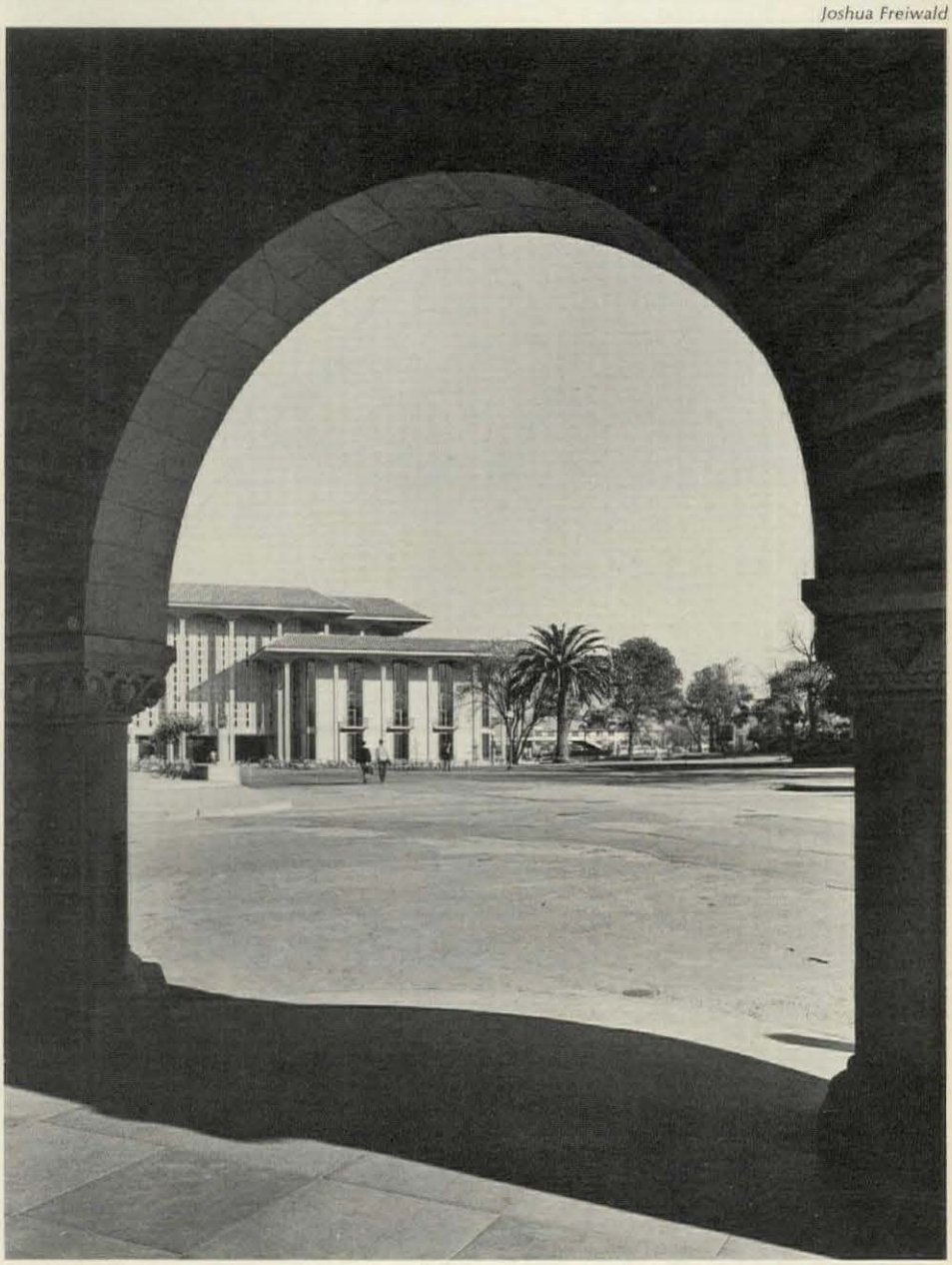
Joshua Freiwald

he Stanford Undergraduate Library by John arl Warnecke and Associates has been cen-ered in a new quadrangle at the intersection f two major campus axes, as the perspective ketch at the upper left shows. The ground oor is open to three sides, allowing students walk through the library on their way to nd from other parts of the campus. The uilding volume consists of four smaller asses dispersed around a large central core. his arrangement has two major advantages: achieves a maximum periphery for natural ghting, and reduces the apparent bulk of the brary, making it compatible in scale with ther campus buildings.

Architect Warnecke has done his best to ccommodate the library to its surroundings. oth the perspective sketch and the photo-raph of the roofs of the famous Stanford uadrangle, as well as the photograph at the ght indicate the traditional design idiom to hich the library, with its clay tile roof, aults and columns defers. The library shares e same design vocabulary which Warnecke eveloped for the University Post Office and ook Store, shown at the bottom of the oppo-te page, which was constructed in 1958.

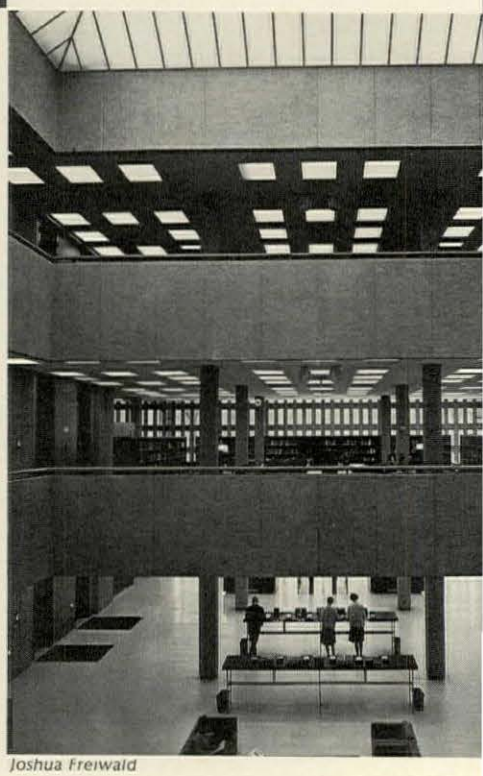
shua Freiwald

HENRY MYER MEMORIAL UNDERGRADUATE IBRARY, Stanford University, Stanford, Cali-rnia. Architects: *John Carl Warnecke and ssociates;* structural engineer: *Isadore Thomp-on;* mechanical and electrical engineers: *G. L. endler & Associates;* landscape architect: *homas D. Church;* acoustical consultants: *Bolt, eranek & Newman;* contractor: *Engstrom & lourse.*

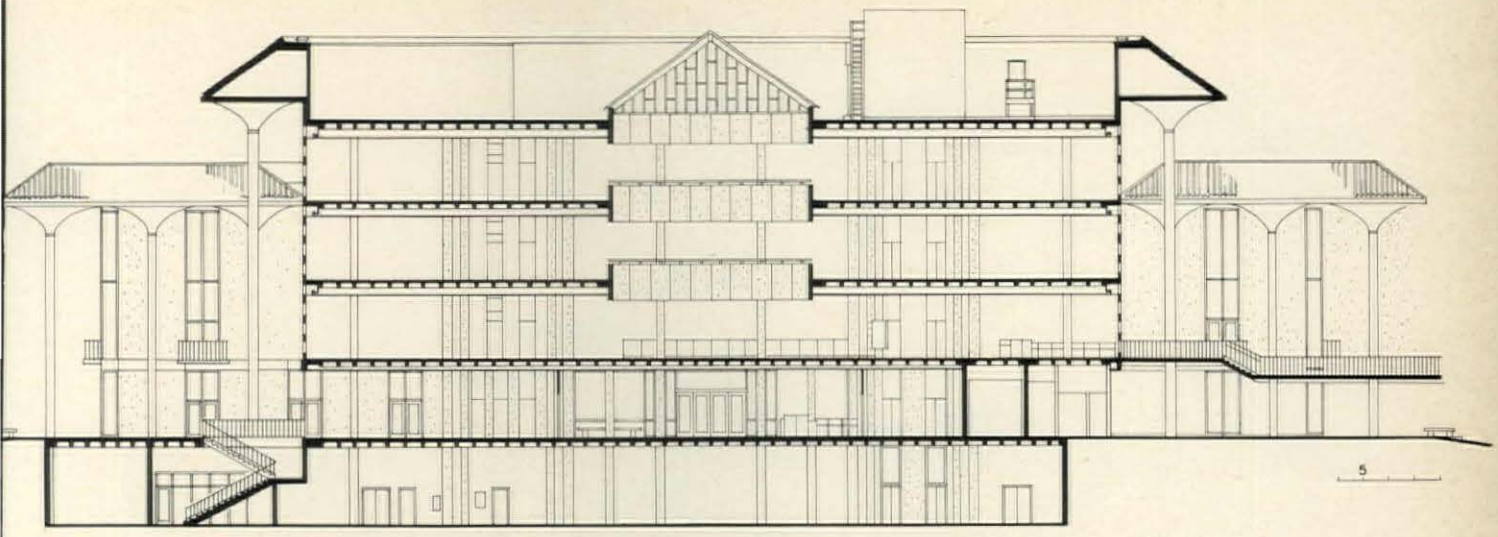


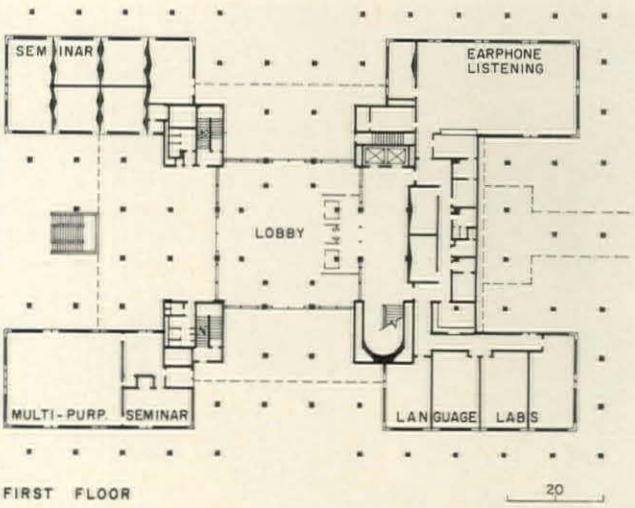
Joshua Freiwald

The library will provide space for 40,000 v
umes in open stacks and 1,500 study sea
Except for one general reading room for 50
100 students which houses reference a
periodicals, all study seats are distribut
through the stacks with emphasis on indivi
ual study tables. The old concept of a ma
reading room with large tables has been d
carded. The library which encloses an area
approximately 115,000 square feet, include
ground floor for audio-visual facilities, tv
full floors above, and a fourth floor with op
terraces. A central skylight well shown belo
unifies the space.

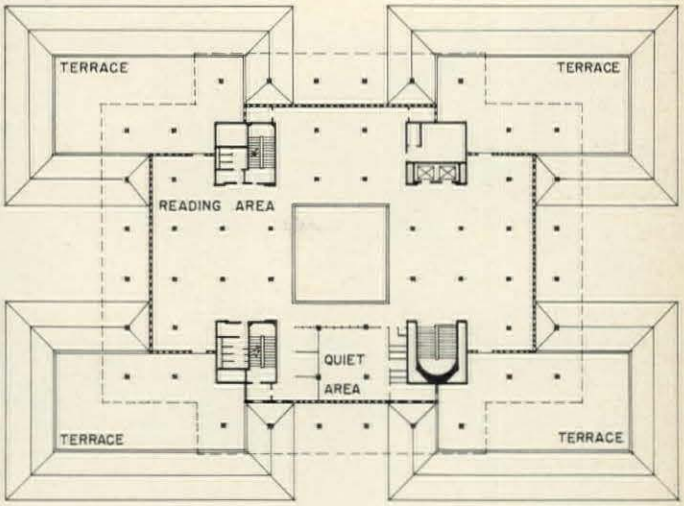


Joshua Freiwald

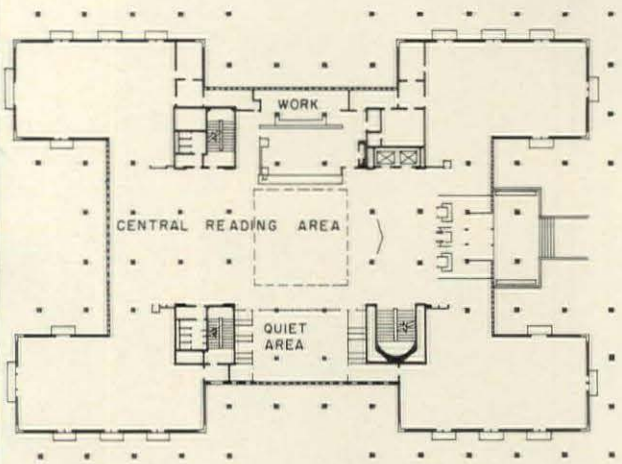




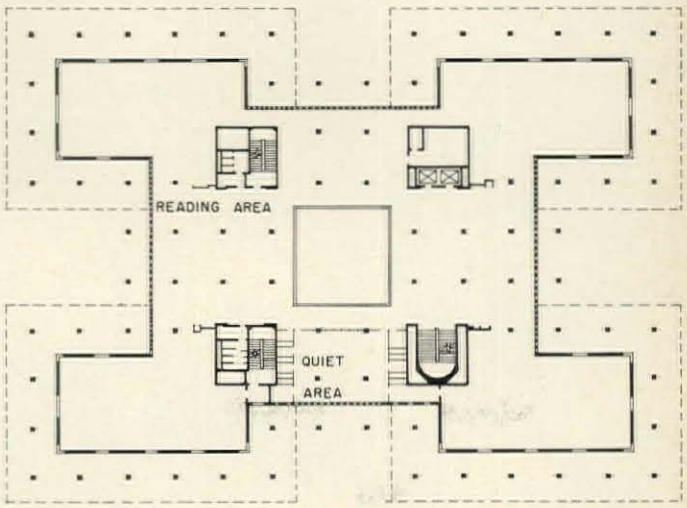
FIRST FLOOR



FOURTH FLOOR



SECOND FLOOR



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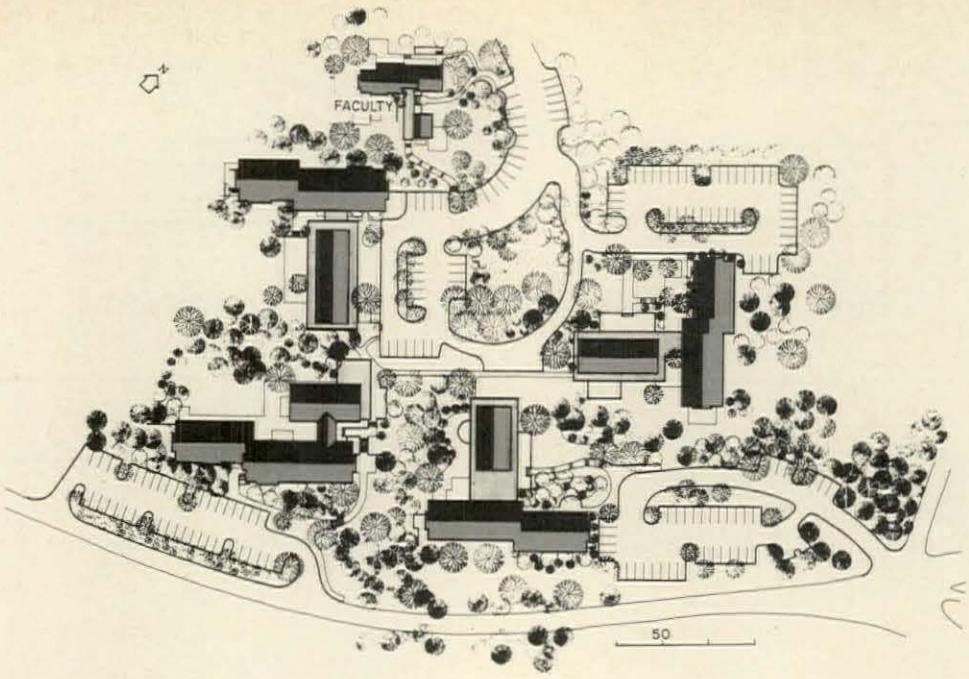
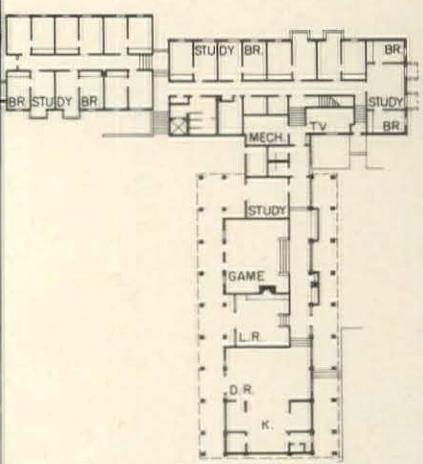


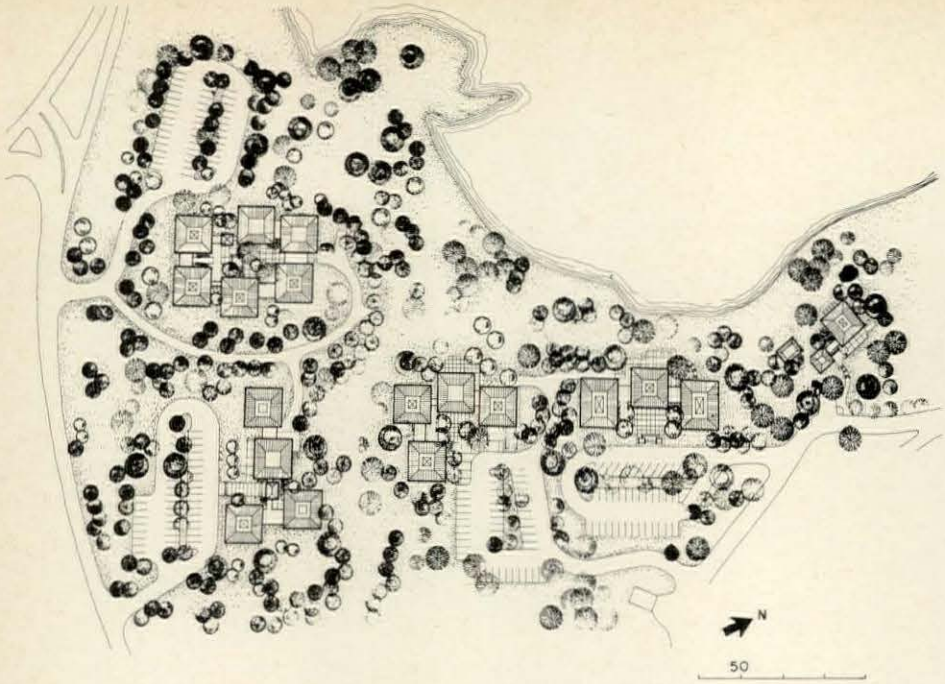
Dandelet photos

HOUSING CLUSTER NO. 1, Stanford University, Stanford, California. Architects: *John Carl Warnecke and Associates;* structural engineer: *Stefan Medwadowski;* mechanical and electrical engineer: *Alexander Boone;* landscape architect: *Lawrence Halprin Associates.*



Student Housing Cluster No. 1 at Stanford University by John Carl Warnecke and Associates is the first group of four fraternity houses of 50 students each, to be completed in an undergraduate program which will ultimately provide housing for all 24 fraternities on the campus. It is located on a hilly 10-acre site at the south end of the campus near Lake Lagunita and adjacent to rolling meadows. The four houses are organized in an informal composition excellently related to the site. The landscaped open spaces between the houses and the terraces adjoining each house provide the privacy essential to study and social gatherings. The structures are wood frame with redwood exterior walls throughout. Roofs are gabled, with wide overhangs, and surfaced with wood shingles, characteristic of the San Francisco Bay Region and widely employed on the campus.

STANFORD UNIVERSITY: HOUSING CLUSTER



HOUSING CLUSTER NO. 2, Stanford Universit
Stanford, California. Architects: *John Carl Wa*
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engineer: *Alexander Boone;* landscape architec
Lawrence Halprin Associates.

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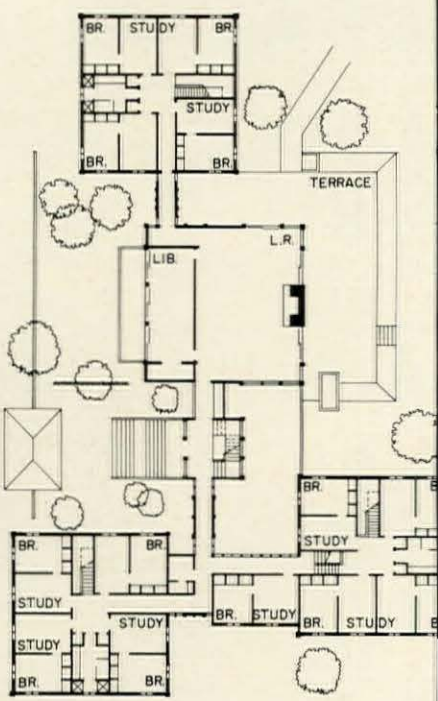


Student Housing Cluster No. 2 at Stanfor
University by John Carl Warnecke and Asso
ciates is organized into a unified yet informa
composition which looks inward to its court
and at the same time outward toward th
campus. The houses are arranged in cluster
of three to six units which range from one t
three stories in height. This arrangement no
only takes advantage of the site, but als
eliminates long corridors and facilitates inter
nal circulation. The structures are wood fram
with exterior walls of stucco painted in ligh
colors ranging from white to beige. Th
hipped, red-tiled roofs are part of Stanford'
structural vernacular.

Building Research Institute gets a reprieve

As a result of a membership vote early in February, the Building Research Institute will continue for the time being to operate as a private technical organization. A B.R.I. board of directors-approved plan to merge B.R.I. and the Building Research Advisory board into a single organization to be known as the Building Research Board failed to receive the required two-thirds majority of B.R.I. members' votes—the final tally being 298 for merger to 224 against.

The move by B.R.I.'s board to recommend merger had been in the wind for at least a year. While several reasons were behind this move, what really prompted it was a lack of money. B.R.I. simply has not been getting sufficient financial support to make it a viable organization. It has been dipping into reserve funds for several years, and unless new sources of revenue are found—for which prospects are not very promising—the reserves will shortly be used up.

Until 1962, the Building Research Institute, along with the Building Research Advisory Board, was a part of the Division of Engineering of the National Academy of Sciences. The Building Research Advisory Board (B.R.A.B.) got its start in 1949 because building industry people were warned by their Washington representatives—the U. S. Chamber of Commerce and others—that unless they, themselves, did something about the rapidly growing need for stimulation and correlation of building research, the Federal government might in the vacuum assume the role. Two years later B.R.I. was formed to create more general interest in and broaden the base of, the building research activity of the National Academy of Sciences. B.R.A.B. had been working with a 30-man board of directors appointed by the president of the Academy. But B.R.I. was open to anyone connected with the building industry who paid the membership fee.

The feeling has grown in recent years among professionals in the building industry that there should be more independently sponsored research, especially in those areas in which building product manufacturers could not be expected to become involved.

This was one of the reasons why B.R.I. left the National Academy of Sciences in 1962—a unit of the Academy cannot initiate research. B.R.I. hoped that foundation grants might become available which would actually support an independent research program. While B.R.A.B., which is still a member of the Academy, cannot initiate research, it can nonetheless administer research grants when asked to do so by a government agency or profession or educational organizations. (Another reason that B.R.I. left the Academy was that it was about to be asked to leave anyway. Some influential people within the Academy had doubts about a "membership" organization being a proper unit of the Division of Engineering and Industrial Research.)

But B.R.I. was not able to attract money for research; and, furthermore, anticipated additional revenue from advertising and exhibits never materialized. Currently B.R.I. income is about $30,000 a year under that of 1961-1962 figures, most of which is attributable to loss of membership. And although B.R.I. is still solvent, deficit operations the last several years have nearly devoured the reserves.

B.R.I.'s principal activity has been to hold two "research correlation" conferences each year, spring and fall. On any one three-day program you might find as diverse topics as building codes, energy plants, wind loads, and fire protection. Attendance at these conferences has also gone down.

Unfortunately, B.R.I. has not been able to muster sufficient enthusiasm to make it financially healthy. And the reasons for this are not too hard to find. For one thing, B.R.I. is not an organization that industry people *must* be involved with. It doesn't develop or write standards; it doesn't develop specifications; it doesn't prescribe criteria by which building products should be judged. What it has done is merely to provide a forum for the exchange of ideas on building research. And while B.R.I. conferences provided an opportunity for personal contact, this contact was not nearly as vital for many people as that at some more industry-oriented organizations.

B.R.I.'s board of directors became especially concerned about the organization's future when it became apparent early last year that B.R.A.B. was actively considering plans to expand its operations in the direction of more conferences, more general meetings, and, through an "associates program," a broad-based approach for increased industry participation. In this associates program, industrial, academic, professional service and professional society organizations may become organiza-

THIS MONTH'S AE SECTION

tional associates for a yearly fee of $300. Individuals engaged in or concerned with building-related activities may become associates for a yearly fee of $25. The right to vote on activities of or before the B.R.A.B. board is still, however, limited to board members.

As the B.R.I. board began to explore the B.R.A.B. situation, it became clear that the attitude within the National Academy of Sciences-National Research Council had shifted 180 degrees. Now the Division of Engineering and Industrial Research is encouraging all of its operating units, including B.R.A.B., to establish long-range plans to improve the breadth and depth of their activity as related to their industry.

Last September a B.R.I.-B.R.A.B. liaison committee recommended to their executive committees that a merger plan be drawn up. The merger proposal was then announced to B.R.I. members on November 16, at their fall meeting.

The suddenness of the announcement apparently took many B.R.I. members by surprise. The large number of votes against the merger on February 2 was undoubtedly due to the fact that many members had not been cognizant of how serious the B.R.I. financial difficulties were. The emotional tide of the shock thus helped defeat the merger.

B.R.I.'s board intends to present the merger proposal once again to the membership. The board feels that the combined organization is bound to be stronger than either of the separate ones. They feel that B.R.I.'s main asset is its nearly 900 members; that B.R.A.B.'s main asset is the prestige and organization of the National Academy of Sciences and, more recently, the National Academy of Engineering.

A communications gap in human engineering

While the literature in human engineering (acoustics, illumination, psychological factors, etc.) has grown tremendously in the last 25 years, particularly in the military field, apparently much of this information is little used by the equipment designer, according to a new report by Bunker-Ramo Corporation. Following a study of the work processes of 20 industrial design engineers, Bunker-Ramo concluded that, "Two problems must be overcome if we expect the designer to use human factors information and principles in his design. The first problem is the designer's unwillingness to use that information; the second is the poverty of his analytic processes." The report says that the first problem might be solved by having the customer emphasize the inclusion of human factors in design to the same extent that he emphasizes other functional requirements.

What Bunker-Ramo considers to be "poverty in analytic processes" is not exactly clear, although one might conclude from what they say that a large part of the problem is the obscure way in which much human engineering information is presented. The authors of the report, themselves, say that, "The material should be substantially simplified, avoiding the quasi-scientific report style in which most human factors specialists write. Information should be presented largely in pictorial or graphic form. Major principles should be emphasized and background or supporting material deemphasized. Since the designer often fails to recognize the relevancy of handbook information to his problems, the material should contain copious examples of how that information can be applied directly to design."

Chicago utilities debate promotional practices

In hearings recently begun by the Illinois Commerce Commission, Chicago's huge electrical utility, Commonwealth Edison, proposed that the Commission authorize two basic promotional practices: (1) that electric utilities be permitted to pay for wiring costs of single- and multiple-family homes for the installation of designated 240-volt appliances, and (2) that the utilities be allowed to make a cash allowance to developers in connection with the installation of electric appliances or heating reported to be 1½ times the estimated annual revenue.

Edison stated that it believes effective competition by utilities leads to lower costs and prices.

Peoples Gas Light & Coke Company, which seeks elimination of promotional practices, contends it must continue the practice because of competitive need. Peoples said it would generally oppose promotional practices involving financing developments in new construction including load guarantees, acquiring equity interest making the utility a partner of the developer, or leasing or owning customer utilization equipment.

"Comfort" in aerospace medical terms

The criteria for an acceptable thermal environment for a space capsule, as formulated by aerospace medics, may surprise engineers who design mechanical systems to provide thermal comfort in buildings. This is the conclusion of Frank Versagi, technical editor of Air Conditioning, Heating & Refrigeration News, who recently visited the Aerospace Medical Division, Air Force Systems Command, near San Antonio. For example, Aerospace Medical has found that men under test in environmental test chambers tend to prefer higher temperatures than those normally used in building practice; and with relative humidity varying from 30 to 70 per cent in some experiments, there was no significant effect on performance and test subjects made no comment on the humidity variation.

Aerospace Medical tends to ignore the comfort aspects of many of its tests, according to Versagi. Items: its reports include almost as afterthoughts remarks such as the following—". . . cracked lips and conjunctivitis appeared to be closely related to periodic declines in water vapor pressure in the chamber"; and ". . . drying of other mucous membranes were attributed to the low relative humidity."

New building systems section set up at Bureau of Standards

In an effort to better define and describe performance requirements for office space, the Public Buildings Service of the General Services Administration has contracted for a study in this area with the newly established Building Systems Section of the National Bureau of Standards. The first phase of this project, which is to be performed over a 14-month period, is funded by a PBS grant of $84,000. Robert W. Blake, chief of the new section, reports that this phase will involve identification and preliminary selection of systems, but not hardware performance specifications and plans. Blake states that the Building Systems Section, which is part of the Building Research Division of the Institute for Applied Technology, will concern itself with systems according to the classic definition, "people, hardware, procedure . . . an aggregation of components." In the case of PBS, the research will go into the performance requirements for the visual, aural, thermal and communications environments and systems for office space.

Included in the Public Buildings Service study will be:
1) direction of proposals to manufacturers for the development of products or systems to meet performance requirements, 2) development of methods to test and evaluate products against Government performance requirements and specifications, 3) arrangement, within the technical and management regulations of the agency in effect, to procure products which are responsive to the performance standards.

In addition to the PBS study, the Building Systems Section expects to do work for the Post Office Department.

The all-electric high-rise demonstrates economies

Architect George Yurchison designed the all-electric Niagara Treadway Inn (left), which has been a proving ground for common-sense economies in electric heating and cooling since its completion in 1963. An increasing proportion of his buildings have been all-electric. The decision in each case has been based on building type, investment factors, relative utility and fuel rates, and personal investigation of performance and energy costs for similar buildings in the utility company area. His buildings use various all-electric systems including heat-by-light. The following article is based largely on Mr. Yurchison's experience.

The words "electric heat" have a magical sound in today's push-button world, where electric appliances and automatic devices of all kinds have gained unquestioned acceptance. Clean, quiet, superior efficiency is the natural connotation of electric heat

More to an economic analysis than a strict Btu comparison

It is true that electricity is a "higher" form of energy than heat from fossil fuels. But while electricity costs more than fossil fuels on a Btu for Btu basis, such an economic comparison is not realistic. For example, electric heating may appear to be more expensive than fossil fuels when the boiler is operating at peak load and distribution losses are ignored. Such a situation hardly ever exists, however, since most of the time a heating boiler operates at part load.

A Btu for Btu comparison also ignores the realities of over-all owning costs. These will be affected by the nature of building occupancy, equipment amortization costs, and, in some cases, savings accruing through the utility providing high voltage feeders to multiple distribution points within the building.

Furthermore, a straight Btu for Btu comparison also ignores the energy multiplication characteristic of the heat pump.

The architect should keep in mind that with the all-electric approach, the buildings themselves are frequently other than conventional, but, even more, the *systems* are different.

Energy cost itself is only one of the many factors entering into the economics of any heating system. First cost and maintenance of the system hardware are obvious factors in which electric systems have strong advantages. It is in these factors that savings through elimination of boilers, piping, flues and the space and structure required to accommodate them permit the electric heating designer to invest in refinements of control and in the long-term economy of added insulation and heat-saving devices such as exhaust-intake air heat exchangers. These investments can go a long way toward balancing or canceling out the price advantage of fossil fuel energy.

One could argue, of course, that insulation and heat savers would conserve as much energy for one system as another. But the key consideration is not conservation of energy. It is return on an investment. It is worth considerable investment in equipment to burn cheap fuel. But, comfort considerations aside, it is not worth much investment to save cheap heat—unless you can save enough to substantially reduce the capacity and cost of the heating equipment.

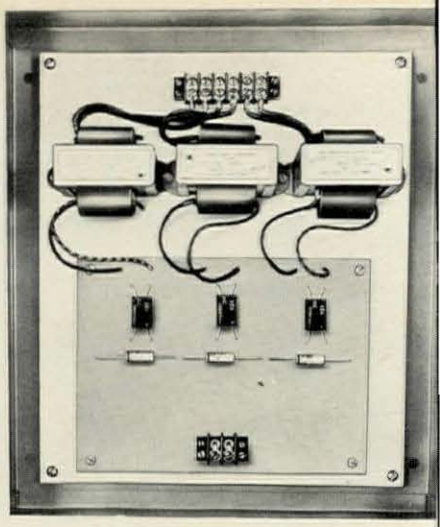
Two trends in modern building design tip the scales further in favor of electric heat for certain circumstances. One is the widening available selection of systems for air conditioning. Both central and decentralized cooling systems can be readily adapted to dual cooling-heating function through the inherent, pipeless flexibility of electric heating. The heat pump also may have wider use once a committment to an all-electric system has been made. The other trend favoring electric heating is the increasing level of illumination generally prescribed for working spaces and the emergence of ceiling systems which either discard or salvage heat from lighting as the need may be. Both of these trends are supported by power-supply facilities already approaching the capacities required for electric heating.

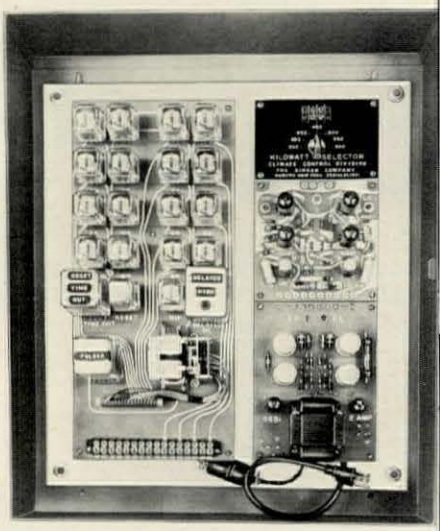
All-electric motel incorporates energy-saving features

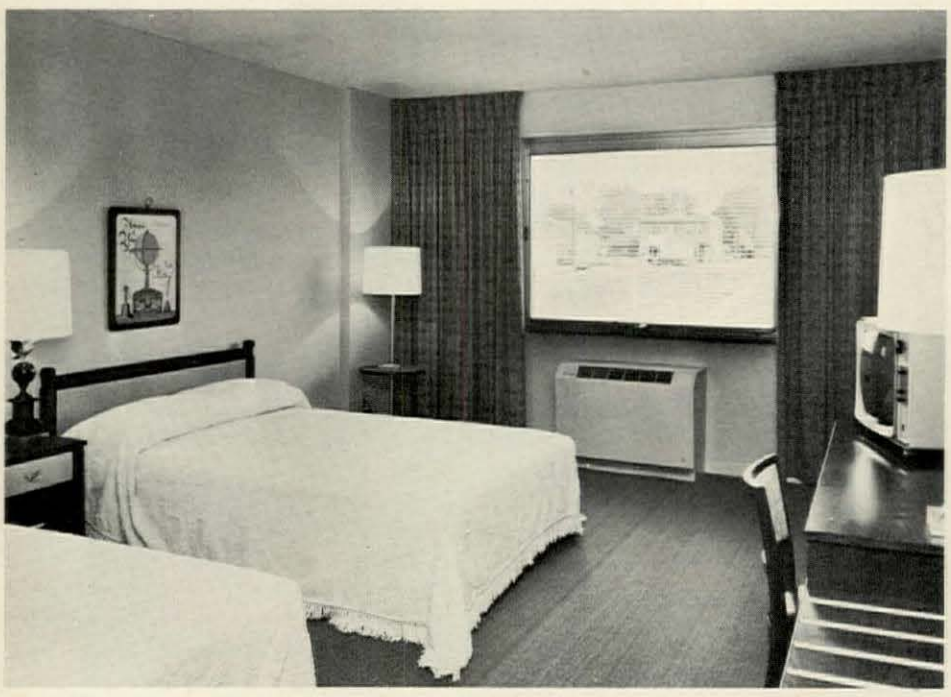
The Niagara Treadway Inn is an 8-story, 160-room, riverfront hotel-motel designed by George Yurchison and completed in 1963. The architect and the owners expected that an all-electric design would be optimum because of the region's noted power resources and favorable rates. Cost comparisons with alternate fuels showed this to be the case.

Considering the irregularly intermittent occupancy typical of hotels, a so-called incremental system was selected. This is a system of self-contained heating-cooling units in which resistance heating coils of 15,000 Btu per hr capacity are used for the heating cycle with a through-the-wall cooling unit of 11,500 Btu per hr capacity. Each room unit is automatically controlled, and room air is circulated by the same fan that is used for both heating and cooling.

The room control is a two-stage thermostat that permits an "occupied" or "unoccupied" setting to be selected by movement of a simple toggle switch at a master control panel near the registration desk. By setting the "unoccupied" limits at reduced load for either heating







The all-electric Niagara Treadway Inn, Georg Yurchison, architect, demonstrates innovatio in economic operation. First (above left), is control board near the registration desk whe clerks put room thermostats on "occupied" low-load "unoccupied" operation. A permissiv load control device (above) rations electric he to the domestic water heating system whenev the total building load is at a low point. Ind vidual room unit is shown at left.

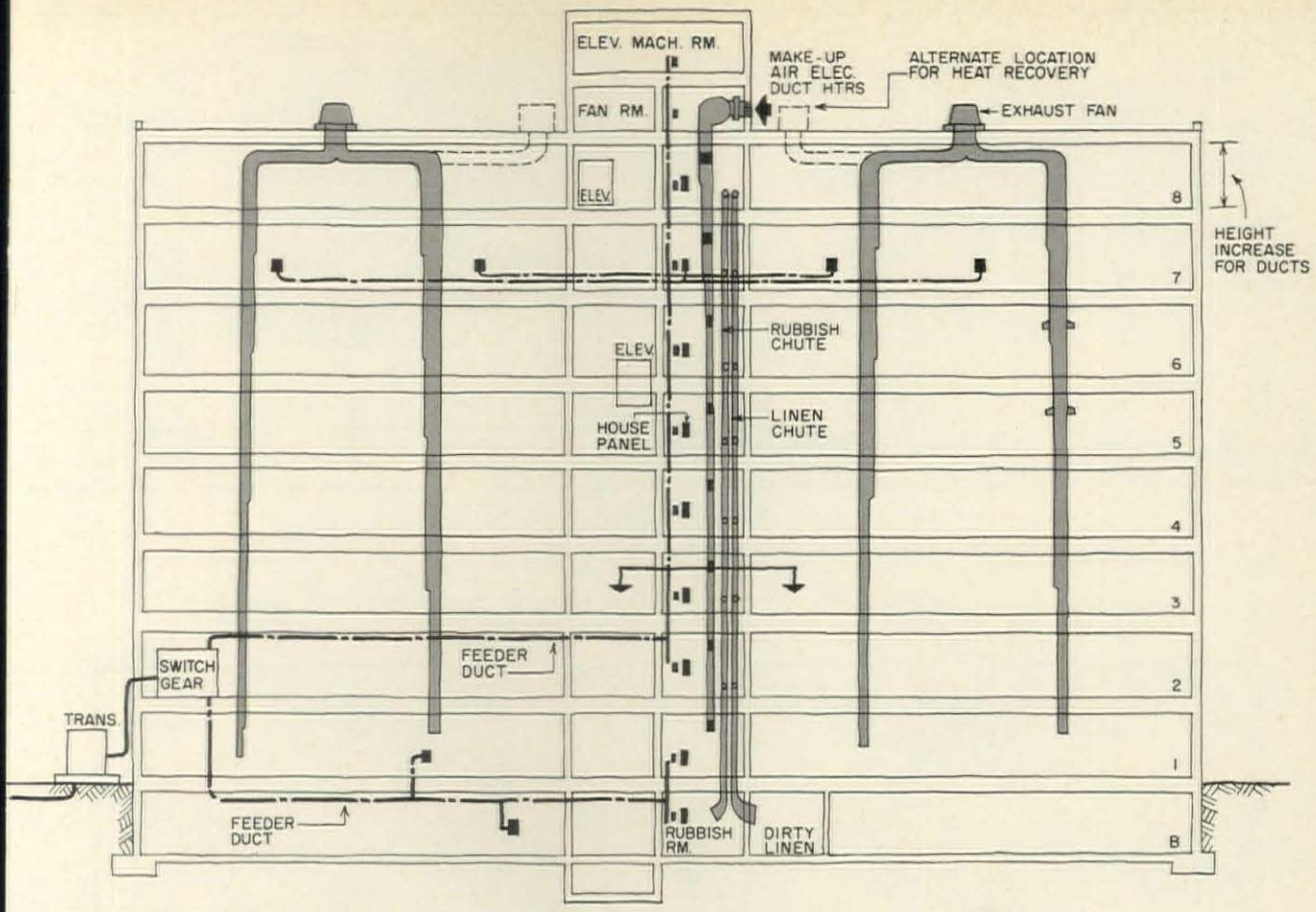
or cooling (e.g., a holding temperature of 55 F instead of 72 F for heating) considerable savings in operating current could be made.

In corridors and stair-wells, electric convectors were used, and in utility rooms electric baseboard heaters were installed about four feet above the floor to escape damage by maintenance equipment. All electric units were individually and automatically controlled.

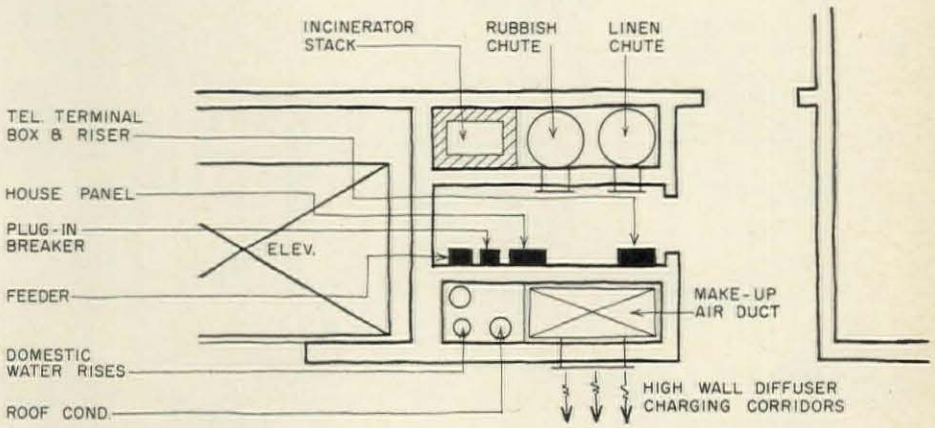
Public areas, dining room, lounge and all-electric kitchen were heated and cooled by large fan-coil units supplemented by step-controlled duct heaters and electric baseboards. Make-up air which replaces continuous exhaust from toilet rooms is tempered by electric duct heaters. The elevator machine room was raised above roof level to provide a fan room for the make-up air system.

Domestic hot water for hotel rooms, kitchens and public areas presented problems in economy. The large supply for the kitchen was stored in a 2,000-gallon tank heated during off-peak hours by immersion heaters. A stand-by supply of 250 gallons was kept on full-time line to be sure of constant supply.

The architect was dubious that a proposed system of individual 30-gallon water heaters to serve back-to-back rooms would be satisfactory, since the temperature of the supply water could be as low as 35 F. The solution was to install a 3,500-gallon tank heated principally by off-peak power, but supplemented by normal daytime power flow through a permissive load control device, with no additional demand charge. This would guard against lack of a supply of hot water during the daytime which might have occurred if only off-peak power had been used. The p.l.c. device senses the electrical demand on the building as a whole and permits the water heating load to be turned on when the building demand is low. In this way the water heat-



ection of Niagara Treadway shows feeder duct n spine near elevator shaft. House panels serve ach floor. Make-up air system can be adapted or heat recovery through exchangers utilizing xhaust air heat.



Utility spine for all-electric building houses power supply, air ducts, water piping, laundry chutes and incinerator stack in small space. This effects an important saving characteristic of the all-electric building.

ng demand is fitted to the low points of he building demand on a 24-hour basis, nd a low rate is charged for this service.

The effect of all of off-peak leveling devices was to bring in the operating cost about 17 per cent below original estimates and the permissive load control reduced operating costs another 4 per cent.

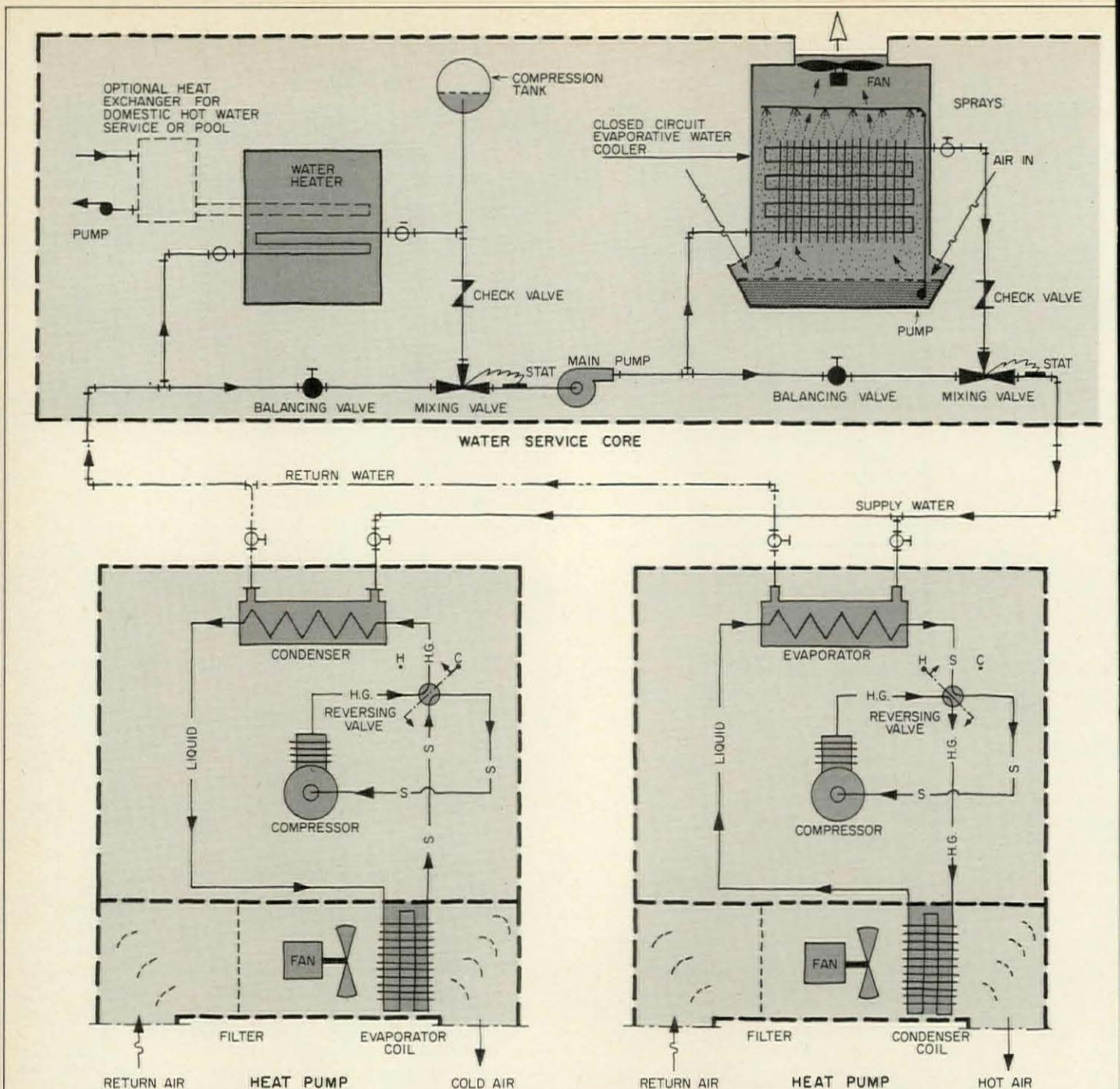
Unusual site and cost conditions affect over-all economics

Architect Yurchison confronted a less favorable situation for all-electric design of a downtown high-rise apartment house in Rochester. Here the utility handled electricity, gas and district steam, so that the incentive to set up preferential rates for an all-electric building was less pressing.

The controlling factor in the decision to consider all-electric design for this apartment house was the limited size and high cost of the site. In order to bring the unit land cost per apartment within a limit of $1,500, the building had to contain 112 apartments, which meant a 15-story building. To keep rentals within a competitive range, it was necessary to place more emphasis on reducing initial cost than might be expected under less restricted conditions. The architect's experience in Niagara Falls led him to consider an all-electric building in Rochester in spite of the fact that Rochester rates are almost double those in Niagara Falls.

Although the utility suggested that a steam system would save about $2,000 a year in operating costs as against an all-electric system, it turned out that the installation cost for steam would be about $80,000 more than for an electric system. The amortization cost of $80,000 over the 20-year life of a mortgage would be about $6,700.

Economy in the first cost of the electric system for this apartment house was



Schematic diagram above illustrates patented heat-pump system of the California Heat Pump Corporation. Heating and cooling can take place at different locations simultaneously with increase of over-all efficiency. Water circuit is both heat source and sink.

realized by running a single feeder duct up the spine of the building with a house panel at each floor serving apartment panels in each apartment. This permits individual temperature control by occupants of each apartment.

The problem of exhaust and make-up air in an apartment is less demanding than in a hotel because it is not necessary to provide constant exhaust. However, it is necessary to control cooking odors, so it is advisable to pressurize the corridors. A heat recovery system was installed to extract heat from exhaust air by a simple arrangement of connected coils in each duct. By pumping fluid through these coils, heat from the exhaust air is transferred to the incoming make-up air.

Integrated heat-pump system uses circulating water loop

One device that partially overcomes the inherent losses of converting electricity into heat is the heat pump, a reversible refrigeration cycle which can deliver more heat units per watt than does a resistance heater. This advantage rapidly falls off, however, when the temperature of the heat source is very low in comparison to the temperature at which the heat is transferred to a heating system by a refrigeration process.

A patented system developed in California seeks to overcome this disadvantage and at the same time salvage heat rejected in cooling one part of the building by using it to heat another. The system uses a closed loop of circulating water which acts as a heat source for heating and heat sink for cooling at individual heat pumps.

Architect Yurchison has designed several apartment buildings using this system. It has the advantage over air-source through-wall heat pumps, in that no holes need to be provided in the facade, since it extracts heating or cooling effect from the water loop.

COMPUTER-AIDED BUILDING DESIGN: WHERE DO WE GO FROM HERE?

What is the role of the computer in the world of architecture? Using it for specification writing is "a little like calling in a diamond cutter to crack walnuts." But how far away is the use of the computer in the much more complex area of design decision? Herewith the report of a conference that explored just those subjects.

The Bureau of Applied Technology of the National Bureau of Standards has been sponsoring a series of invitation-only working conferences at M.I.T. on the subject of computer-aided building design. The first of these took place last fall, and was reported briefly in the RECORD (November, page 36); and the second was held February 10th and 11th, and deserves a somewhat longer notice, as much for what didn't happen there as for what actually took place.

The conference was divided into five working sessions: cost estimating and specification, mechanical and structural systems, computer graphics, design evaluation, and design-decision theory.

Cost estimating and specification

This first category is, at least on the face of it, reasonably straightforward. Cost estimating and specification seem to be well-defined subjects that can benefit from computer procedures in the present state of both the building and computer art. In fact, much has been done in these areas. The RECORD reported quite extensively last month on a promising study of computerized cost-estimating (pages 163-166); and several architectural offices (for example, Smith, Hinchman and Grylls in Detroit and Skidmore, Owings and Merrill in Chicago) have operational computerized specification-writing systems.

The computer, however, is a precision instrument; whereas the basis by which architects decide what information goes into the specification and what is shown only on the drawings—as well as the relationship between the two—would seem to be far less precise. Using a computer to write your specification thus becomes a little like calling in a diamond cutter to crack walnuts: he no doubt will do a superb job, it may even make good economic sense, but his full capacity is not being used.

The same problem is present to some extent in computerized cost-estimating; that is, it would work better with a more rationalized drawing process, more sophisticated construction-cost information, and different relationships between architects and contractors than are presently available.

As a result, far from dealing with well-defined and easily manageable problems, the first discussion group tended to move towards the question of a systematic description of the architectural design process; and these are deep waters indeed—and very murky.

Mechanical and structural systems

Working group two was composed largely of engineers. Again, considerable progress has already been made in writing computer programs to calculate common classes of structural and mechanical engineering problems. The big difficulty in this field seems to be getting everyone's computer programs to relate to each other. One of the funniest sessions (if you like gallows humor) at the first computer-aided building design conference consisted of a whole series of computer programers getting up and saying that Fortran Four, for example, might be all right for a clumsy insensitive program like *yours*, but it certainly wouldn't do for a sensitive and sophisticated program like *mine*—for all the world like a group of architects arguing modular standards.

The National Science Foundation is presently sponsoring a major research effort at M.I.T. called I.C.E.S.: Integrated Civil Engineering System. The objective is to produce a group of computer programs that relate to each other, and which cover the whole range of structural and mechanical problems likely to be found in a building. Like all computer programing problems, such an objective is much easier stated than achieved.

". . . . Computer graphics provide the key means of communication. . . . However, first architects need to kno something about computer graphics, and, generally speaking, they do not. The dialogue between compute experts and the architect clearly needs to go much farther before the profession grasps the possibilities."

As a single programing language doesn't seem to be possible, much of the I.C.E.S. research now centers about trying to make basic data transferable from one program to another. When this problem is solved, perhaps someone will be able to give some more attention to getting the resulting information into a form that the architectural designer can use more readily and effectively.

Computer graphics

The composition of the computer graphics working group ranged from Timothy Johnson, who wrote the three-dimensional Sketchpad drawing program, to a number of practicing architects, including some very skillful and thoughtful practitioners. Alas, one of them began the discussion by saying that he didn't see what application computer graphics had for architects except, perhaps, the retrieval and display of standard construction details (an operation which can be accomplished of course by several commercially available photographic methods). And one quickly got the sinking feeling that this statement is representative of the prevailing view within the architectural profession. It certainly provided the working group with a clearly stated communications gap. After several desultory attempts to bridge it, the computer graphics people returned to their own concerns, and the architects became discouraged and left. They missed some interesting discussions about three-dimensional line drawings actually displayed in real space and visible from all sides, and the possibility of computer graphics in various colors. They also missed learning about more mundane computer graphic techniques that are very close to being commercially available. (The reader who is interested in learning more about computer graphics might begin with the RECORD's October 1965 article, "Computer-Aided Design and Automated Working Drawings," as well as the latest issue of Design Quarterly, number 66/67, entitled "Design and the Computer.")

Design evaluation

A course of action in which all the basic assumptions and steps are known and understood proceeds in a simple, linear way to its conclusion. Trying to approach complex problems in as systematic a way as simple ones requires a constant process of checking and review, a process expressed by the familiar feed-back loops of the systems diagram. The design evaluation group was concerned with analyzing how such a feedback process could work in an architectural situation—a problem that, because of the diffuse and unsystematic nature of the building industry in its present state, seems very difficult to solve as a theoretical construct, although all kinds of pragmatic design evaluation techniques are now in use.

Design-decision theory

The fifth group, design-decision theory, was clearly the hit of the conference, with many participants from the other groups playing hookey to attend its sessions. The star turn was provided by Professor Christopher Alexander of the University of California at Berkeley (RECORD readers will remember his articles on the Theory and Invention of Form, April 1965, and Relational Complexes in Architecture, September 1966.) Alexander spoke about what he calls an urban rule system, which is perhaps closer to cultural anthropology than to any form of decision-making theory that makes use of a computer. Much of the other discussion in this group turned on concerns in which the computer was relatively incidental: there is clearly an entirely new approach to architectural theory brewing, in the architectural schools, whic will draw on operations research tech niques and other new types of decisior making theory.

Computerized vs. computer-aided

The principle decision-making issue tha relates directly to the computer is th distinction between *computer-aided* an *computerized,* when the word 'compu erized' is used to describe a situation i which a solution is automatically pro duced from a problem description. Th people who invent computer machine and develop basic programs tend to lik computerized approaches such as the so called optimization programs, in whic the boundaries of a problem are set an the instructions written to automaticall produce the best solution according to given requirement, such as lowest cos or largest area. The trouble with optimi zation programs is that there is a stron temptation to over-simplify the proble in order to use them. The complexitie of architecture tend to make *computer aided* procedures more desirable. In computer-aided procedure, the architec would have direct access to a compute throughout the design process, and coul use it to solve a great variety of problem as he went along. He would always, how ever, have the ability to recast the term of a problem, or introduce new factor for consideration, and he would thus sta in control of the entire design process Computer graphics provide the ke means of communication which woul allow architects to use computer-aide procedures. However, architects woul need to know something about compute graphics; and, generally speaking, the do not. The dialogue between the com puter experts and the architect clearl needs to go much farther before the pro fession grasps the possibilities.

—Jonathan Barne

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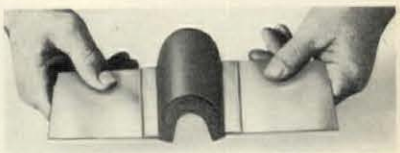

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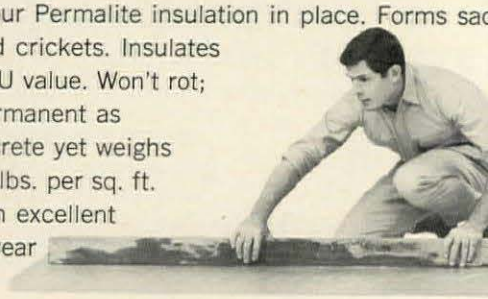

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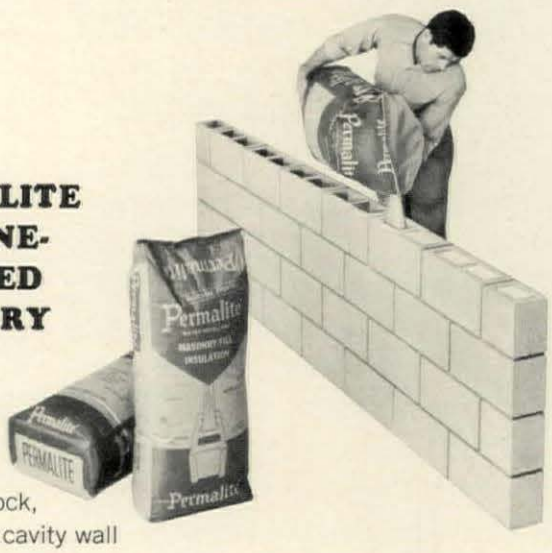

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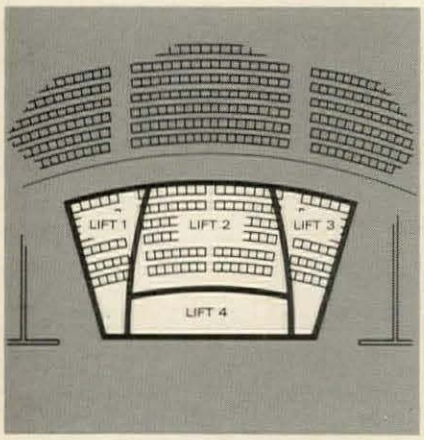
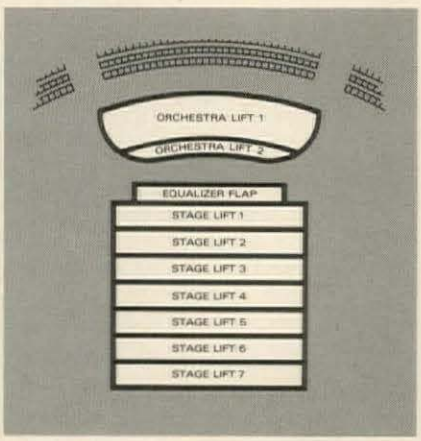
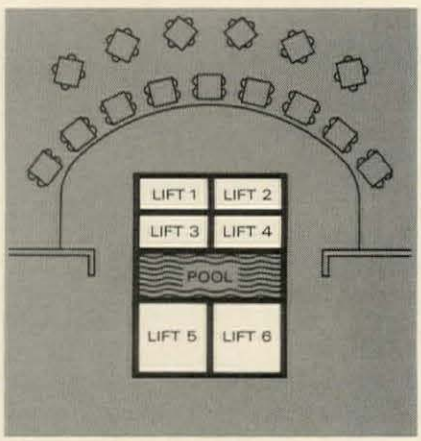


Loeb Drama Center, Harvard University—Four Dover Stage Lifts are used to create a theatre that easily converts for three different kinds of staging.



Metropolitan Opera House, New York City—The new home of the Metropolitan is equipped for fabulous stage effects with seven Dover Lifts on stage and two in the Orchestra.



Stardust Hotel, Las Vegas—Six Dover Stage Lifts, operating in combination or independently, bring performers and sets into view from below stage level.

These diagrams illustrate three of the more than 100 entertainment centers equipped for flexibility with Dover Stage Lifts. Dependable, smooth-running Dover hydraulic lifts produce elaborate theatrical effects, save valuable floor space, and help in the design of multi-use halls. There are practically no limitations on platform size, lifting capacity and systems for controlling combinations of lifts. For theatres, concert halls, opera houses, auditoriums, night clubs, wherever you need a rising stage, specify Dover Stage Lifts. Send your preliminary requirements for analysis and recommendation.

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Elevated flooring permits "impossible time schedule" and great flexibility

The architect's problem: to design and lay out a highly flexible electrical and mechanical system for a $3-million research complex—in less than 30 days. By installing heating, ventilating, electrical and plumbing services under an elevated floor similar to that in computer installations and "clean" rooms, architects Charles H. Harper Associates could start construction independently from mechanical installation, conserve time, and meet a strict deadline.

A critical shortage of existing space was the reason for the 10-month occupancy target date set for a new administrative-engineering-research complex for Globe-Union in Milwaukee. The management of Globe-Union (one of the world's largest manufacturers of automotive storage batteries) would revert to original plans for a remodeling program and shelve the new building indefinitely if the target could not be met.

Thirty days and great flexibility

When Charles H. Harper Associates began setting up schedules, they found that the date for beginning steel erection left less than 30 days to design and detail the 140,000-sq ft, three-building complex.

Further, the building had to be as flexible as possible because of the constantly changing requirements for services of all kinds in the engineering and research facilities.

The time and flexibility requirements made a one-story building mandatory: scaffolding would be eliminated and provisions for future vents and shafts would not be necessary.

Biggest problem: the mechanicals

The major difficulty with all of the commonly-used methods for locating mechanicals is that design must be complete before construction can begin. In addition, few offer the flexibility that the new complex required. A basement, for example, which would add a substantial cost, would provide an overhead complex of wires, conduit, plumbing, and ventilating shafts that might be fairly inaccessible for maintenance. Relocating the mechanicals at a future time would require breaking through the floor at the new positions and repairing the holes left by the original work. Further problems would occur if the largely unusable space were desired for parking or storage: or locating basement mechanical.

A crawl space under the floor would be less expensive, but again, the mechanicals might not be readily accessible and relocation would be troublesome.

Installing the mechanicals under the floor before the slab was poured offered no further solution, since putting the raceways, conduit, and pipe in the slab itself would be expensive and would not provide the maximum flexibility required —especially in this situation where the mechanical needs for research go beyond the normal requirements. Special gas, acid and distilled water lines would have to be installed along with special electrical requirements plus acid resistant sewer lines. Since raceways are generally installed on 6-ft centers and cannot be laid on diagonals, the possibilities for relocating equipment for present and future applications would be limited.

The solution: elevated flooring

Harper Associates considered the use of a modular raised flooring complex of the type used in data processing installations, laboratories and television stations. Such a system (coupled with movable wall partitions), providing unrestricted access through instantly removable panels to all mechanicals underneath, would give Globe-Union maximum flexibility for future modifications and relocations of their engineering and research facilities. And, because utilities could be installed right on top of the floor slab, the construction could proceed and still leave the architects plenty of time later to plan the physical placement of mechanicals.

Net installed cost: $1 per sq ft

Most installations of elevated flooring to date have been restricted to 3,000- to 4,000-sq ft areas, because of the $4 to $5 per sq ft cost that this flooring entails. For the Globe-Union complex there would have to be 120,000 sq ft.

Harper Associates tailored the building to accommodate the floor system—that is, used clear, open spans with interior walls designed to be installed on top of the floor system, thus reducing the amount of carpentry required to "fit" the floor in place.

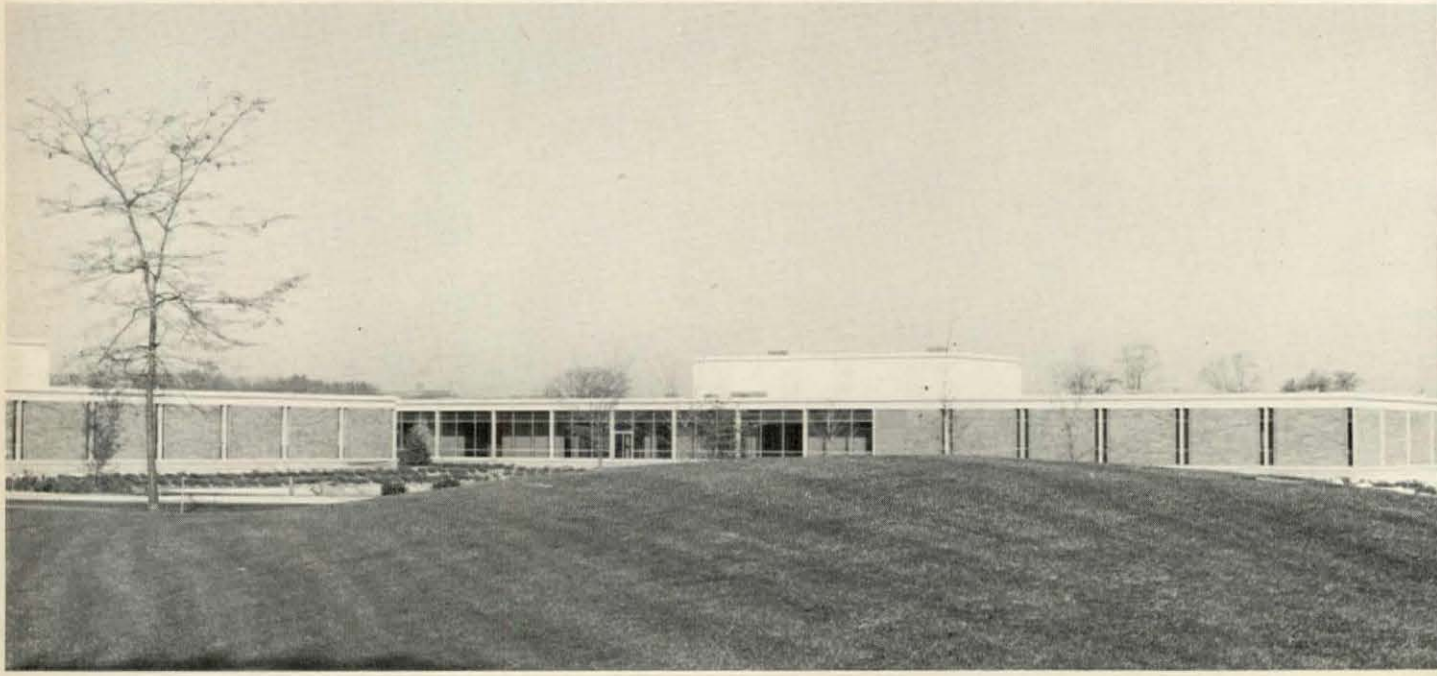
Next, they approached the Weber Showcase and Fixture Company, Inc., makers of WEBCOM Flooring Systems, with ideas for a special 27-in. module system (normal is 24 in.). This increased panel size would cover the floor area with 25 per cent less hardware, i.e., the pedestals that support the system. With the high production volume for 120,000 sq ft, Weber engineers were able to get the installed cost below $3 per sq ft.

An additional cost-savings pattern was established by planning to have the installation of mechanicals directly atop the floor slabs, working in clean, dry conditions. Architects estimated an approximate $1 saving per sq ft for electrical installation, and $1 per sq ft for plumbing. Since the cost of the flooring was down to $3 and savings per sq ft on mechanicals was $2, the actual net price for installing elevated flooring was $1 per sq ft. There should be additional savings through unrestricted accessibility for service and flexibility for relocation.

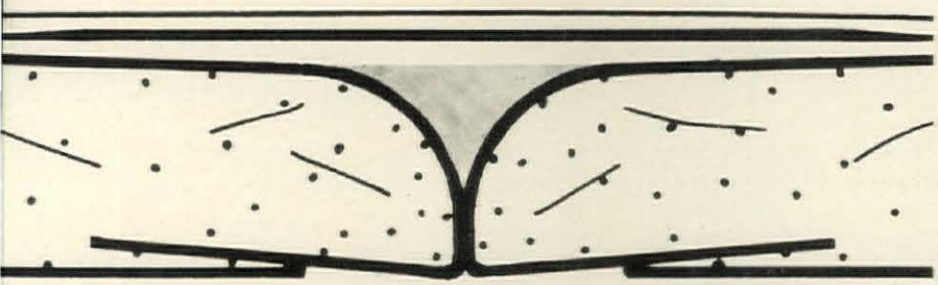
What will the new complex provide?

The building, designed on the 27-in. module, will provide two office sizes (general offices measuring 11½ ft by 11½ ft, and executive space measuring 13 ft by 16 ft) in a one-story construction steel frame with concrete block and brick, non-bearing exterior walls.

The engineering and research buildings, 65,000 sq ft and 55,000 sq ft respectively, have small aluminum windows but the 20,000-sq-ft administrative building makes generous use of glass. The 2- by 4-ft lighting fixtures are mounted on an aluminum T-bar system which distributes air throughout the building. Air conditioning for the building totals 800 tons. The roof is metal deck with 3½-in. fiberglass insulation. The floor is elevated 24 in. above the slab and all mechanicals (except three major services, acid waste, sanitary waste, and storm sewer which are below the slab) are installed on top of the slab. Fifty per cent of the flooring is carpeted in panels, the remainder in high pressure laminates and asbestos tile.



For more information circle selected item numbers on Reader Service Inquiry Card, pages 355-356



Wallboard system helps remedy joint deformation problems

Sheetrock SW gypsum wallboard has a new rounded tapered edge that is said to help joint deformity problems caused by twisted framing, poor board alignment, damaged wallboard edges and extremes in temperature and humidity. More than 500 tests report that *Sheetrock SW* met requirements in extremes of temperature, handling, humidity and load. The eased edges promise to provide deeper, stronger joints and added safety margins against shadows, bumps and blisters. They are said to be easier to handle and less subject to damage. The new edge formation minimizes the need for crowning joints, resulting in flatter joints that require about the same or less compound as conventional joints.

The new system requires a few adapted tools, materials and techniques. *Durabond 90,* a multi-purpose compound that hardens with a maximum bond and minimum shrinkage, is used for pre-filling the grooved joints to solve potential problems of excessive or delayed shrinkage. A specially-designed head attachment for pre-filling with an Ames tool provides a "ski" that guides the tool

smoothly along the joint in one application. After pre-filling, conventional finishing procedures are followed.

The company recommends DWA adhesives or Type-W screws and its patented back blocking system for use on butt joints. ▪ United States Gypsum Company, Chicago.

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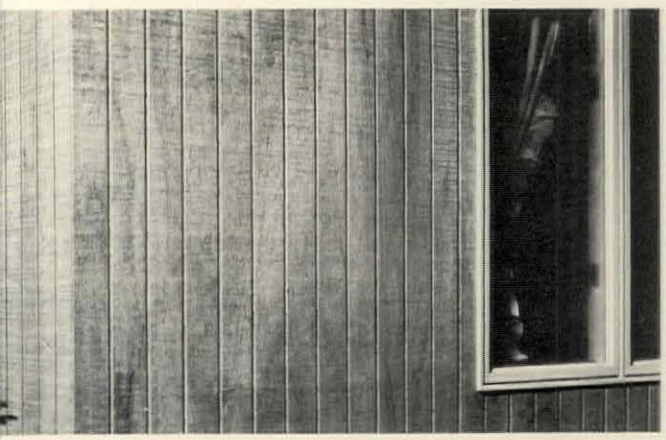

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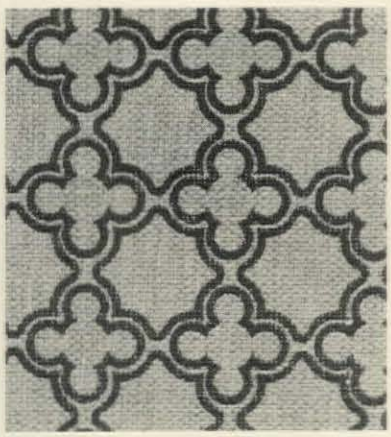
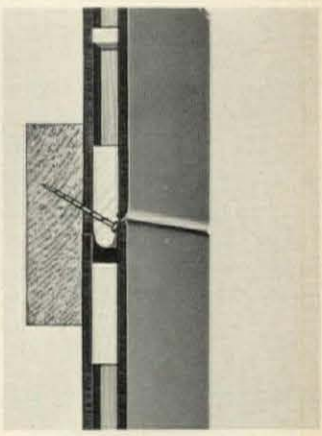


VINYL WALL COVERING / *Fabricraft,* a wall treatment for schools, hospitals, high risers, and residences, looks and feels like grass cloth and can be custom-designed. It is coated with a glossless, transparent polyvinyl acetate and cured to insure abrasion, soil, and stain resistance. It is fade and flame resistant, sound absorbent, and non-allergenic and does not encourage fungus, mildew or vermin. ▪ Crown Wallcovering Company, New York, N.Y.

Circle 302 on inquiry card



HARDBOARD PANELING / *Korelock,* a hollow-core hardboard paneling, has tongue-and-groove edges that hide screw-type securing nails; tongues are pre-drilled. A special V joint provides a fast, accurate fit. Paneling, which may be installed vertically, horizontally, or in combination, has a washable, plastic-finished face and a sealed back panel. ▪ Marlite Paneling, Dover, Ohio.

Circle 303 on inquiry card

more products on page 236

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 355-356

STEEL ROOF SYSTEMS / An 8-page brochure describes tapered-beam, beam-and-column, truss and self-framing steel systems. Drawings show details of ridges, eaves, gables, panel splices, purlin laps and insulation. ▪ Armco Steel Corporation, Middletown, Ohio.

Circle 400 on inquiry card

PAINT / A specification manual specifies paints for various jobs, whether brand new or for an old surface. The manual gives surface preparation instructions for different surfaces. ▪ The Allentown Paint Mfg. Co., Allentown, Pa.

Circle 401 on inquiry card

SECURITY EQUIPMENT / An 8-page catalog shows the complete line including exit control lock and alarm. ▪ Detex Corporation, New York, N.Y.

Circle 402 on inquiry card

PORCELAIN ON ALUMINUM / An 8-page brochure describes the properties of porcelain-enameled aluminum as an architectural material. ▪ Aluminum Council, Porcelain Enamel Institute, Washington.

Circle 403 on inquiry card

TILE / *CeramaLux* vinyl grouted ceramic floor tile is featured in a 20-page catalog that includes a variety of tiles for many jobs. The catalog reports that *CeramaLux* will not crack, chip or powder out and is supplied in 20 patterns and color combinations. ▪ United States Ceramic Tile Company, Canton, Ohio.

Circle 404 on inquiry card

ACOUSTICAL DOORS / Full-flush, glazed and louvered doors, with Sound Transmission Class ratings from 35 to 62 db. are covered in a 4-page brochure. ▪ Overly Manufacturing Company, Greensburg, Pa.

Circle 405 on inquiry card

PLYWOOD / *U.S. Product Standard PS 1-66 for Softwood Plywood—Construction and Industrial* covers panels made of Douglas fir, western softwoods and southern pine. ▪ American Plywood Association, Tacoma, Wash.

Circle 406 on inquiry card

GLASS / *Glass for Construction* is a 36-page manual on the design characteristics, uses and specifications of a broad range of flat glass products. There is detailed information on *Thermopane* insulating glass. ▪ Libbey-Owens-Ford, Toledo, Ohio.

Circle 407 on inquiry card

STEEL FRAME AND ANCHOR / One 4-page brochure gives isometric drawings of the various types of UL and FM frames used in masonry, wood stud, channel steel stud, and truss-type steel stud. Another 4-page brochure shows masonry anchors, UL-listed anchors, channel-type and truss-type steel stud anchors, wood stud anchors, floor anchors, and adjustable ceiling struts. ▪ Amweld Building Products, Niles, Ohio.

Circle 408 on inquiry card

AIR CONDITIONING / A 12-page engineering data manual covers 16 vertical and 16 horizontal remote fan-coil conditioners of 200-, 300-, 400- and 600-cfm design capacities. ▪ Acme Industries, Inc., Jackson, Mich.

Circle 409 on inquiry card

BRICK VENTS / A 4-page bulletin presents vents for low-height air intake and exhaust. A selection chart lists 50 modular sizes for brick, block and precast panels. All sizes are extruded aluminum with polished faces. ▪ Construction Specialties, Inc., Cranford, N.J.

Circle 410 on inquiry card

EXPANSION JOINT COVER / A leaflet describes a prefabricated cover in which flexible butyl rubber insulated bellows is attached to metal flanges. The leaflet explains how the center section permits full three-dimension movement at changes from −40 deg to 220 deg F. ▪ Grefco, Inc., Chicago.

Circle 411 on inquiry card

FANS / *Powered Ventilation for Every Application* is the title of a 12-page brochure detailing the complete line of tube axial duct fans, powered roof fans and bisected fans. ▪ Strobic Air Corporation, Trenton, N.J.

Circle 412 on inquiry card

ROOF DECK / *Vermiculite* concrete roof deck systems are the subject of an 8-page catalog. Material is included on cast-in-place insulation and insulating concrete ▪ W. R. Grace & Co., Chicago.

Circle 413 on inquiry card

INSULATION / *Perlite* insulation for walls, ceilings and roof decks is presented in an 8-page catalog that describes expanded perlite as an aggregate in insulating concrete and plaster, and as water-resistant fill for masonry walls ▪ Grefco, Inc., Los Angeles.

Circle 414 on inquiry card

LABORATORY FURNITURE / A 92-page catalog contains the products, accessories and miscellaneous items required for laboratories. ▪ Hamilton Manufacturing Company, Two Rivers, Wisc.

Circle 415 on inquiry card

PAINTING GALVANIZED STEEL / What architects should know about painting galvanized steel is the subject of a 4-page brochure. ▪ American Iron and Steel Institute, New York, N.Y.

Circle 416 on inquiry card

COMMERCIAL FURNITURE / Four color catalogs picture desks, cabinets, tables, chairs, sofas, and components. A variety of materials and styles are available. Directional Contract Furniture Corp., New York, N.Y.

Circle 417 on inquiry card

HOME ELEVATORS / A catalog shows the *Elevette* home elevator, the *Inclinette* single-seat stair lift, the *Inclin-ator* two-seat stair lift, and outdoor lifts. ▪ Inclinator Company of America, Harrisburg, Pa.

Circle 418 on inquiry card

HEATING / A 16-page brochure features school heating applications. Photos show actual installations and cut-aways expose the components of the panel type radiators used. ▪ Shaw-Perkins Manufacturing Company, Pittsburgh.

Circle 419 on inquiry card

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

more literature on page 2

ART METAL RECESSED ALLUME® LENSES

The first frameless round and square incandescent luminaires

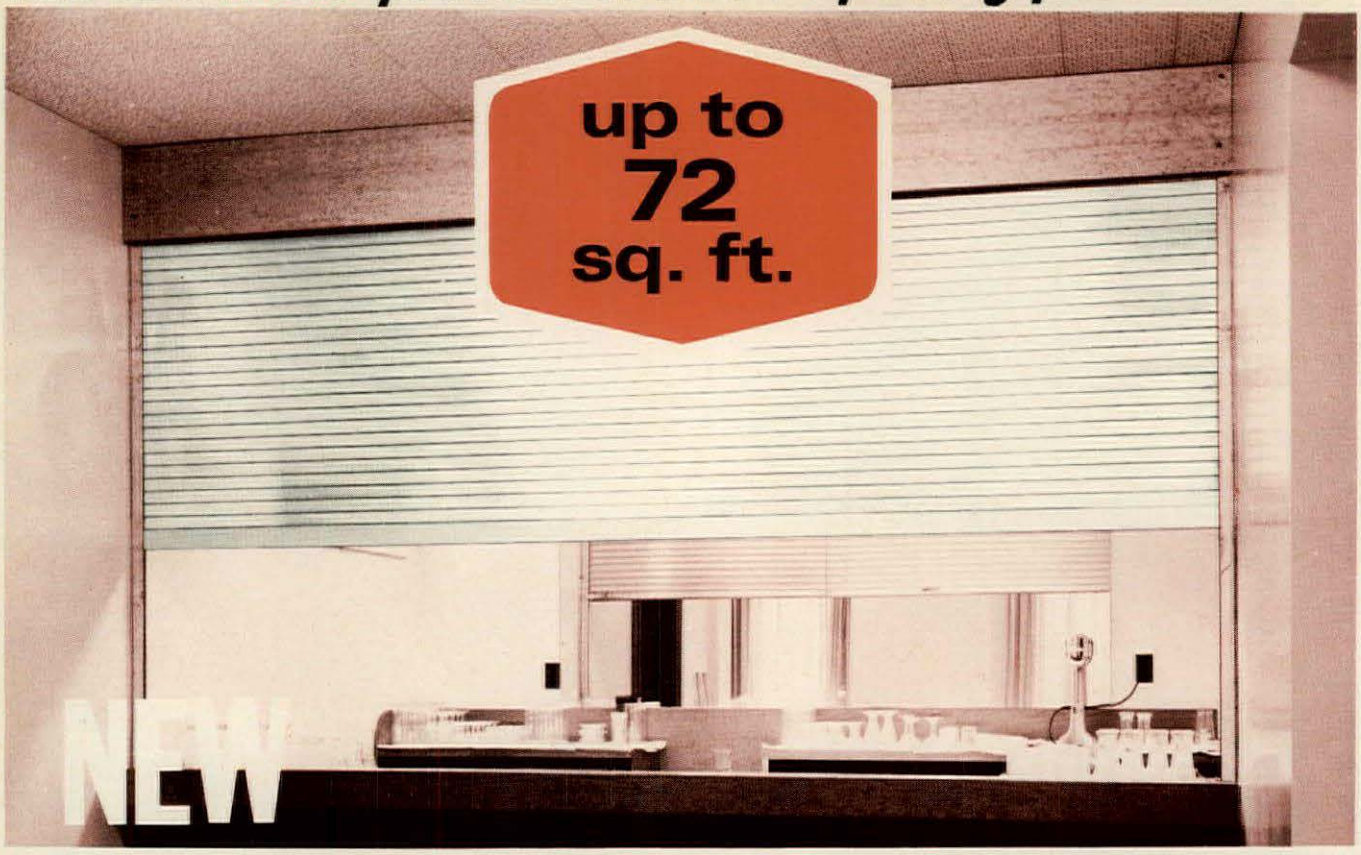
The newest addition to the Art Metal Allume family of frameless luminaires are frameless recessed prismatic lens units. With either round or square Recessed Allume Lenses **all you see is light.** There's no exposed metal to detract from the all-luminous look. No exposed metal to cast a dark shadow or corrode from weather exposure. The luminous lens edge gives a soft halo effect blending the fixture with the darker ceiling. Here is the first real breakthrough in incandescent frameless lighting. Available in 100W or 200W incandescent, or in 100W deluxe white mercury vapor. The gasketed lens hinges down for easy relamping. For the Allume look, call or write ITT Environmental Products Div., International Telephone and Telegraph Corporation, 1814 E. 40th St., Cleveland, Ohio 44103.

ART METAL LIGHTING ITT

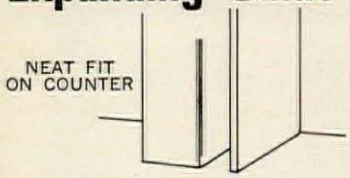
In Canada, Wakefield Lighting Ltd., London, Ontario

For more data, circle 119 on inquiry card

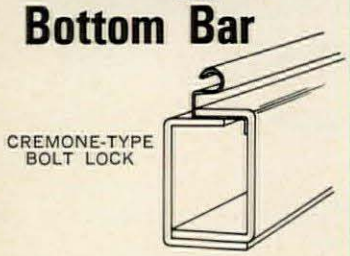
You can NOW provide counter opening protection...



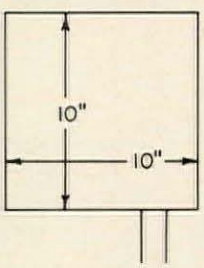
Trim Upward Expanding Guide



Trim Rugged Bottom Bar



Trim Compact Bracket



KINNEAR

U.L. Listed COUNTER Fire Door

The NEW Kinnear FYR-DOR Rolling Fire Door is especially designed for counters and similar applications calling for "good looks." You can now provide Underwriters' "A" Labeled fire protection for openings up to 72 sq. ft. in area or to 12 ft. widths. Though built on the Kinnear time-proven, efficient interlocking slat principle, this new FYR-DOR Counter Door offers such new design features as:

- ★ Trim-line slat design in stainless steel or zinc-coated steel
- ★ 3-hr. listed ("A" Label) by Underwriters' Laboratories
- ★ Automatic closure in case of fire, but operable for daily use
- ★ Upward expandable guide — neater, snug fit on counter top
- ★ Sealed box-type guides — neat and trim
- ★ Tubular foot piece — cremone-type bolt lock
- ★ Easy resetting after testing automatic closing mechanism
- ★ Face-of-wall or between-jamb — push up, crank or motor operation
- ★ Built in accordance with all Underwriters' Laboratories requirements

Above and beyond features like those listed, this new FYR-DOR Door is a KINNEAR Product — makers of the famous Akbar Fire Door that has proven its superiority in major conflagrations from coast-to-coast for more than a half century. It's also "Registered" for Life-Extension and backed by a reliable, financially solid company with a nationwide installation and service organization.

Also Manufacturers of Rolling Service Doors, Power Operators, Rolling Grilles, Rolling Counter Shutters and Overhead Type Wood or Metal Doors.

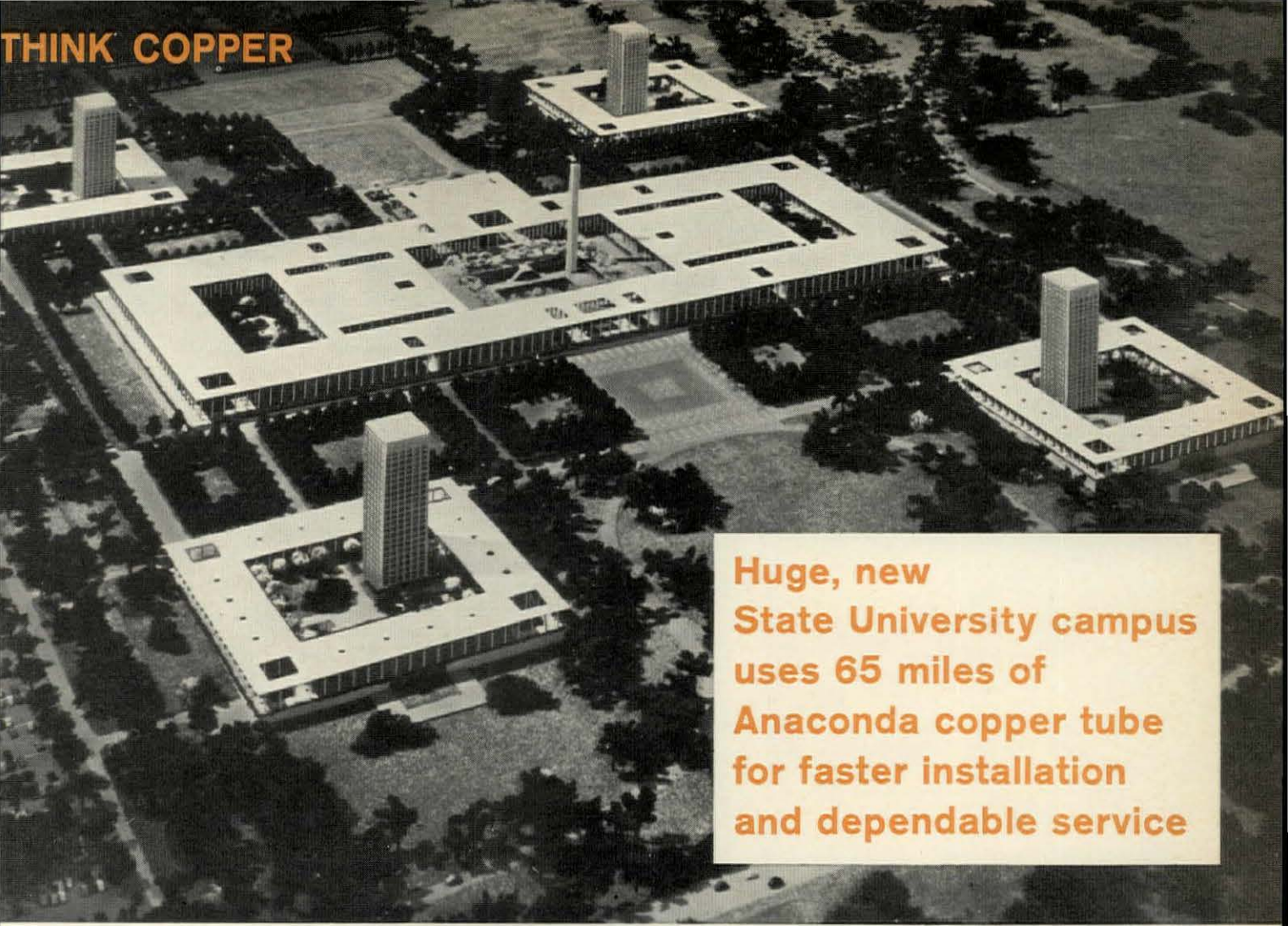
Write TODAY for New Fire Door Catalog (Bulletin 135) giving complete details and size limitations.

The KINNEAR Manufacturing Co. and Subsidiaries
1868-80 Fields Ave., Columbus, Ohio 43216
Factories:
Columbus, Ohio 43216 • San Francisco, Calif. 94124
Centralia, Wash. 98531 • Toronto, Ont., Canada
Offices & Representatives in All Principal Cities — listed in Yellow Pages under "Doors." Also see Sweet's!

KINNEAR® ROLLING DOORS

Saving Ways in Doorways Since 1895

For more data, circle 120 on inquiry card



Huge, new State University campus uses 65 miles of Anaconda copper tube for faster installation and dependable service

(Photo of Architect Edward Durell Stone's model)

00 million campus at Albany, N.Y., (Owners: State University of New York, through the Dormitory Authority of the State of New York and ate University Construction Fund—Architect: Edward Durell Stone—Consulting Engineers: Consentini Associates—Mechanical Contractor: vis & Eckert—General Contractors: McManus, Longe, Brockwehl, Inc.; Psaty & Fuhrman; Basic Construction Company; Lipkins Corp., d D. Fortunato, Inc.)

ocated on a 360-acre tract of rolling hills and woodlands, ew York's new State University complex is being built with n eye toward the future, in more ways than one—minimal aintenance and lasting service.

The early decision of the consulting engineers to specify pper tube for water supply lines and for waste and vent rvice was based on the many advantages copper offers—ster installation, space savings, time-saving preassembly perations and dependable, trouble-free service.

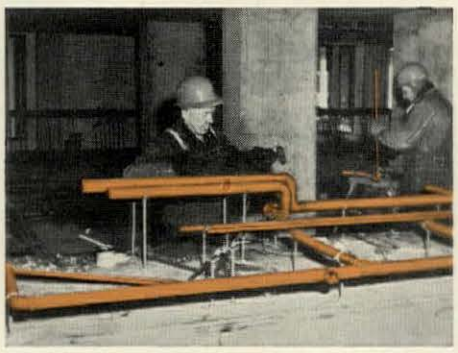
Making full use of the efficient "prefabrication" techniques ssible with lightweight copper tube, mechanics bench-sembled, at the site, multiple units required for each floor. ach unit served *two* bathrooms and contained hot and cold ater supply, waste and vent lines. The few connections re-uired to join these units to the system reduced roughing-in me and helped maintain construction schedules.

And looking even farther ahead, Consentini Associates ecified copper tube because of its resistance to corrosion, mmunity to rust, and its smooth interior for swifter flow and tter sanitary conditions. A combination that adds up to inimal maintenance even after long years of service.

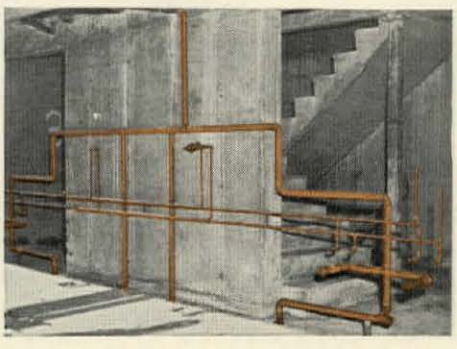
In terms of installation savings and long-range economical rvice, Anaconda copper tube is truly a product of unusual acticality . . . and far ahead of competitive materials. Next ne, plan to use Anaconda copper tube right from the start . to come out ahead on your jobs. For further information, rite: Anaconda American Brass Company, Waterbury, onnecticut 06720. In Canada: Anaconda American Brass d., Ontario.

6-0983

ANACONDA®
AMERICAN BRASS COMPANY



Mechanics pre-assembling copper plumbing "tree" on site, in a new dormitory of the State University of New York at Albany.

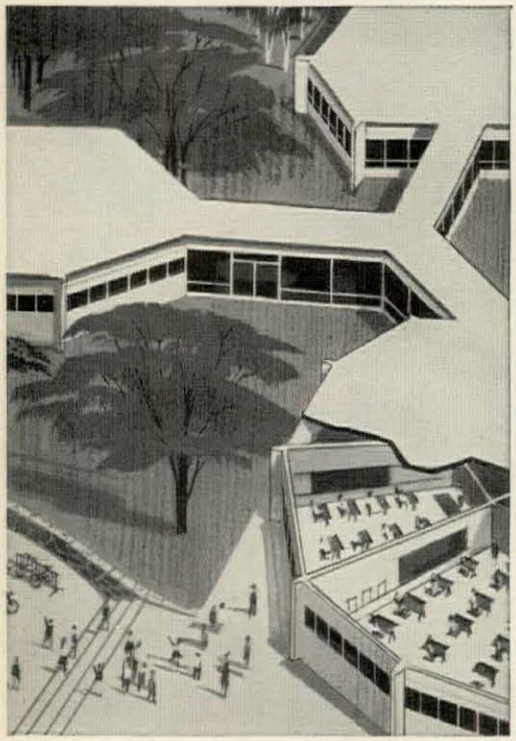


Installed copper "tree" showing typical arrangement of water supply, waste and vent tubes serving two bathrooms, in State University dormitory.

For more data, circle 121 on inquiry card

Only all-electric you all these

FLEXIBILITY OF DESIGN



The design simplicity of electric heating and cooling components permits you to design with far greater freedom and flexibility. And since no bulky furnaces or complex distribution systems are required, you can solve problems of office and room design with far greater latitude.

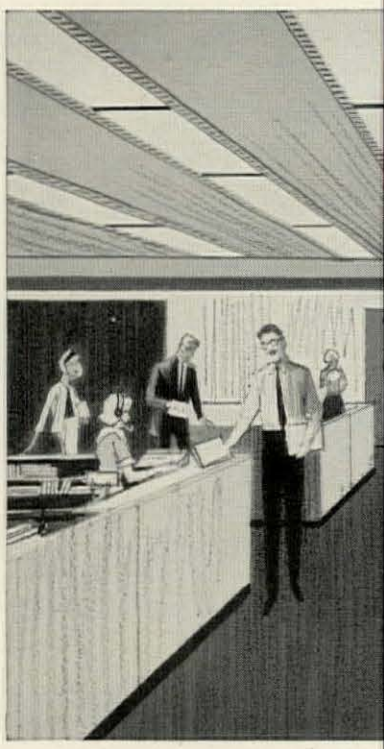
Witness the oval layout of the Pine Hill Elementary School, Pine Hill, N.J. Surrounding a central library and multi-purpose room are classrooms varying in shape and size. And rooms will be added as needed—in satellite clusters.

LOWER CONSTRUCTION COSTS

The most modern, efficient heating/cooling system you can specify can actually be the least expensive for your client to install. With an electric system, you can eliminate costly boilers, stacks, trenching and steam piping. Not to mention fuel storage and boiler *rooms*. (The boiler is replaced by a compact control cabinet, like the one seen above.) You would also eliminate attendant high installation costs.

How substantially can construction costs be reduced? By going All-Electric, the designers of the 60,700 sq. ft. Hampshire High School, Romney, W. Va., for example, lowered construction costs by $62,900. A saving much appreciated by the local school board.

HEAT RECOVERY



The principle of recovering hea from high-intensity lighting permi such impressive economies, that seems sure to dominate the futu of space conditioning. By deplo ing the recovered heat to the cool parts of a building, or storing it f later use, the architect can effe extraordinary operating efficienc

Example? The new All-Electr 94,500 sq. ft. engineering and a ministration building of Electron Associates, Inc., Long Branch, N. So efficient is this building's heat-b light system that during mild parts of the heating season it pr vides enough extra heat to car other EAI buildings.

design can offer major benefits

EASIER EXPANSION

hy is it much easier to expand an ll-Electric building? Because you n forget about boilers and boiler pacity problems. And there's no eed for concern about boiler oms, fuel storage or stacks. In- ead, expansion is accomplished th wiring and a compact control binet.

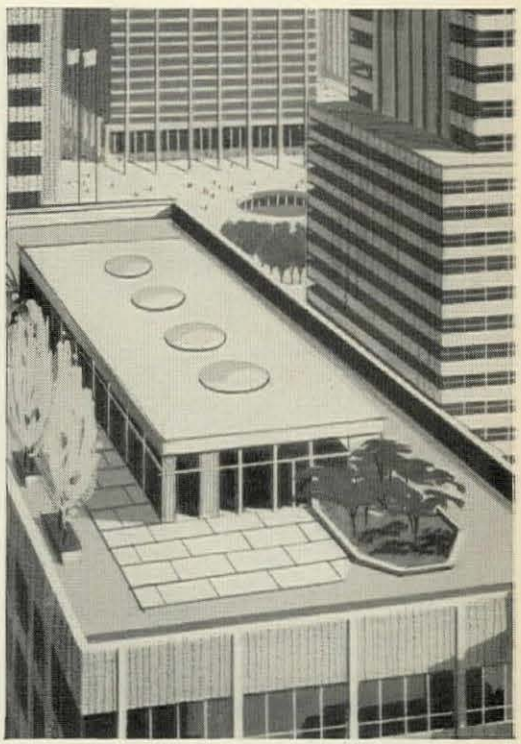
Example? Central High School, ympia Fields, Ill., expanded from 3,500 sq. ft. to 159,685 sq. ft. at estimated saving of $38,610.

ROOM-BY-ROOM TEMPERATURE CONTROL

In many buildings, individual room temperature control is a must. Nursing homes require it for critical health reasons. Motels want it for economy. And it is also fast becoming standard in other buildings in which occupancy and activities vary daily from room to room; e.g. schools, churches and hospitals.

Only All-Electric design permits room temperatures to be controlled directly, either by occupants inside their rooms or by management from a remote central location... or both.

EXTRA RENTABLE SPACE



A penthouse serves best as a source of revenue—not as a storeroom for boilers, cooling equipment and fuel. That's one reason why the builders of the $3 million People's Savings Bank Building in Bridgeport, Conn., chose All-Electric design.

By specifying through-the-wall electric heating/cooling units, they freed 4,800 sq. ft. of penthouse space for extra owner income. The added return on capital? $15,000 per year.

Shouldn't you incorporate these All-Electric benefits into your next project? For more facts, call your electric utility company.

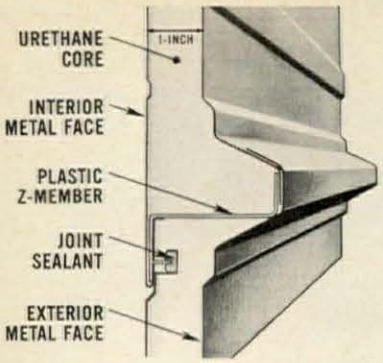
LIVE BETTER ELECTRICALLY

Edison Electric Institute, 750 Third Avenue, New York, N.Y. 10017

ALL-ELECTRIC BUILDING AWARD

For more data, circle 122 on inquiry card

continued from page 229



URETHANE PANELS / Pre-engineered metal-faced panel with a foamed-in-place urethane insulating core is reported to produce substantial savings in heating and cooling costs. In the manufacturing process, the inner and outer metal faces are the mold into which liquid urethane is poured and foamed. As it cures, the urethane is said to form a strong bond to the metal surfaces. The panel has a nominal thickness of one inch and the U-factor is .10. ▪ Butler Manufacturing Co., Kansas City, Mo.

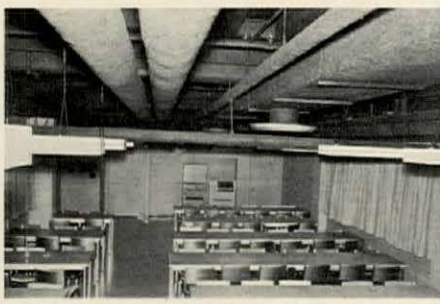
Circle 304 on inquiry card

ROOF INSULATION / *Celramic-board* reported to help prevent wrinkling an buckling in roofing felts, is composed *Celramic* nodules held together in a b tuminous binder that is compatible wit pitch or asphalt. Each 48-in. by 24-in. 1-in. board is covered with speciall treated perforated paper that permi vapor flow between boards. Each nodul contains glass-enclosed cells of dry, sti air and the nodule itself is sealed in glass shield. Continuous air passages be tween nodules prevent vapor pressur buildup, yet the insulating air in eac nodule is sealed against moisture. A materials in the system expand and cor tract at the same rate. ▪ Pittsburg Corning Corporation, Pittsburgh.

Circle 305 on inquiry car

WEATHERPROOF ROOFING / *Neolor* an elastomeric, thermo-plastic coating i said to provide complete protection an good weathering characteristics in a climates; and durability for all types o roofs, regardless of shape or contour. can be applied to Portland cement, con crete, plywood, asbestos board, insula tion board, and metal. ▪ Desco Inter national Association, Buffalo, N.Y.

Circle 306 on inquiry car

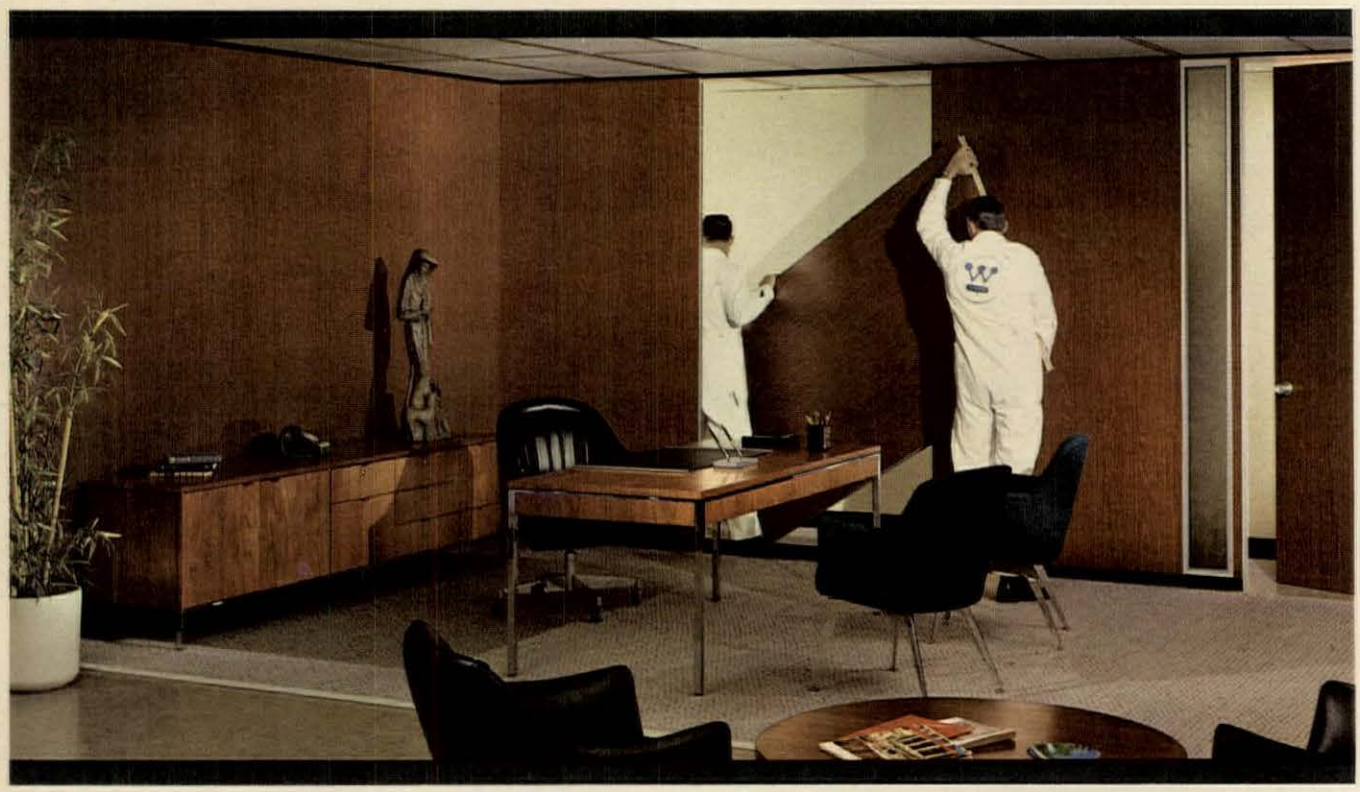


SOUNDPROOFING / Spray-applie *Acousticote*, a textured self-extinguish ing coating for ceilings. It is a blend o resins, fibers and sound absorbing par ticles. The continuous film provide jointless installation over a variety o shapes and surfaces. Factory pigmenta tion is built into the material. ▪ Desc International Association, Buffalo, N.Y.

Circle 307 on inquiry car

more products on page 25

"Tomorrow" is built into Westinghouse partition



Westinghouse executive movable partitions

You can design for today and for the future with Westinghouse movable partitions. The versatility you need for the future is already there.

Need surfaces befitting an executive office? You can have them in a variety of Micarta® woodgrains. Or in natural wood veneers. Or glass.

Want maintenance-free surfaces color-coordinated (Eliot Noyes colors) to a master plan for clerical offices, supervisors' offices? Yours in a variety of Micarta Loglare surfaces. Remember, Micarta — the original high pressure laminate–gives you flint-hard surfaces. Acid resistant, alkali resistant, with permanent finishes. Tough, and virtually maintenance free.

And salvable!

The first time Westinghouse partitions need to be rearranged, they prove their economy. They can be moved from building to building or across the country. Disassembled and reassembled by building maintenance personnel. With as much as 100% salvability.

Westinghouse partitions are easy to install, too. Anywhere in the nation. By Westinghouse crews, by the contractors' crews, or by building maintenance crews after minimum instruction from a nearby Westinghouse representative. No system is easier to install, easier to move quickly, economically.

You can plan monolithic walls 12′ high or accent them with mullions with, perhaps, a contrasting snap-in batten. Or call for dividers just 42″ high. Westinghouse partitions afford you great freedom of design within the unity of system and surfaces as you desire.

You'll like the engineering refinements you'll find in Westinghouse partitions. They're there to make your planning easier — to make the finished jobs far more satisfactory.

Remember, Westinghouse partitions are backed by a national network of sales, service representatives. Ask one to call on you. Phone the Westinghouse sales office in your area. For more product information, see our catalogs in Sweet's, or write our Grand Rapids' office.

SEE SWEET'S ARCHITECTURAL FILE 13a Wes

Circle No. 11 on Inquiry Card

clean rooms, computer rooms, raised flooring

Westinghouse clean rooms and laminar flow work stations

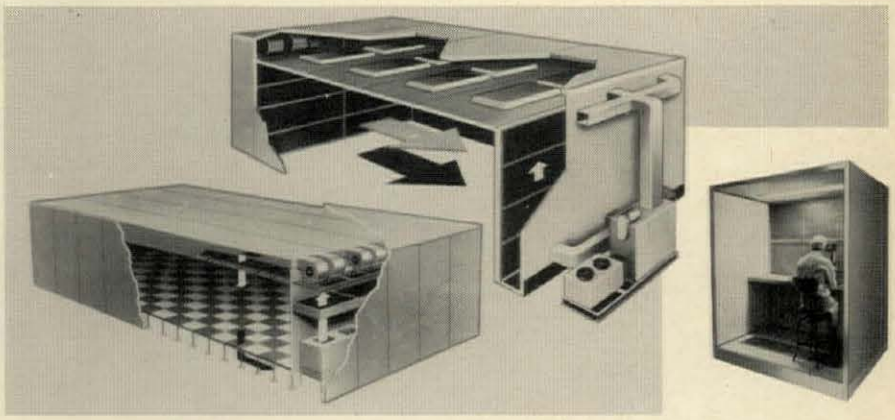
Westinghouse makes more than 70 models of prefabricated clean rooms and laminar flow work stations for industry, laboratories, hospitals. From this supply of prefabricated components you can plan rooms large enough to house hundreds of workers. Or specify portable stations (miniature fields of controlled environment) that roll from job to job. Or any size, any shape in between.

All functional components — Micarta clad, sandwich walls; Micarta clad raised flooring; the blowers; the filters; the illumination are manufactured by Westinghouse. And are guaranteed by Westinghouse.

Air contamination, temperature, humidity, illumination, vibration levels are precisely controlled to your requirements.

Whenever you plan controlled environmental rooms or stations, call in one of our Westinghouse environmental systems men. They're located across the nation. Ready to serve you. Just phone the Westinghouse sales office in your area.

Circle No. 12 on Inquiry Card



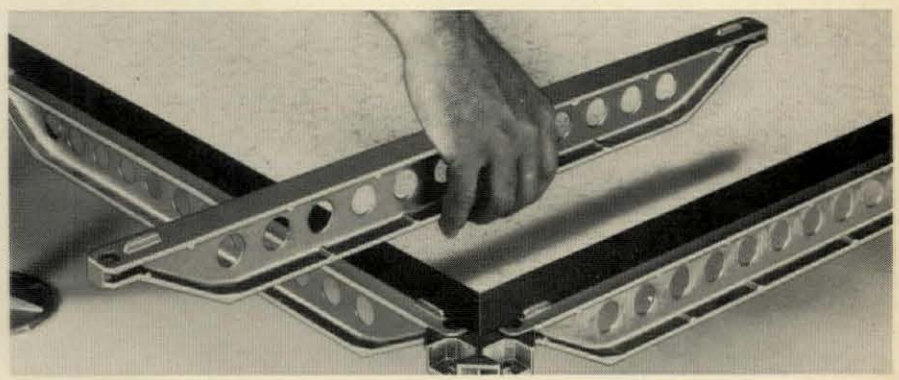
SEE SWEET'S ARCHITECTURAL FILE 35b / Wes

Westinghouse computer room components

You can plan computer rooms, component by component or as a package from Westinghouse. Either way the owner gets the same nationwide guarantee. Westinghouse makes the walls, the raised floors, the air conditioning, the lighting. Makes it easy to plan, easy to enlarge. Write for full information.

Circle No. 14 on Inquiry Card

SEE SWEET'S ARCHITECTURAL FILE 29m / We



Westinghouse raised flooring system

After buying 80 raised floors for their own computer rooms, Westinghouse decided to manufacture their own. Previous shortcomings were engineered out. Results? A rugged, corrosion-proof and almost maintenance-free raised flooring system.

It consists of tough, cast aluminum pedestals, sturdy short-length aluminum girders, and vinyl edged, Micarta clad floor panels. Floor level can be maintained at ± 1/16″ in 10 ft. Especially convenient is the short girder system. It permits instant access in any direction for lay-in wiring rather than stringing services under immovable long girders. The floor is rated at 250 lbs. per sq. ft. live load. And new applications beyond E.D.P. installations are being discovered regularly.

Truly, the floor of the future—the Westinghouse raised flooring system. See our catalog in Sweet's Architectural File or write today for more information.

Circle No. 13 on Inquiry Card

SEE SWEET'S ARCHITECTURAL FILE 11k / We

Westinghouse Electric Corporation

Architectural Systems Division, 4300 36th St., S.E., Grand Rapids, Michigan 49508

Civic Center / National City, California / Architect: Freeland Bird & Associates / General Contractor: Raymond A. Whitw

Facing and structural support combined in one Mo-Sai unit

The textured surface of exposed natural white quartz aggregates in a light buff matrix provides the Center with a Mo-Sai facade of permanent beauty. The complete design flexibility of Mo-Sai allowed for casting of ribs that gracefully curve the height of the 22-foot Mo-Sai units. Varying in depth from one to four feet, the ribs add the desired strength to support the poured-in-place concrete floor and roof. Dowels in the base of the Mo-Sai units were grouted into the concrete foundation. Protruding reinforcing ties the Mo-Sai into the poured-in-place concrete on the second floor and roof. The Mo-Sai was smooth-troweled on the interior side and forms the complete wall unit. Permanent, maintenance-free beauty, design flexibility, fast, easy erection, and uniform high quality assured by factory controlled manufacturing methods are the advantages you receive when you specify genuine Mo-Sai manufactured by the companies listed.

Mo-Sai®

PRECAST, PRESTRESSED CONCRETE
WITH EXPOSED AGGREGATE

For more data, circle 133 on inquiry card

or more information,
rite or call any of the
nstitute members listed below:

IO-SAI INSTITUTE, INC.
110 Social Hall Ave.
Salt Lake City, Utah 84111
Members, Producers' Council

ADGER CONCRETE COMPANY
shkosh, Wisconsin 54902

EER PRECAST CONCRETE LTD.
carborough, Ontario, Canada

UEHNER & COMPANY, INC.
lesa, Arizona 85201

AMBRIDGE CEMENT STONE CO.
llston, Massachusetts 02134

CONOMY CAST STONE COMPANY
ichmond, Virginia 23207

ORMIGLI SALES COMPANY
hiladelphia, Pennsylvania 19103

OODSTONE MANUFACTURING, INC.
ochester, New York 14621

RASSI AMERICAN CORP.
outh San Francisco, California 94080

AMILTON CONCRETE PRODUCTS CO.
hattanooga, Tennessee 37407

ARTER CONCRETE PRODUCTS, INC.
klahoma City, Oklahoma 73106

NTERPACE
RECAST CONCRETE PRODUCTS
omona, California 91766

ACKSON STONE COMPANY, INC.
ackson, Mississippi 39205

LYMPIAN STONE COMPANY, INC.
edmond, Washington 98052

OLITE INDUSTRIES, INC.
liami, Florida 33163

LASTICRETE CORPORATION
lamden, Connecticut 06514

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leveland, Ohio 44105

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oise & Idaho Falls, Idaho

EKIGAHARA STONE CO., LTD.
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OUTHERN CAST STONE CO., INC.
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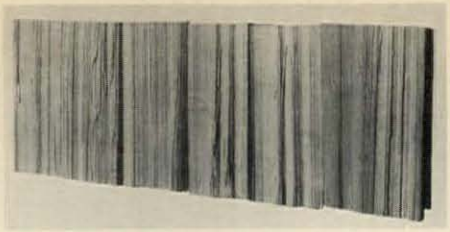
Vinnipeg 6, Manitoba, Canada

EXAS INDUSTRIES, INC.
rlington, Texas 76011

VILSON CONCRETE COMPANY
maha, Nebraska 68107

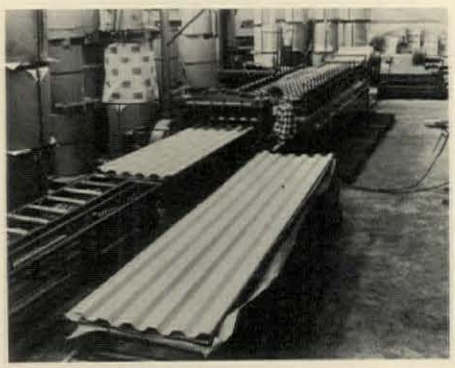
or more data, circle 133 on inquiry card

continued from page 236



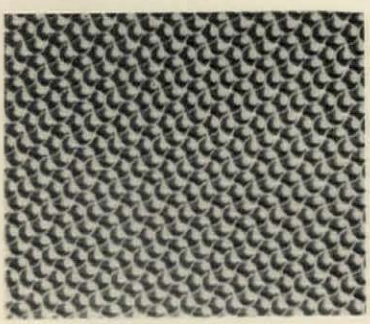
EXTERIOR WALL PANELS / Individual hand-split shakes are bonded to an asphalt-impregnated backerboard to make these panels, 46¾ in. long by 16¼ in. high. The panels, which come in many colors, have shiplapped edges for weathertight protection. ▪ Shakertown Corporation, Cleveland.

Circle 308 on inquiry card



METAL PANELS / Bink-Rib is primarily used with metal wall panels, either single-skin or insulated. When used with insulated systems, Bink-Rib spans 12 to 14 ft without a girt. It is available in 20, 22, and 24 gauge and can be rolled to lengths of more than 30 ft. Its configuration is V-corrugations 1½ in. deep by 7.2 in. pitch with 2-in. top and bottom flats. Choice of 20 colors. ▪ Binkley Company, Warrenton, Mo.

Circle 309 on inquiry card



TEXTURED METAL / This non-directional pattern is said to provide a non-glaring, non-reflecting surface from any vantage point and rigidity and mar-resistance to any ferrous or non-ferrous metal. It is available in a rolling width up to 36 in. in sheet and 24 in. in coil. ▪ Rigidized Metals Corporation, Buffalo, N.Y.

Circle 310 on inquiry card

more products on page 266

For more data, circle 134 on inquiry card

Frank Lloyd Wright believed that form should follow function.

We took him to heart when we designed Wheeler's High Bay Mercury fixture. Which explains why it performs as well as it looks.

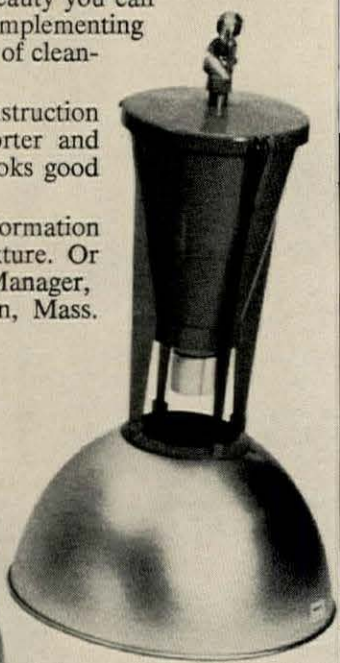
But let the specifics speak for themselves: cover, body and reflector support are all lightweight, die-cast aluminum, finished in baked gray enamel. Reflector is aluminum, Alzak-finished for highest reflectivity. The housing has a constant-wattage ballast, potted with Dri-Lok C2 (so the fill material can never leak out of the housing.) Other ballasts also available.

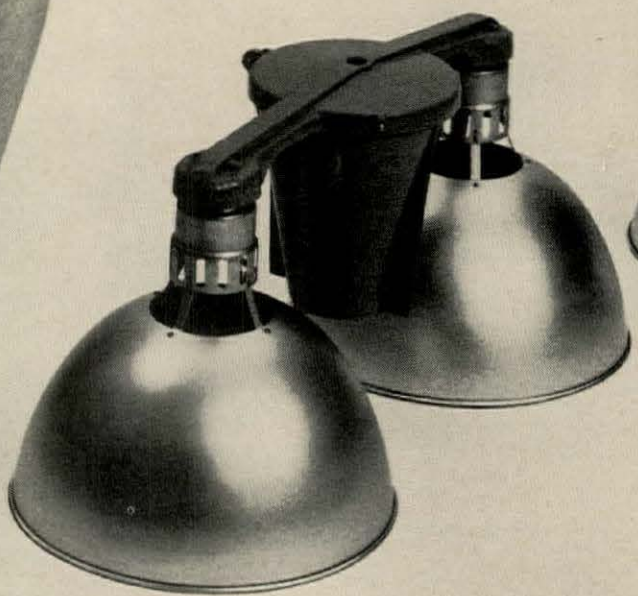
And you can have your choice of 400 (single or twin) or 1000 watt (single) fixtures.

Install Wheeler's High Bay Mercury in any industrial setting, and certain things become obvious: half the beauty you can see . . . the other half is performance. Complementing the space-age styling is a remarkable ease of cleaning and maintenance.

Nothing's wasted on this fixture. The construction is simple and straightforward. It's shorter and lighter than conventional fixtures. It looks good in any company.

Contact your wholesaler for more information on Wheeler's High Bay Mercury fixture. Or write: E. Quintiliani, General Sales Manager, Wheeler Reflector Co., Inc., Hanson, Mass.





WHEELER REFLECTOR

For more data, circle 135 on inquiry card

You can get 247 miles away from these genuine Onan parts...

but it isn't easy!

If you get stuck in Death Valley with a "sick" Onan electric plant . . . Heaven help you. You're in trouble. Because help is at least a day away. Service out there isn't really "local."

And let's face it. Even though we build every Onan plant to be 100% dependable . . . even though we test it to make sure it will deliver every watt of power our nameplate promises...even though it's Performance Certified by an independent testing authority... it's still a piece of mechanical equipment. Eventually, it's going to require some service.

So if you're caught without power in or around Death Valley, we're sorry for your inconvenience.

Any place else, you're in much better shape. Just minutes (a few hours at the most) away from genuine Onan parts and a full-time factory-trained Onan service specialist. There's one or more on every distributor's staff (more than 100 authorized distributors in every major city in the country).

He'll always be just a phone call away any time you need service. And he's there when your new plant is started up, back from time-to-time for performance checks.

It's the result of 20 years' work to develop the industry's finest parts and service capability. And it's all part of Onan's Unit Responsibility idea: one source and one responsibility for installing and servicing the complete package . . . no "buck passing" at all.

Call your Onan distributor (in the Yellow Pages under Generators—Electric). Or write direct for literature.

PERFORMANCE CERTIFIED

We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its namplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

ONAN

We build our future into every Onan® product

◀ **Genuine Onan parts** like these are available through your local Onan distributor. When yours is a high-use, professional application or one that is highly critical, it makes good sense to use only factory parts instead of the "might fits" that abound.

ONAN ENGINE/GENERATOR DIVISION Studebaker CORPORATION
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For more data, circle 138 on inquiry card

1

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3

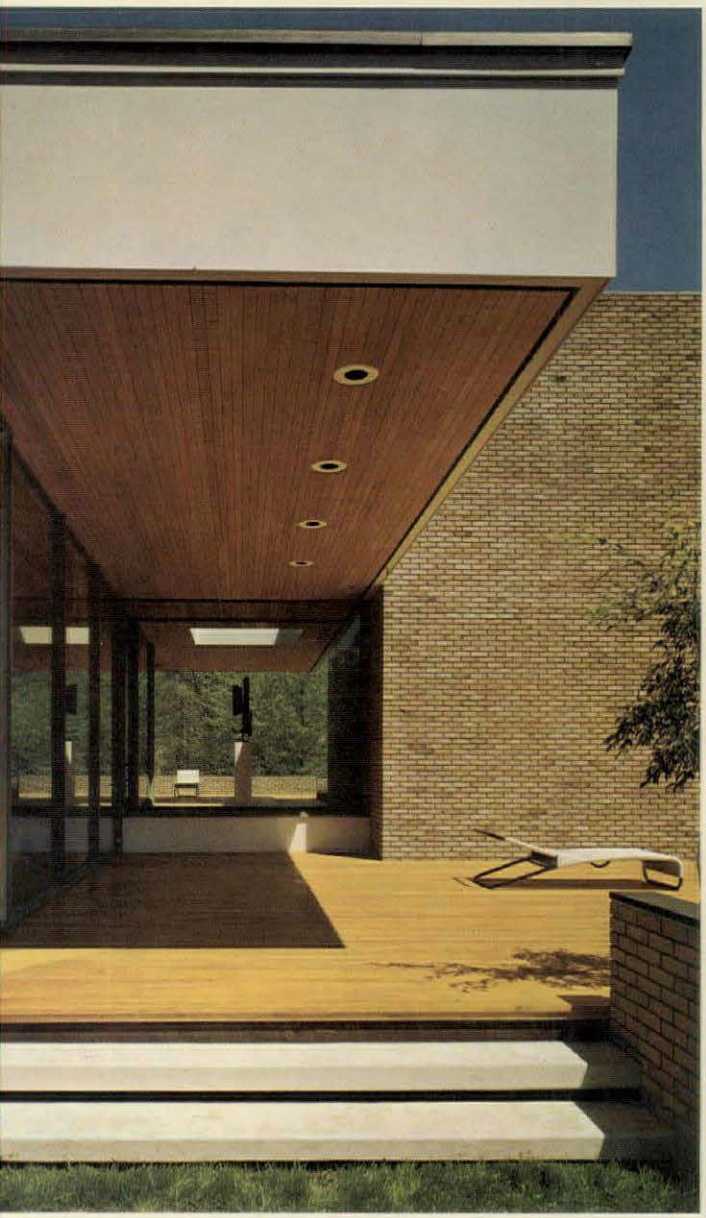
4

Coming in mid-May...

RECORD HOUSES OF 1967

Featuring...

The 20 Houses of the Year



5

A year in preparation, RECORD HOUSES OF 1967 will present the work of a wide variety of architects ranging from the well-known to talented unknown architects new to the ranks of major innovators. The houses will win for their architects and owners Architectural Record's coveted **Annual Award of Excellence for House Design.** All 20 award-winning houses are fully detailed with photographs (many in full color), plans and schematics. This highly visual presentation of each house, coupled with a clear statement of the problems and purposes behind its planning, will make RECORD HOUSES OF 1967 an ideal tool for opening your client's eyes to ways in which architecture can serve their individual needs, aspirations and way of life.

RECORD HOUSES OF 1967 comes to you as part of your subscription to Architectural Record. And again in 1967, RECORD HOUSES will be distributed to the nation's 23,000 foremost builders to accelerate the healthy trend toward greater architect-builder collaboration on tract housing. The house building and buying public will find it on sale at leading book stores.

)M RECORD HOUSES OF 1966

ate Residence in New Canaan, Connecticut. Architects: ch Franzen & Associates. Photo by Robert Damora
ate Residence, Martha's Vineyard Island, Massachusetts. nitect: Hugh Newell Jacobsen. Photo by Robert Lautman
amm Residence, Burlington, Iowa. Architects: George Keck–William Keck. Photo by Hedrich-Blessing
ett Residence, Nassau Bay, Texas. Architect: Clovis leimsath. Photo by Robert Murray
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Schokbeton precast concrete curtain wall, Dell Publishing Warehouse, Pinebrook, New Jersey
Architect: Frank Grad & Sons, Newark, N.J. Schokbeton by: Eastern Schokcrete Corp.

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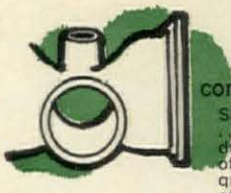
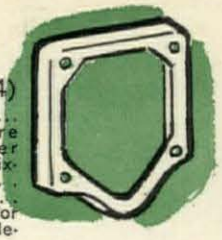
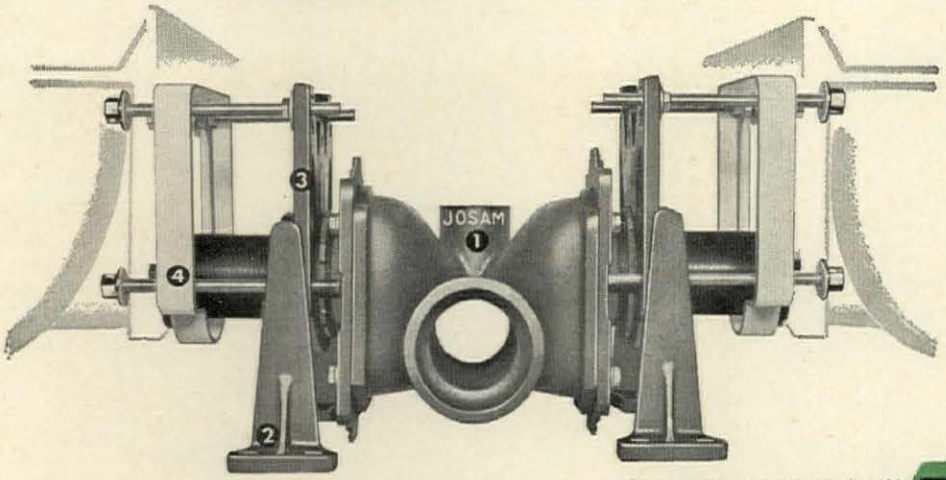
WHAT MAKES AN OFF-THE-FLOOR INSTALLATION COST LESS?



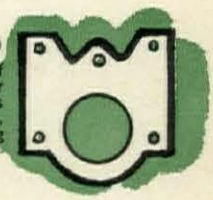
common vent (1)
Saves chase space . . . substantially reduces the number of connections required in a battery of toilets

positioning frame (4)
Simplifies alignment... Saves one or more hours of labor per bowl* . . . saves fixture breakage . . . saves call-backs . . . acts as template for wall finish, saving tile-setting time.

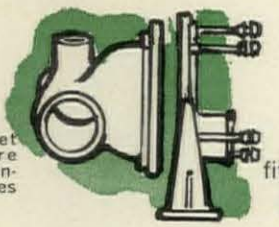




invertible carrier body (3)
Fits all types of toilets, blow-out or syphon jet . . . saves handling time . . . eliminates stocking and ordering of different carriers.



buttress foot (2)
Short Bulldog feet do not interfere with any type of finished floor . . . saves installation time



fitting and carrier are separate
provide more adaptability to meet changing conditions of installation . . . save revision time and labor

. . . put them all together . . . they spell JOSAM UNITRON®

AND THERE'S NOTHING ELSE LIKE IT!

Now . . . with all the other advantages of off-the-floor fixtures . . . there is no reason to allow installation costs to change your mind . . . if you use Josam Unitron Carriers and Fittings on the job. Every feature is designed not only to save time and prevent error, but to provide the adaptability that solves on-the-job problems.

The combined savings in space, materials and installation are substantial enough to make off-the-floor fixtures the logical choice on every job . . . if you use Josam Unitron Carriers! For further information, write for Manual F-4.

Verification on request

JOSAM

JOSAM MANUFACTURING CO.

Michigan City, Indiana

JOSAM PRODUCTS ARE SOLD THROUGH PLUMBING WHOLESALERS

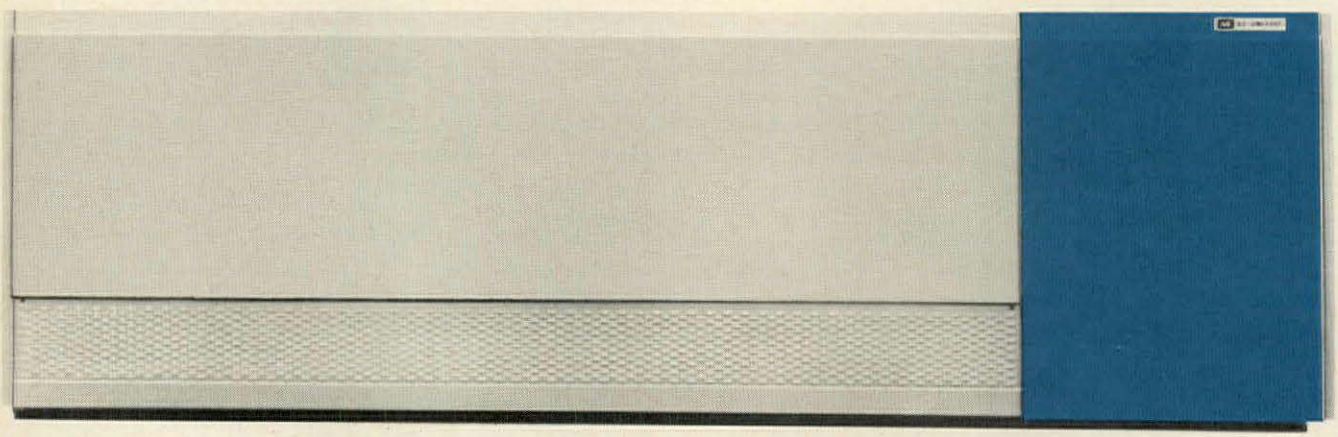
For more data, circle 150 on inquiry card

UNIT VENTILATORS

with self-contained refrigeration ...heat, ventilate, cool.
Use them to remodel a single room or an entire central system.

The SC (self-contained) UNIvent is the most versatile, through-the-wall unit ventilator ever designed. It lets you air condition an entire new building or older ones one room at a time. Or the SC UNIvent can be installed first for heating and ventilating only. Then sealed refrigeration section can be added when budgets permit. Cooling capacity is 45,000 BTU/hr. Up to 100% outdoor air for natural ventilation cooling is provided for low operating costs. All motors and bearings are permanently lubricated and sealed—only maintenance necessary is periodic replacement of air filter. Award-winning design includes variety of four base colors, decorator panels in choice of six modern colors and full line of versatile classroom storage accessories.

Choose from seven fully automatic SC UNIvent models, including units for steam, hot water and electric resistance heating. The SC UNIvent readily fits supply piping from existing heating systems. Write for all the facts. American Air Filter Company, Inc., 215 Central Avenue, Louisville, Kentucky 40208.



AAF Herman Nelson
SCHOOL PRODUCTS DIVISION

For more data, circle 151 on inquiry card

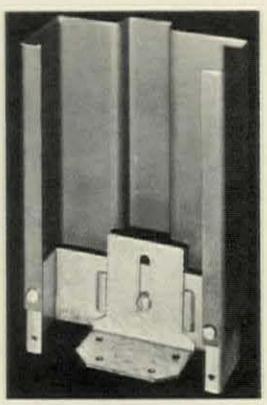
continued from page 266

FLOOR COVERING / Recommended for operating rooms, a vinyl resin terrazzo with acetylene carbon black distributed evenly throughout the matrix is said to absolutely dissipate static electricity and retain conductivity. Even when wet, the non-slip surface of *Conductive Novatraz* assures safety in operating rooms. The nonporous surface resists stains, antiseptics and chemicals and has no bacteria breeding areas. ▪ Selby, Battersby & Co., Philadelphia.

Circle 315 on inquiry card

WATER-LEVEL / The manufacturer reports that one man can accurately check levels with an instrument that works on the water level principle. The *Ebostat* has a reservoir of water at one end, a gauge mounted on a brass staff at the other, and a plastic tube joining the two. A datum level is set on the scale, and direct reading can be taken in about 10 seconds, when the instrument is placed on another point. ▪ HCI Sales Corp., New York, N.Y.

Circle 316 on inquiry card

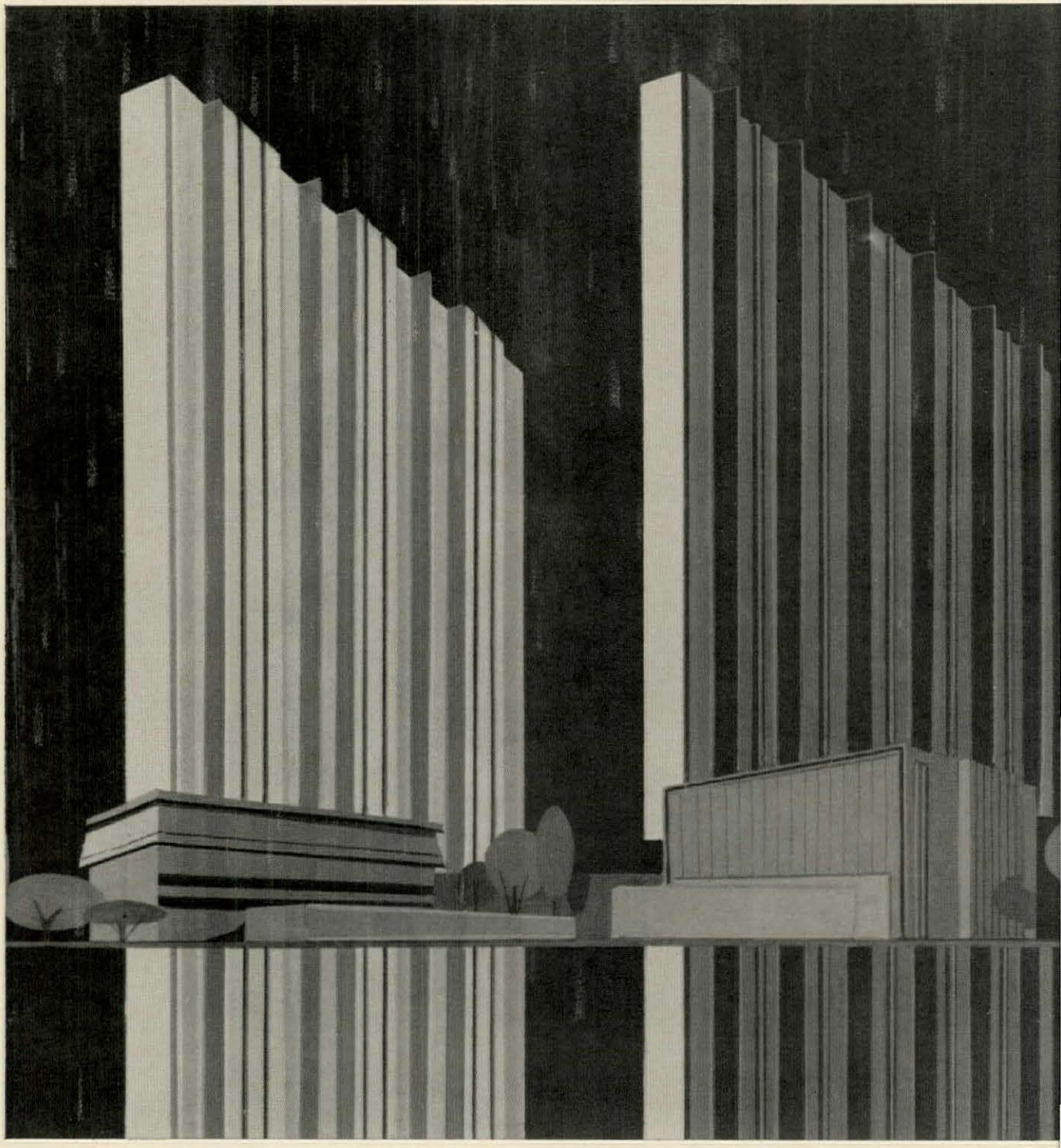


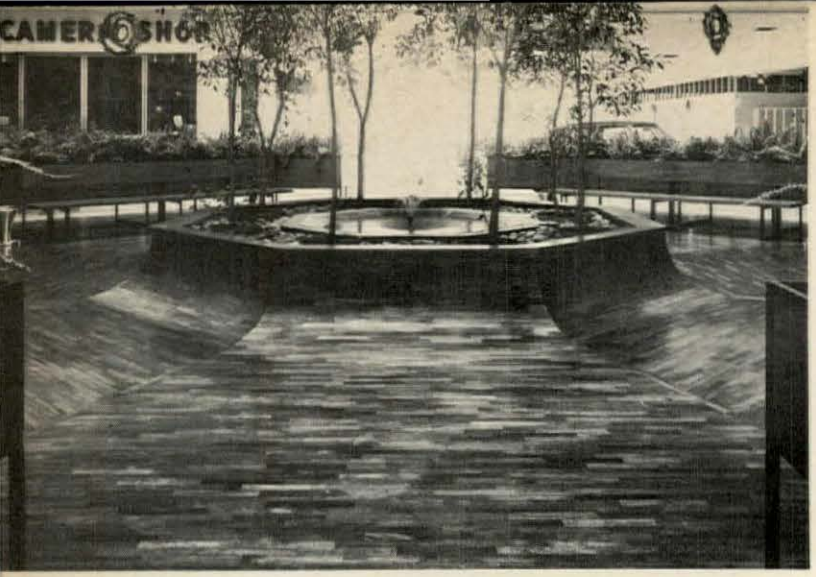
FLOOR ANCHOR / An adjustable anchor compensates for uneven floors when installing steel door frames by eliminating the need for shims or other improvisation. The anchor, which can be installed on any type of subfloor or finished floor, provides a firm attachment reducing the possibility of the frame being knocked out of plumb during construction. ▪ The Ceco Corporation, Chicago.

Circle 317 on inquiry card

more products on page 288

from Mahon... insulated wall panels that will help you add color and flair to your "Plain Jane" projects





Thai-Teak Brick Pattern in King of Prussia Shopping Plaza,
Evantash & Friedman, Architects

Move up to the elegance of "Thai-Teak" Floors

WITHOUT MOVING THEM OUT OF THEIR PRICE RANGE!

Thai-Teak (Botanical name, Tectona Grandis; imported from Thailand) is the most elegant flooring in the world. It's lustrous and luxurious . . . easy to maintain with just an occasional waxing . . . withstands the hardest wear . . . resists termites, rot, decay. And now, Thai-Teak is available at a cost that compares with medium-priced carpet and vinyl . . . and comes in 85 different patterns. Only Bangkok Industries offers you this endless variety.

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GENUINE IMPORTED Thai-Teak™ PARQUETRY FLOORING

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Evantash & Friedman, Architects

looking for refrigeration that's really

FLEXIBLE?

then take a good look at the Norris line of walk-in coolers, freezers and combinations

Check these features:

■ Norris walk-ins, with 3″ walls, are available with either frothed-in-place polyurethane or glass fibre insulation. Full protection with more usable capacity ■ Norris walk-ins are supplied to actual, not nominal, dimensions within 6″ increments. You get the size you specify—whether it's a small storage unit or a giant refrigerated warehouse ■ Modular, pre-fabricated construction means fast, easy assembly—a light hammer is the only tool necessary ■ Glass doors available for low- or normal-temperature merchandising applications ■ White baked enamel exteriors, galvanized interiors standard. Other finishes available ■ Complete selection of accessories ■ Self-contained or remote refrigeration systems ■ N.S.F. approved walk-ins available

Write for descriptive literature designed to make it easy for you to specify!

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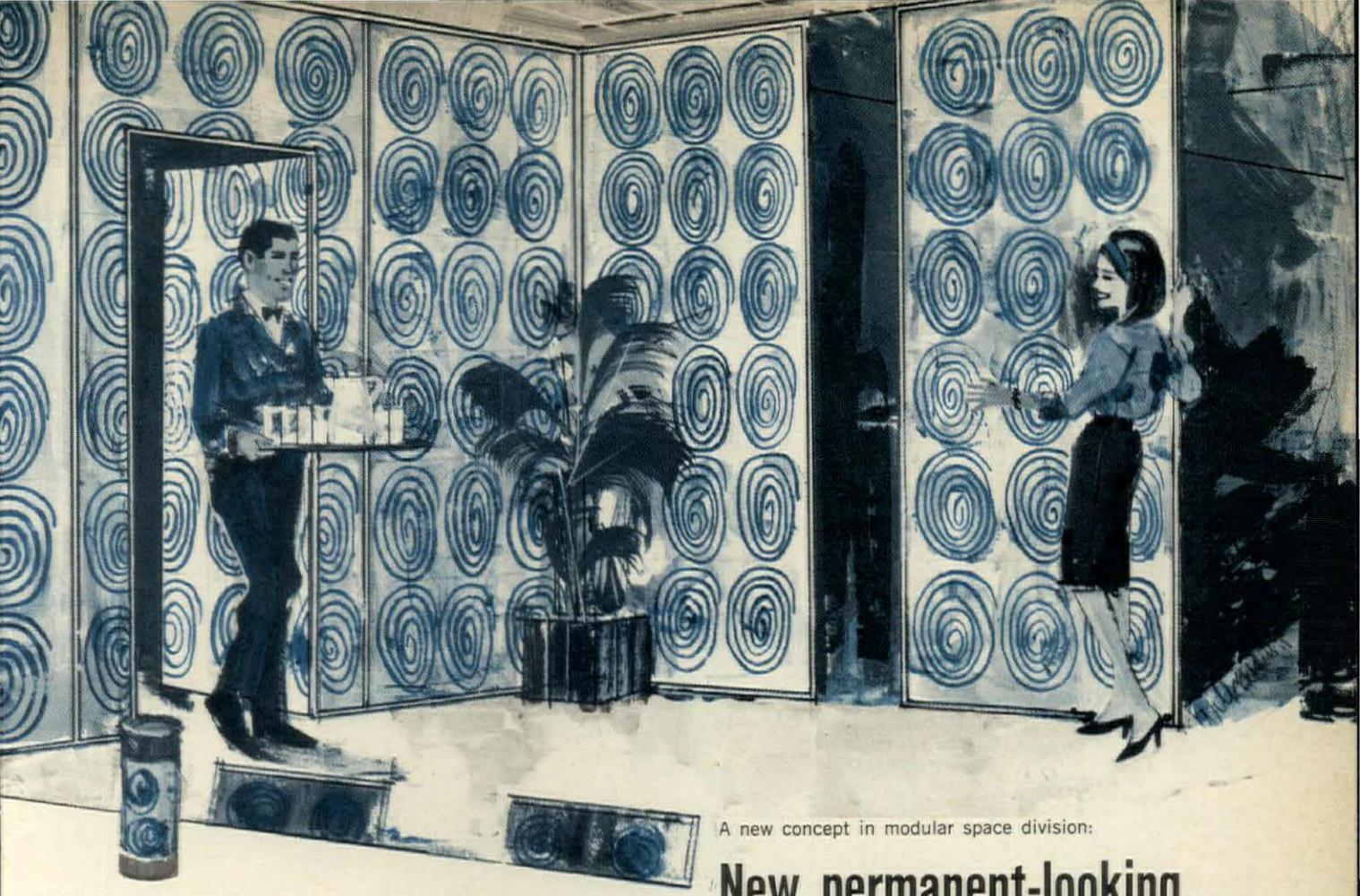
For more data, circle 154 on inquiry card



A new concept in modular space division:

New permanent-looking walls glide on ceiling tracks, lock rigidly, seal out sound

Divide large areas into several high-income rooms in just minutes with Kwik-Wall movable walls. Panels glide on ceiling tracks (no unsightly floor tracks), lock solidly into place with a simple one-hand operation. Kwik-Wall has the look and feel of permanent construction. It has a flat, solid appearance and can be adapted to any decor with virtually unlimited choice of decorator panel facings. Laminates, vinyls, hardwood, print grains or unfinished ready-to-paint. Kwik-Wall construction is sound retardant. You can order Kwik-Wall panels with walk-thru doors if you wish. Kwik-Wall is also available in trackless panels that install anywhere. Send in the coupon today for the full exciting story of Kwik-Wall.

KWIK-WALL

KWIK-WALL CO., Box 319, Dept. A
Springfield, Illinois 62705

Please tell me more about KWIK-WALL movable walls.

Name _____

Title _____

Company _____

Address _____

City _____ State _____ ZIP _____

☐ New construction ☐ Remodeling

Room(s) dimensions: _____

Construction date: _____

☐ Send literature ☐ Have representative call

For more data, circle 155 on inquiry card

continued from page 283

HUMIDIFIER / The *Turbo-Flo* power humidifier runs on air from the furnace blower by means of an air turbine. Wire mesh evaporator discs lift water into the air stream, providing enough moisture reported to humidify a 2000 sq ft house. No duct-work, electrical connections, extra controls, or wiring are required for the *Turbo-Flo*, and the unit can be used in any type of forced air heating system. ▪ Leigh Products, Inc., Coopersville, Mich.

Circle 318 on inquiry card

MAPS, 3-D MODELS / A new method of making relief maps and similar three-dimensional models is said to offer lightness, speed of operation, simplicity and economy. The technique is to cut all the contour lines of the shape through a single flat slab of medium-density rigid polyurethane foam or similar material. Fixed to a table, a moveable beam carries a high-speed drill at one end and a stylus at the other. As the operator traces the contour lines of the original work with the stylus, the drill cuts corresponding lines through the polyurethane sheet. ▪ British Information Services, New York, N.Y.

Circle 319 on inquiry card

HOSPITAL LIGHTING / *Cool Lamps* promise to facilitate treatment without causing discomfort to the patient. Most of the heat-producing infra-red rays are transmitted through the back, while visible light is reflected forward. The lamps are available with specially created adjustable fixtures that direct the light where it is needed. ▪ Swivelier Co., Inc., Nanuet, N.Y.

Circle 320 on inquiry card

UNDERSLAB PANELS / Moisture-barrier sheets, installed between underlayment and poured concrete slabs, are constructed of corrugated kraft layers with a bentonite core. The bentonite forms a gel and is reported to swell to as much as 10 times the dry volume to prevent seepage. ▪ American Colloid Company, Skokie, Ill.

Circle 321 on inquiry card

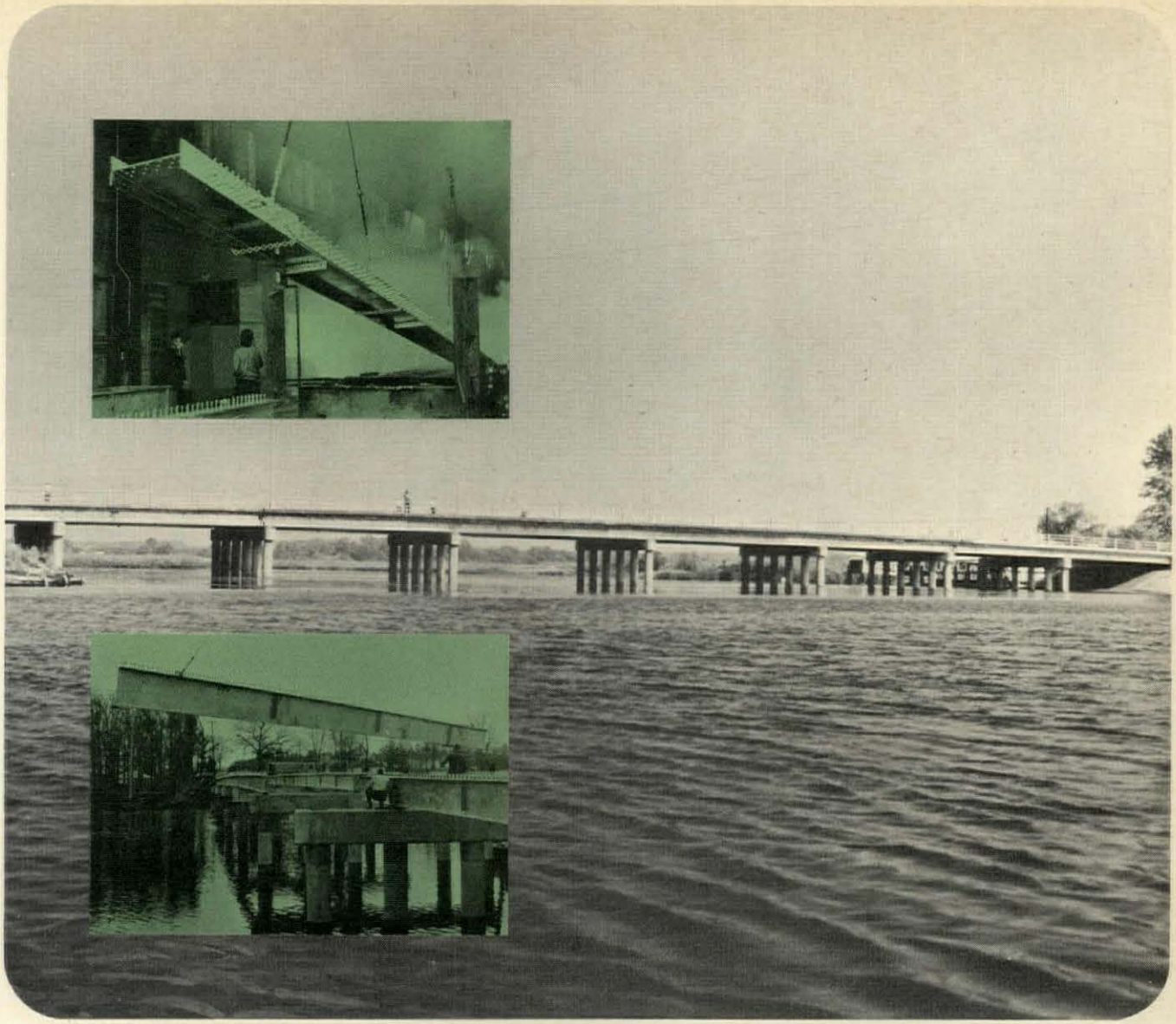
GAS-FIRED FIREPLACE / This free-standing fireplace, with a three-piece set of ceramic gas logs, has an automatic 45,000-BTU pilot-controlled burner that is said to produce a clean, fast, quiet, realistic "wood-fire" gas flame. The assembly, consisting of firebox, flue and ceiling collar, is available in red, white, or gold porcelain enamel, or matte black. ▪ The Majestic Company, Huntington, Ind.

Circle 322 on inquiry card

PAINTS / A latex outside house paint with a polyvinyl chloride formulation is said to expand and contract with the weather while maintaining a tight bond that prevents cracking, chipping and flaking. The paint resists mildew and is nonreactive with sulphide fumes. ▪ Pittsburgh Plate Glass Company, Pittsburgh.

Circle 323 on inquiry card

more products on page 292



The First Hot Dip Galvanized Bridge in the U.S. Spans a River of Maintenance 20 Years Wide

A zinc skin will provide 20 to 50 years of protection without maintenance for this bridge over Stearns Bayou, Ottawa County, Michigan. ☐ The bridge is 420 feet long with a 30 foot roadway and a 5 foot walk on each side. There are 8 spans, two at 60 feet and six at 50 feet. Design loading is H20-S16-44. All structural members, fasteners and other steel parts are protected against corrosion after fabrication by hot dip galvanizing specified at 2.3 ounces per square foot. Structural techniques proven successful in a hot dip galvanized bridge opened near Quebec City, Canada, in 1963 assure full friction of fastener contact surfaces plus the corrosion resistance of an unbroken zinc coat. ☐ The cost of galvanizing today is surprisingly close to that of a proper paint system. When maintenance costs are considered, galvanizing with its 20 to 50 year life expectancy is by far the most economical.

ST. JOE

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Producers of Zinc for American Industry

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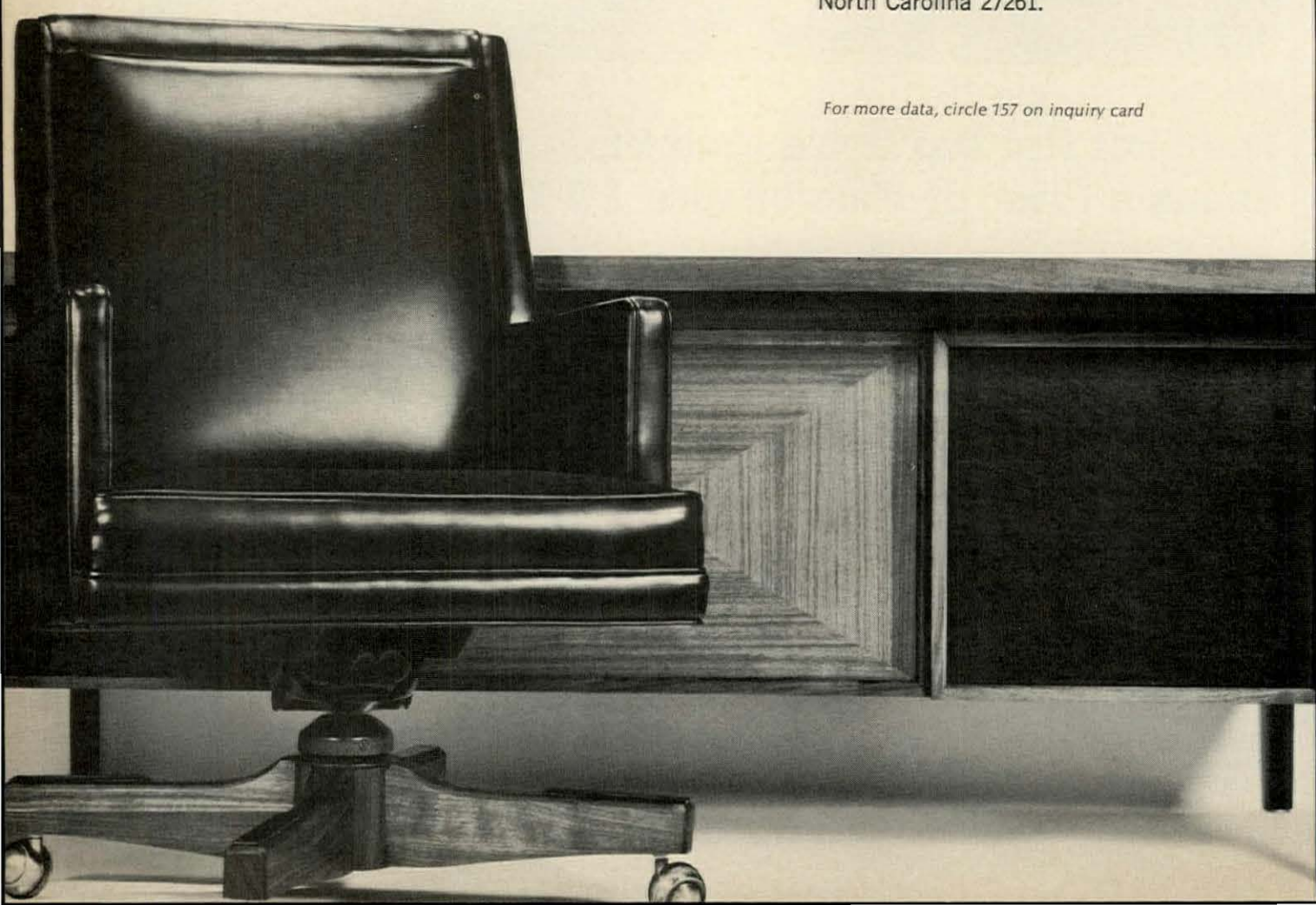
ZN-307

ALMA.

Alma?

Expect the unexpected from Alma craftsmen. That's how we became the world's leading manufacturer of wood office furniture. Designs like this, the Series 400, are another reason. For a complete catalog, write Alma Desk Company, High Point, North Carolina 27261.

For more data, circle 157 on inquiry card



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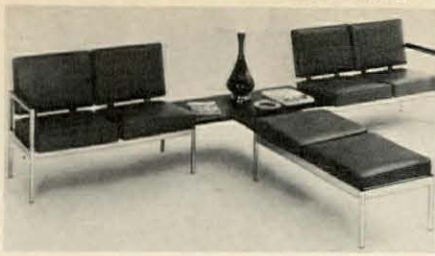

FURNITURE / Single, double and tripl seating units, with or without arms, ca be combined with tables and benc seats for reception areas, waiting room and executive offices. Drop-in arms an panel inserts between seating units aug ment flexibility. ▪ The Sturgis Company Youngstown, Ohio.

Circle 324 on inquiry car

DECORATIVE OFFICE STORAGE / A complete line of furniture offers a choic of walnut or teak woodgrain finish fo 30-in.-high credenzas, 42-in.-high book shelves, 56-in.-high cabinets and 78-in. high wall units. ▪ S. A. Hirsh Mfg. Co., Skokie, Ill.

Circle 325 on inquiry car

ACOUSTICAL SPACE-SAVER / *Carouse Acousti-Booth* is a telephone center con taining six coin telephone panels in a compact 5-ft diameter. The interior o each capsule is individually illuminated and capsule walls contain sound-absorb ing material. Available in sitdown o standup facilities. ▪ Burgess-Day Inc. Libertyville, Ill.

Circle 326 on inquiry car

The first power groove industrial fixture for 40°C (104°F) ambient temperature.

The ballast lives at the fixture end.
It's the New Guth Duo-Liner.
We call it
THE COOL ONE!

Guth

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continued from page 230

SOFTWOODS / Folders in a western woods technical library include: *Interior Paneling, Exterior Siding, Structural Framing, Sheathing and Decking, Laminated and Solid Posts and Beams, Machine Rated Lumber,* and *Rules for the Proper Selection, Specification and Use of Wood Products for Construction.* These brochures provide basic information on 12 western softwoods. ▪ Western Wood Products Association, Portland, Ore.

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DECK / Flexicore Hi-Stress Deck is the subject of an 8-page catalog describing fully-prestressed precast concrete slabs. Load tables, typical spans of various sizes for floors and roofs, and instructions for use on steel frame, concrete frame and wall bearing construction are included. The underfloor electrical distribution system is described along with uses of the hollow cells for air supply, air exhaust, air conditioning and heating, piping, and wiring for ceiling lighting. ▪ The Flexicore Co., Inc., Dayton, Ohio.

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ORNAMENTAL METALWORK / A 1(page color catalog, "Stock Componen for Decorative Metal Screens and Rai ings," features space dividers, buildir facades, rail moldings, railing posts, an other ornamental systems in both cor temporary and traditional styles. ▪ Juliu Blum & Co., Inc., Carlstadt, N.J.

Circle 422 on inquiry ca

PLYWOOD/ A 20-page design specific tion pamphlet published by the Amer can Plywood Association presents recom mended design stresses, physical prop erties, and design methods for softwoo plywood. ▪ American Plywood Assoc ation, Tacoma, Wash.

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SEALANTS / A 4-page guide to sealan includes specifications and data for syr thetic bulk compounds, oil-base bul compounds, and synthetic extrude compounds. A selection table recom mends the specific sealant for various ap plications. ▪ Parr Paint and Sealan Inc., Cleveland.

Circle 424 on inquiry ca

PROTECTIVE COATINGS / A 32-pag color booklet features 180 color stand ards and a two-page guide that help pinpoint a surface condition or exposu and recommends the surface preparatio method and the coating system. Rust-Oleum Corporation, Evanston, Ill.

Circle 425 on inquiry ca

WINDOW / A 28-page brochure use photographs and section drawings t illustrate standard designs for architec tural, commercial, industrial and deter tion windows. ▪ The William Bayle Company, Springfield, Ohio.

Circle 426 on inquiry ca

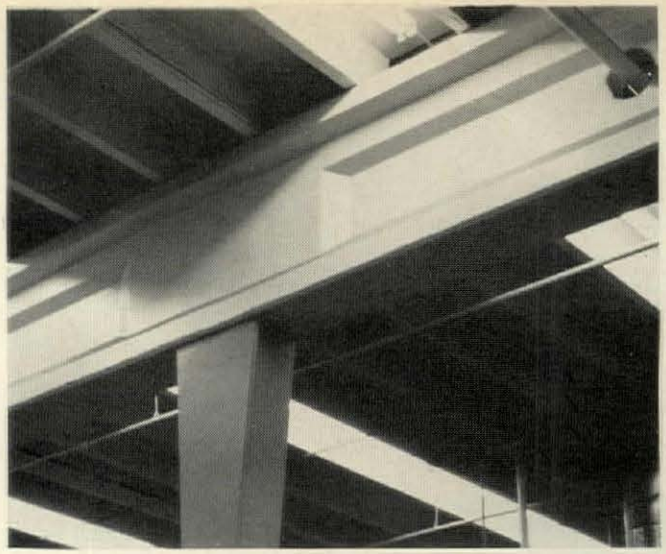
MOULDING / *WP/Series Moulding Pa terns* is presented as the moulding indu try standard. It is a reference work of th most popular moulding patterns and said to be the first major moulding pa tern catalog revision in almost 10 year ▪ Western Wood Moulding Producer Portland, Ore.

Circle 427 on inquiry ca

ENTRANCES / A 104-page manual pr sents technical information regarding th use of architectural metals in entranc design and performance. The focus is o public entrances. ▪ National Associ tion of Architectural Metal Manufactu ers, Chicago.

Circle 428 on inquiry ca

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



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APRIL

1-6 National Planning Conference, American Society of Planning Officials—Shamrock Hilton Hotel, Houston.

1-7 Annual Convention, American Concrete Institute—Royal York Hotel, Toronto.

19-20 Engineering Institute: "Energy Utilization," University of Wisconsin—Madison, Wisc.

20-21 American Institute of Steel Construction, Inc. National Engineering Conference—Sheraton-Palace Hotel, San Francisco, Calif.

23-27 Third North American Conference, University of Illinois—Urbana, Ill.

MAY

7-10 29th Annual Convention of the National Association of Architectural Metal Manufacturers—Bismarck Hotel, Chicago, Ill.

8-11 First Joint Convention of the Consulting Engineers Council/USA and the International Federation of Consulting Engineers—Shoreham Hotel, Washington, D.C.

8-12 ASCE Structural Engineering Conference—Olympic Hotel, Seattle, Wash

12-14 Annual Meeting, Association of Collegiate Schools of Architecture—Barbizon-Plaza Hotel, New York City.

14-16 Third Annual Theatre, Television and Film Lighting Symposium, Illuminating Engineering Society—Hollywood Roosevelt Hotel, Hollywood, Calif.

14-18 99th Convention of the American Institute of Architects and 17th Annual Building Products Exhibit—New York Hilton, New York City.

15-19 23rd Annual Technical Conference, Society of Plastic Engineers—Cobo Hall, Detroit, Mich.

20-28 International Commission of Illumination Congress—Shoreham Hotel Washington, D.C.

31-June 3 Seventh Annual Conference U. S. Institute for Theatre Technology—Barbizon-Plaza Hotel, New York City.

JUNE

6-8 Ninth Annual Pacific Coast Builders Conference—Fairmount Hotel, San Francisco.

17-23 A.I.A.—A.C.S.A. Teachers' Seminar 1967—Illinois Institute of Technology Chicago.

20-28 International Commission of Illumination Congress—Shoreham Hotel Washington, D.C.

25-30 70th Annual Meeting, American Society for Testing and Materials—Statler Hilton Hotel, Boston.

28-July 7 IXth World Congress of the International Union of Architects—Prague Czechoslovakia.

ADDENDUM

The correct address of Smislova and Associates is 6010 Executive Blvd., Rockville, Md., and that of Carcaterra and Associates is 9301 Georgia Ave., Silver Spring, Md. We regret that these addresses were incorrectly listed in our January issue.

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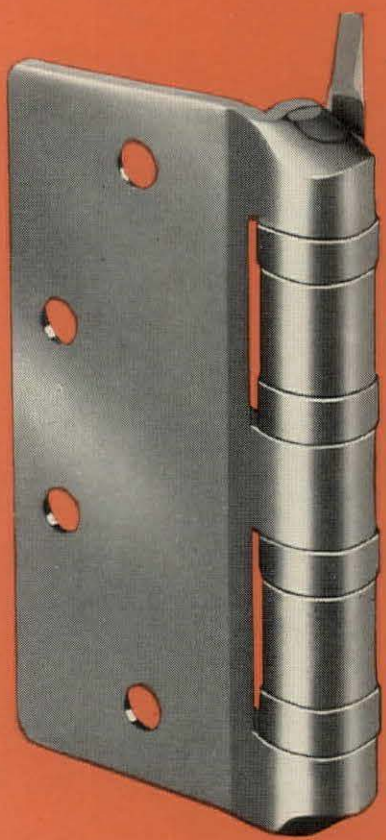
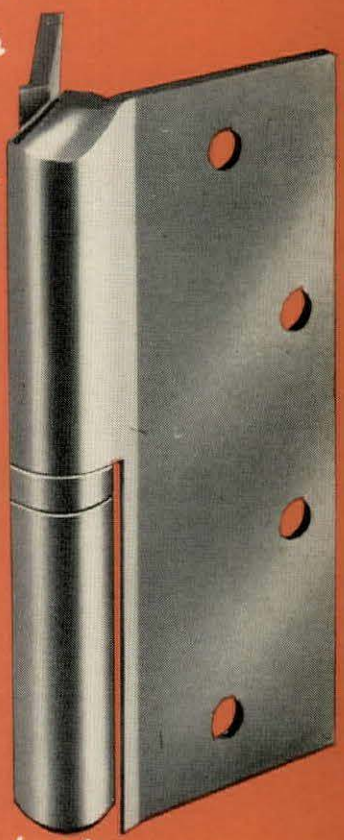


Five dirt-collecting surfaces

Less attractive appearance

Leaves can not be separated... this tight pin hinge requires extra work, time to install doors

McKINNEY MODERNE



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- **PRE-BIDDING.** Before preparing working drawings, the architect can determine components by pre-bidding combinations of components.
- **KNOWN PERFORMANCE.** Component systems have been pretested, separately and in combination. Performance can be accurately predicted.
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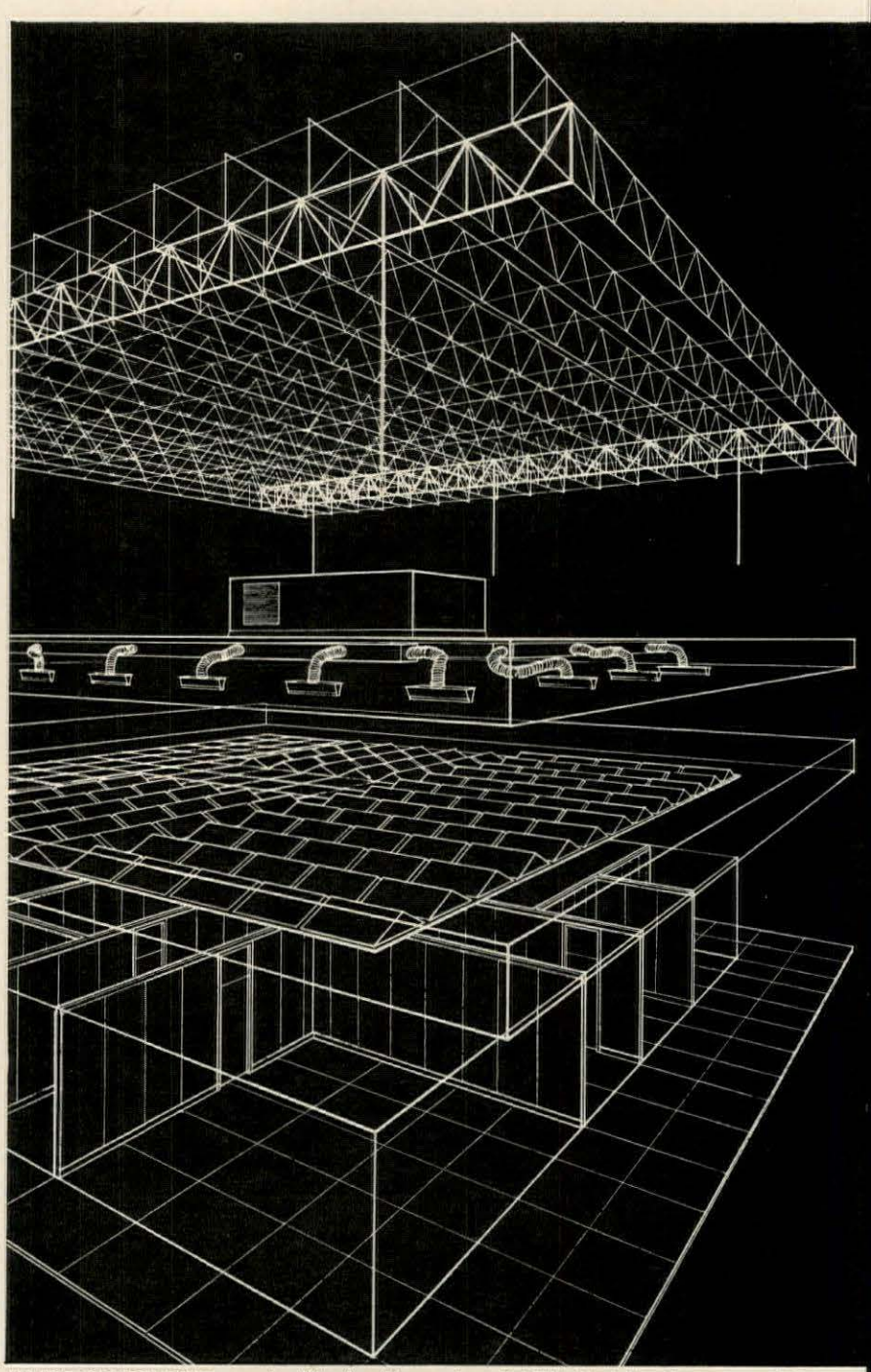

MAJOR COMPONENTS used with the Macomber V-LOK Modular Component System include a heating-ventilating-air conditioning system with flexible ducts, lighting-ceiling components, and interior partitions that attach to the ceiling grid. Lights, air vents and walls can be relocated at any time during the life of the building to suit the needs of the occupants.

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For more about the V-LOK Modular Component System, write *Macomber Incorporated, Canton, Ohio 44701.*

SUNDSTRAND AVIATION GOES VLMC—Sundstrand's 250,000-square-foot, three-story Research and Development Center in Rockford, Illinois, is an outstanding example of the Macomber V-LOK Modular Component System in action. Jones and Brown Company, Inc., represented Macomber in supplying the structural components including steel roof decking. Architects are Larson and Darby, A.I.A. Consulting Engineers are The Engineers Collaborative, and General Contractor is Sjostrom & Sons, Inc.

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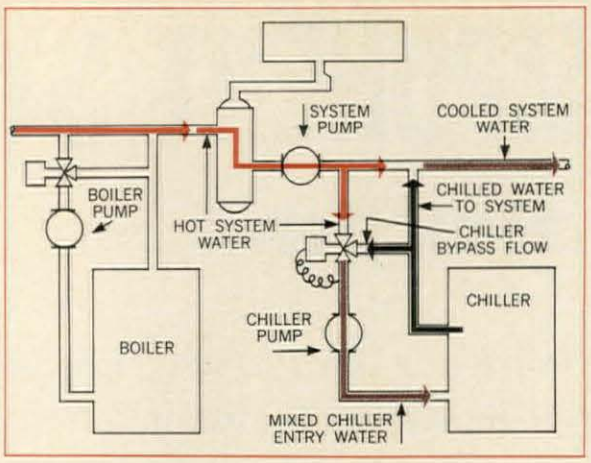

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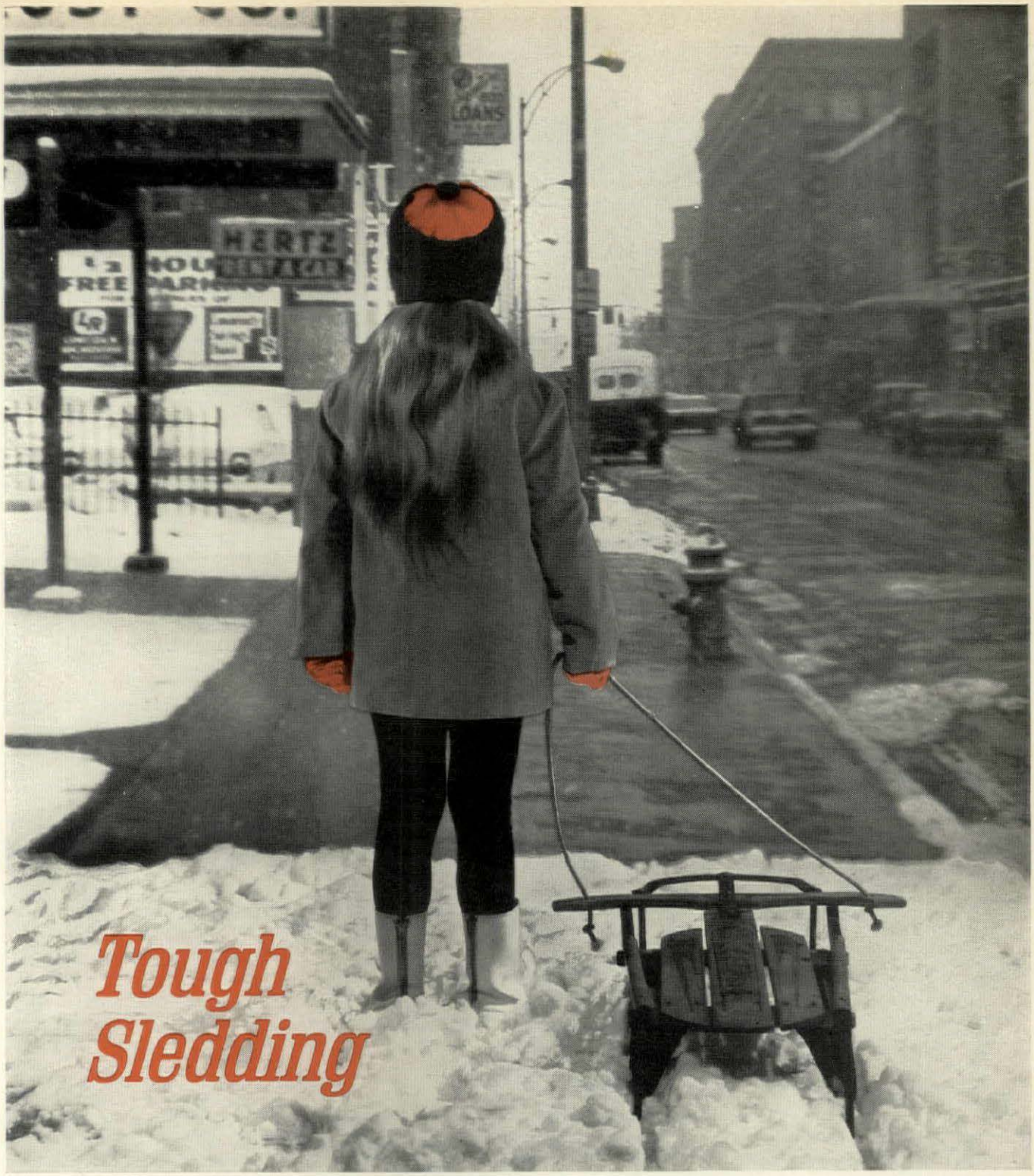

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These four reviews describe several different kinds of monographs on architect's work, from a memorial volume, to two of the "oeuvre complet" type, to a highly unconventional autobiography.

Kiesler: the man and his vision

INSIDE THE ENDLESS HOUSE. *By Frederick Kiesler. Simon and Schuster, 630 Fifth Avenue, New York, N.Y. 10020. 576 pp., illus. $15.00.*

Other people's diaries and personal memoranda—irrespective of literary merit—have a certain fascination, particularly if they record the inner thoughts and experiences of an interesting mind. Kiesler's posthumously published record of the years 1956-1964 provides some of this kind of insight, although perhaps—as is the way with diaries—it reveals both more and less than the author intended.

How much you like "Inside the Endless House" will depend to a large extent on how much you knew of and liked the man; because the man does seem to come through the rather stilted text and self-conscious book design. If you search the pages for Kiesler's *raison d'etre*, what do you find? You find a man with all the motivation and some of the potential of genius, who sought to express himself in a number of art forms and at the same time tried to translate these into the reality of new forms for architecture—a newly plastic approach to design which he usually described as "endless".

What for Kiesler might the significance of this "endless" concept have been? It certainly has a significance in architecture of today, since flexibility has become a predominant program demand; extensibility, growth and change of buildings, multipurpose use of space are all ideas which are almost too well accepted by architects today. A form that can be repeated indefinitely, a space which does not have the rigid limits of standard geometry, these are valid and important concepts, but Kiesler never quite succeeded in translating them effectively into a design method that could become a part of the language of day to day architecture.

He did exert an influence, however, both through his exhibitions and writings and through some buildings—like the Shrine of the Book in Jerusalem—although his buildings do not have the impact of prototype forms, rather they are monuments of a particular, personal esthetic, an esthetic whose validity has not been accepted as having a central place in the practicalities of building design: in the way people want to live.

Kiesler had many of the personal attributes of genius: magnetism, originality, disrespect for convention; but he lacked that important criterion for worldly success, the ability to translate his ideas into a reality with which the rest of the world could relate. He remains a fanciful Puck in a world of men.

Nevertheless, despite its selfconsciousness, its attempt to appear to be the spontaneous jottings of a poetic mind, this book has literary merit. Sometimes profound thoughts find an almost epigrammatic, even poetic, expression

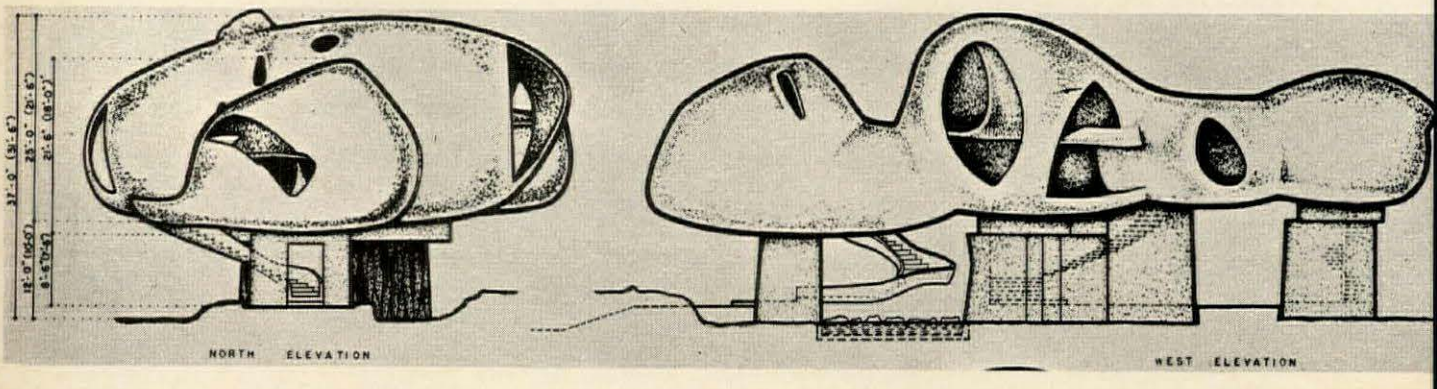
> "I shall never accept the effigies of a life on the surface, instead of a life born of infinity and sustained by our creative imprint."

There are many apt and humorou descriptions of day-to-day life—"We a rose and the paper doilies were snatche off in a whiff"—as well as a number o personal revelations we could well hav done without.

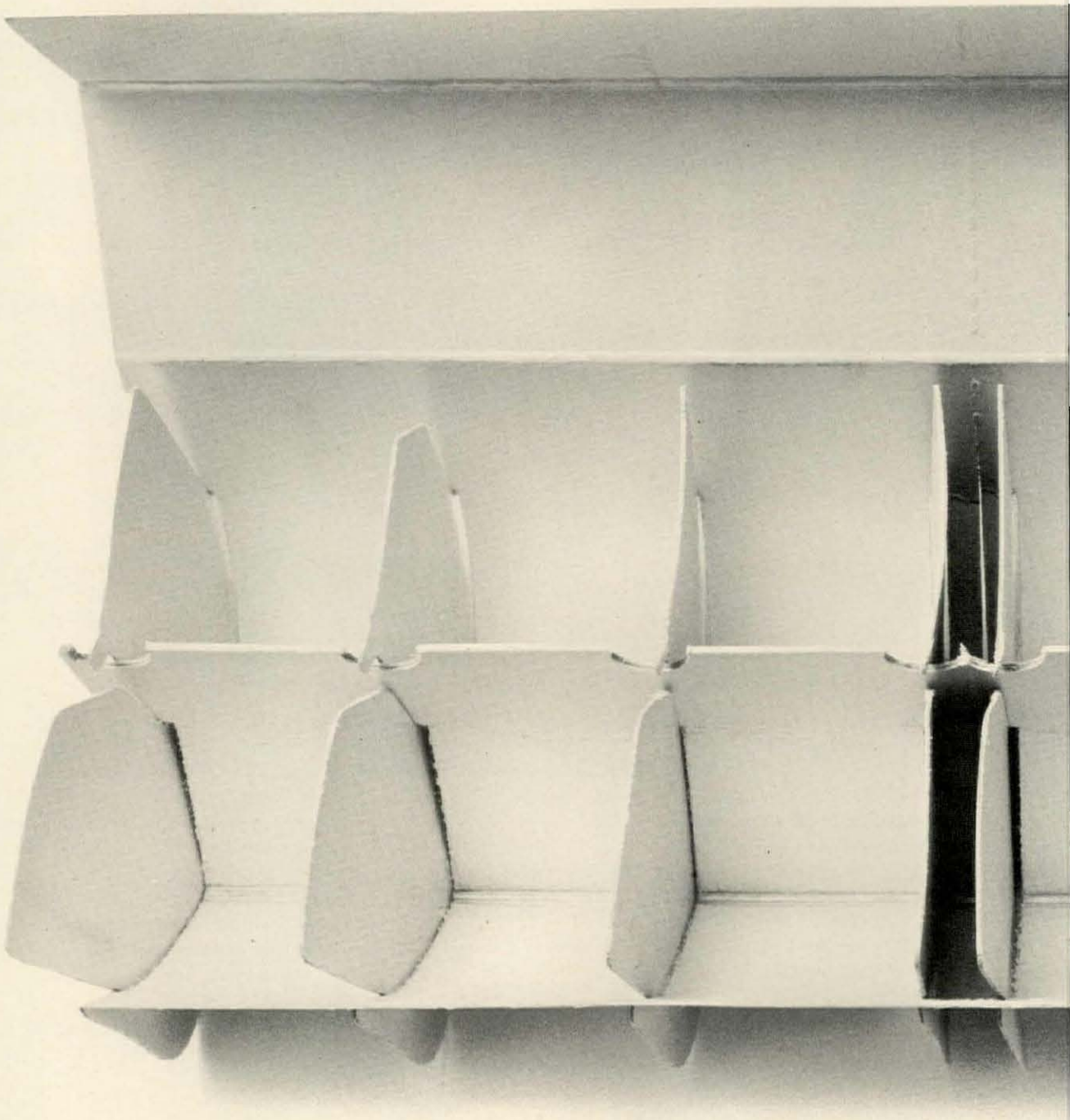
How, then, does one assess the con cept of endlessness so fundamental to a understanding of the man and his work It may not be too whimsical to sugges that it is ultimately the expression of very personal longing for immortality a an emotional and intellectual level. Tha this was a major preoccupation is sug gested by many passages in the text:

"Man's greatest invention," say Kiesler in one passage, "has been con

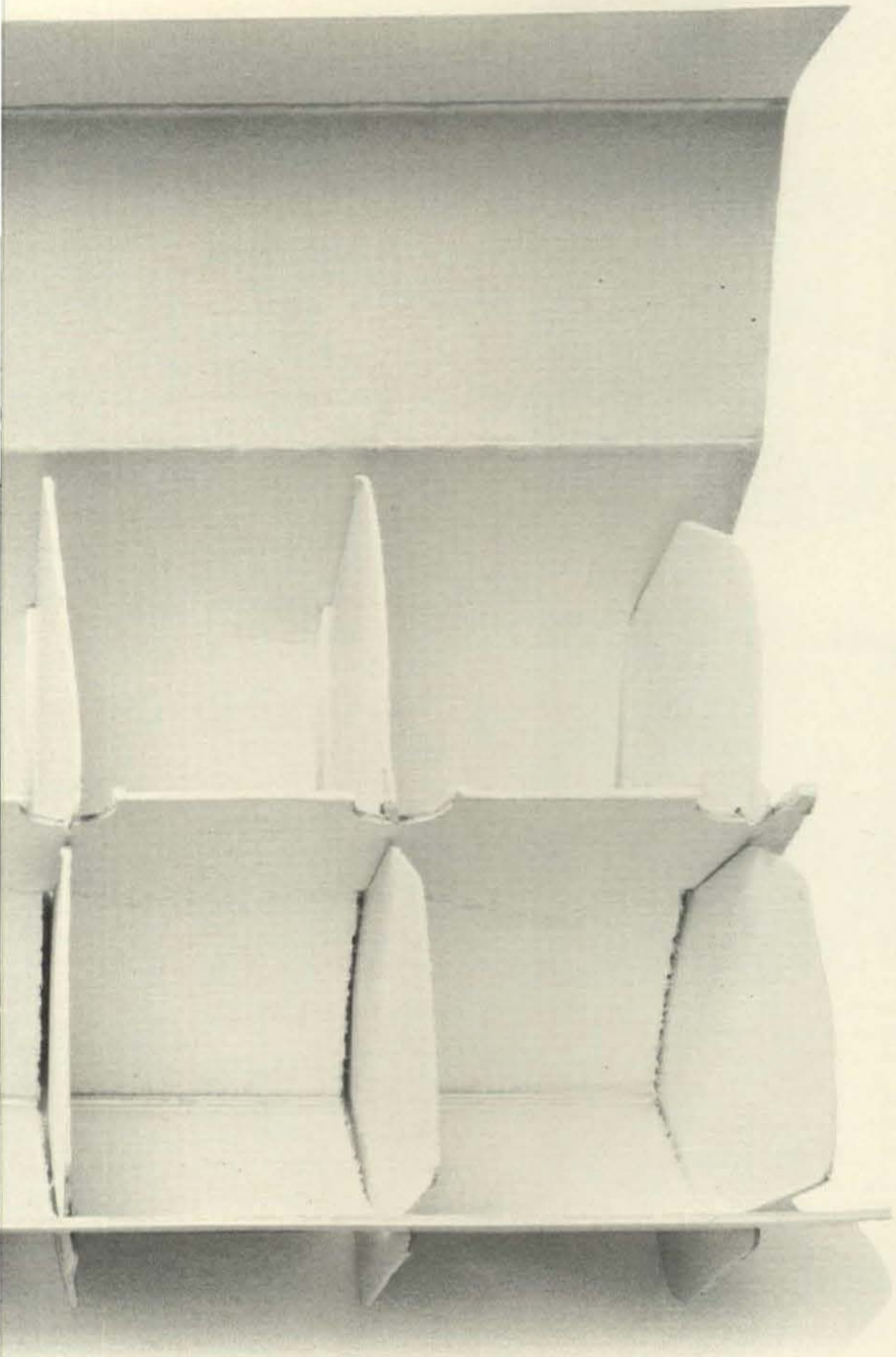
continued on page 34



A single climate conditioning system would be fin



all the rooms in your plans were the same size.



But they aren't, are they? Schools have big rooms, small rooms, medium-sized rooms. Sometimes room sizes even change.

You couldn't possibly expect one type of climate conditioning system—unit or central—to do the best job in all these situations.

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Nesbitt, Environmental Products Division, International Telephone and Telegraph Corporation, Philadelphia, Penna. 19136.

NESBITT ITT

continued from page 340

stant since the beginning of time; the idea of immortality. However, no man can evolve an idea which isn't concocted by the forces of the universe itself"; or, in another passage, "Scientists do not need to assure us of immortality, sooner or later it will be a fact."

The desire, but also the fear of going on forever, the need for a logic which transcends the limits of experience and which suggests a relationship between the known and the unknown, were these the motivations behind this man? Does this account for his failure . . . the failure which comes from trying to express the inexpressible, from the attempt to give tangible form—however plastic—to an essentially intangible concept?

Even the design and sequence of the book suggest that this may be the case, the staccato presentation, the lack of physical contiguity between one event and its successor, the power of what is suggested rather than what is said, the significance of what is left out.

If, ironically enough, immortality escapes the occupant of the "endless house," Kiesler deserves credit for having spent his life in direct confrontation with ideas which most of us manage to side step, and for having concerned himself with the wider implications of art and architecture. The book stands as a record of this process and of an unusual and probing mind.

—Susan Braybrooke

TAC

THE ARCHITECTS COLLABORATIVE, 1945-65. *Edited by Walter Gropius, Jean B. Fletcher, Norman C. Fletcher, John C. Harkness, Sarah P. Harkness, Louis A. McMillen and Benjamin Thompson. Arthur Niggli Ltd., 9053 Teufen AR(Switzerland). 300 pp., illus. $26.50.*

In 1945 Walter Gropius and a group of young architecture students from Yale, Harvard and Smith decided to start an office in Cambridge for the collaborative practice of architecture. Gropius had already achieved renown for his revolutionary experiments in design and education at the Bauhaus, which he founded in 1925. Now, 20 years after its founding, TAC is one of the largest and most successful practices in this country. The new book is a virtual catalog of their extensive and varied work.

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continued on page 348

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continued from page 344

work, vast numbers of schools and university buildings. Their work extends beyond the boundaries of the United States and includes U. S. embassies abroad as well as university and town planning projects.

The architects themselves believe that the great success of their endeavors is due in large part to their collaborative method which each partner describes briefly from his own point of view. The book, generously supplied with photographs and plans, is a valuable document, for it includes some of the best architecture produced in the United States in the last 22 years.

NEUTRA

RICHARD NEUTRA: 1961-66. *Edited by Willy Boesiger. Frederick A. Praeger, III Fourth Avenue, New York, N.Y. 254 pp., illus. $20.00.*

The present book, last in a three-volume series on Richard Neutra's work, records his buildings and projects of the most recent years of a distinguished career. Willy Boesiger lucidly assembles the work, much of which was done with Robert Alexander, in more than 500 photographs, drawings and plans.

The book suffers in form only from lack of development of the subject; this third illustrated list begins where the second left off—arbitrarily, undefined by any natural turning point in Neutra's style, and unclimaxed by any innovation. The volume is rather a retrospective of work which is backward looking itself. Neutra's forms of these years were only elegant variations on themes of a design vocabulary many of whose idioms had long before passed into common usage —such as the protected outdoor school corridors or the "patio-school" itself.

While Neutra's architecture was hardly free wheeling, it was farflung. Much space and detail is thus devoted to several of Neutra's major works abroad. The U.S. Embassy in Karachi, Pakistan is an example. But its outstanding element —tall, anodized aluminum sunshade louvers—was first used by Neutra a generation ago in California.

The book achieves its unity through its restatement of Neutra and Alexander's trademarks in design and philosophy whether applied in Los Angeles or abroad, whether to houses, schools, or embassies. Neutra managed to remain unencumbered by his own traditions, as the well-chosen photos show; his buildings remained light and effortless. And during these years, Neutra's famous re-

continued on page 350

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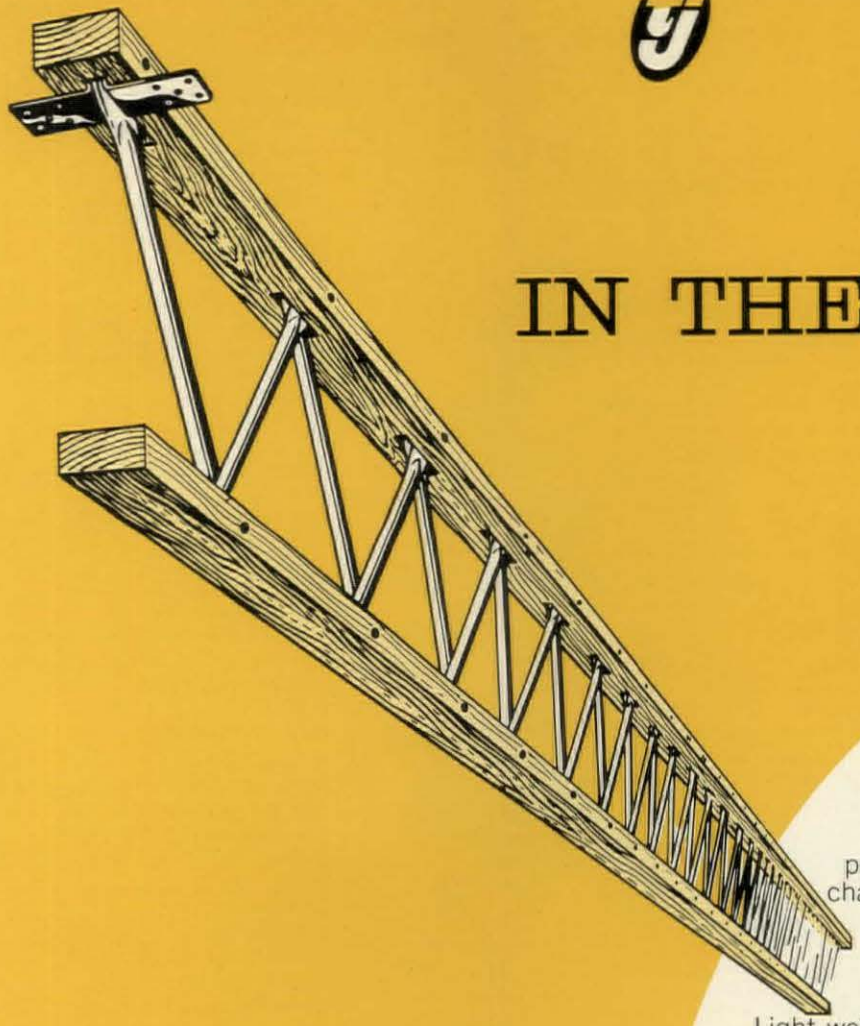

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